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PUBLIC

To: Members of Improvement and Scrutiny Committee – Climate Change, Biodiversity and Carbon Reduction

Friday, 12 May 2023

Dear Councillor

Please attend a meeting of the **Improvement and Scrutiny Committee – Climate Change, Biodiversity and Carbon Reduction** to be held at **2.00 pm** on **Monday, 22 May 2023**; in **Committee Room 1, County Hall, Matlock**; the agenda for which is set out below.

Yours faithfully

Helen E. Barrington

Helen Barrington
Director of Legal Services

A G E N D A

PART I - NON-EXEMPT ITEMS

1. Apologies for absence

   To receive apologies for absence (if any)

2. Declarations of Interest

To receive Declarations of Interest (if any)

3. Minutes of Previous Meeting (Pages 1 - 6)

   To confirm the non-exempt minutes of the Improvement and Scrutiny - Climate Change, Biodiversity and Carbon Reduction meeting held on 13 February 2023.

4. Public Questions (Pages 7 - 8)

   30 minutes maximum in total for this item. Questions may be submitted to be answered by the Scrutiny Committee or Council officers who are attending the meeting as witnesses, on any item that is within the scope of the Committee. Please see the procedure below for the submission of questions.

5. Identifying the Council's Role in Nature Recovery (Pages 9 - 860)

6. Implementation of the Council's Nature Recovery - Derbyshire Wildlife Trust (To Follow)

7. Single Use Plastic Policy and Action Plan (Pages 861 - 888)

8. Development and Publication of the Spatial Renewable Energy Study, Climate Change Planning Guidance Document and an Associated Assessment Tool, Progress Update (Pages 889 - 896)

9. Climate Change Performance Reporting - 2022-2023 Q4 (Pages 897 - 938)

10. Work Programme (verbal report) (Pages 939 - 940)

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MINUTES of a meeting of **IMPROVEMENT AND SCRUTINY COMMITTEE – CLIMATE CHANGE, BIODIVERSITY AND CARBON REDUCTION** held on Monday, 13 February 2023 at Committee Room 1, County Hall, Matlock.

PRESENT

Councillor W Major (in the Chair)

Councillors B Bingham, S Bull, A Clarke, M Ford, G Kinsella and D Taylor.

Apologies for absence were submitted for Councillor R Redfern, A Hayes and T Kemp.

Officers present: Joe Battye (Director - Economy & Regeneration), David Beard (Head of Projects), Rupert Casey (Assistant Director - Climate Change and Environment), Andrew Marsh (Head of Employment and Skills (Place)), Juliette Normington (Democratic Services Officer) and Caroline Toplis (Programme Manager - Climate Change).

1/23 DECLARATIONS OF INTEREST

There were no declarations of interest.

2/23 MINUTES OF PREVIOUS MEETING

RESOLVED – to confirm the non-exempt minutes of the meeting of the Improvement & Scrutiny – Climate Change, Biodiversity and Carbon Reduction committee held on 28 November 2022.

3/23 PUBLIC QUESTIONS

Question from Keith Venables:

In the DCC climate change strategy achieving net zero 2021 -2025, which was signed off in October 2021, section 9.0 Monitoring and Reporting, states the following:

- Publishing annually the progress on reducing emissions across each action area set out in the Strategy, how this contributes to the national emissions inventory sectors and national target and how this has been achieved.
- Seeking to develop five-yearly delivery plans with sector specific emissions reduction targets and report against their progress.

So has the report for 21-22 been published and if so what progress has been made? and have 5 year delivery plans been made and if so again what progress has been made?

Response from the Chairman of the Committee:

Thank you for your question, Mr Venables.

The Derbyshire County Council Climate Change Strategy: Annual Review of Progress for 2021-22 was presented to Cabinet on 12 January 2023 and can be found here. This gives an overview of the progress in delivering the Climate Change Strategy: Achieving Net Zero plus an update on wider climate change initiatives including climate adaptation and natural capital.

The Council's Climate Change Delivery Plan is based around the 32 priority actions set out in the Climate change Strategy. These are monitored and reported quarterly through the Climate Change Performance Dashboard and then reviewed and updated in full as part of the annual review. Sector specific emissions reduction targets are reflected in the targets within the strategy and are largely based on national targets and data. They are also reviewed and reported annually. Any delivery plans are also produced by the Council service leading on delivery of the target. For instance our transport team have produced the Bus Service Improvement Plan which can be found here and the forward programme for delivering the Low emissions Vehicles Infrastructure Strategy is shortly to be presented to Cabinet.

4/23 **THE COUNCIL'S ROLE IN THE GROWTH OF LOW CARBON SKILLS, EMPLOYMENT AND TRAINING**

Joe Battye, Director of Economy and Regeneration introduced the report together with Councillor Tony King and Andrew Marsh, Head of Employment and Skills (Place). The report had been circulated in advance of the meeting and provided an overview of the Council's role in the growth of low carbon skills, employment, and training in Derbyshire. It was accompanied by a presentation that gave more detail on the key work programmes currently being delivered.

The report set out the strategic context faced by the Council which had a multi-faceted role to play. As Facilitator, it was bringing together key partners, identifying issues, delivering programmes and offering funding through schemes such the Green Entrepreneurs. Twelve themes had been established to develop, implement, manage and monitor delivery plans however the main focus was on schools, low carbon economy, internal engagement and training and external engagement. Much had

already been achieved, with the Council continuing to develop the county-wide green narrative, being mindful of existing sectors and the skills base, greening and decarbonising jobs.

Councillor King reinforced the narrative around education and skills with work being done to put together an accredited qualification for the people of Derbyshire. Great strides had been made with green initiatives and around the hydrogen agenda – changes were radical and outcomes would be seen in the near future.

Committee members welcomed the report and the work being done. The apparent low number of 77 gaining employment was explained in that just 187 of the total stated were seeking actual employment, with the remainder seeking different types of support. The Council was speaking with businesses but it had to be recognised that it had little influence or control of private business.

Officers agreed to publish good news stories around Green Entrepreneurs in the regular electoral update. The next Strategy update would focus on how to engage with small businesses.

RESOLVED to note the approach being taken to the Council's role in the growth of low carbon skills, employment and training.

5/23 CLIMATE CHANGE PERFORMANCE REPORTING - 2022-2023 Q3

Caroline Toplis, Programme Manager – Climate Change introduced the report, which had been circulated in advance of the meeting and presented the Climate Change Programme Dashboard for Quarter 3 2022-2023. The Dashboard had been developed to provide details on performance against delivery of the Council's Climate Change Strategy: Achieving Net Zero (2021-2025) (the 'Strategy').

The report was accompanied by a presentation that highlighted the key points. It was noted that no priority actions had been allocated and the focus areas being concentrated on being:

- Council estate and operations;
- Low carbon economy – a lot of work was being done around skills alongside the D2N2 LEP;
- Decarbonising the domestic sector – using avenues such as signposting;
- Transport, travel and infrastructure – funding had been secured and emphasis was being placed on improving access to charging points; and
- Waste – a great deal of work was being undertaken with district

and borough councils.

Steps were being taken to bring the 15 Review-rated actions back on track, in particular those that had the potential for the biggest negative impact on achieving net zero. Many of the 27 targets in the Strategy were outside the direct control of the Council, with progress being reviewed annually. Interim targets were introduced where possible and would be reviewed again in Autumn 2023.

Committee posed a number of questions. No date was available for the publication date of the Local Energy Plan however it was imminent. Concerns were expressed around the scoring of some of the actions provided; these were taken on board by officers. The retro-fitting and carbon reduction of homes was currently influenced by what was available locally.

The Committee agreed to look into how to further reduce emissions and 'the grey fleet'; these would be included to the Committee's work programme.

RESOLVED to note the content of the Climate Change Programme Dashboard detailed in Appendix 2.

6/23 PROGRESS REPORT FOR PROPERTY DECARBONISATION - REVIEW OF CARBON REDUCTION TARGETS

David Beard, Head of Projects introduced the report, which had been circulated in advance of the meeting and provided progress on the targets to decarbonise the Council's estate. It included a review of the targets in the Climate Change Strategy (the Strategy) and the subsequent development of additional or enhanced targets by Corporate Property.

Some elements of the report were highlighted:

- Target T2 – procurement of 100% renewable electricity would not be met however, measures to reduce electricity demand would reduce the base carbon footprint.
- Target T3 – to reduce emissions from heating buildings to less than 700tCO2e. Interpreted as a reduction of 90%, it was noted that that level was not possible. The Committee was directed to Section 2.7 of the report where the adjusted figure included the procurement of green energy and other offsetting measures. The Strategy targets had been superseded by new annual emissions targets.
- Target T4 from the Strategy - for microgeneration of energy from

renewable sources on corporate buildings. It was expected that this target would be achieved and exceeded five-fold.

The report and supporting illustrative slides were very much welcomed by the Committee. Committee members posed questions around the type of solar panels available and potential sites for small discreet farms in Derbyshire.

RESOLVED to:

1. Endorse the proposed targets; and

2. Support the proposed strategy for the decarbonisation of corporate property.

7/23 WORK PROGRAMME (VERBAL UPDATE)

Members were invited to submit future items for the work programme for the remainder of 2022/23 and into 2023/24.

The Chair had met with representatives of Derbyshire Wildlife Trust who were undertaking some very important biodiversity work. It was agreed that they should be invited to attend the next meeting to discuss their work. Other topics proposed for future meetings were electric vehicle programmes and to facilitate zero emissions and the Local Energy Plan.

RESOLVED to:

1. Invite representatives of Derbyshire Wildlife Trust to attend the meeting in May; and

2. To update the work programme to include consideration of the electric vehicle programmes and to facilitate zero emissions and the Local Energy Plan.

The meeting finished at 4.06 pm

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Procedure for Public Questions at Scrutiny Committee meetings

Members of the public who are on the Derbyshire County Council register of electors, or are Derbyshire County Council tax payers or non-domestic tax payers, may ask questions of the Improvement and Scrutiny Committees, or witnesses who are attending the meeting of the Committee. The maximum period of time for questions by the public at a Committee meeting shall be 30 minutes in total.

Order of Questions

Questions will be asked in the order they were received in accordance with the Notice of Questions requirements, except that the Chairman may group together similar questions.

Notice of Questions

A question may only be asked if notice has been given by delivering it in writing or by email to the Director of Legal Services no later than 12 noon three working days before the Committee meeting (ie 12 noon on a Wednesday when the Committee meets on the following Monday). The notice must give the name and address of the questioner and the name of the person to whom the question is to be put.

Questions may be emailed to democratic.services@derbyshire.gov.uk

Number of Questions

At any one meeting no person may submit more than one question, and no more than one such question may be asked on behalf of one organisation.

Scope of Questions

The Director of Legal Services may reject a question if it:

- Exceeds 200 words in length;
- is not about a matter for which the Committee has a responsibility, or does not affect Derbyshire;
- is defamatory, frivolous or offensive;
- is substantially the same as a question which has been put at a meeting of the Committee in the past six months; or
- requires the disclosure of confidential or exempt information.

Submitting Questions at the Meeting

Questions received by the deadline (see **Notice of Question** section above) will be shared with the respondent with the request for a written response to be provided by 5pm on the last working day before the meeting (ie 5pm on Friday before the meeting on Monday). A schedule of questions and responses will be produced and made available 30 minutes prior to the meeting (from Democratic Services Officers in the meeting room).

It will not be necessary for the questions and responses to be read out at the meeting, however, the Chairman will refer to the questions and responses and invite each questioner to put forward a supplementary question.

Supplementary Question

Anyone who has put a question to the meeting may also put one supplementary question without notice to the person who has replied to his/her original question. A supplementary question must arise directly out of the original question or the reply. The Chairman may reject a supplementary question on any of the grounds detailed in the **Scope of Questions** section above.

Written Answers

The time allocated for questions by the public at each meeting will be 30 minutes. This period may be extended at the discretion of the Chairman. Any questions not answered at the end of the time allocated for questions by the public will be answered in writing. Any question that cannot be dealt with during public question time because of the non-attendance of the person to whom it was to be put, will be dealt with by a written answer.

FOR PUBLICATION

DERBYSHIRE COUNTY COUNCIL

IMPROVEMENT AND SCRUTINY COMMITTEE – CLIMATE CHANGE, BIODIVERSITY AND CARBON REDUCTION

MONDAY, 22 MAY 2023

Report of the Executive Director - Place

Identifying the Council's Role in Nature Recovery

1. Purpose

1.1 To inform the Improvement and Scrutiny Committee of the nature recovery implications for the Council arising from the Environment Act 2021 and the Government's Environmental Improvement Plan 2023.

2. Information and Analysis

2.1 Background

2.1.1 There is recognition from the Government, public authorities, and the environmental sector that prompt action is required to address society's neglect of nature. Planning for nature recovery must take place in a strategic, collaborative, and evidenced based manner. Furthermore, a more biodiverse environment will allow important new climate change, social, health, regeneration, and economic growth benefits to be realised.

2.1.2 The Council has set policy to fulfil the stewardship roles it has for protecting landscapes and habitats from the impacts of climate change and biodiversity loss, and to facilitate appropriate use of the county's valuable ecosystem services to the benefit of everyone.

2.1.3 This is demonstrated through the following Council Plan 2023-25 priority and action:

- Priority – A prosperous and green Derbyshire
- Action – Develop the Local Nature Recovery Strategy for Derbyshire in accordance with the Environment Act 2021 for the co-ordinated benefit of Derbyshire's natural environment

2.1.4 The following Council policies are also of relevance:

- The Climate Change Strategy: Achieving Net Zero 2021-2025 (which recognises reversing the decline in biodiversity as a key issue facing society that this Strategy will itself help to address)
- To facilitate the planting of up to 1 million trees across Derbyshire by 2030
- To maximise opportunities for carbon capture using woodlands as agreed in the Vision Derbyshire Climate Change Strategy: 2022-2025
- To make decisions that protect and enhance nature wherever possible, as detailed in the Council's Nature Recovery Resolution, that was passed at the meeting of the Council on 2 February 2022 (set out in the minutes of the meeting at item 10/22)

2.1.5 Furthermore, the East Midlands Mayoral Combined County Authority (MCCA) Deal (August 2022) makes the following important commitments:

- Provisional agreement by Derbyshire County Council and Nottinghamshire County Council to act as the responsible authorities for the preparation of the Local Nature Recovery Strategies (LNRSs) for the Derby City and Derbyshire County, and Nottingham City and Nottinghamshire County LNRS respectively. Both county councils will work to ensure join-up of each LNRS where this is possible.
- Production of a MCCA Flood Alleviation Strategy to help build community and economic resilience. This will support a comprehensive approach to tackling local nature recovery with a focus on green and blue infrastructure and maximising benefits for people, wildlife, and the economy.

2.1.6 In progressing this policy agenda, the Council has invested in preparing a Natural Capital Strategy for Derbyshire. This Strategy provides a unique and comprehensive understanding of the current condition of Derbyshire's natural environment; the type and value of the ecosystem services it provides and where opportunities exist for improvement. Natural capital is the stock of renewable and non-renewable natural

resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a wide range of benefits (ecosystem services) to people.

2.1.7 The Natural Capital Strategy's findings are of great relevance to ensuring a robust landscape-level approach is applied to the Council's advocacy of nature recovery across Derbyshire. It considers, in detail, the diverse network of Derbyshire's woodland, heathland, wetland and grassland habitats. For example, it identifies how trees and woodlands make a huge contribution to enhancing biodiversity, mitigating the impacts of climate change, improving public health, providing jobs, supplying markets and in celebrating cultural heritage. However, the Strategy also identifies that climate change, increasing population pressure and a decline in biodiversity are negatively impacting on the resilience of these habitats and restricting their ability to provide many of the ecosystem services that much of society takes for granted.

2.1.8 The Environment Act 2021 includes a suite of interrelated measures which underpin the objectives of the Government's Environmental Improvement Plan 2023. These are also of relevance to and complement the Council's intentions to ensure nature recovery across Derbyshire. They are summarised as the following five statutory drivers for change, which are explained further in the remainder of this report.

- New legally binding national targets to protect the environment.
- An amended and strengthened general duty for Councils (and other public bodies) to seek to conserve and enhance biodiversity.
- A Local Nature Recovery Strategy for each area.
- Biodiversity Net Gain (BNG) as a mandatory requirement for planning permission.
- Biodiversity Net Gain offsetting.

2.2 **New Legally Binding Targets to Protect the Environment**

2.2.1 The Government has set national targets to drive action to tackle climate change, restore natural capital, and protect landscapes and green spaces. The targets include:

- Halt the decline in species populations by 2030, and then increase populations by at least 10% to exceed current levels by 2034.
- Restore precious water bodies to their natural state.
- Increase total tree and woodland cover from 14.5% of land area now to 16.5% by 2050.
- Restore or create in excess of 500,000 hectares of a range of wildlife-rich habitat outside protected sites by 2042, compared to 2022 levels.

2.2.2 The Environment Act 2021 requires environmental considerations to be central to national and local Government policy making, thereby delivering these targets against the principles of: integration; prevention; rectification at source; polluter pays; and the precautionary principle.

2.3 Duties on the Council for furthering the Conservation and Enhancement of Biodiversity

2.3.1 The Environment Act 2021 (amending the Natural Enviroment and Rural Communities Act 2006), has, strengthened and expanded the duties on public authorities towards the "general biodiversity objective", With effect from 1 January 2023, that objective has thus been widened to comprise "the conservation and enhancement of biodiversity in England". The enhanced duties include requirements for each public authority:

- to consider what action it can take to further that objective;
- to set such policies and specific objectives as it considers appropriate for taking such action; and
- to take such action as it considers appropriate having regard to such policies and [specific] objectives, to further that [general] objective.

The duties also now include a requirement for production of Biodiversity Reports. For authorities that are Local Planning Authorities, as the Council is, this reporting must include information on BNG outcomes related to the planning system (see Paragraph 2.5).

2.3.2 Hence, Local Planning Authorities l must publish a first Biodiversity Report, in first 12 weeks in 2026 at the latest, to cover a period of up to 3 years from January 2023. The next such reports to be published need to cover a period of no more than 5 years. for submission to Natural England. However, there is an expectation that the Council will report publicly on its biodiversity duty actions annually. Therefore, this first report should be published in early 2024, to cover the period of the first year, up to 31 December 2023.

2.4 A Local Nature Recovery Strategy for Derbyshire

2.4.1 The Environment Act 2021 also brings into law the appointment by the Government of Responsible Authorities to create Local Nature Recovery Strategies (LNRS), which it intends will form a national Nature Recovery Network (NRN). The NRN is expected to comprise around 50 LNRS largely based upon counties and combined authority areas, and which will collectively cover the whole of England. Each LNRS will be prepared during 2023-24 and be designed to ensure locally targeted,

more co-ordinated, practical, and focused action, and investment in nature.

2.4.2 The Council has provisionally been identified by the Government as the "Responsible Authority" for the creation of a LNRS for Derbyshire. The Government intends that each Responsible Authority will work closely with relevant public, private and voluntary sector organisations to draw on their shared expertise in the co-production of their area's LNRS. Hence the LNRS will reflect collective knowledge of relevant planned or ongoing nature recovery activity, enabling the LNRS to improve integration between existing efforts to improve the natural environment in Derbyshire. The LNRS must be understandable and of value to local stakeholders and therefore their involvement in its preparation will be essential. The Government expects such stakeholders to include Non-Governmental Organisations (NGOs), local planning authorities, businesses, landowners, and managers (e.g. the agricultural sector), and community interest groups.

2.4.3 The approach/scope that the Council will need to adopt in preparing the LNRS as the Responsible Authority for Derbyshire is as follows.

a) **Purpose**
The LNRS will provide the route map for nature recovery in Derbyshire; setting a long-term vision and action plan that is formulated and delivered in a collaborative manner.

b) **Establishing the baseline**
The LNRS will map the location and condition of Derbyshire's habitats, i.e. existing areas, places and sites that are already good for nature and which form the basis for nature recovery. Furthermore, it will identify where biodiversity is in decline or limited in ecosystem value. The Council's Natural Capital Strategy provides this information for Derbyshire and therefore this part of the LNRS is in effect largely prepared.

c) **Setting Derbyshire's ambition for nature recovery through a Statement of Biodiversity Priorities**
The LNRS preparation will identify priorities, outcomes and measures for nature recovery and the wider environmental, economic and social benefits this will realise. Importantly, this work needs to include engagement workshops and meetings with a range of residents, experts and organisations to co-produce the nature recovery priorities, outcomes and measures for Derbyshire.

d) **A Delivery Plan for Nature Recovery in Derbyshire**
The LNRS will need to provide a robust, costed, long-term set of actions through which Derbyshire's nature recovery will be delivered, with an initial five-year time horizon.

2.5 Biodiversity Net Gain as a Mandatory Condition of Planning Permission

2.5.1 BNG will become a mandatory part of the planning permission system from November 2023. Developers will be required to demonstrate ≥10% net gain in biodiversity from their developments compared to the pre-development biodiversity value of onsite habitats. Where sufficient biodiversity cannot be delivered on site, the developer has the opportunity to deliver the outstanding number of biodiversity units offsite, through a process known as offsetting (see section 2.6 below).

2.5.2 Therefore, all Local Planning Authorities (including the Council) must ensure that the statutory requirement for BNG delivery is met through their operation of the planning system. This will include the following new roles of assessment, control, and monitoring:

- Consideration of BNG where pre-application advice is being provided to developers.
- Planning application BNG formal review/assessment, i.e. of the developer's Biodiversity Net Gain Plan.
- Critically reviewing biodiversity metric calculations submitted with planning applications (in accordance with the Government's Biodiversity Metric).
- Preparation of BNG conditions and obligations for new development.
- Undertaking the monitoring, enforcement, and reporting of the delivery of approved BNG conditions and obligations for a 30-year period.

2.5.3 Ideally, these new BNG planning responsibilities will be applied consistently by all the Derbyshire Local Planning Authorities. Planning officers are currently discussing. how this is best progressed.

2.6 Biodiversity Offsetting

2.6.1 Biodiversity offsetting will become a new market mechanism that the Government is establishing to drive and fund nature recovery in England. The commencement of biodiversity offset markets is anticipated from November 2023 (when mandatory BNG planning permission starts) and is expected to lead to multiple local biodiversity offset markets evolving across England. The Government has estimated that this market will generate annual demand for around 6,200 off-site biodiversity units for England with a value of £135 million.

2.6.2 Land managers (the supply-side) who can create or enhance habitat to the required BNG standards on their land will be able to sell biodiversity

units to the developers who cannot achieve BNG on their development sites. The land managers will be able to use this income to fund the habitat improvements on their land and its maintenance for at least 30-years after the completion of the BNG works. In return for purchasing the biodiversity units from land managers, the developers (the demand-side) will be able to demonstrate their mandatory BNG compliance to Local Planning Authorities. These arrangements will be legally binding to the land affected through new conservation covenants or planning obligations.

2.6. 3 There is no statutory requirement for local authorities to participate in biodiversity offset markets. However, there may be opportunities for the Council which are summarised below.

a) **Providing strategic direction to biodiversity unit investment in Derbyshire**
The LNRS, which the Council is due to become accountable for preparing in 2023-24 / 2024-25 (see Paragraph 2.4 above), will influence such decision making through the identification of a prioritised investment pipeline of Derbyshire sites suitable for BNG offsetting.

b) **Commercial involvement in the biodiversity offsetting land market**
There could be market opportunities for the Council to act as a BNG offset site provider by selling biodiversity units from its public land, and thereby improving its habitat credentials, either direct to developers or via a broker.

c) **A trusted advisor and/or broker of biodiversity offsetting**
The Council could expand on its Local Planning Authority BNG statutory functions, to offer BNG offsetting advisory paid-for services (with a clear demarcation between these roles). For example, it could help developers to understand BNG offsetting options in Derbyshire, and how to prepare Biodiversity Net Gain Plans that include such offsets.

d) **Habitat Maintenance Services**
Whilst the Council would be responsible for maintaining new habitats created from BNG offsetting on its own land (funded by developers' biodiversity units), it could also incidentally provide a paid for service for habitat conservation and maintenance to developers or landowners of either the BNG net gain on the development land or of the BNG net gain on their offset land.

3. Consultation

3.1 There are no consultation requirements for this report. However, the Council has a responsibility to undertake public consultation in preparing the Local Nature Recovery Strategy for Derbyshire. This activity will be included in this Strategy's workplan, which will be subject to Council approval before it is delivered.

4. Alternative Options Considered

4.1 The Council has yet to determine its specific approaches to addressing the five drivers identified in this report. This analysis will be undertaken during quarter 1 and quarter 2 of 2023-24 for each driver, with alternative options being considered to inform the Council's decision-making process for progressing them.

5. Implications

5.1 Appendix 1 sets out the relevant implications considered in the preparation of the report.

6. Background Papers

6.1 The Council's Climate Change Strategy: Achieving Net Zero 2021-2025.

6.2 The Council's Nature Recovery Resolution (from the meeting of the Council on 2 February 2022, set out in the meeting minutes under item 10/22).

6.3 Vision Derbyshire Climate Change Strategy: 2022-2025.

6.4 The Council Plan 2023-25
The Council Plan 2023 to 2025 (derbyshire.gov.uk)

6.5 East Midlands devolution deal
East Midlands devolution deal - GOV.UK (www.gov.uk)

7. Appendices

7.1 Appendix 1 – Implications.

7.2 Appendix 2 – Natural Capital Strategy for Derbyshire.

8. Recommendation

That the Committee:

a) Notes the nature recovery implications for the Council arising from the Environment Act 2021 and Environmental Improvement Plan 2023 that are described in this report.

9. Reason for Recommendation

9.1 To ensure that the Committee is able to understand and support the work being undertaken to ensure the Council fulfils its statutory duties and Place leadership responsibilities in respect to nature recovery.

Report Author: **Rupert Casey** **Contact details:** **Rupert.Casey@derbyshire.gov.uk**

Appendix 1

Implications

Financial

1.1 The specific financial implications arising from the drivers for change identified in this report have yet to be determined. However, the Council will look to the Government for New Burdens Funding in the first instance to support its delivery of the new statutory duties associated with BNG in planning and the preparation of a Local Nature Recovery Strategy. If such funding is not forthcoming, then the policy will need to be revisited to fit within the resource constraints of the Council.

1.2 The anticipated resource requirements are identified below along with potential funding solutions.

Resource issues

Identified new resource requirements	Priority	Projected cost 2023/24	Anticipated period of need
Local Nature Recovery Strategy (LNRS)			
• Nature Recovery Manager (Grade 13 – to be confirmed)	High	£0.059m	2023/24 to 2025/26
• Local Nature Recovery Strategy Officer (Grade 11 – to be confirmed)	High	£0.047m	2023/24 to 2025/26
• Backfilling expertise from DCC Conservation, Heritage & Design Service	High	£0.070m	2023/24
• LNRS Partnership Board professional chair	Medium	£0.010m	2023/24
• Stakeholder engagement advisor / facilitator	Medium	£0.030m	2023/24
Biodiversity Net Gain planning			
• Biodiversity Officer (Grade 11 – to be confirmed)	High	£0.047m	Permanent
Commercial opportunities			
• Assess the viability of the Council hosting a "Derbyshire Nature Recovery Advisory Service" for other LPAs	Medium	£0.050m	2023/24

• Assess the viability of the Council providing a "commercial" biodiversity offsetting service	Medium	£0.050m	2023/24
Total		**£0.363m**	

Potential funding solutions
1. Government new burdens funding for Local Nature Recovery Strategy • £0.048m in 2022/23 for Council preparation for Local Nature Recovery Strategy (not used) • New funding for Local Nature Recovery Strategy preparation of £0.200m for 2023/24 and £0.175m for 2024/25
2. Government new burdens funding for Biodiversity Net Gain planning • £0.037m in 2022/23 for Council preparation for BNG planning (£0.027m used towards the cost of preparing the Natural Capital Strategy) • Expect £0.020m per annum for 2023/24 & 2024/25 for BNG planning
3. The Council's Climate Change Programme • £4m reserve
4. Income generation (value to be confirmed as subject to business case appraisal) • From BNG / ecological planning advisory service • From biodiversity offsetting commercial services

Potential funding solutions
1. Government new burdens funding for Local Nature Recovery Strategy • £0.048m in 2022/23 for Council preparation for Local Nature Recovery Strategy (not used) • New funding for Local Nature Recovery Strategy preparation of £0.200m for 2023/24 and £0.175m for 2024/25
2. Government new burdens funding for Biodiversity Net Gain planning • £0.037m in 2022/23 for Council preparation for BNG planning (£0.027m used towards the cost of preparing the Natural Capital Strategy) • Expect £0.020m per annum for 2023/24 & 2024/25 for BNG planning

3. The Council's Climate Change Programme • There is a £4m Earmarked Reserve to support Climate Change initiatives – there will be a call on this reserve if required for any one-off funding support, subject to the balance being available
4. Income generation (value to be confirmed as subject to business case appraisal) • From BNG / ecological planning advisory service • From biodiversity offsetting commercial services

Legal

2.1 As has been summarised in this report, the Environment Act 2021 has strengthened the "general biodiversity objective" (which is now for the conservation and enhancement of biodiversity in England), and imposed new duties on public authorities towards furthering that general objective. It brings in new requirements for planners and decision-makers in councils which relate to nature and biodiversity, including new provisions for objectives, policies and actions for improving the natural environment.

2.2 Furthermore, the Environment Act 2021, and brings into law a system for Local Nature Recovery Strategies, that will together in form a national recovery network.

2.2

Human Resources

3.1 The Council's delivery of the drivers for change identified in this report has human resource implications, given the associated new responsibilities and skills officers will need to provide. The following additional officer resources have been identified, which will be subject to the approval of the Executive Director – Place. The Council will seek to fund these new posts through New Burdens Funding that is expected to be provided by the Government.

- 1 Full Time Equivalent (FTE) Nature Recovery Manager (Grade 13 – subject to job evaluation).
- 1 FTE Local Nature Recovery Strategy Officer (Grade 11 – subject to job evaluation).
- 1 FTE Biodiversity Officer (Grade 11 – subject to job evaluation).

Information Technology

4.1 The effective delivery of Council action to address the identified policy drivers for change is likely to have information technology implications. These will be considered on a case-by-case basis.

Equalities Impact

5.1 The Council will ensure it complies with, and champions, inclusive approaches to its nature recovery priorities.

Corporate objectives and priorities for change

6.1 The implications arising from this report have relevance to the following Council Plan priorities:

- Resilient, healthy, and safe communities.
- High performing, value for money and resident focused services.
- Effective early help for individuals and communities.
- A prosperous and green Derbyshire.

Other (for example, Health and Safety, Environmental, Sustainability, Property and Asset Management, Risk Management and Safeguarding)

Environmental Sustainability

7.1 The implications arising from this report have significant implications for Derbyshire's Green Infrastructure as this will provide the physical delivery of BNG, the Local Nature Recovery Strategy, and Natural Capital Strategy.

7.2 GI is defined as "a network of multi-functional green and blue spaces and other natural features, urban and rural, which can deliver a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities, and prosperity" (National Planning Policy Framework, 2021).

7.3 The drivers identified in this report represent a radical uplift from January 2023 in the Council's strategic responsibilities for the natural environment in terms of collaborative leadership, place-shaping regeneration, regulation, applying ecological expertise, and securing new models of investment.

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Natural Capital Strategy for Derbyshire

Final report

February 2023

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Chapter 1: Introduction to Derbyshire's Natural Capital Strategy

Natural capital can be defined as the stocks of natural assets which include geology, soil, air, water and all living things. Our environment is our life support system sustaining and providing our food, fuel, building materials, fresh air, clean water; and as such is fundamental to the functioning and stability of our economy. It is from this natural capital that humans derive a wide range of services, often called ecosystem services, which make human life possible and enjoyable.

Our environment functions as a dynamic system. The land, water and biodiversity it supports are all interconnected; changes in land use such as housing developments not only affect the local environment, but can have implications for the functioning of the environment at a wider landscape scale, and implications for the local and national economy.

The effects of climate change, declines in biodiversity, and increasing population pressure, together with growing scientific understanding of how our environmental systems function, have shown that the earth's resources are finite and need to be carefully managed; they are integral to decision making, and integral to the future health and stability of our economy.

The level of ecosystem services provided by an area of land depends heavily on the land cover or habitat present in that area, and how resilient those habitats are in the face of the many pressures they face, such as pollution, invasive non-native species, and climate change. Natural habitats form the most resilient ecosystems, and provide a wide range of ecosystem services. Resilient habitats adapt to pressures and demands, either by resisting, recovering or adapting to external pressures, whilst retaining their ability to deliver the same level of ecosystem services, now and into the future.

Resilient ecosystems:

- preserve and regenerate soil
- control floods
- mitigate droughts
- pollinate crops
- store carbon
- operate the hydrological cycle
- fix nitrogen
- recycle nutrients
- filter pollutants
- assimilate waste
- maintain a genetic library

It is important to understand how ecosystem services are being delivered in an area, as they underpin our well-being, our prosperity, health, culture and identity. Although they

are often hidden from view, they can be spatially modelled and mapped, and valued in monetary terms by way of a natural capital account, allowing us to realise the true value of nature and the environment.

Our environment is important not only at the local scale, but at the broad landscape scale also. Landscapes have evolved over time as a result of both natural and cultural processes, and these different combinations of natural and human factors can be used to describe the landscape character of an area. The landscape character of Derbyshire is distinct, recognisable and has consistent patterns of elements, such as hedgerows, heath and arable land, in the landscape. It is these patterns that give each locality its 'sense of place', making one landscape different from another.

The Natural Capital Strategy for Derbyshire describes the current status of the natural assets in the county using the best available data. The strategy identifies where our natural capital is resilient and performing well in supporting our population. It identifies opportunities to adjust land management to increase the benefits we get from nature in Derbyshire;, this will allow us to understand how and where to invest in maintaining and enhancing natural capital in our landscape, whilst maintaining its distinct landscape character. The rationale of the strategy is shown in Figure 1.

Figure 1: Rationale for the Natural Capital Strategy for Derbyshire

Derbyshire's Natural Capital Strategy comprises:

- a natural capital baseline assessment with:
    - baseline habitat and ecological network maps
    - ecosystem service stock maps
    - baseline landscape character and cultural heritage assessment
- natural capital baseline accounts
- a monitoring plan for updating the natural capital accounts and habitat map
- analysis of the predicted impacts of climate change on natural capital of the county;
- proposed land management actions to maintain and enhance natural capital that align with landscape character
- identification of funding mechanisms to attract investment for natural capital projects
- this report, which includes conclusions, recommendations and technical appendices

The work has been completed by Environment Systems Limited together with eftec Limited and SLR Consulting Limited, with input from key stakeholders in the county. It covers the geographical county of Derbyshire (Figure 2), including Derby City and the area of the Peak District National Park (PDNP), shown in green, that falls within the county.

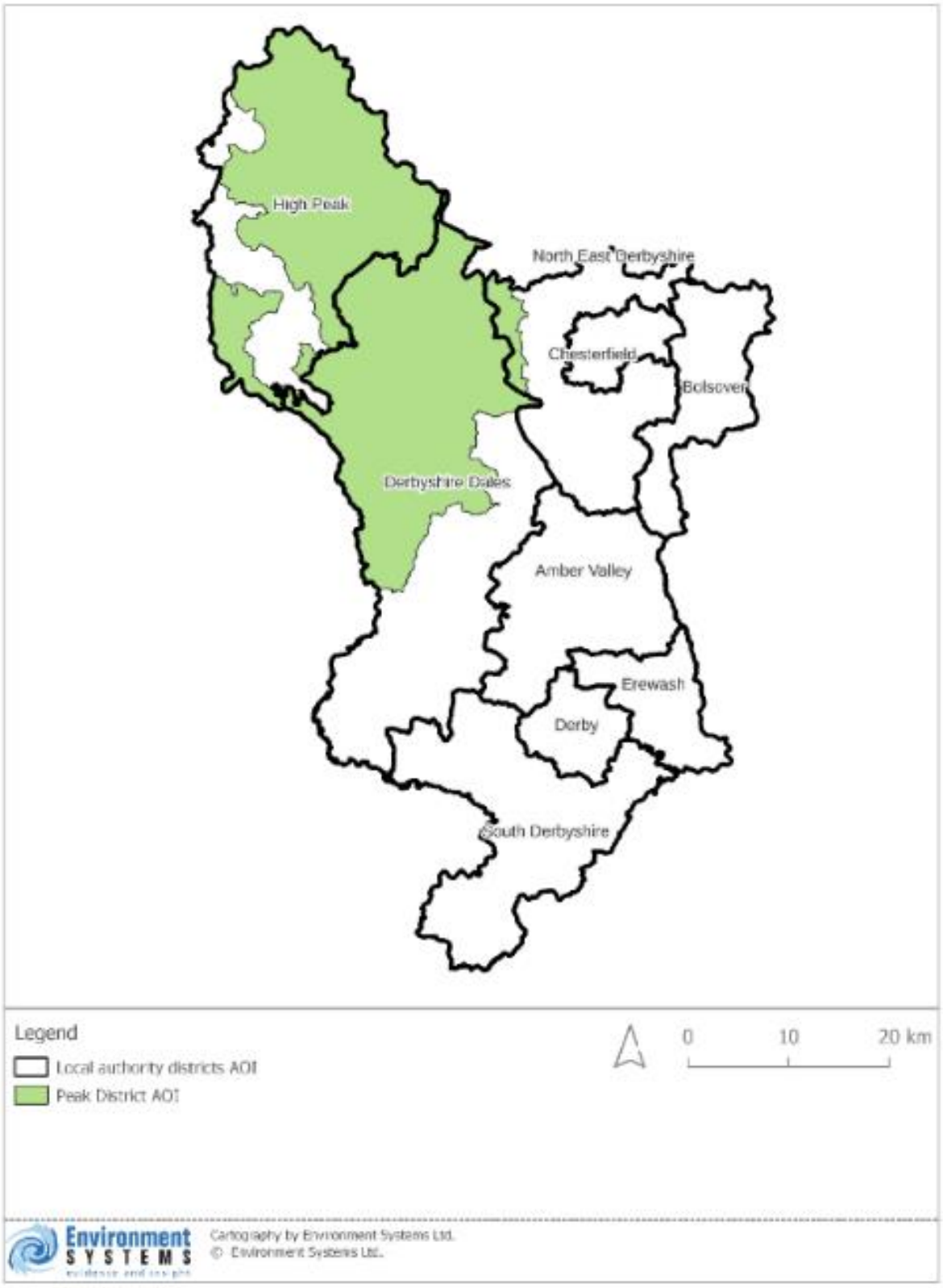

Figure 2: Area covered by the Derbyshire Natural Capital Strategy, showing Local Administrative Districts

Chapter 2: Natural Capital Baseline Assessment: Mapping for Nature Recovery

Introduction

Natural capital

Natural capital is "the stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people"[1].

Understanding where semi-natural habitats are located is of key importance, as these places are high in biodiversity, support nature recovery and provide multiple other ecosystem services. For example, understanding how farmed land relates to the urban landscape is key to understanding how rural areas currently help mitigate problems such as flooding, poor water quality and carbon loss. Conversely, understanding where semi-natural habitats are not present, but could be restored, will help mitigate and prevent such problems.

For natural capital accounting it is important to distinguish between the natural capital stocks and the flows of benefits they provide; projecting benefits into the future and linking them to the extent and condition of assets. The intention is to ensure that decisions prioritise maintaining the assets to sustain a range of benefits, and not to maximise one of the benefits at the expense of others, or the natural capital asset itself.

Nature Recovery Network (NRN)

The Nature Recovery Network (NRN) is a major commitment in the Government's 25 Year Environment Plan that brings together partners, legislation and funding to restore and enhance the natural environment. It seeks a national joined-up network of marine, water and terrestrial habitats where nature and people can thrive. More than a map, it is an active, adaptive spatial plan that identifies the best opportunities to deliver nature's recovery. The NRN helps deal with the challenges of biodiversity loss, climate change and human wellbeing, and establishing the NRN will:

- enhance sites designated for nature conservation and other wildlife-rich places - newly created and restored wildlife-rich habitats, corridors and stepping stones will help wildlife populations to grow and move
- improve the landscape's resilience to climate change, providing natural solutions to sequester or store carbon and manage flood risk, and sustaining vital ecosystems such as improved soil, clean water and clean air
- reinforce the natural, geological and cultural diversity of our landscapes, and protect our historic natural environment

[1] Natural Capital Protocol https://naturalcapitalcoalition.org/natural-capital-protocol/

- enable us to enjoy and connect with nature where we live, work and play - benefiting our health and wellbeing

Local Nature Recovery Strategies

To deliver the NRN there is a requirement for mapping and data and this involves Local Nature Recovery Strategies (LNRS) to effectively target action and investment in nature. LNRS are a new mandatory system of spatial strategies for nature established by the Environment Act 2021. They are designed as tools to encourage more coordinated practical and focused action and investment in nature and will link to funding streams, policy and statutory duties that will incentivise the restoration and creation of habitats and help deliver the NRN through collaboration and partnership working.

Mapping for the Local Nature Recovery Strategy

The mapping of habitats, ecological networks and opportunities for biodiversity in Derbyshire provide the evidence base for the county natural capital strategy, and provides the baseline for the LNRS.

Creating a habitat map of Derbyshire

In order to map and quantify the natural capital assets and provide data to inform the natural capital baseline accounts, a habitat map is needed for the whole of Derbyshire. This habitat map can be maintained as a 'living map': an excellent resource to build upon and keep updating as new survey data becomes available, and restoration projects are established.

Choice of classification system for the habitat map

Many counties have data from a variety of habitat and land use surveys, conducted over many years, and that use differing classification systems. A single classification system was needed for a countywide analysis. To facilitate this, the construction of the habitat map used the UK Habitat Classification (UKHab) as a land classification system. In addition, other data from several sources was used. The UKHab is a framework that enables data from differing habitat classifications to be brought together and translated to a single system. By combining data from multiple sources, the mapping provides a more accurate and complete estimate of the coverage of land and habitat types to include in the Asset Register.

The relevant top tier UKHab classification used includes cropland, grassland, heathland and shrub, rivers and lakes, sparsely vegetated land, urban, wetland and woodland. A full overview of the habitat classifications used in this account is provided in Appendix 1.

UKHab is a nested system, which means that habitat analysis can be disaggregated if higher detail is required. The use of UKHab also facilitates links to datasets with more or fewer categories, including those used in other parts of the region (e.g., mapping of natural capital in the DCC area), at a national scale (e.g., the Broad Habitats used by the Natural Capital Committee), and to other assessment frameworks (e.g., the Defra biodiversity metric).

Creating the habitat map of Derbyshire

A full list of datasets used to produce the habitat map is provided in Appendix 2; the key input datasets are:

- Amenity and urban greenspace data (Chesterfield, Derby)
- Ordnance Survey MasterMap
- Derbyshire Wildlife Trust habitat data (e.g. open mosaic habitats (OMH), ponds, lowland lakes)
- Natural England - Priority Habitat Inventory data
- Peak District National Park Authority (PDNPA) - Priority Habitat data
- National Trust - Phase 1 habitat data
- Defra - Annex 1 habitat data
- Other habitat inventories: traditional orchards, National Forest Inventory, Ancient Woodland Inventory
- Rural Payments Agency – CROME (Crop Map of England)
- Earth observation (EO) imagery: LiDAR, Sentinel-1 and Sentinel-2 data

An extensive consultation exercise was undertaken to review the habitat map and receive stakeholder feedback to ensure that as much detail as possible was captured for both urban and rural areas. This was compiled through the design and build of a private website where stakeholders could log in to mark corrections and upload photos, maps and other data.

The input habitat datasets utilised a range of classification systems with differing survey dates which were each translated into UKHab notation at Level 2 classification. These were then summarised to derive an overarching Level 1 classification (see Appendix 3) with fewer classes.

The habitat map was generated by combining all available existing habitat data. However, once combined, there were still gaps in coverage. To address this, UKHab Level 1 habitats were mapped for these locations using Sentinel-2 satellite imagery (from 2021).

The datasets were then merged to form a seamless habitat dataset for Derbyshire. This was done in a way that gave priority to certain datasets, so the final version of the habitat map utilises the most up to date information for each area (Figure 3). Where there were data conflicts, a judgement was made of which dataset should be used depending on the land category and data quality assessment.

Air photo analysis was used to quality assure the resulting outputs, concentrating on classes with less certainty. For example, areas identified as improved, intensely managed grassland in the urban areas, were checked and reclassified as playing fields or other green space as appropriate.

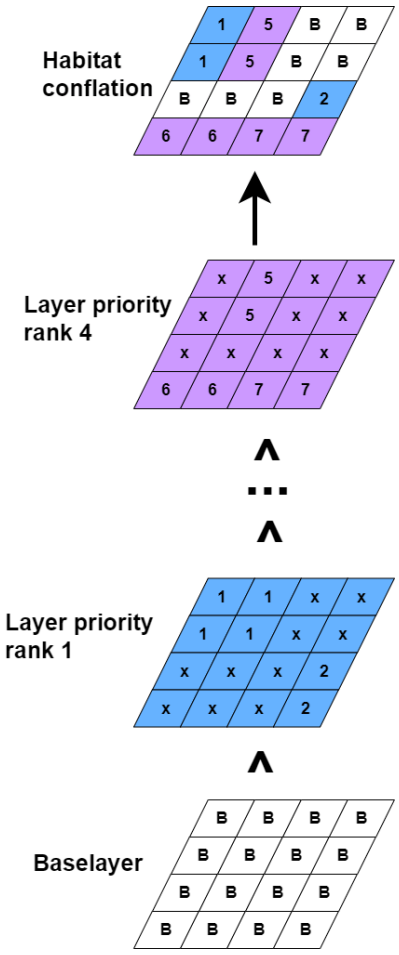

Figure 3: Merging data to create the habitat map

No existing datasets mapping hedgerows were available to the project. Hedgerows are important habitats that have a profound influence on ecosystem service delivery in Derbyshire, and as such an inability to factor the presence (and absence) of hedgerows into the analyses would be a significant limitation. Hedgerows, which support biodiversity, help intercept water, contribute to carbon storage and abatement and, in the correct places, can have a significant effect on water quality and flood management.

In the absence of existing data, a hedgerow map was created using the available EO datasets. LiDAR, which records the height of features in the landscape, was available for some areas outside the uplands and was used to map hedgerows. In the uplands, in the absence of LiDAR data, a combination of satellite image classification, followed by aerial imagery processing (which helped exclude walls and tracks) was also used to classify and map hedgerows. The mapping of hedgerows in the uplands is therefore less accurate than the lowland areas mapped using LiDAR.

In some areas there are very dense networks of hedgerows as illustrated in Figure 4.

Figure 4: Extract of habitat map showing hedgerow and woodland classes

The habitat map of Derbyshire

The Level 1 habitat map classification is shown in Figure 5. In this map it can be seen that heath (purple) and wetland (pink) dominate the upland environments in northern parts of the county. Woodlands (dark green) are located on the sides of steep linear valleys in the uplands, and typically alongside water bodies and rivers (blue) in the lower lying areas. There also some larger blocks of woodlands and parklands, for example in the larger estates. Arable land (orange) is located more to the east and south of the county, and the eastern areas are more urbanised. Hedgerows are a feature of the agricultural land in southern and eastern areas. In the county-scale map hedgerows and stone walls are coloued mid-green, although a larger-scale map is needed to fully identify these narrow features (e.g Figure 4).

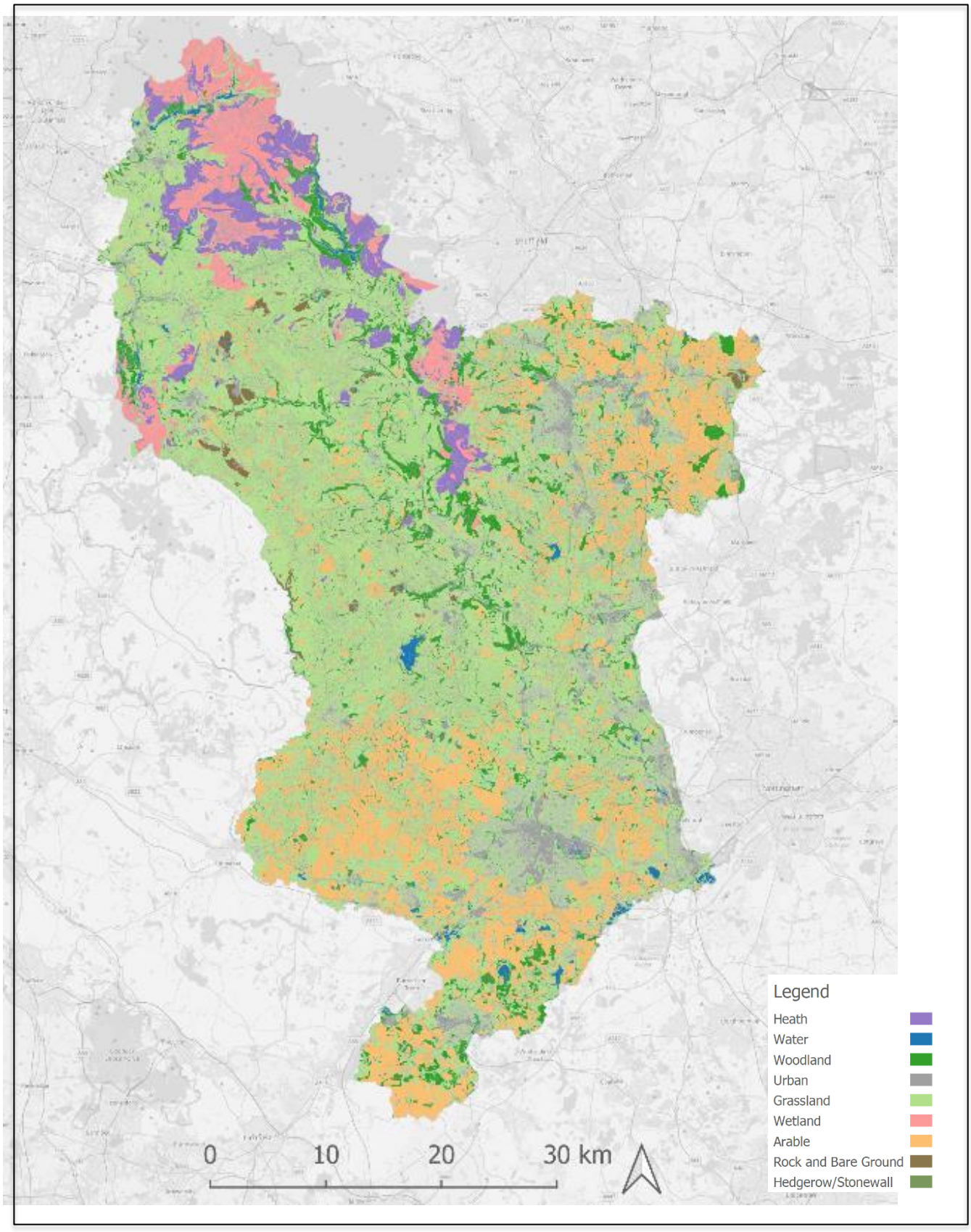

Figure 5: Habitat map showing Level 1 classification

Baseline ecological networks

Ecological networks describe how well individual habitat patches are connected across the landscape. The closer patches of habitats are together, the better they are able to share resources such as pollinators, and seeds. Where habitats are close enough to share these resources, an ecological network is formed. These networks are significant as they increase the resilience of the habitats within them. For example, a woodland patch that is damaged by a storm will have a better chance of regenerating to its former level of biodiversity if it lies within a network of other woodlands, as animals and seeds will be able to disperse from neighbouring patches to recolonise the damaged area. Conversely, habitat patches that are isolated will be less able to regenerate to the same habitat type, or level of diversity. Networks are important as restoring habitats within the overall network generally protects the existing resource, whilst also allowing a more robust habitat to form which provides better ecosystem services overall.

Ecological networks were mapped for four habitat types: woodland, wetland, heathland and grassland. Connectivity was modelled using a cost-distance approach, using the comprehensive Derbyshire habitat map.

In the cost-distance approach larger blocks of habitats are recognised as being more resilient and able to sustain viable populations of species, and therefore are classed as 'core habitats'. Smaller habitat areas are classed as stepping stones. An animal might use the small isolated area of habitat (stepping stone) to pass through or forage in, but the stepping stone is too small to provide all of the resources the animal needs to make its permanent home there; for this, an area of core habitat is needed.

All habitats and land cover types in the habitat map were considered in terms of how easy or difficult it would be for a typical grassland / heathland / wetland / woodland species to move through and forage within; each habitat type is assigned a movement cost. Core habitats were assigned a movement cost of 0, meaning that the associated species can easily exist in these patches. The cost value increases for habitats that are more difficult for species to traverse, with intensively managed agricultural land or urban areas normally having the highest cost values.

Woodland ecological network

The woodland network is shown in Figure 6 and includes ancient woodlands, broadleaved woodlands and mixed plantation woodlands. Core woodland habitat is located predominately in central and north-eastern areas of Derbyshire. There is generally high connectivity of woodlands throughout Derbyshire except in areas that are managed intensively for agriculture; a very strong woodland network follows the Derwent and Wye valleys, from the upper catchments to the valley bottom. Hedgerows form a very important part of the woodland network in the Needwood & South Derbyshire Claylands region, and south of Chesterfield, and are particularly important for connecting the many smaller woodland core habitat patches. There is a high abundance of small, highly fragmented woodland patches in the Trent Valley Washlands region, and northern Melbourne Parklands, where hedgerows are less common; in these areas the woodland network is not functioning well. There are large areas of core woodland habitat in the

Mease/Sense Lowlands region, that are relatively poorly connected at present; this area lies within the National Forest boundary.

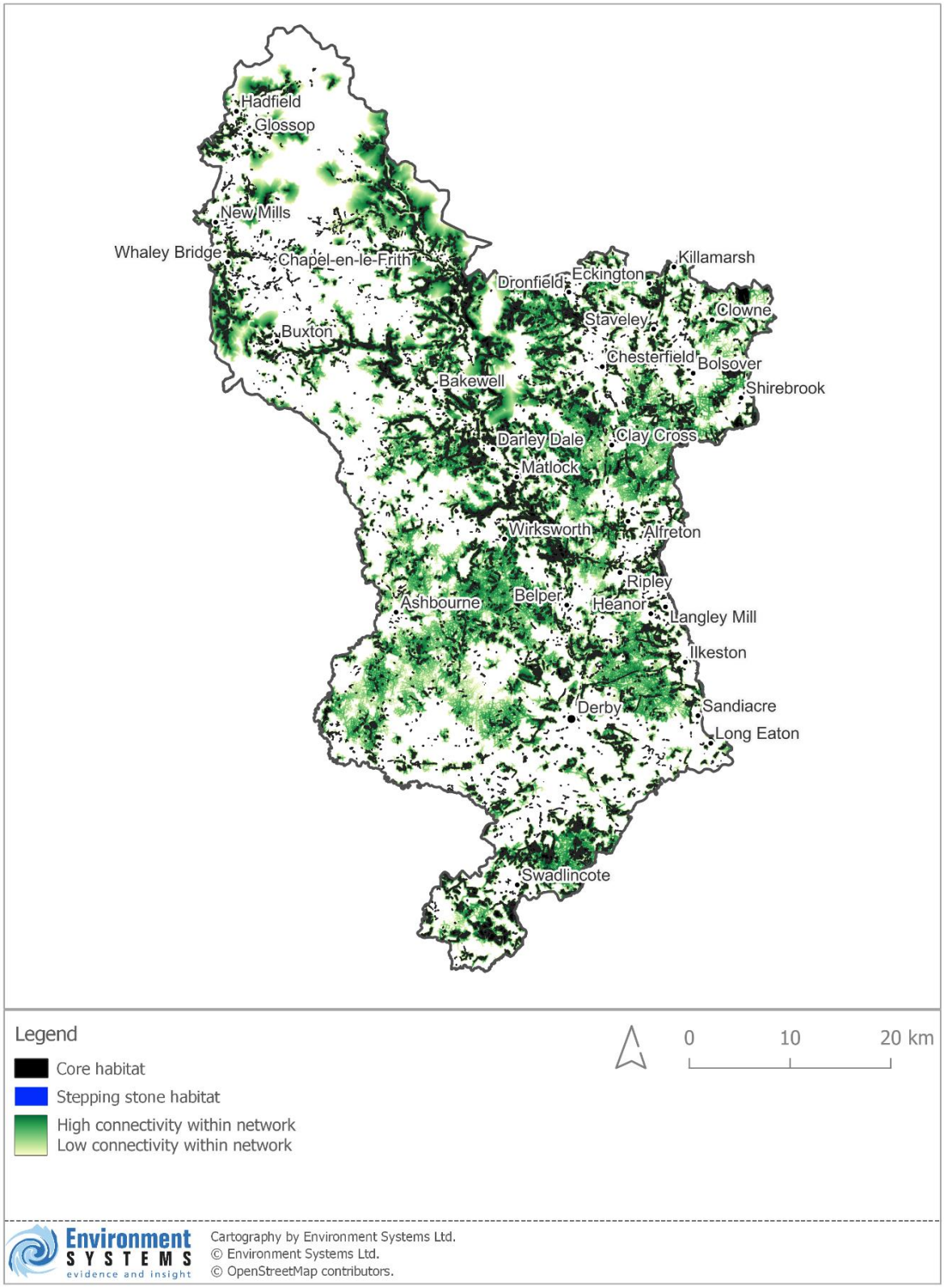

Figure 6: Woodland network

Heath ecological network

Heath is more difficult to re-establish than woodland as the heather forms a relationship with mycorrhizal fungi in the soil which helps heather germinate and grow. Heath networks therefore need an existing heath very closely associated with them or propagules with soil will need to be transported from a donor site. The heath network in Derbyshire is associated with the uplands and is mostly located within the Peak District National Park and the upland parts of the Peak Fringe & Lower Derwent region (Figure 7).

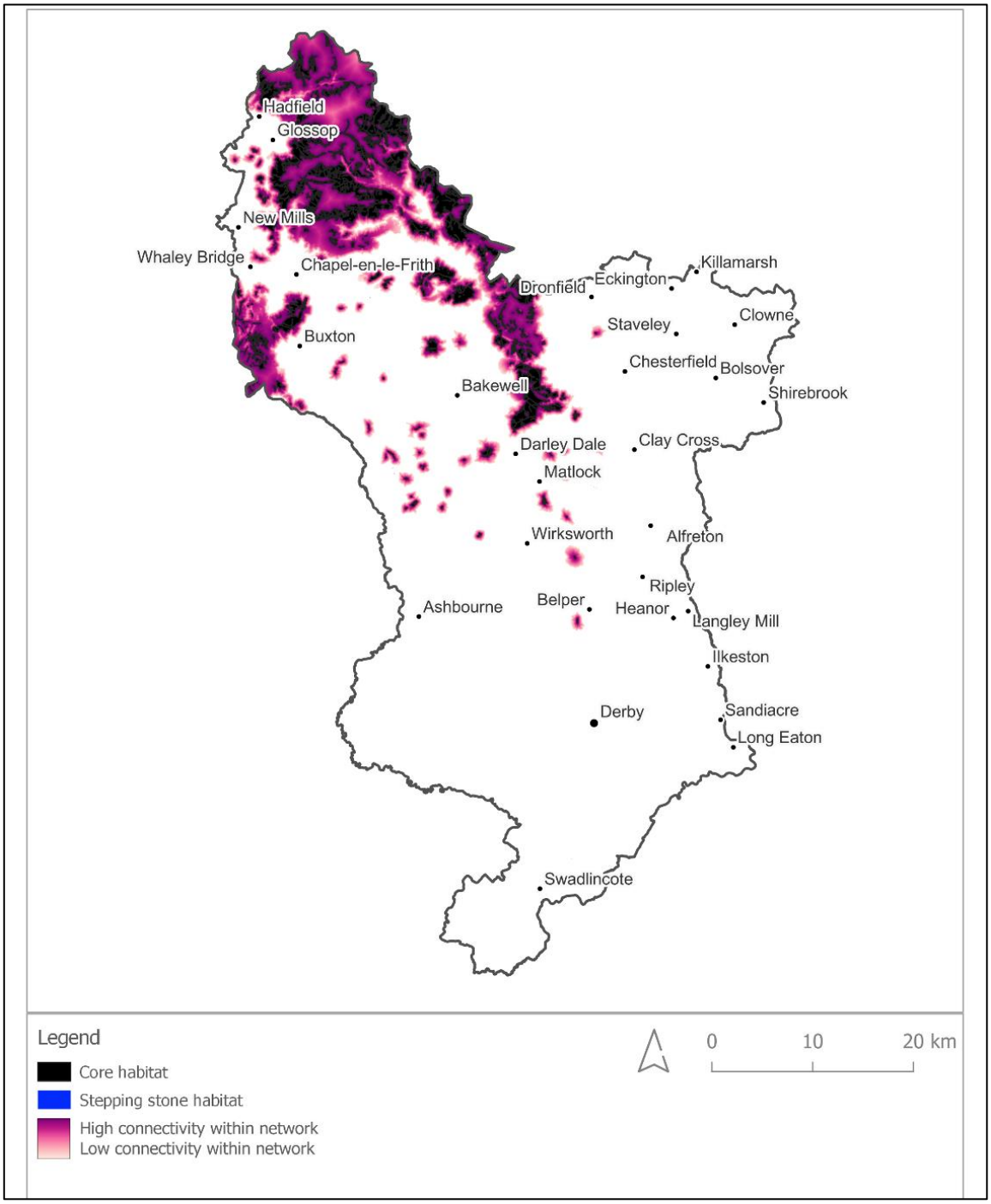

Figure 7: Heath network

Wetland ecological network

The wetland network is determined by the rivers and lakes, as well as occurring on extensive areas of blanket bog in the uplands of the Peak District National Park, and the upland parts of the Peak Fringe & Lower Derwent region; areas that also feature strongly in the heath network (Figure 7).

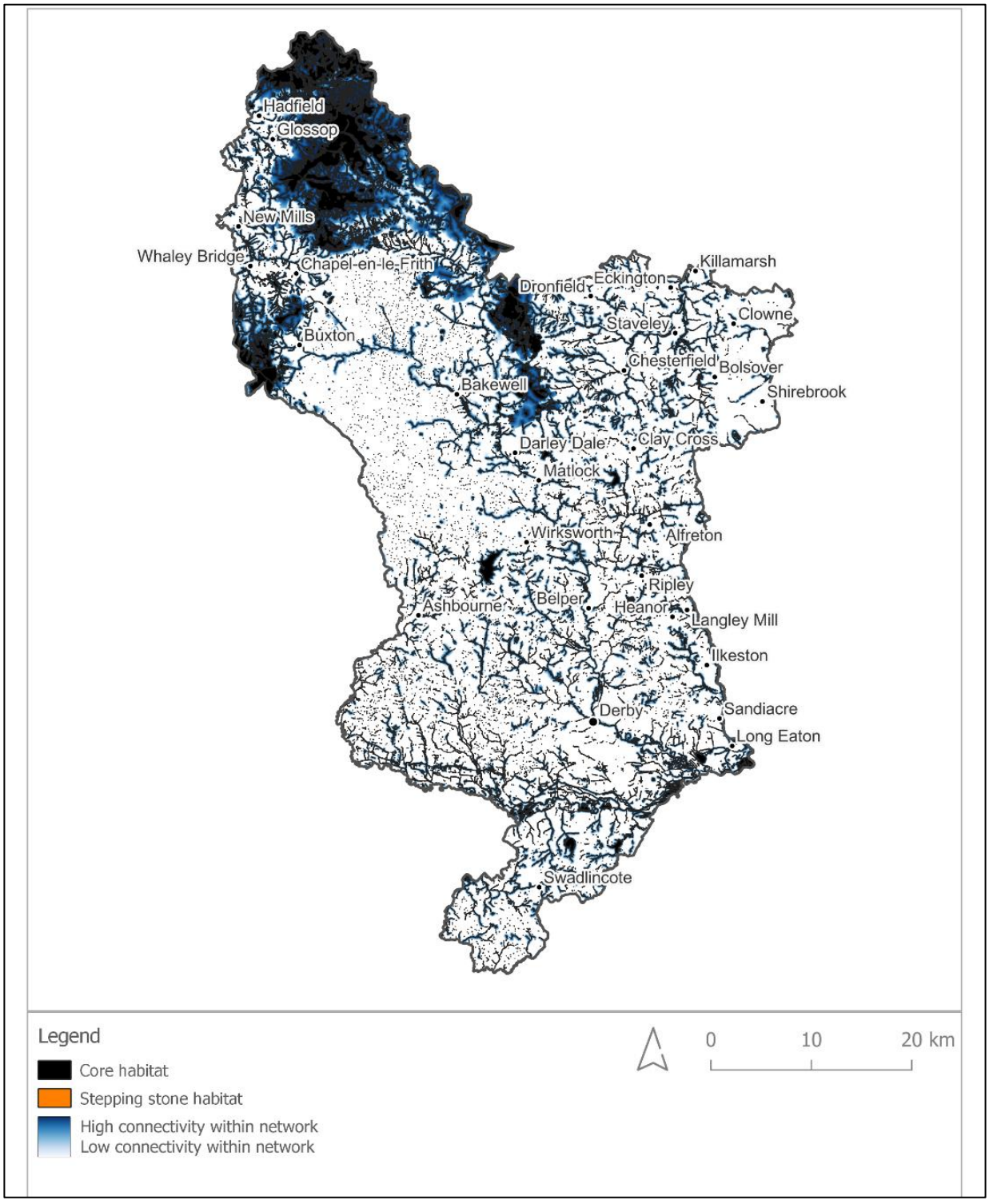

Figure 8: Wetland network

Species-rich grassland ecological network

There are several types of natural grassland in Derbyshire; the limestone grassland located on the White Peak, is of particular importance, but neutral grassland and hay meadows are also frequently found throughout Derbyshire (Figure 9). There is a large number of highly fragmented grassland habitat patches within the Needwood & South Derbyshire Claylands, and Peak Fringe & Lower Derwent regions; the grassland network is not currently working well in these areas, and these core habitat patches are likely to be less resilient/more vulnerable to pressures as a result.

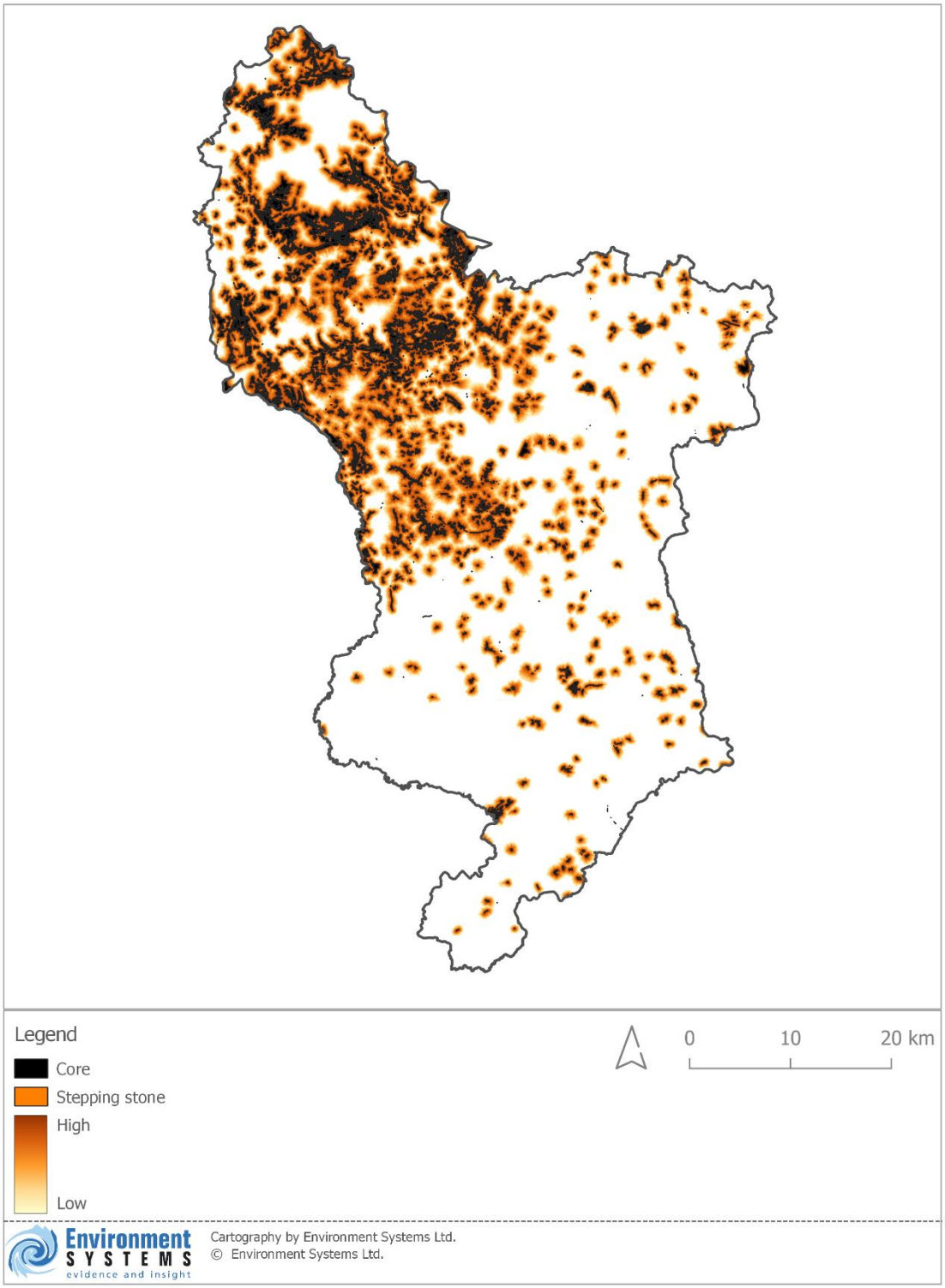

Figure 9: Natural grassland network

Opportunities for biodiversity restoration

The success of habitat restoration projects depends on the selection of appropriate sites, and the ecological networks form an important part of this decision-making process; restoration areas located within an existing ecological network will serve to enhance the resilience of the existing network and core habitat patches, while also increasing the chances of success at the restoration site, as a site located within an ecological network will benefit from species dispersal from the surrounding areas. Therefore, ecological networks will be a key component of the overall natural capital strategy.

Habitat Condition

It is important to understand the condition of habitats as this affects the delivery of ecosystem services, and what kind of opportunities exist for nature recovery. The natural capital asset register (Chapter 2: Natural Capital Baseline Assessment: Mapping for Nature Recovery) incorporates data on current habitat condition; both the extent and condition of habitat assets form the basis of the benefits assessment, which combine these data with unit value and other context data.

The Derbyshire habitat map provides information on habitat extent, and this directly feeds into the natural capital asset register. The habitat map also provides information on current habitat condition (for example the location of priority habitats, and areas of degraded habitats), that is incorporated into the asset register. Additional datasets were sourced to further describe habitat condition in the asset register.

Examples of datasets representing indicators of condition, that were utilised in this work include; land use types (habitat map), recreational land (parks), open access land, and statutory and local site designations such as Sites of Special Scientific Interest (SSSI), Ancient Woodland, Country Parks, Local Nature Reserves and National Nature Reserves; and existing monitoring and condition data (e.g. SSSI condition monitoring data, Water Framework Directive status, and flood zone areas).

Habitat condition is not a static attribute, and regular monitoring is required to maintain an accurate picture of biodiversity and wider ecosystem service analyses, and for natural capital accounting. Habitat condition is influenced by soil and vegetation management practices both locally and in the wider catchment, as well as pollution, the spread of invasive non-native species, and climatic conditions. Climate change is a significant emerging threat to habitat condition due to range shifts in ecological niches, and the frequency and magnitude of extreme events such as drought, flooding and storms[2].

Summary

A habitat map has been created for the whole of Derbyshire to inform the natural capital baseline accounts and is the foundation for ecosystem service analysis, the identification of opportunities and the formulation of natural capital strategy. The maps of ecological networks are key environmental information for modelling opportunities to enhance biodiversity and inform the LNRS. A new dataset of hedgerows has been specifically created to support the natural capital strategy. The coverage

[2] UK Climate Change Risk Assessment 2022. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1047003/climate-change-risk-assessment-2022.pdf

and level of detail that these maps provide gives Derbyshire County Council a particularly good start on designing local nature recovery projects.

Derbyshire currently has a very strong woodland network following the Derwent and Wye valleys, with large blocks of well-connected core habitats. Where hedgerows occur these greatly enhance woodland connectivity, and are particularly important for connecting the numerous smaller core habitat patches. The National Forest provides an opportunity to improve connectivity of large blocks of core woodland habitat that are currently poorly-connected in the Mease/Sense Lowlands region.

Mapping existing ecological networks is fundamental step before targeting habitat restoration and creation activities. Much greater biodiversity resilience can be created by focusing activity on sites that are within the existing networks. Habitat restoration can still be undertaken outside the existing networks, but the habitats and species they support are likely to be less resilient to pressures and disturbances. This means they will not serve to protect and enhance the existing biodiversity assets and therefore, in purely biodiversity terms they may be considered to represent a lower return on investment.

However, habitat restoration outside the ecological networks may be valuable in terms of increasing the delivery of other ecosystem services; for example, a site may not enhance the local biodiversity resilience a great deal but could lead to great improvements in the level of surface water runoff regulation, and therefore be considered a viable, value-for-money project. For this reason, a broad view must be taken, to consider the full range of ecosystem services that could be enhanced by taking action in a specific location, and to consider who/what would benefit. This is addressed in Chapter 5: Natural Capital Baseline Assessment - landscape character

Chapter 3: Spatial Distribution of Ecosystem Services, Risks and Opportunities

Ecosystem services

Derbyshires' land and the water deliver many different ecosystem services, from providing food, minerals and timber through to supporting wellbeing and other cultural services. Ecosystem services can be valued; measuring and reporting these values facilitates production of natural capital accounts (Chapter 4: The Natural Capital Accounts).

The 25-Year Environment Plan for England outlines a future where the net gain approach is expanded to include wider natural capital benefits when planning development activities or changes to land management. So rather than require only a biodiversity net gain, the projects should also result in a gain for features such as carbon capture, water regulation and control of water pollution. This is being termed environmental net gain. The key ecosystem services in Derbyshire were considered to allow the natural capital strategy for Derbyshire to report the complete set of relevant environmental net gain indicators, when considering opportunities for enhancing the environment and risks.

A crucial output of the ecosystem service analysis is the spatial data and maps identifying where in the county ecosystem service provision is strong or, conversely, weak. When the value of the land is mapped in this way, decision-makers have a more complete picture of the current value of the environment in terms of the wide range of ecosystem services it provides, and how land management decisions will impact on these. The maps and data are part of the evidence base that inform the Natural Capital Strategy, helping to identify what needs to be protected, and where enhancements can be made. The ecosystem services of most importance were chosen in a workshop held with key stakeholders from the county. Nine ecosystem services were considered key for the county and these have been grouped according to the main type of ecosystem service delivered:

Provisioning services

- Agricultural production

Supporting services

- Biodiversity

Regulating services

- Water regulation (Natural Flood Management)
- Water quality regulation
- Carbon storage (the total amount of carbon contained in vegetation and soil)
- Carbon sequestration (the amount of carbon being removed from the atmospheree and stored in anotherr form that cannot immediately be released)

Cultural services

- Recreation
- Tourism
- Contribution of agriculture to landscape character

The spatial distribution of these services has been mapped using SENCE (Spatial Evidence for Natural Capital Evaluation), an established natural capital tool developed by Environment Systems. SENCE is a modelling process that provides place-based information on natural capital and identifies:

- the stock of ecosystems services that the land is currently delivering
- where environmental risks or issues are located
- the most advantageous locations for changing land management to enhance ecosystem services.

SENCE uses a rule-based approach to map and combine individual environmental variables of the ecosystem service in question. This provides a stepped approach to building a representation of the whole, or part of, a complex ecosystem interaction.

Factors that influence ecosystem services

The main factors that influence the spatial distribution of the Natural Capital and the delivery of ecosystem services in Derbyshire are:

- **The habitat type:** Habitat type is the main driver for the delivery of biodiversity and other ecosystem services. For example, broadleaved woodlands intercept rainfall, absorbing the energy of the rain, and slowing surface runoff; which means the rainfall infiltrates into the ground more easily. The tree roots are deep; they carry water, and often also organic matter rich in carbon, down into the soil profile to be stored. In contrast, an arable field with emerging crops has much bare ground, the crop does not intercept rainfall as effectively as woodland and the plant roots are shallower. The reduced ability of the crop to intercept rainfall and help it get into the soil, leads to the rain running off the land surface potentially picking up pollutants and transferring them to watercourses, as well as potentially speeding up flood events.
- **Habitat management and condition**: The condition of habitats and their management also plays an important part in the delivery of ecosystem services, for example drained, actively eroding upland blanket bogs will not be effective at storing water and will be losing greenhouse gasses to the atmosphere, whereas an intact blanket bog will store water contributing to natural flood management and will also sequester carbon.
- **Soil type:** The soil type and condition are also important. In terms of carbon storage, organic soils store more carbon than mineral soils. Clay and silt rich mineral soils hold more carbon than sandy mineral soils. It is not possible in a county wide strategic survey to represent individual site soil conditions, but good soil management will always enhance ecosystem services.
- **Landform:** Slope will affect the role of habitats in certain ecosystem service delivery, for example on steep slopes the water will flow over the surface more rapidly, potentially carrying soil particles and causing soil erosion.
- **Hydrology:** Land close to rivers will be more impacted by river levels and flooding events, and have more influence on water quality than those areas more remote from rivers and channels. There is less opportunity for pollutants to be filtered by vegetation or soil in land that is closest to rivers.

The SENCE rule base is built around a series of key factors which interact together in different ways for the ecosystem service under consideration. As an example, the key factors can be used to describe how the biophysical properties of a parcel of land can be applied, as shown in Figure 10. By understanding these characteristics, it is possible to infer the functions that each parcel of land provides and therefore identify the societal benefits and dis-benefits.

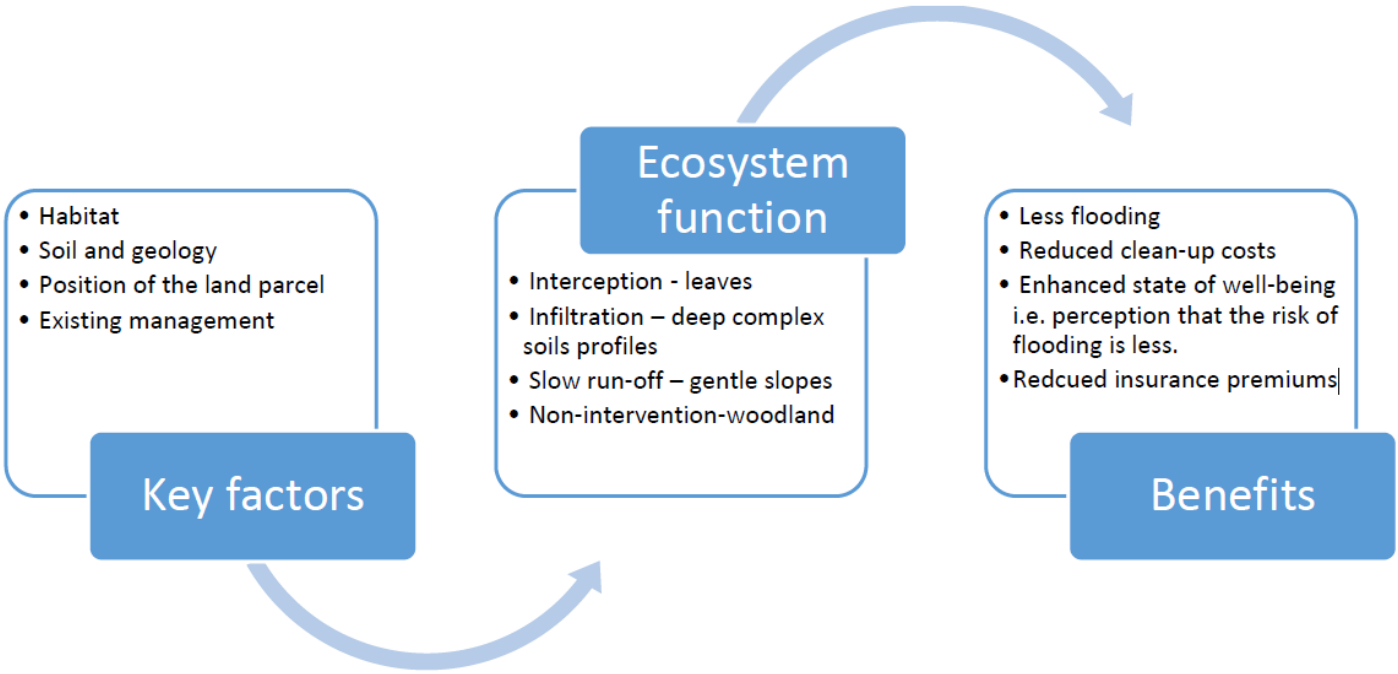

Figure 10: Identification of living systems, their management and the flow of ecosystem service for detention time of overland flow

Additional spatial datasets were sourced for modelling the ecosystem services and these are listed in Appendix 4. Information on the methodology used to produce each ecosystem service map is provided in Appendix 5.

Nature-based solutions

The best way to enhance ecosystem services and address risks and issues is to restore native habitats and species in locations that would naturally support their biophysical requirements. This is known as nature-based solutions. The existing land cover and soil types are the features of primary importance when considering where the opportunities to restore natural habitats. For example, habitats which have the requirement for a nutrient poor soil environment such as native woodland, or species-rich acid grassland, cannot be established well on land that is currently under arable land management, which has a higher pH and nutrient loading, without drastic action to ameliorate the soil environment. If the land is currently an old improved ley for permanent grazing pasture, with a lower pH and nutrient load then the woodland is likely to establish more quickly and is more likely to support the full range of species associated with the native habitats; this will enable a functioning ecosystem to form quickly. In addition, if the restoration area is within the ecological network for woodland, then there are likely to be features such as seeds and pollinators which will move into the woodland and increase the genetic diversity and in turn, its resilience.

The topography and hydrology of areas are also significant in prioritising the optimum areas to develop nature-based solutions. Some species prefer shadier locations, other sunnier ones, some will thrive on exposed ridges, while others prefer sheltered, wet hollows. Wetland creation must consider aspects such as soil drainage, slope and hydrological connectivity; attempting to establish a natural wetland on a naturally freely draining site would face many challenges.

Climate change

Climate change is an important emerging risk to all ecosystem services due to its impact on the underlying key factors of habitat, soil and land management. However, spatially mapping climate change impacts on ecisystem services at the county scale is difficult because the level of risk varies according to local site resilience, which itself is dependent on multiple contributing factors that are difficult to quantify.

As a general rule of thumb, habitats that are currently in favourable condition, are connected through a strong ecological network, and are surrounded by a range of topographic niches, are considered to be more resilient to the impacts of climate change than habitats that are currently in poor condition and more fragmented, with limited opportunities for species migration as the climate changes. A freshwater habitat may become stressed due to reduced summer water levels as a result of climate change; the level of stress and the ability of the habitat to recover will depend on its starting condition and the frequency and magnitude of the stress events that occur. A habitat that is already stressed by pollution levels and invasive non-native species is likely to be less able to recover than a habitat that is in a better starting condition.

The complexity and local variability of these interactions means that climate change has not been considered as a standalone risk factor in the ecosystem service modelling. However, actions to enhance the condition and local resilience of habitats will also enhance climate change resilience.

The predicted trends in climate change in Derbyshire are discussed on Chapter 8: The impacts of climate change.

Irreplaceable habitats

Some species-rich priority habitats within Derbyshire contain native species that are irreplaceable, because these habitats cannot be reconstructed in a different place. In these cases, the particular combination of soil, geology and hydrology is very closely attuned to the habitat that has developed over centuries at that place. An example is the calcareous grassland Priority Habitat. Irreplaceable habitats are defined as:

> *"habitat that cannot be recreated within a specified timeframe because it would be technically very difficult or impossible to recreate taking into account their age, uniqueness, species diversity, rarity and environmental or historical context. These habitats are also likely to be particularly vulnerable to threats such as degradation, fragmentation or loss. In the UK, there is no definitive list of irreplaceable habitats … the full range of factors affecting irreplaceability should be taken into account when determining the status of a particular habitat."*[3]

Natural England is in the process of developing a more comprehensive definition for 'irreplaceable habitats' together with a 'high level' list of habitat types that are considered likely to fall within the revised definition in England. Natural England will retain control of the list and definition and may provide additional evidence and guidance to define irreplaceable habitats and to make additions or deletions to the list.

[3] British Standard BS8683:2021 – Process for Designing and Implementing Biodiversity Net Gain – Specification (BSI, 2021)

Conceptually, individual stands of habitat need to be assessed to determine whether they are irreplaceable or not due to the variation that is likely to occur within particular stands of Priority Habitat. In order to assist practitioners and stakeholders with identifying irreplaceable habitats, Natural England is regularly reviewing its habitat inventories[4]. The national inventories of priority habitats provide a reasonable starting point for identification of irreplaceable habitats, however considerable work is required to maintain and update these inventories. There should be a clear mechanism to add to, and subtract from, the inventories to correct errors, with a right to appeal that is transparent for all stakeholders involved.

Irreplaceable habitats are vulnerable to misidentification by ecologists and degradation through management changes. Therefore, all irreplaceable habitat stands (or those potential to be irreplaceable) should be subject to independent verification as part of any development-related process to ensure that they have been correctly identified.
Work to update the inventories should be undertaken soon, as there is a substantial risk that stands of habitat that are not on the current lists will be subject to poor management or deliberate degradation to render them less likely to meet irreplaceable habitats thresholds.

Outputs and analysis: ecosystem services – stock, opportunity and risk

Agricultural production

The stock of the most highly productive agricultural areas is located in the Southern Magnesian Limestone and in valley bottom areas, particularly in the catchments of the Melbourne Parklands, and Mease/Sense Lowlands (Figure 11 & f
Figure 12). Productivity is highest where the soil and topography are most suited to agriculture. This is defined as the 'Best and Most Versatile (BMV) land measured using the Agricultural Land Classification (BMV is ALC Grades 1, 2 and 3a).

Risk to agricultural production is currently driven by new market forces which are taking the ALC BMV land out of production. This is an issue as this land supports the widest range of crops and losing this land may affect food security. As well as affecting agricultural production these market driven changes will affect the landscape character; particularly in those areas where agriculture plays a significant role in the landscape character.

Maps have been produced to show high quality agricultural land that may be targeted for woodland for carbon schemes and making a distinction of whether the areas are within or outside of the woodland network (Chapter 2: Natural Capital Baseline Assessment: Mapping for Nature Recovery). The highest concentration of risk is in the south of the county. Areas which may be suited for solar (Figure 14) or wind energy generation (Figure 15 and Figure 16) have also been mapped and have similar locations. Areas have been classified as a higher risk of a loss of agricultural production if there are deemed to be fewer constraints to establishing renewable energy projects. Risks to a loss of

[4] Priority Habitat inventories are published by NE and are regularly updated. Current dataset (09/08/2022) is available here: https://www.data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-england

agricultural production have been based on assessments from the Derbyshire Spatial Energy Strategy[5].

The risk maps consider all scales of renerable energy generation (micro to very large), and identify areas where applications for renewable energy are most likely to be lodged and approved. The maps do not identify the level of risk to productivity associated with each scale of generation; therefore it has not been possible to classify the level of risk to agricultural production according to generation scale (for example, small wind schemes would lead to lower impacts on productivity than larger schemes).

Where point data mapping the location of existing energy generation proposals were available, these were included only for schemes proposing significant scales of development (>1MV; medium to very large schemes). It is important to note that while the Spatial Energy Strategy considered agricultural land quality and landscape character sensitivities in its assessment of site suitability for energy generation, it did not consider grid connection costs; therefore the mapped areas are likely to be an overestimation of what is currently technically feasible in terms of energy generation, or planned improvements to grid connections.

Key points and recommendations for nature-based action: Agricultural Production

- **Change management practices** to increase resilience to climate change; for example, altering the types of crop grown and cropping cycles.
- **Agroforestry:** integration of trees and shrubs into crop and animal farming systems to create a range of environmental, economic, and social benefits, including climate change adaptation by way of providing shelter from extreme temperatures, benefiting animal welfare.
- **Embrace regenerative agriculture:** supported by innovative technologies this approach reduces the use of water and other inputs. Through preventing land degradation and deforestation, this approach also protects and improves soil, biodiversity, climate resilience and water resources, while making farming more productive and profitable in the face of climate change.
- **Renewable Energy:** changing land use to support renewable energy generation can support income generation and provide other environmental benefits.

[5] Scene Connect (2022) Derbyshire Spatial Energy Study. Evidence base for policy makers. Derbyshire County Council

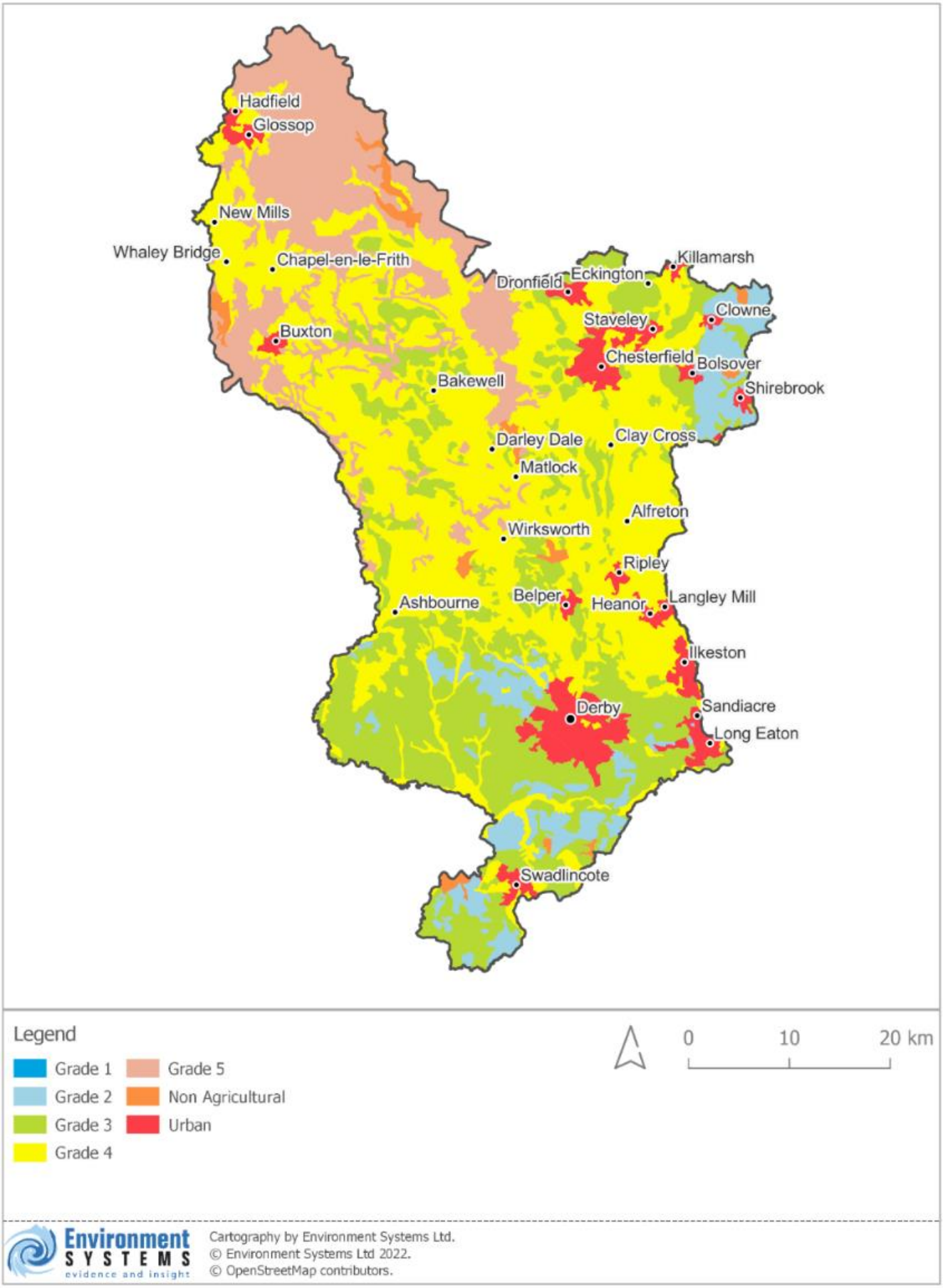

Figure 11: Agricultural Land Classification

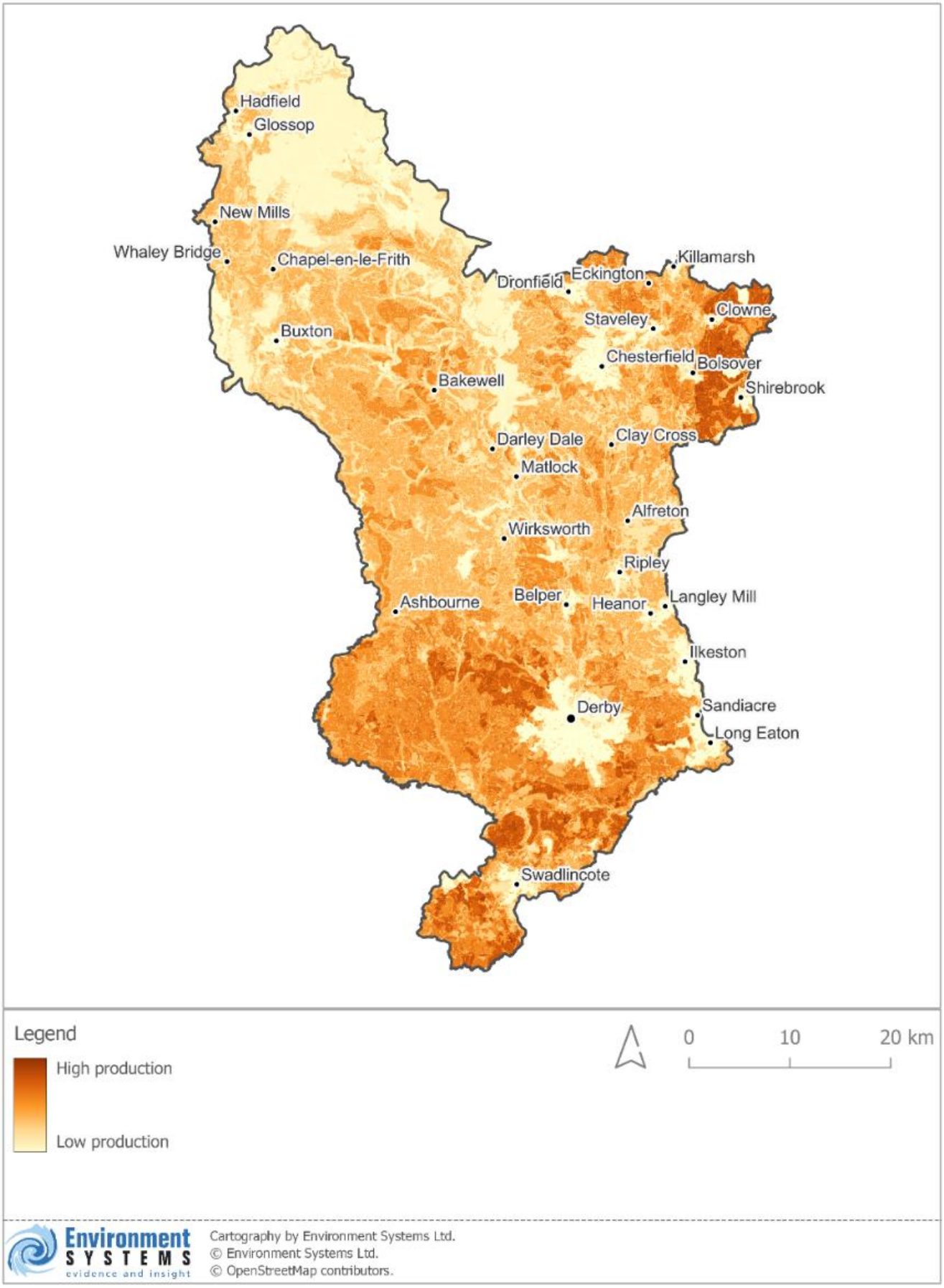

Figure 12: Agricultural production: current provision (stock)

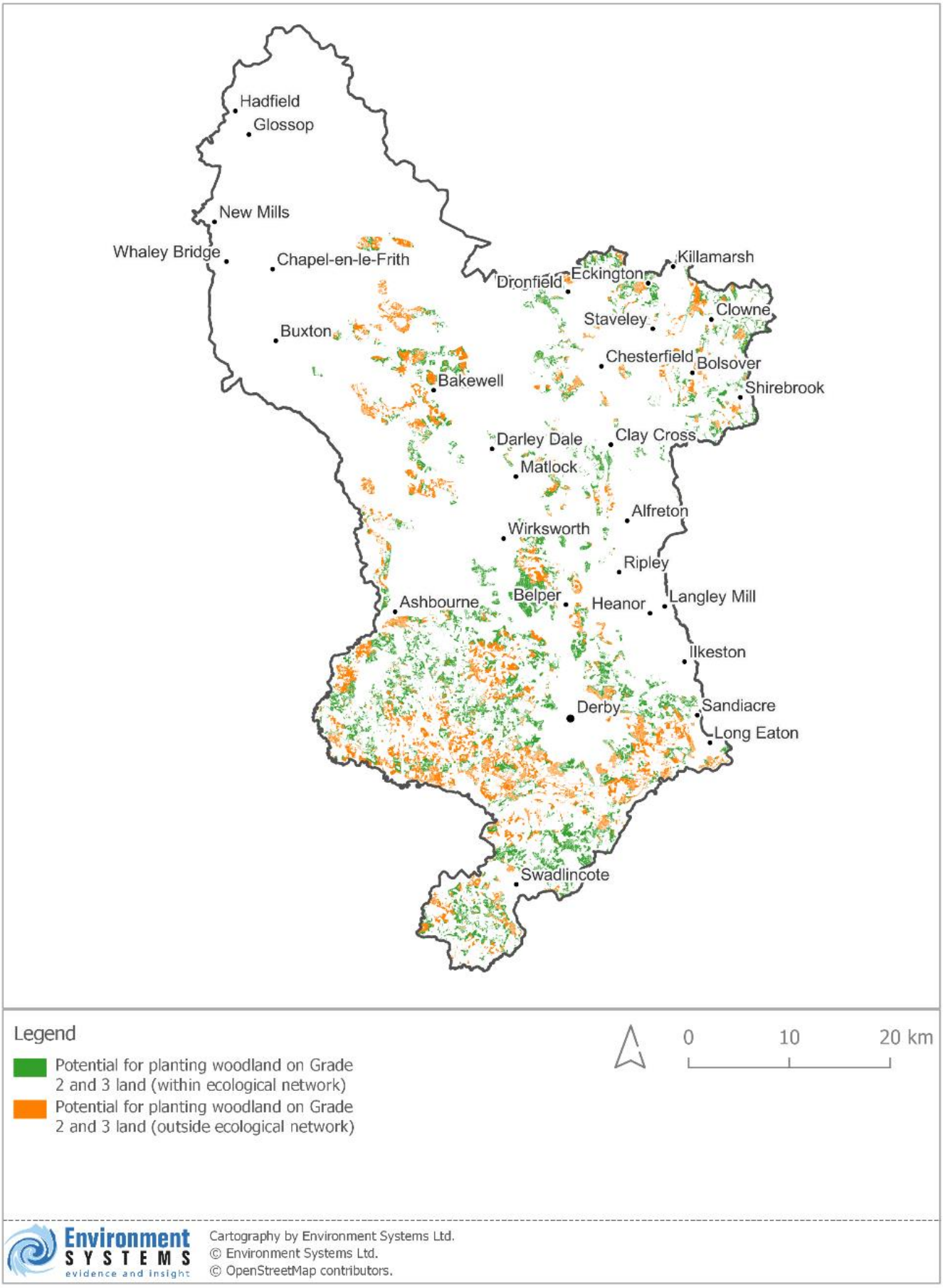

Figure 13: Risks to agricultural production: potential conflicts with woodland objectives

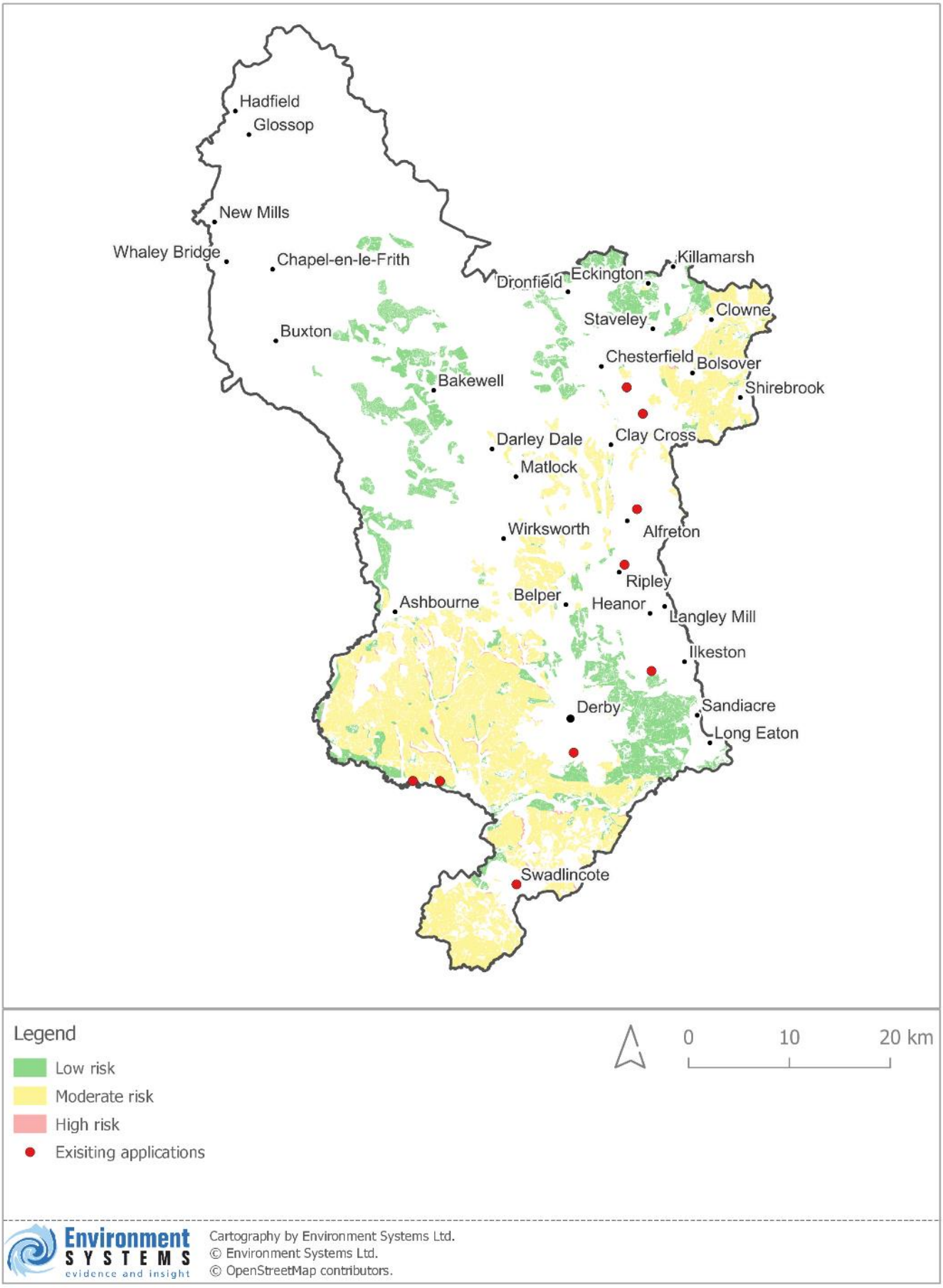

Figure 14: Risks to agricultural production: ground-mounted solar PV

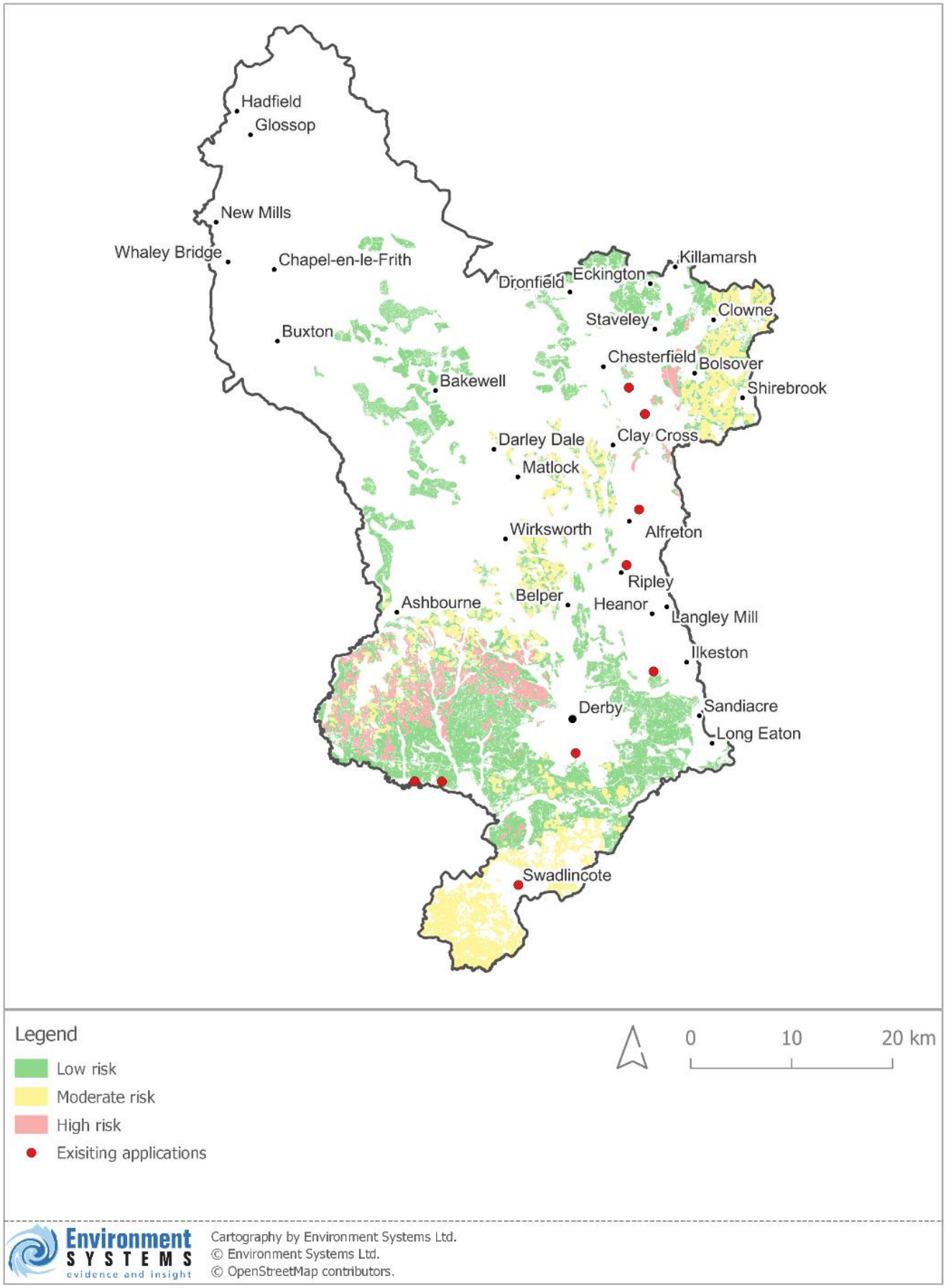

Figure 15: Risks to agricultural production: small wind generation

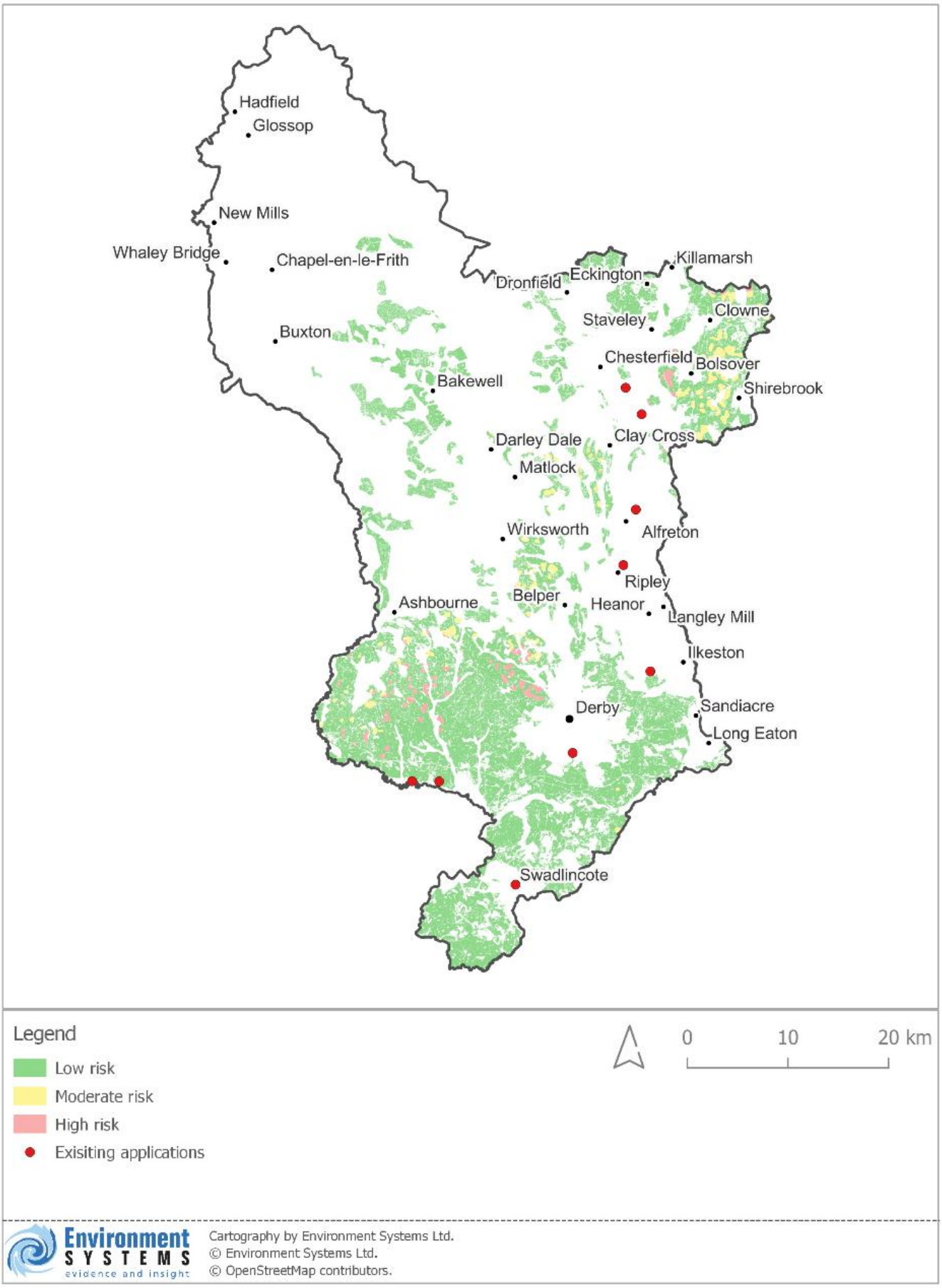

Figure 16: Risks to agricultural production: large wind generation

Biodiversity and irreplaceable Habitats

Very significant areas of biodiversity stock, known as biodiversity hotspots, are located in the northern areas of the Peak District National Park (Figure 17 and Figure 18), which also support the most important heath (Figure 21) and wetland ecological networks in Derbyshire (Figure 23). Other biodiversity hotspot areas that are outside of the National Park are found in White Peak, the Peak Fringe. Lower Derwent, Melbourne Parklands and Southern Magnesian Limestone areas (Figure 18).

There are opportunities for creating new areas of grassland, heath, wetland and woodland habitat (Figures 19-26) which will strengthen the ecological networks in Derbyshire. A comparison has been made between these ecological network maps and the more strategic scale Natural England Nature Recovery Networks (NRNs) which are based on less comprehensive and detailed data. This is informative to the Derbyshire natural capital strategy because where the NRNs coincide, the delivery of natural capital projects will meet both local and national priorities. For example, Figure 19 shows all opportunities throughout Derbyshire for creating species-rich grassland habitat, while Figure 20 solely shows those opportunities that coincide with the Natural England grassland NRNs. Opportunities that coincide with the NRNs will be particularly effective at supporting national biodiversity objectives, but opportunity areas outside the Natural England NRNs maps could be very important at a local scale, and may also provide significant co-benefits in terms of other ecosystem services.

There is widespread opportunity for creating both grassland (Figure 19) and woodland (Figure 25) across Derbyshire, with concentrations of opportunity for grassland creation within the existing grassland network in the Peak District National Park and the Peak Fringe and Lower Derwent. Opportunities for woodland creation lie along the river valleys and other lower lying areas of the county. Through development of the National Forest there is an opportunity to enhance connectivity of large areas of core woodland habitat that are currently relatively isolated, and enhance their resilience.

Opportunities for heath creation are located in the Peak District National Park, as well as in the more southern areas of Derbyshire from the Needwood and South Derbyshire Claylands to the Mease/Sense Lowlands (Figure 21). Opportunities for creating wetland are concentrated in the Trent Valley Washlands (Figure 23). Heath shows a very large potential opportunity space outside the existing ecological network, but these 'outside of network' areas should be treated with caution; due to its exacting mycorrhizal requirements, it is very difficult to establish heath unless it borders, or is in close proximity to, existing heath. An exception to this is areas of coniferous plantation that may have been planted on heath; such areas could revert quickly back to heath habitat.

Key points and recommendations for nature-based action: Biodiversity

- **Maintain and enhance existing biodiversity hotspots:** prioritise areas containing significant stock of irreplaceable habitat; including The Peak District National Park, White Peak, and Derwent valley.
- **Increase the connectivity of existing habitats**: prioritise ecological restoration activities within the ecological networks, to promote nature recovery and increase habitat resilience to pressures including climate change.
- **Consider the size of the habitat:** the size of a habitat patch is important in selecting sites for restoration and habitat creation. For example a woodland site <2ha is considered vulnerable, while a much smaller patch of Calaminarian grassland could be considered resilient.
- **Consider the existing ecology of the site:** habitat restoration is most successful when the soil conditions of the restoration site are similar to those associated with the native habitat. For certain habitats such as heathland, soil mycorrhizal associations are so important that the restoration site will need to either be adjacent to the existing habitat, or an element of soil translocation from a donor site would be needed to improve the success rate of habitat establishment. Coniferous plantations on former heath sites may retain the soil conditions needed for heath establishment, making good candidates for heath restoration.
- **Consider ecosystem multi-benefits:** habitat restoration to support biodiversity can also provide other valuable ecosystem services such as flood management, benefits to agriculture and carbon storage. Consideration of multi-benefit areas can help in the prioritisation of restoration sites.
- **Ensure appropriate mitigation actions are taken by developers**: 'Bespoke compensation' should be required to mitigate the damages potentially caused mitigation of development projects that lead to losses of irreplaceable habitats
- **Establish long-term management agreements:** Habitat restoration and creation projects should be accompanied by a secured agreement for long-term management to ensure success and sustainability

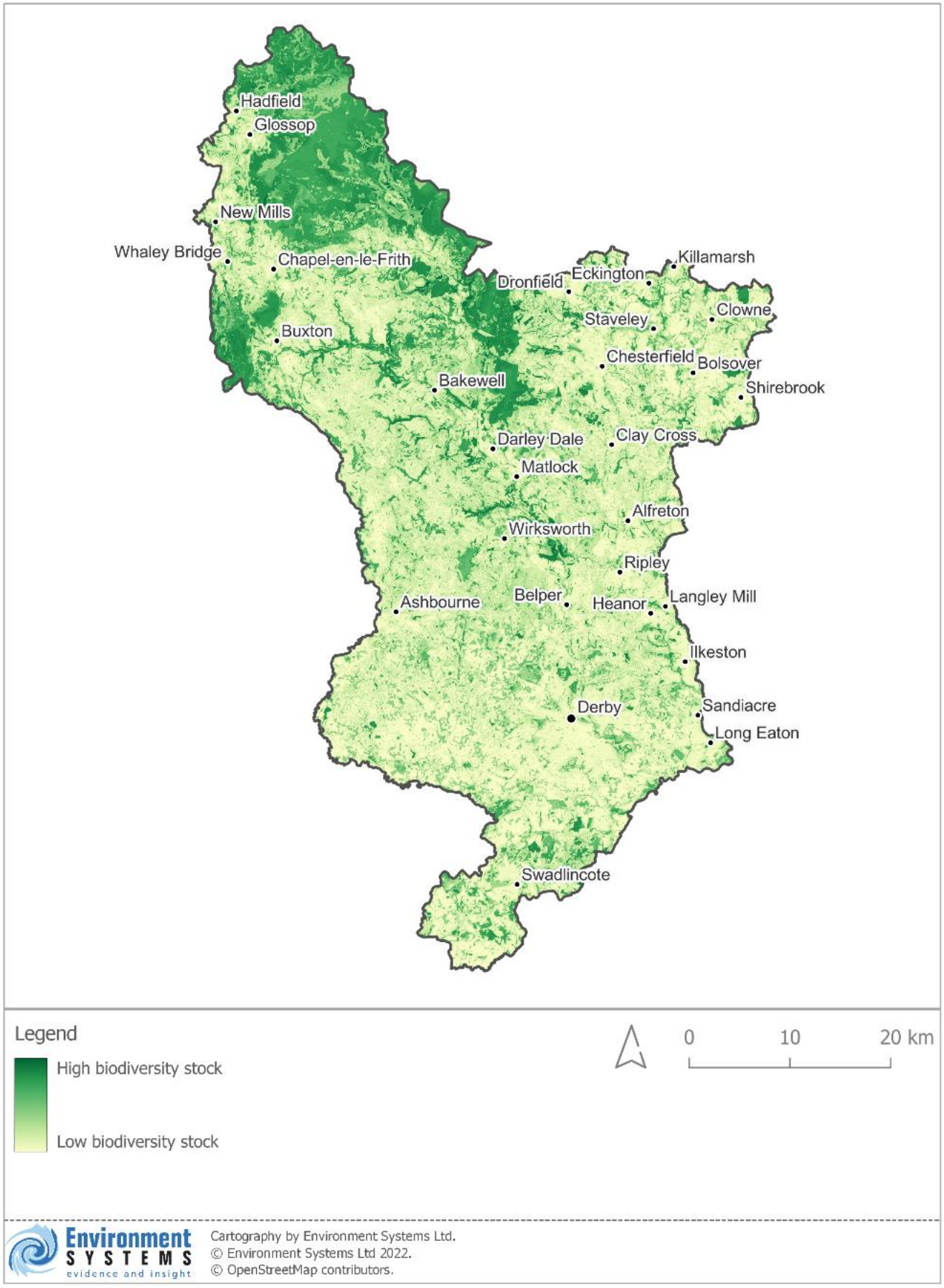

Figure 17: Biodiversity: current provision (stock)

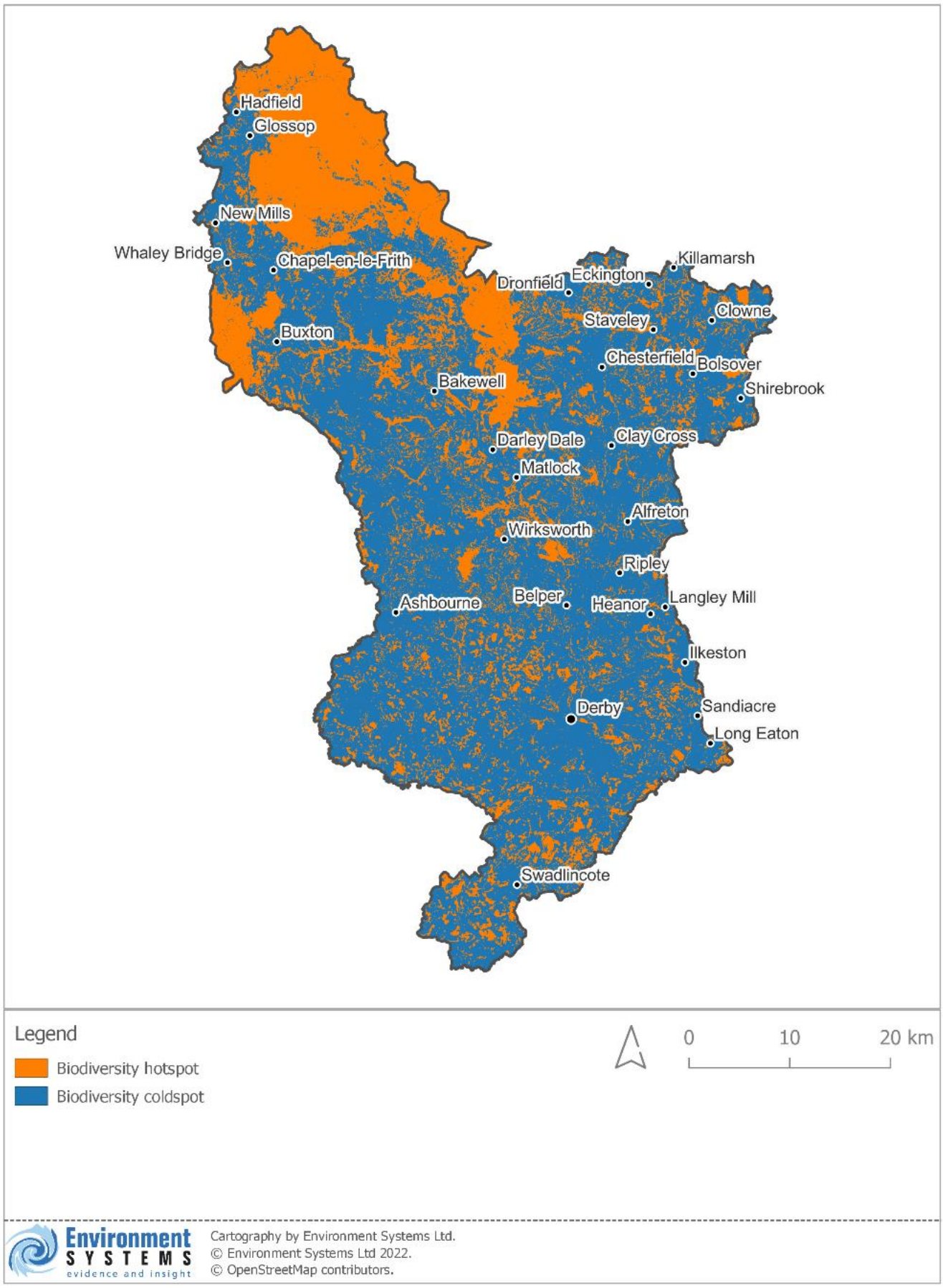

Figure 18: Biodiversity hotspots / coldspots

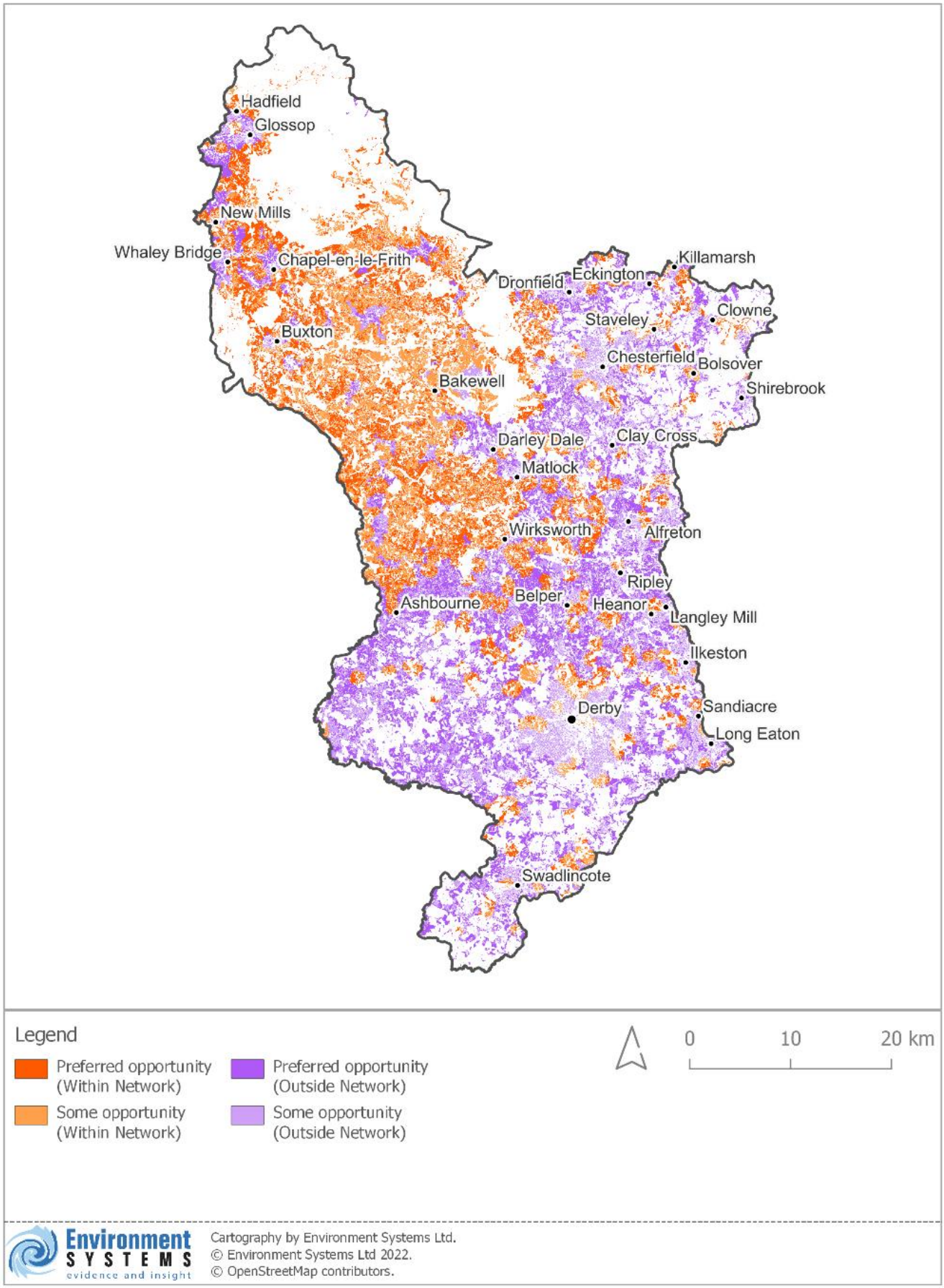

Figure 19: Opportunities for establishing species-rich grassland

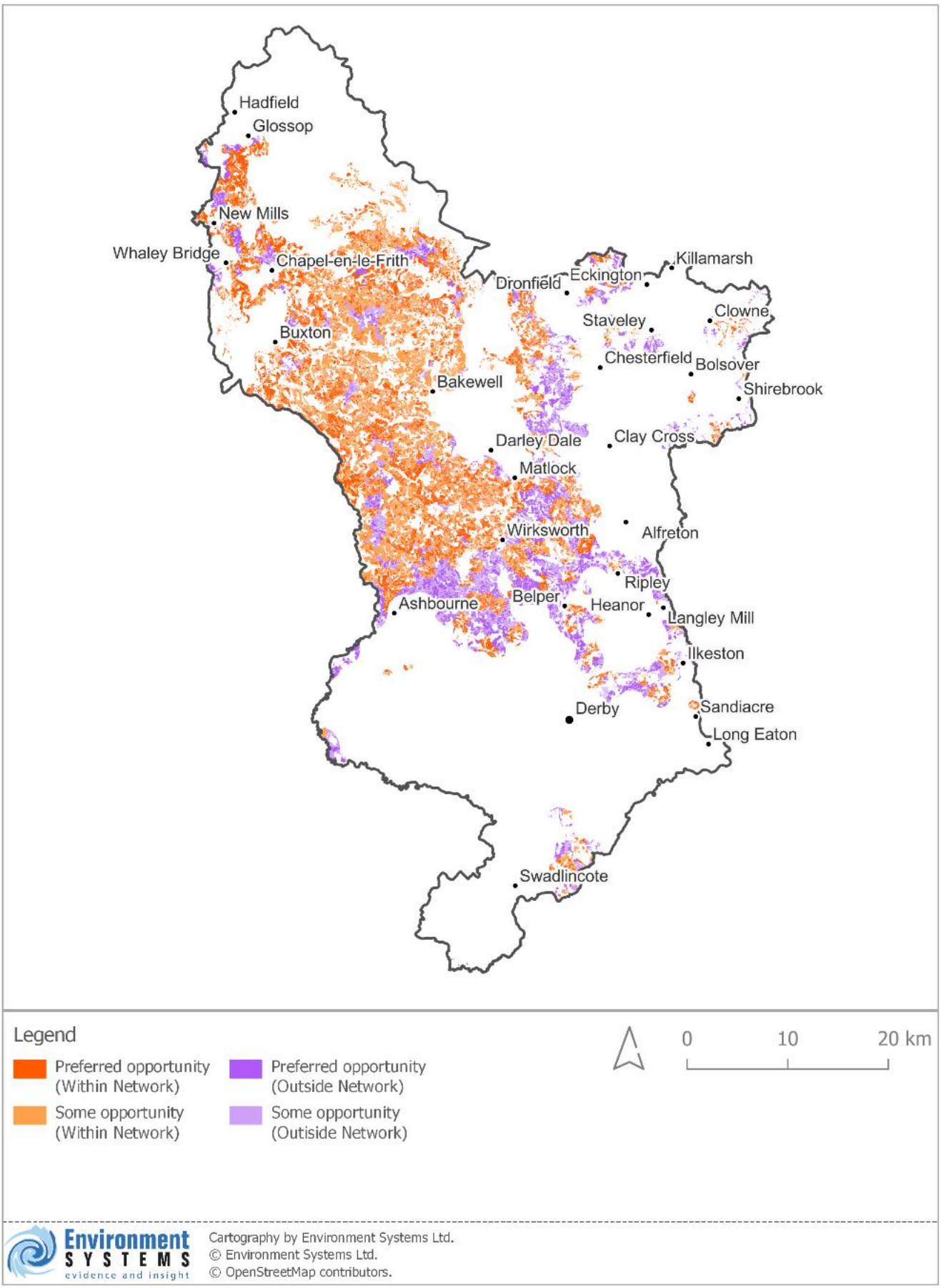

Figure 20: Opportunities for establishing species-rich grassland in relation to Natural England national grassland NRNs

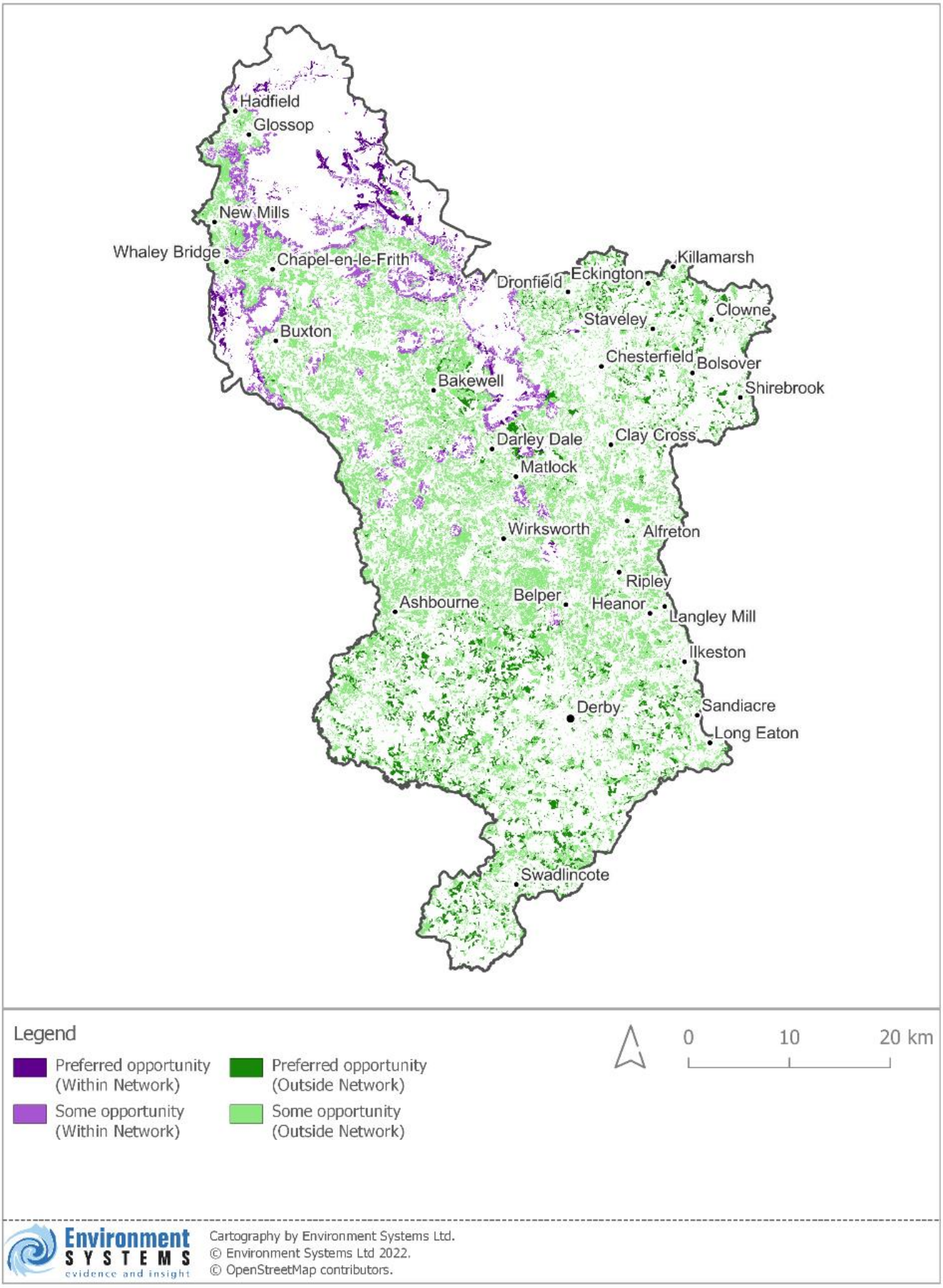

Figure 21: Opportunities for establishing heath

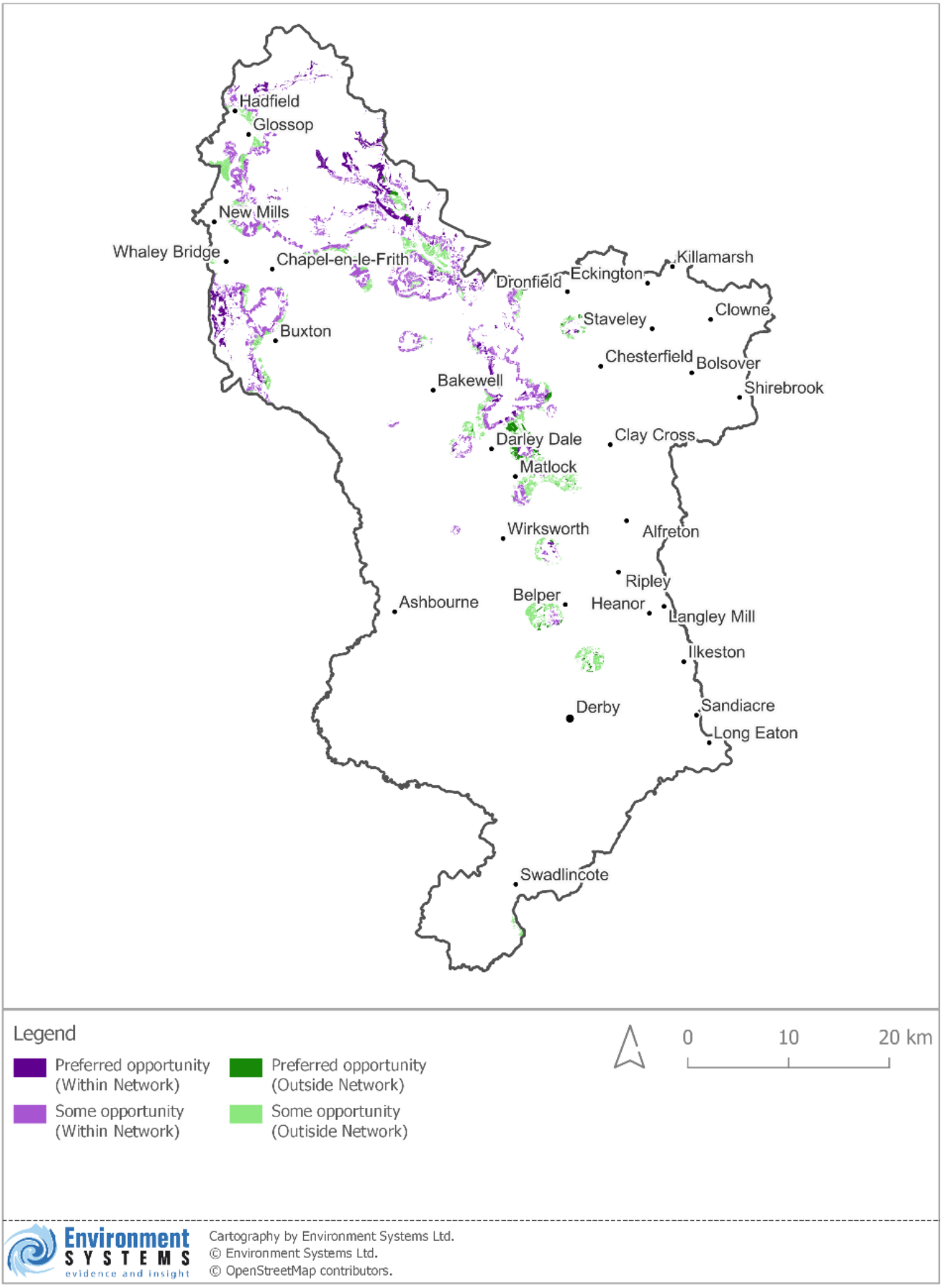

Figure 22: Opportunities for establishing heath in relation to Natural England national heathland NRNs

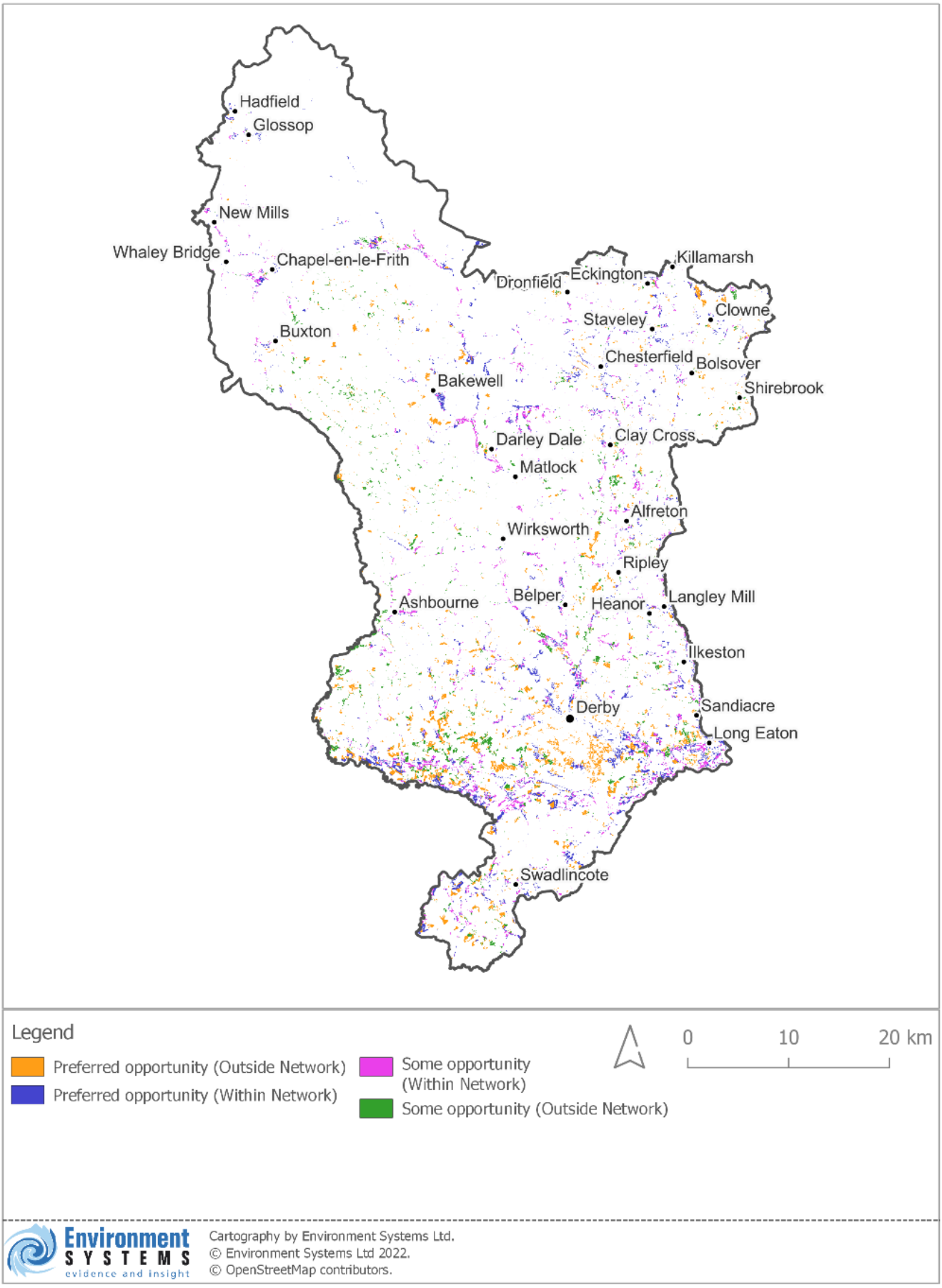

Figure 23: Opportunities for establishing wetland

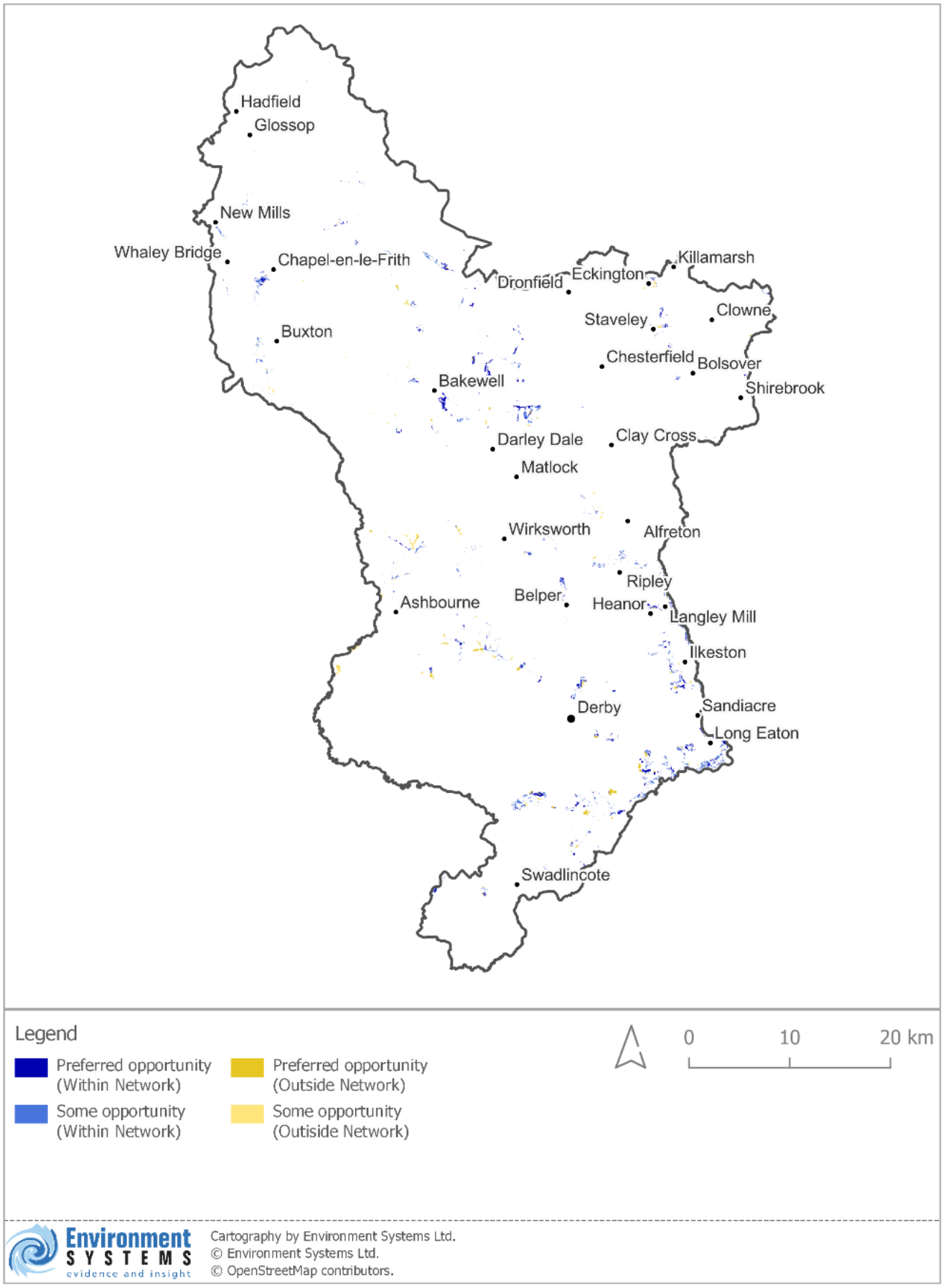

Figure 24: Opportunities for establishing wetland in relation to Natural England national wetland NRNs

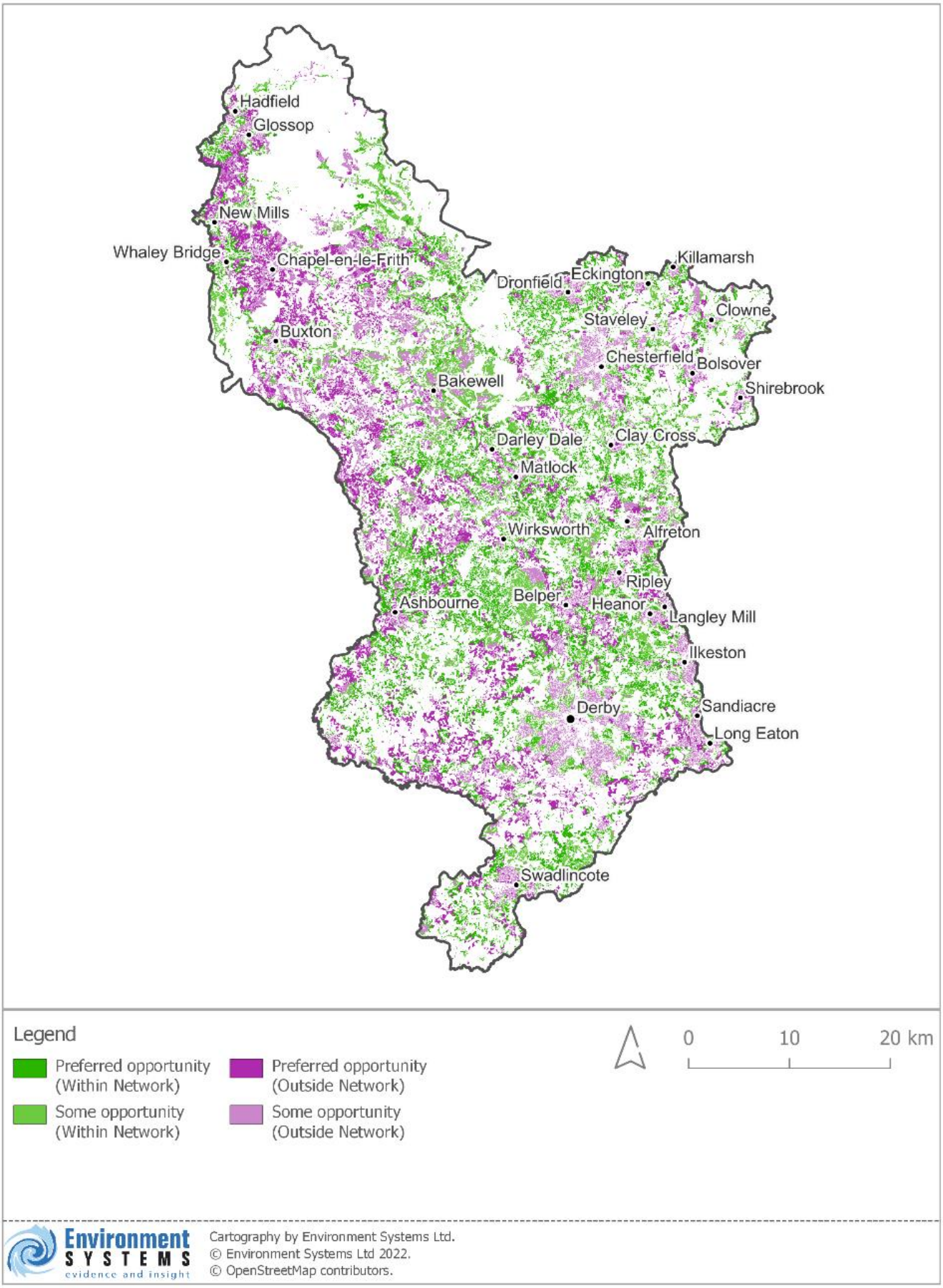

Figure 25: Opportunities for establishing woodland

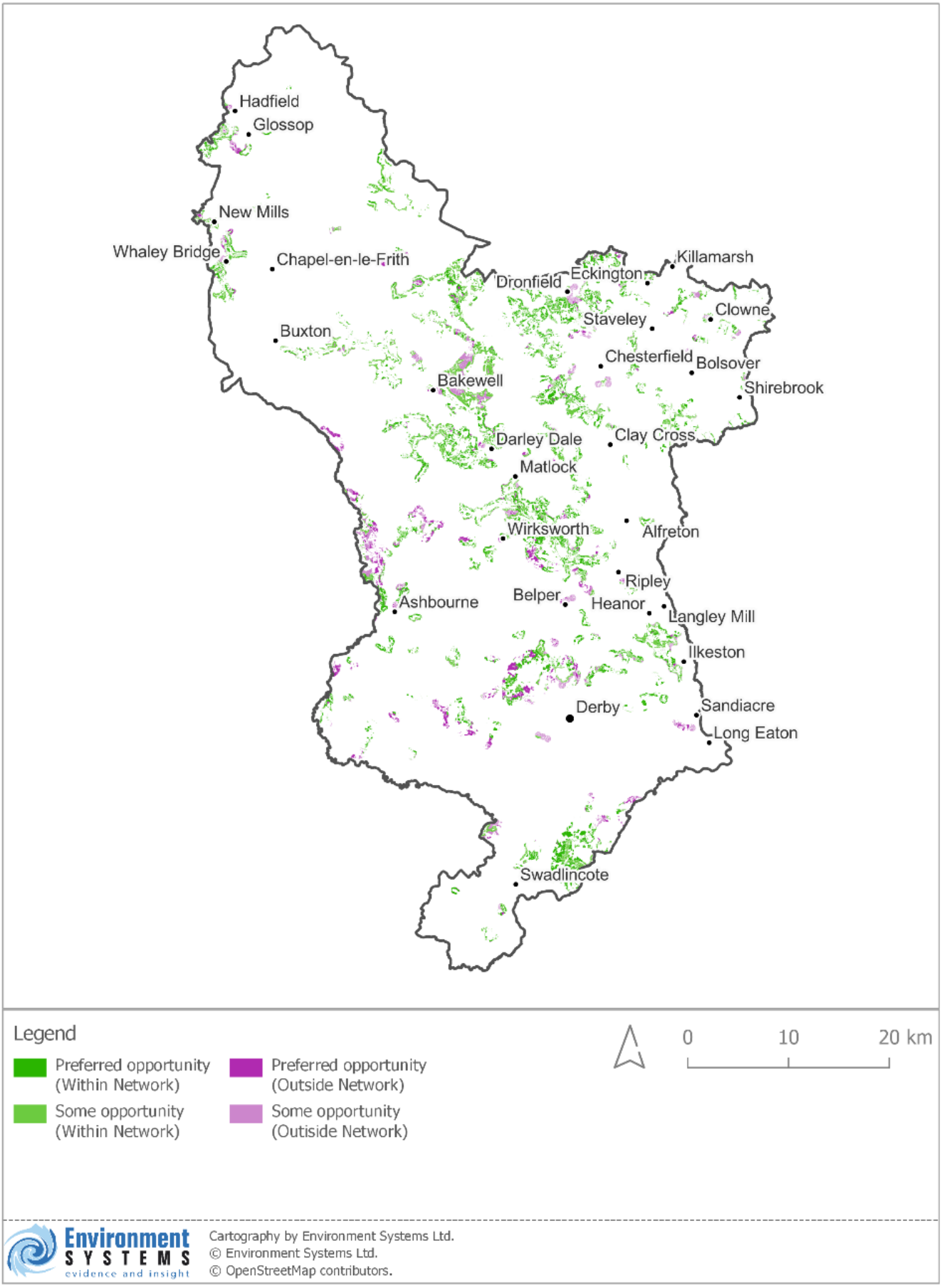

Figure 26: Opportunities for establishing woodland in relation to Natural England national woodland NRNs

Risks to biodiversity have been mapped where native habitats experience pressures from the surrounding land use (Figure 27), as follows:

- Native woodlands less than 2ha in extent, where the surrounding land is under more intensive agricultural use; the risk of fertilisers and herbicide sprays affecting the vegetation in these small woodlands is much higher than for larger woodlands. In this situation, the agricultural management of crops can create unfavourable conditions for some specialist native woodland species and, therefore, poses a risk to the biodiversity these smaller woodlands host.
- Other habitats adjacent to intensive agricultural land are also affected by the same type of risk if they also contain specialist species.
- Where public access is present to woodland, grassland, heath or wetland, there is a risk to species including from disturbance to wildlife, increased pollution (e.g. phosphorus from dog excrement) and littering; this is a particular issue in the Peak District National Park.
- Some Sites of Special Scientific Interest (SSSIs) are recorded as being in 'poor' or 'declining' condition which demonstrates that there is currently a risk to the biodiversity they are designated to support.
- Water bodies with a current 'poor-quality' status.

Development risk: areas that have been identified within local development plans as areas targeted for housing or employment development. The distribution of irreplaceable habitats is shown in Figure 28. These habitats are predominately located within the Peak District National Park and the Peak Fringe and Lower Derwent, and mainly comprise heath, blanket bog and calcareous grasslands.

Local planning policy as determined by Local Authorities, National Park Authorities, City Councils and Natural Capital Strategies must ensure rigorous protection of these habitats. A significant and largely unquantified proportion of irreplaceable habitats occur outside the designated sites network in Derbyshire, and therefore outside protected designated sites, such as National Nature Reserves, SSSIs, Local Nature Reserves and Local Wildlife Sites. Planning authorities should adhere to the protections already granted to designated sites but also ensure through the Natural Capital Strategy and LNRS that the undesignated irreplaceable habitats are not comprised. These unprotected important habitats are often small patches that have been fragmented and degraded by human activity, making them key targets for restoration, as they are stepping stones that can be included in plans for the expansion of existing ecological networks.

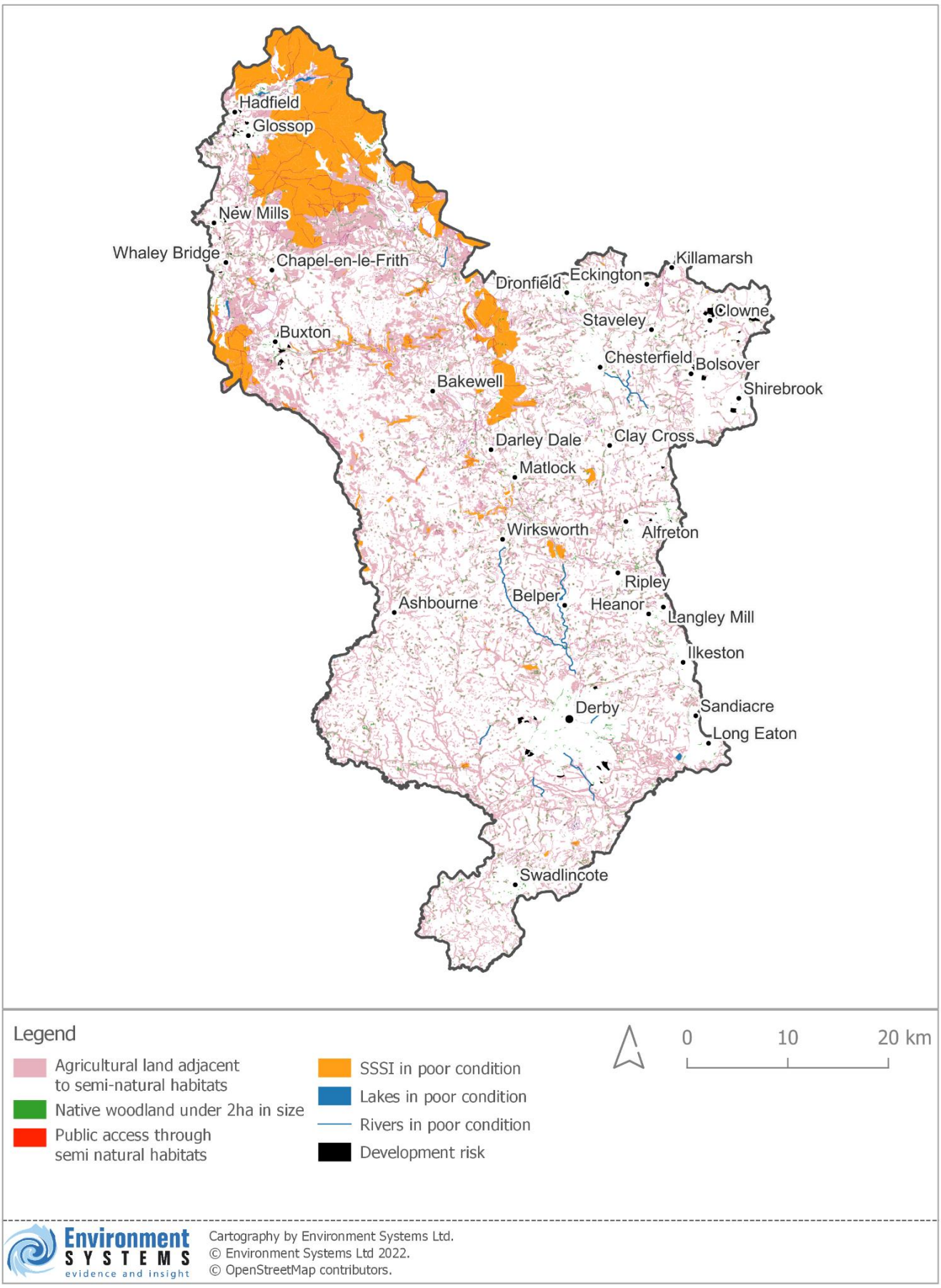

Figure 27: Risks to biodiversity

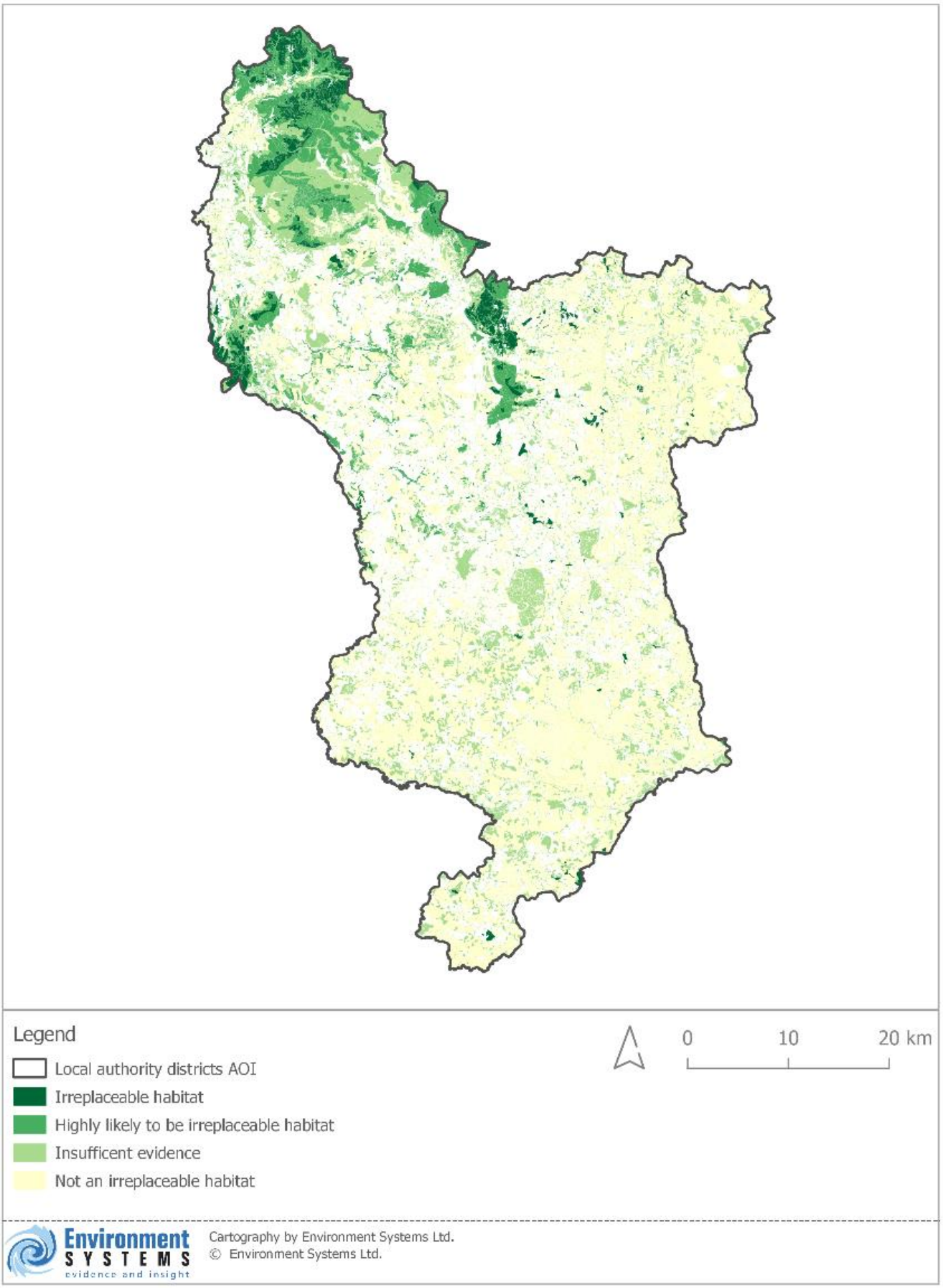

Figure 28: Distribution of irreplaceable habitats

It is a core principle of Biodiversity Net Gain (BNG) that irreplaceable habitats are avoided by proposed development. Figure 29 illustrates a proposed flowchart for the consideration of irreplaceable habitats in the development planning process and for BNG projects.

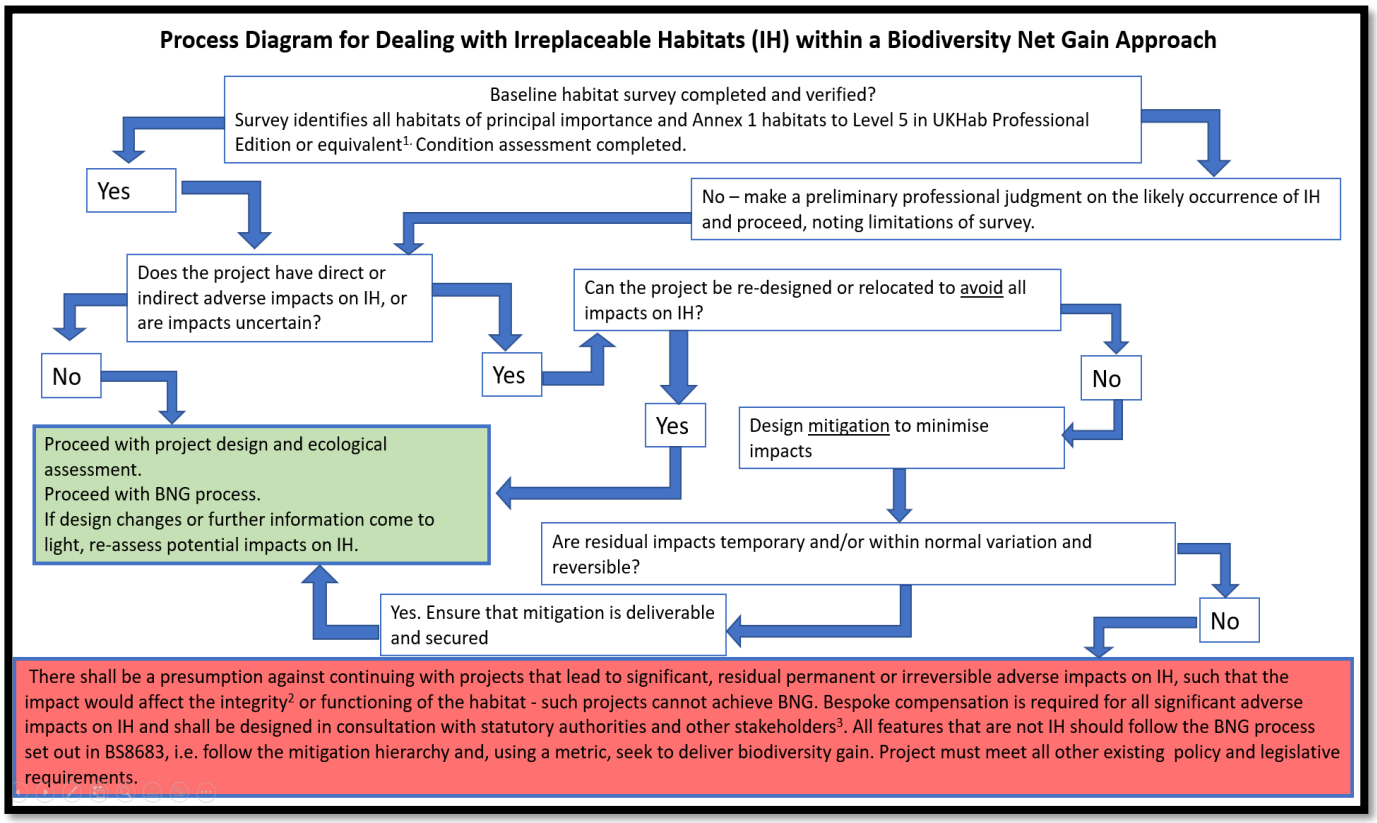

Figure 29: Process Diagram for Dealing with Irreplaceable Habitats in Development Planning and BNG Projects

Figure 29 identifies that 'bespoke compensation' is required for projects that lead to losses of irreplaceable habitats. Currently, there is no national guidance on what form this compensation should take. One approach may be to provide a hierarchy of suitable measures, for example:

1. Compensate for losses of irreplaceable habitats through a habitat translocation, where this is technically feasible and subject to existing guidance[6];
2. Restore existing equivalent habitats, i.e. habitats that are the same type as those being impacted, and secure their long-term management;
3. Create new habitat to enhance network connectivity and buffering to existing equivalent habitats already under appropriate management;

The approach to compensation for irreplaceable habitats must be clearly defined and agreed with relevant stakeholders. Where appropriate, compensation should be quantified using standard and repeatable methods. As a minimum, the quantum of compensatory habitat required should be significantly above the baseline biodiversity units + 10% to account for the relevant risk multipliers and habitat type should be the closest approximation to the habitat type lost as practicable.

[6] https://cieem.net/resource/habitat-translocation-a-best-practice-guide/

A national list of irreplaceable habitats is yet to be published by Natural England. In the absence of a national list a provisional list of habitats of high irreplaceability that are known to occur in Derbyshire has been identified for the Natural Capital Strategy, as follows:

- Ancient woodland
- Wood pasture and parkland
- Ancient and Veteran Trees
- Long-established woodland
- Blanket bog
- Lowland hay meadows and pastures
- Traditional Orchards
- Purple moor grass and rush pasture
- Lowland and upland fens
- Reedbeds
- Inland rock and scree
- Calaminarian grassland

This list should be interpreted with caution and reviewed as soon as the forthcoming Natural England definition and national list is available. The location of these habitats in Derbyshire, their characteristics and how each habitat is mapped in the Natural Capital Strategy is described in Table 1: Irreplaceable habitats in Derbyshire. It is expected that local authorities can build upon this list to ensure it is adequate in the local context.

Table 1: Irreplaceable habitats in Derbyshire

Habitat Name	Habitat Type (UKHab[7] typology)	Description and likely occurrence in Derbyshire
Ancient woodland	All woodland (w) ecosystems identified with Secondary code 33	Current definition of Ancient Woodland is any woodland (including plantations) that has been continuously wooded since 1600AD[8]. Known Ancient Woodlands >2ha are documented on the Ancient Woodland Inventory, although many smaller woods will not be included. In Derbyshire, the majority of recorded ancient woodlands are small and fragmented. Larger fragments remain in the ashwoods of the limestone dales of the White Peak, e.g. Millers Dale, Cressbrook Dale and Lathkill Dale and the Derwent Valley around Matlock and the oak and birch woods on the steeper slopes of the gritstone edges in the Eastern Moors.
Wood pasture and parkland	Habitat features identified with Secondary code 20	Wood-pasture and parkland are mosaic habitats valued for their ancient and veteran trees and are typically characterised by open grown trees in an extensive grazed landscape.

[7] Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). The *UK Habitat Classification Version 1.1* at http://www.ukhab.org/

[8] Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Habitat Name	Habitat Type (UKHab[7] typology)	Description and likely occurrence in Derbyshire
		Some sites have origins from Royal Hunting Forests. Anderson (2021)[9] records 3 Royal Forests partially in Derbyshire: The High Peak, Malbanc Frith and Macclesfield Forest, although there are only remnants of wood-pasture habitat retained along the Snake Pass road recorded on the current inventory. Most parklands in Derbyshire are associated with the country estates, including Chatsworth, Haddon Hall, Longshaw, Kedleston and numerous smaller estates. Wiltshire and Woore (2009)[10] provides a useful reference source of other medieval parks of Derbyshire.
Ancient and Veteran Trees	Point features identified with Secondary code 49	Many ancient and veteran trees fall within other ancient habitats, e.g. woodland and parkland. Open grown trees are poorly recorded, but the Woodland Trust has a publicly accessible database[11]. NB – all ancient trees are also veterans, but the terms are not strictly interchangeable.
Long-established woodland	Potentially including all woodland (w) ecosystem types	Long-established woodland is a stand of habitat that has a recorded history of being continuously wooded* >100years. There is no systematic inventory of these woodlands and many have no protection from development pressures. The First Edition Ordnance Survey maps are a useful resource to indicate the presence of long-established woodlands in Derbyshire. *woodland management, including coppice, felling and replanting or felling and regeneration is acceptable and areas of woodland open space and habitats that occur as part of woodland succession, e.g. native scrub, may also count.
Blanket Bog	Degraded blanket bog (UKHab f1a6) and Active Blanket Bog (UKHab f1a5 Annex 1 H7130)	Large blocks of blanket bog, a UKBAP Habitat of Principal Importance and the majority are also an Annex 1 Habitat under the Habitats Directive are present within Derbyshire. The vast majority of blanket bog in Derbyshire has been degraded by a combination of fire, including managed burns, wild fire and arson; drainage, cutting for fuel, over-grazing, air pollution and recreational pressures (Anderson, 2021). There are 3 major areas of blanket bog within Derbyshire: The Dark Peak, including Edale Head and Kinder Scout National Nature Reserve and part of South Pennines Moors Special Area of Conservation. (SAC) The Dark Peak, including the open moors and moorland fringe of Coombs Moss and the Upper Goyt Valley (including part of the Goyt Valley SSSI) to the west of Buxton

[9]Anderson, P (2021) Peak District – A Survey of British Natural History. New Naturalist Library
[10] Wiltshire M. and Woore, S. (2009) Medieval Parks of Derbyshire. Landmark Collectors Library
[11] Ancient Tree Inventory - Woodland Trust

Habitat Name	Habitat Type (UKHab[7] typology)	Description and likely occurrence in Derbyshire
		The Eastern Gritstone Moors, including Big Moor above the Gritstone Edges of Froggatt and Curbar, which include part of the Eastern Peak District Moors SSSI.
Lowland hay meadows and pastures	May include all priority grassland types: g1a lowland dry acid grassland, g2a lowland calcareous grassland and g3a lowland meadows	Grasslands with a long history of continuous management are likely to have high irreplaceability where they meet the following criteria: 1) Presence of designated species or habitats, rare or scarce plants, fungi or invertebrates; 2) Characteristic and appropriately managed areas with evidence of long establishment (>100 years); 3) Presence of characteristic topography, aspect, geology and soils. This includes grassland on all soil types (acid, calcareous and neutral), which are widely distributed throughout Derbyshire. Natural England has published grassland priority habitat inventories[12], although field data should be used to confirm the presence and status of any grasslands outside of the designated sites network. Calcareous grasslands are typically largest in area and are restricted to the limestone dales in the north and west of the county. Acid grasslands are typically smaller and associated with the Gritstone Dark Peak. Neutral grasslands are widespread, but typically in small patches.
Traditional Orchards	Complex habitat features identified with Secondary code 21	Traditional orchards comprise open-grown fruit and nut trees typically including specimens which are >50years old and have veteran features. Typically planted in herbaceous ground layer, this habitat may have fallen out of regular management, leading to encroachment with tall herbs and scrub. Habitat includes traditional orchards within curtilage of domestic properties. Habitat patches are typically very small (typically <1000m^2) and isolated patches, associated with traditional villages and farmsteads throughout the county.
Purple moor grass and rush pasture	UKHab f2b	This grass and rush-dominated wetland community is associated with poorly drained soils on valley sides and spring-lines, especially on calcareous and clay soils. Good examples of this uncommon and difficult to identify community are typically herb-rich and are sometimes confused with considerably more widespread species-poor acidic communities such as Yorkshire fog – soft rush pastures (UKHab g3c8) and many purple moor-grass dominated communities that have arisen through inappropriate management of other bog and fen communities. Very rare in Derbyshire, probably covering <50ha in total, the largest known patch is within Goyt Valley SSSI.
Lowland and upland fens	Lowland fens (f2a) and Upland flushes,	Derbyshire straddles the upland/lowland boundary of the UK and this complicates the differentiation between these two closely allied priority habitat types. The upland moorland of

[12] Priority Habitat Inventory (England) - data.gov.uk

Habitat Name	Habitat Type (UKHab[7] typology)	Description and likely occurrence in Derbyshire
	fens and swamps (f2c)	Kinder and the Dark Peak SSSI, Derwent and the Eastern Moors support a mosaic of blanket bog, wet heath and upland flush communities, with the latter largely associated with streamlines and cloughs[13]. Lowland fens are uncommon and largely confined to river valleys, notably along Bretton Clough near Abney and in the Erewash valley on the border with Nottinghamshire.
Reedbeds	UKHab f2e	Reedbeds are an uncommon habitat in Derbyshire and almost all are a result of the restoration of former mineral workings. Reedbeds in restored mineral working are not irreplaceable.
Inland rock and scree	UKHab s1a	Inland rock and scree and their natural vegetation communities, derived from natural and semi-natural outcrops (as opposed to quarried outcrops) are likely to be irreplaceable. There is no national habitat inventory for this habitat type currently. Natural limestone outcrops (UKHab s1a), base-rich screes (UKHab s1a6) and crevice vegetation (UKHab s1a7), particularly within the Derbyshire Dales NNR, but occurring throughout the dales of the White Peak support fragments of this habitat. It is notably difficult to map these habitats as they occur on steep slopes and so the area shown on two-dimensional spatial projections significantly under-estimates the area of the habitat across the county.
Calaminarian grassland	UKHab u1c	This is a very uncommon and rare habitat within Derbyshire, although the county is a stronghold nationally. This habitat is only associated with the former workings of historic metalliferous surface mining, in particular the lead rakes of the White Peak. Good examples, such as Tideslow Rake SSSI, are protected, but much of this habitat has been subject to grazing pressure and intensification which has led to loss and degradation. It is estimated that only 14ha of Calaminarian grassland remains in the Peak District, with an upper estimate of 41ha[14]. Mapping the current extent, condition and potential for restoration and buffering (through new habitat creation of species-rich grasslands) for this critical habitat resource within the county should be a conservation priority.

[13] a steep-sided ravine
[14] Anderson, P (2021) Peak District, New Naturalist Library.

Surface water regulation (Natural Flood Management)

Surface water regulation is an important ecosystem service with respect to climate change, due to the trend for increased frequency and severity of flood events. Enhancing surface water regulation can reduce peak flows when carried out at scale, in the right locations.

Figure 30 shows the existing level (stock) of Natural Flood Management (NFM) provision. The uplands of the Peak District National Park provide the highest provision for NFM due to the high occurrence of peaty soils that absorb and retain water. Other areas that have a high capacity to reduce flooding are those with shallow gradients and areas that are wooded.

Knowledge of the areas that flood can help us understand where nature-based solution can be targeted to help mitigate flood peaks by slowing the time it takes water to reach rivers during high rainfall events. The position of land in a water catchment is an important consideration; interventions targeted within headwater zones (i.e. upstream) have greatest impact, but can be physically challenging to achieve due to accessibility issues. Interventions in the valley bottoms are least effective at slowing the flow of water through a catchment, but can still be important locally. Figure 31 shows the hydrological catchment zones for Derbyshire from headwaters to valley bottoms.

Hydrological connectivity is an important consideration when targeting interventions to enhance NFM. The existing channel network for Derbyshire, showing rivers and major streams, is shown in Figure 32. From this network and the surrounding topography the hydrological connectivity has been derived. Hydrological connectivity is shown in Figure 33; in areas with high connectivity more of the surface water is funnelled by the topography to join the channel network, which then carries it downstream and these areas are more prone erosion, pollution and pluvial flooding.

Two maps for NFM opportunities have been produced; one showing all possible locations where interventions could be located (Figure 34 and Figure 35) and one showing a range of targeted interventions, which are the locations that have the highest hydrological connectivity, and as such would have the greatest impact on reducing the flow of water into the channel network (Figure 32).

Key points and recommendations for nature-based action: NFM

- **Restoration of peatland** within the Peak District National Park will enhance water holding capacity in the peat, thereby mitigating downstream flooding. It will also alleviate the impact of drought on the surrounding areas, and store carbon.

- **Plant riparian woodlands** along rivers where there is no existing adjacent semi-natural vegetation. This flood management solution will be particularly beneficial in reducing flood risk in the Trent Valley Washlands, and the mid and lower section of the river Derwent.

- **Create and restore floodplains** in the lower reaches of the catchment where the floodplain is larger. Flood mitigation can be enhanced by establishing sacrificial flood areas upstream of major settlements. An example of this is the lower reaches of the River Rother near Chesterfield, where washlands have been created upstream of the town to contain flood water.

- **Enhance integrity of river channels,** particularly the river Derwent, to slow the speed of water and increase its water holding capacity.

- **Creation of wet woodlands and fen** adjacent to rivers to absorb flood waters.

- **Enhance soil infiltration** through the management of existing species-rich pastures, planting deep rooted grasses in agricultural ley grassland, and/or establishing species rich meadows. These actions will have most impact when they are carried out in the higher catchment zones, and on the areas with greater hydrological conductivity.

- **Plant new hedges** or restore older hedges and field margins across slopes. This will help slow the movement of water and mitigate flooding particularly when implemented in the mid-reach catchment zone.

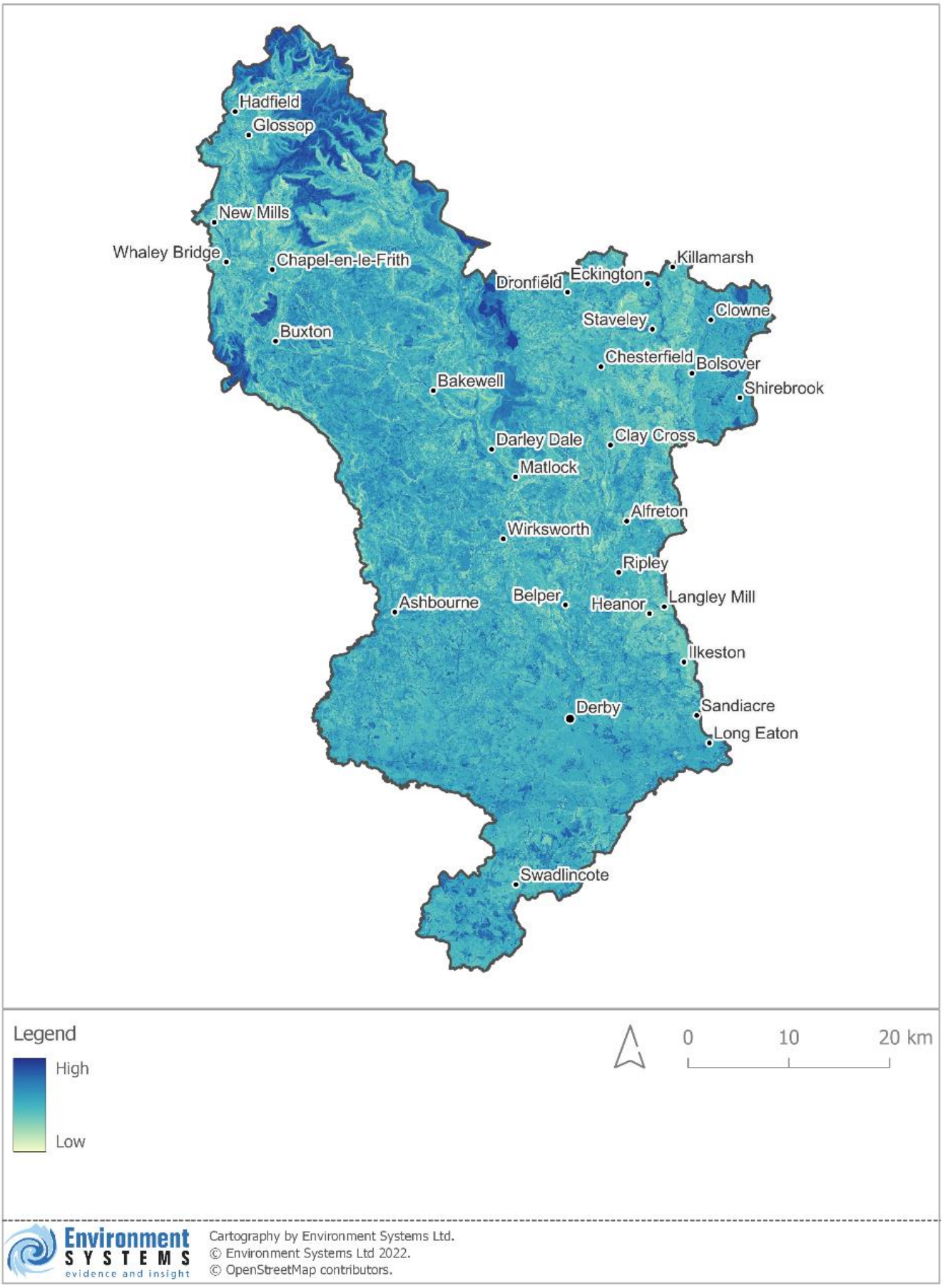

Figure 30: Natural Flood Management: current provision (stock)

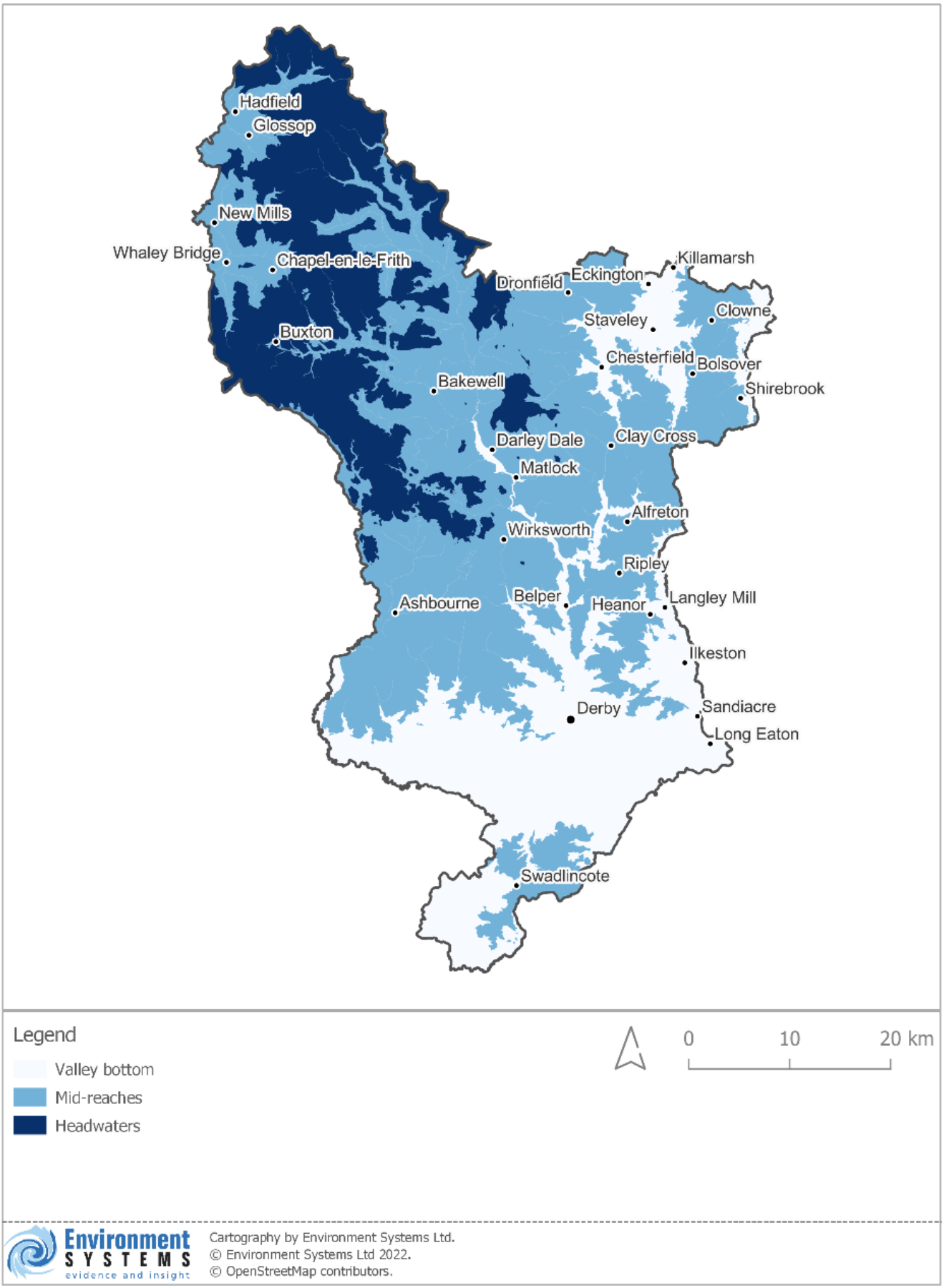

Figure 31: Hydrological catchment zones

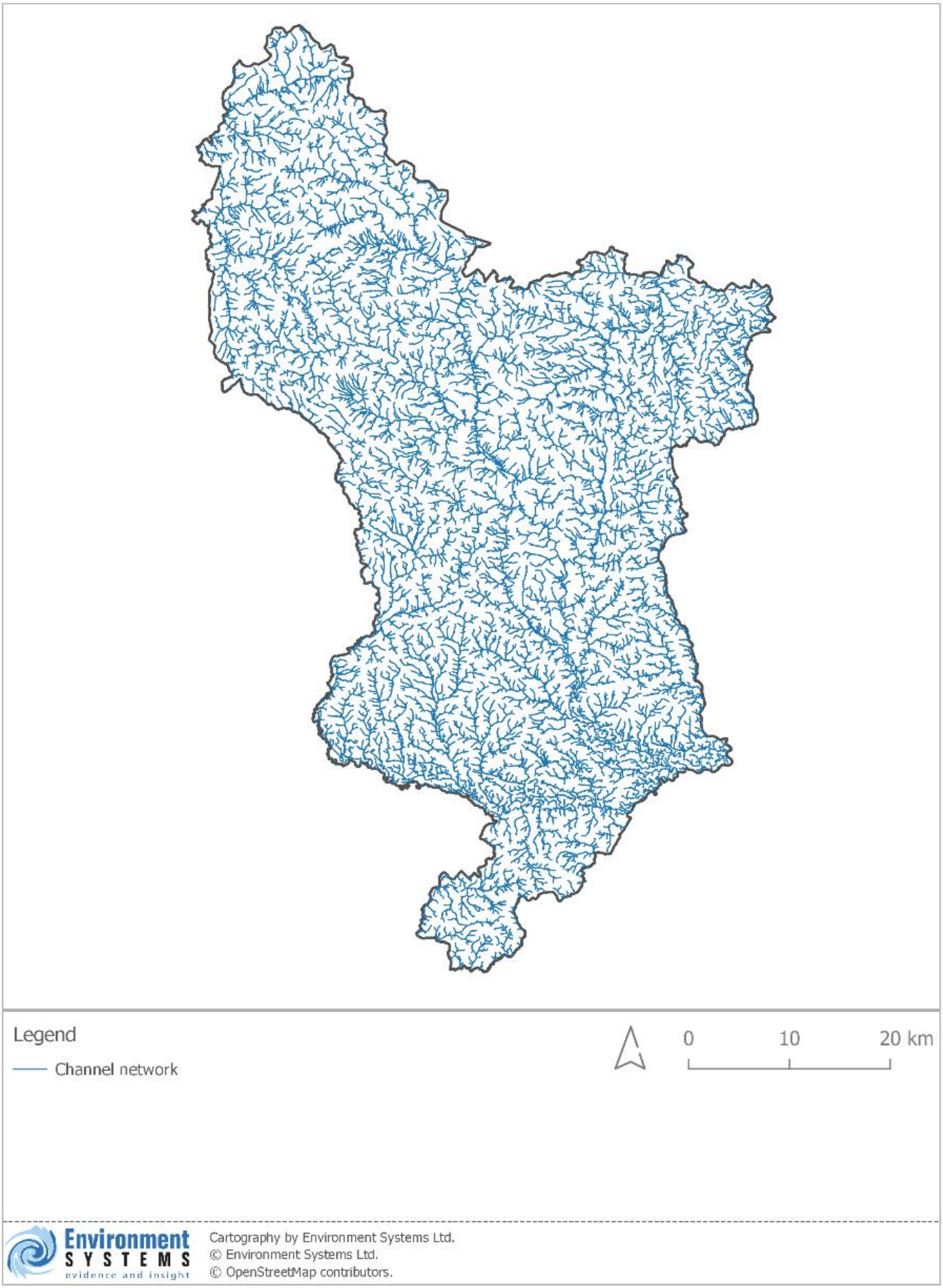

Figure 32: Channel Network

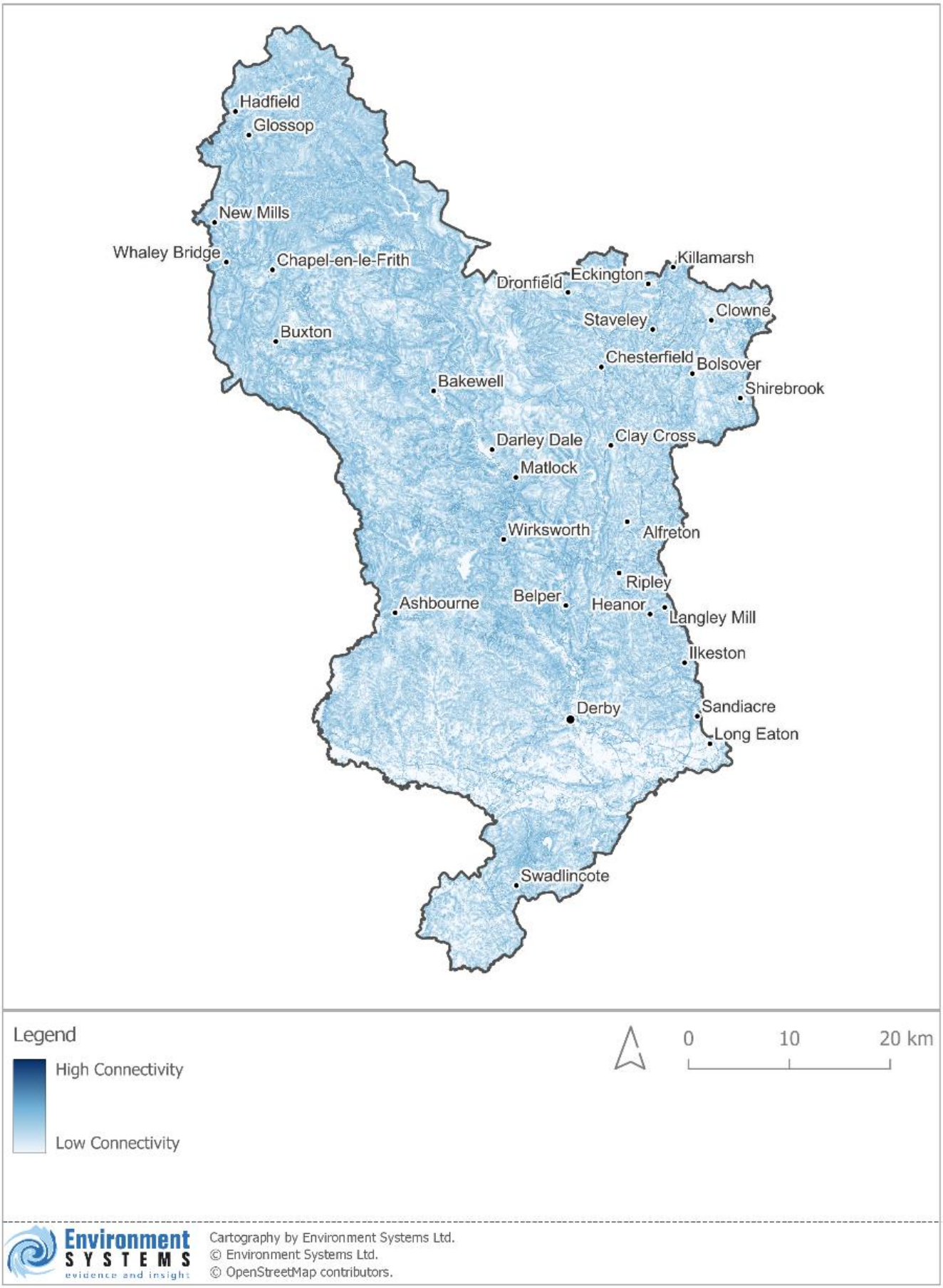

Figure 33: Hydrological connectivity

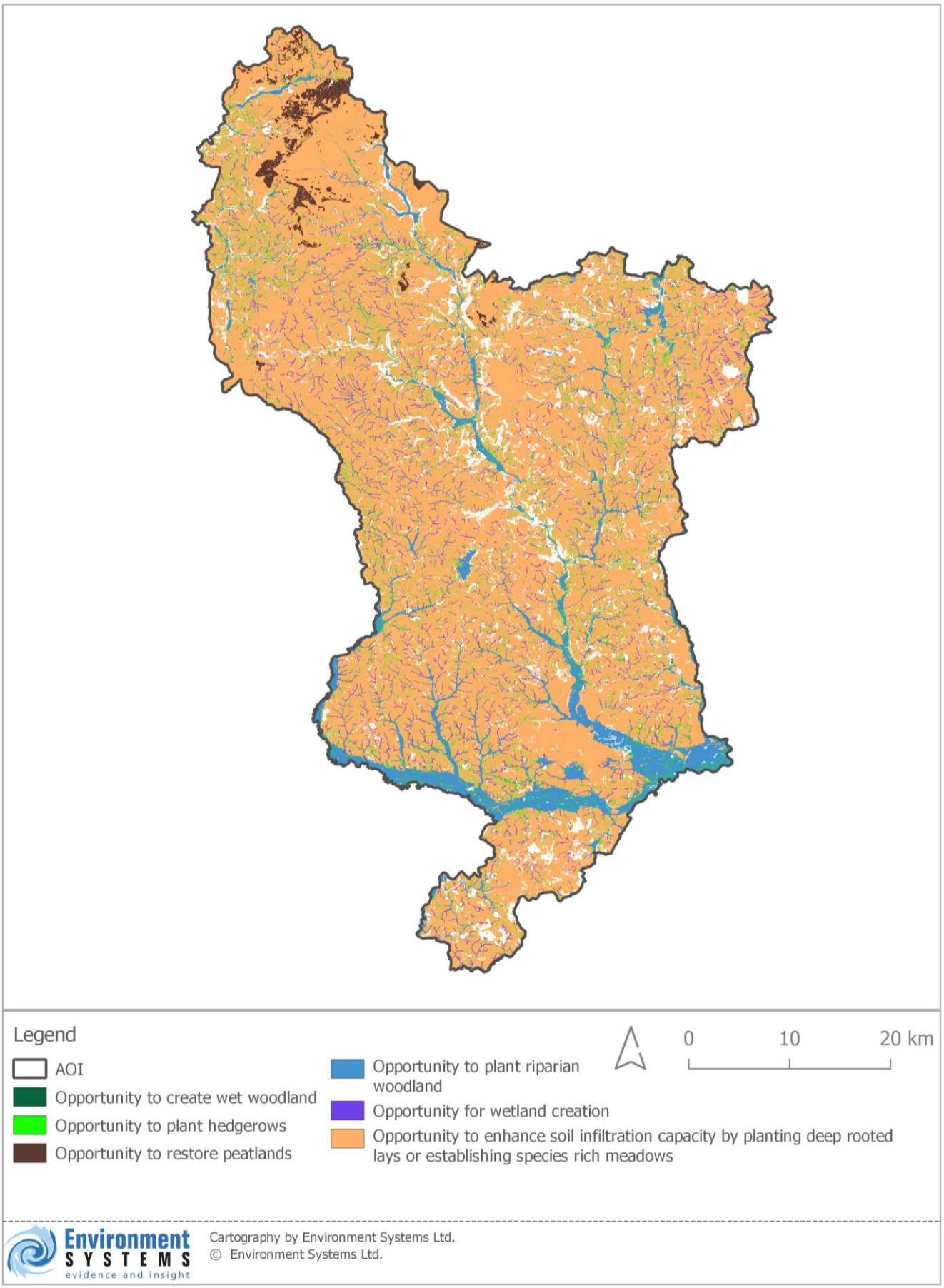

Figure 34: Natural Flood Management: all NFM opportunities

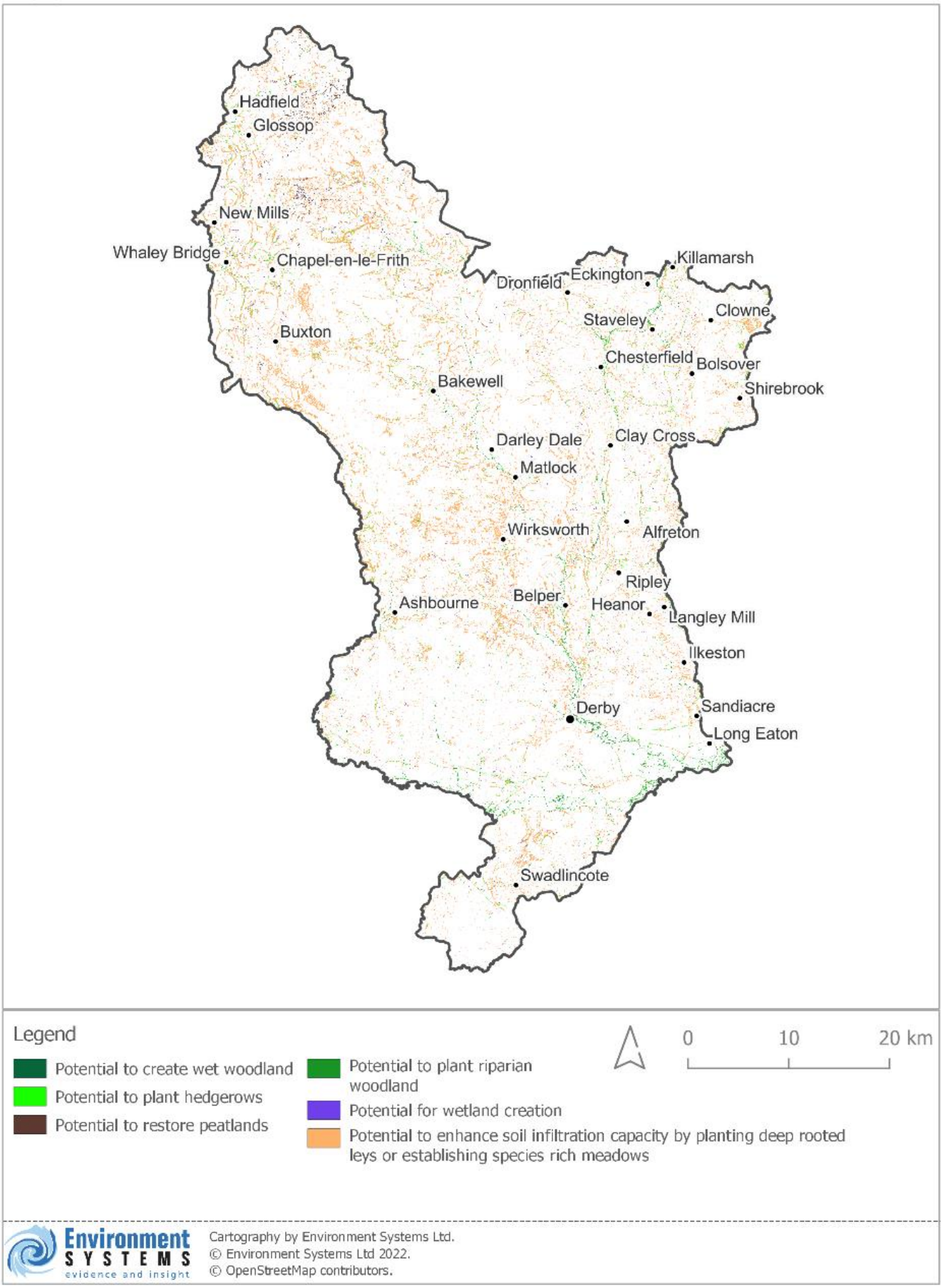

Figure 35: Natural Flood Management: targeted opportunities

Water quality regulation

Slope, soil type, vegetation cover and land management practice all have an impact on maintaining water quality. Figure 36 shows the existing level (stock) of water quality regulation in Derbyshire. Peat habitats located within the Peak District National Park have a high existing provision for maintaining water quality. In contrast, the intensively managed agricultural land in the Trent Valley Washlands currently have the lowest existing provision for maintaining water quality.

The degraded peat within the Peak District National Park is a risk to water quality in the wider catchment (Figure 37). However, the most widespread risk to water quality within Derbyshire that can be tacked by NBS is the potential for agricultural run-off into watercourses, or places where there are livestock directly adjacent to streams and rivers and channels of fast water movement; in this situation run-off can pick up pollutants which then enter the watercourses. This risk is greatest in areas with high levels of agricultural production such as Southern Magnesian Limestone and in the valley bottom areas of the main river catchments, particularly the Trent Valley washlands, the Melbourne Parklands and Mease/Sense Lowlands.

Opportunities for nature-based solutions that will improve water quality throughout the catchment are shown in Figure 38. These land management actions can have a significant, positive impact on water quality.

Key points and recommendations for nature-based action:
Water Quality

- **Restoration of peatland:** peatlands act as a water filter removing dirt, debris and pollutants from water before they flow into waterways.
- **Establish within-field headlands** throughout Derbyshire's agricultural lands to reduce sediment and pollutant run-off.
- **Enhance the woodland network** throughout Derbyshire to reduce soil erosion and pollutant run-off.
- **Improve bankside vegetation:** riparian tree buffers and riverside meadows intercept and immobilise sediment and pollutants before they reach watercourses.
- **Plant new hedgerows or rows of trees** across slopes or adjacent to watercourses, to reduce the sediment and pollutant load reaching watercourses.
- **Prevent erosion and pollution of the River Wye:** this river has specific management needs, as due to the porosity of the underlying limestone it is common for this river to dry up during the summer. Preventing erosion, and pollution of the river bed from animal grazing or visitor pressure, are particularly important during dry periods. Fencing, and establishing more bank-side vegetation along the river bed is recommended.
- **Planting of vegetation around disused mining sites:** bankside vegetation adjacent to mining sites can alleviate heavy metal pollution.

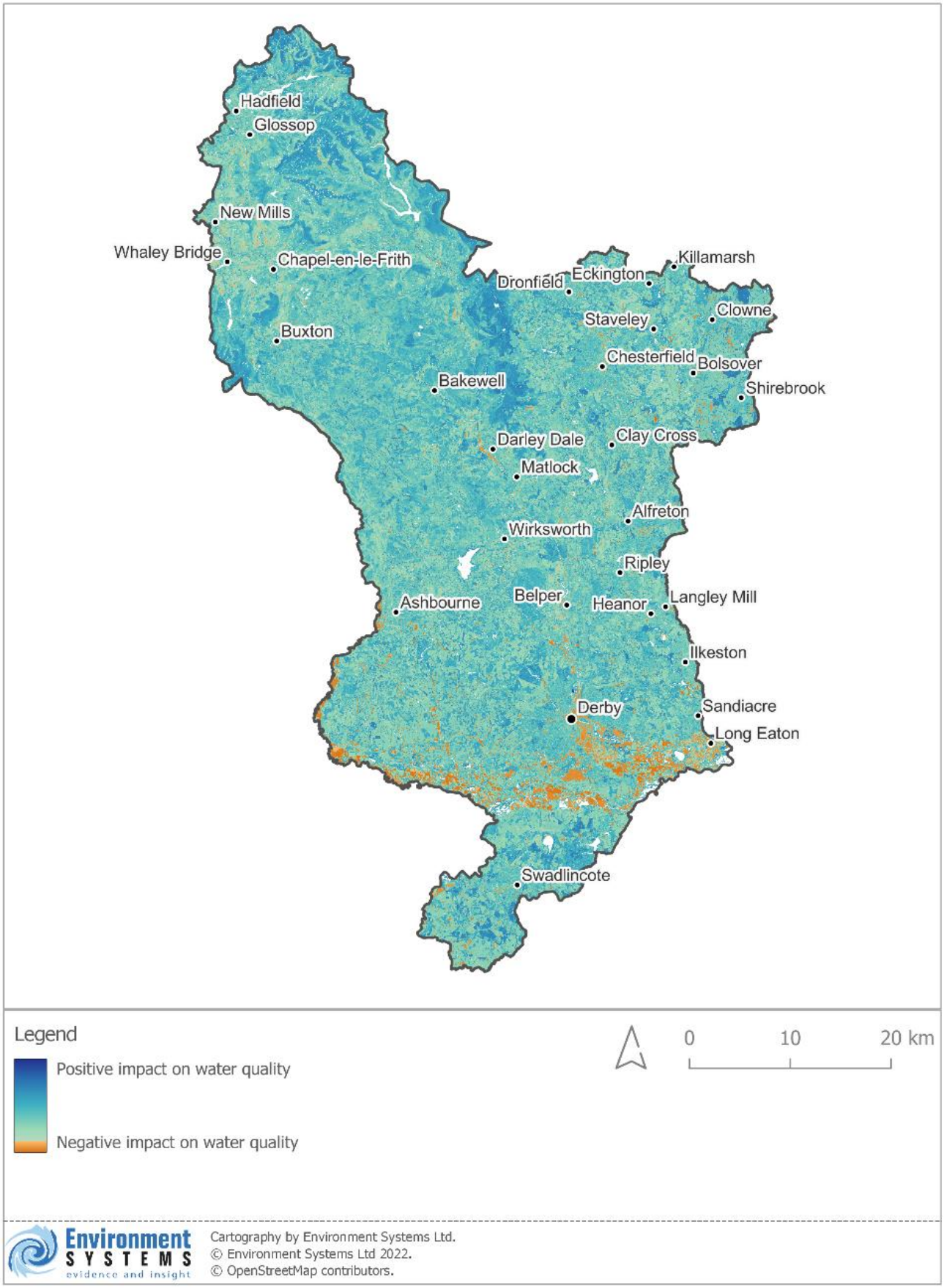

Figure 36: Water quality regulation: current provision (stock)

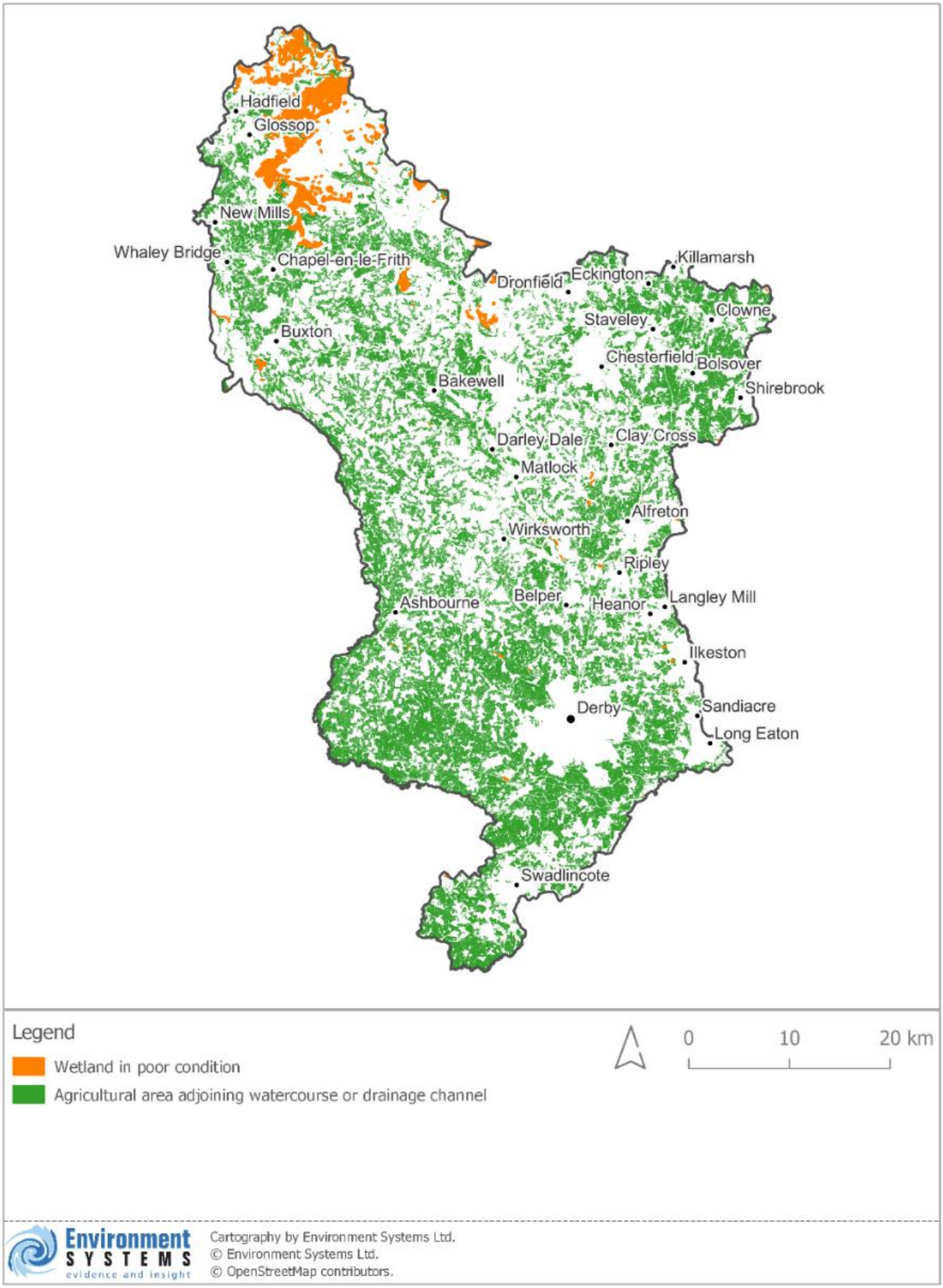

Figure 37: Water quality regulation: risk areas

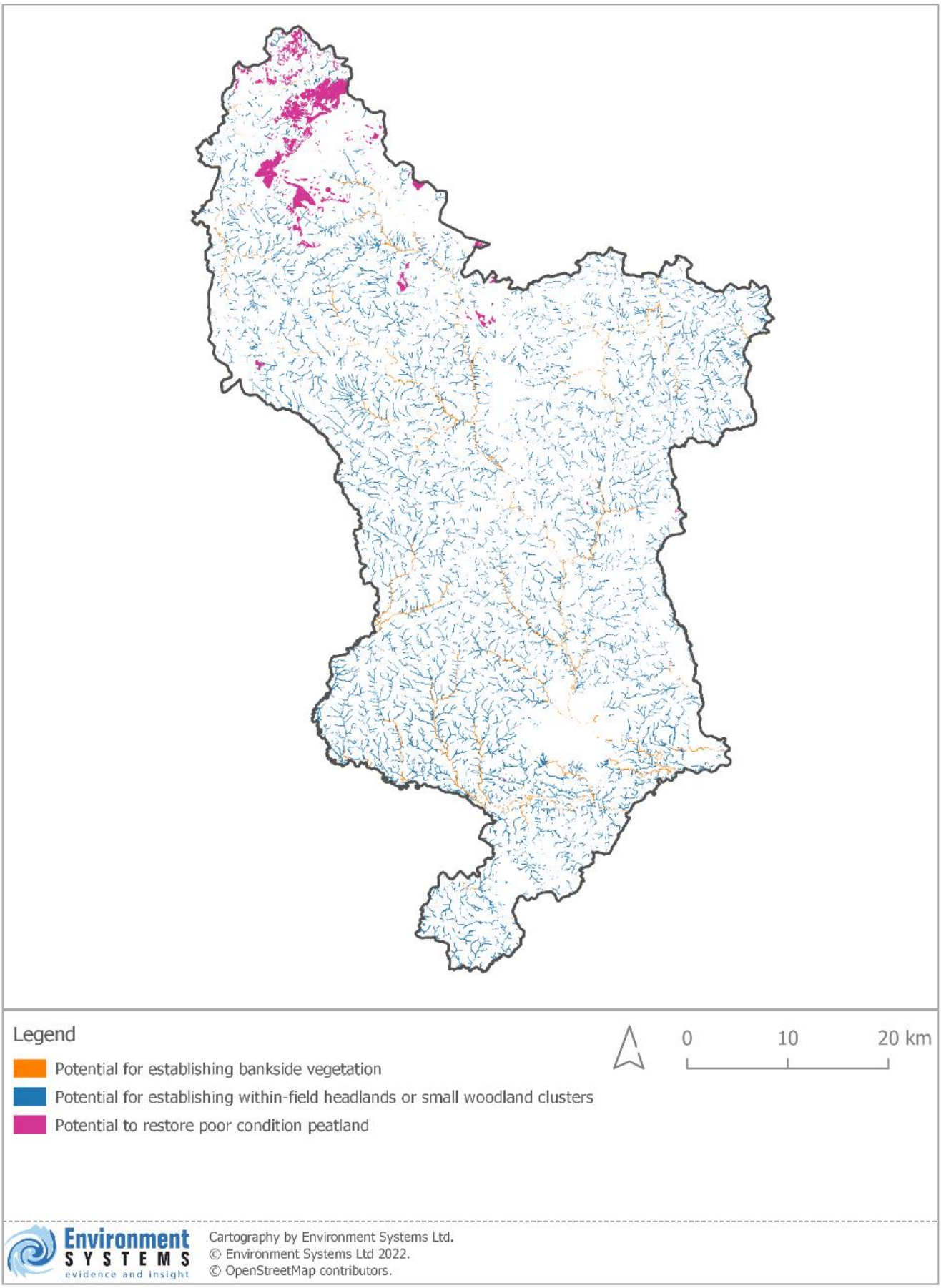

Figure 38: Water quality regulation: areas where nature-based solutions will improve water quality

Carbon storage and sequestration

Areas with the greatest area of carbon storage (stock) are located within the Peak District National Park, the Peak Fringe and Lower Derwent and areas south of the Mease/Sense lowlands (Figure 39) where there is bog on deep peat.

Figure 40 shows the current likely status of natural carbon sequestration, the process by which carbon dioxide is removed from the atmosphere and held in vegetation or the soil. The map also shows areas where there is likely to be a loss of carbon occurring.

There is widespread risk to carbon sequestration throughout Derbyshire due to the extent of degraded peat and agricultural land that is not under regenerative management.

In general, areas with the highest levels of carbon stock also deliver carbon sequestration. Woodlands provide the highest levels of sequestration and intact bog on deep peat the highest carbon storage. There are notable exceptions though; carbon emissions are occurring on degraded peat in the Peak District National Park.

Land of high agricultural quality throughout Derbyshire has also been identified as a potential carbon emission source rather than emission sink (Figure 41). However, land management practices have a significant role to play in maintaining carbon in arable and intensive grassland systems, for example regenerative agriculture and organic farm systems can sequester carbon. As no information is available on management practices, the map should be interpreted as showing the potential for risk of carbon loss.

There is also widespread opportunity to enhance carbon storage and sequestration (known as carbon abatement). The highest benefits to sequestration can be achieved through bog and heath restoration within the Peak District National Park and the conversion of low productivity grasslands to native woodland, particularly in the Peak Fringe and Lower Derwent (Figure 42).

Key points and recommendations for nature-based action:
Carbon storage and sequestration

- **Restore peatlands:** when in poor condition peatlands emit a large amount of greenhouse gases to the atmosphere every year. Restoring peatland and making sure it is sufficiently wet all year round will have the biggest impact on the carbon budget of the county.
- **Establishment of new wetlands:** particularly wet woodlands and fens. This will enhance soil carbon, as well as providing other benefits for water management and biodiversity.
- **Regenerative agriculture** is effective at enhancing soil carbon while retaining agricultural production. Measures taken to increase soil carbon will also increase the resilience of agricultural land to the impacts of climate change.
- **Establishment of deep-rooted leys** across agricultural lands will increase soil structure and stability and crop resilience to drought, as well as increasing the overall carbon storage potential.
- **Mange ancient woodlands:** coppicing / pollarding of individual trees will maintain the ecosystem in a state of carbon sequestration rather than it reaching an equilibrium.
- **Planting new trees** will always enhance carbon sequestration; the planting of native species should be encouraged as native species will better support overall biodiversity.
- **Commercial woodlands:** where a forest operation is sought, trees should be destined for the wood rather than paper market. In order to make a positive impact on carbon sequestration, trees should be in place for at least 40 years prior to harvest.
- **Willow coppice for biofuel** can be a useful carbon market, to enhance the soil carbon while still preserving woodland habitats.
- **Planting shelterbelts, green barns and hedgerows** can all bring carbon sequestration benefits to farms while also benefiting animal welfare.

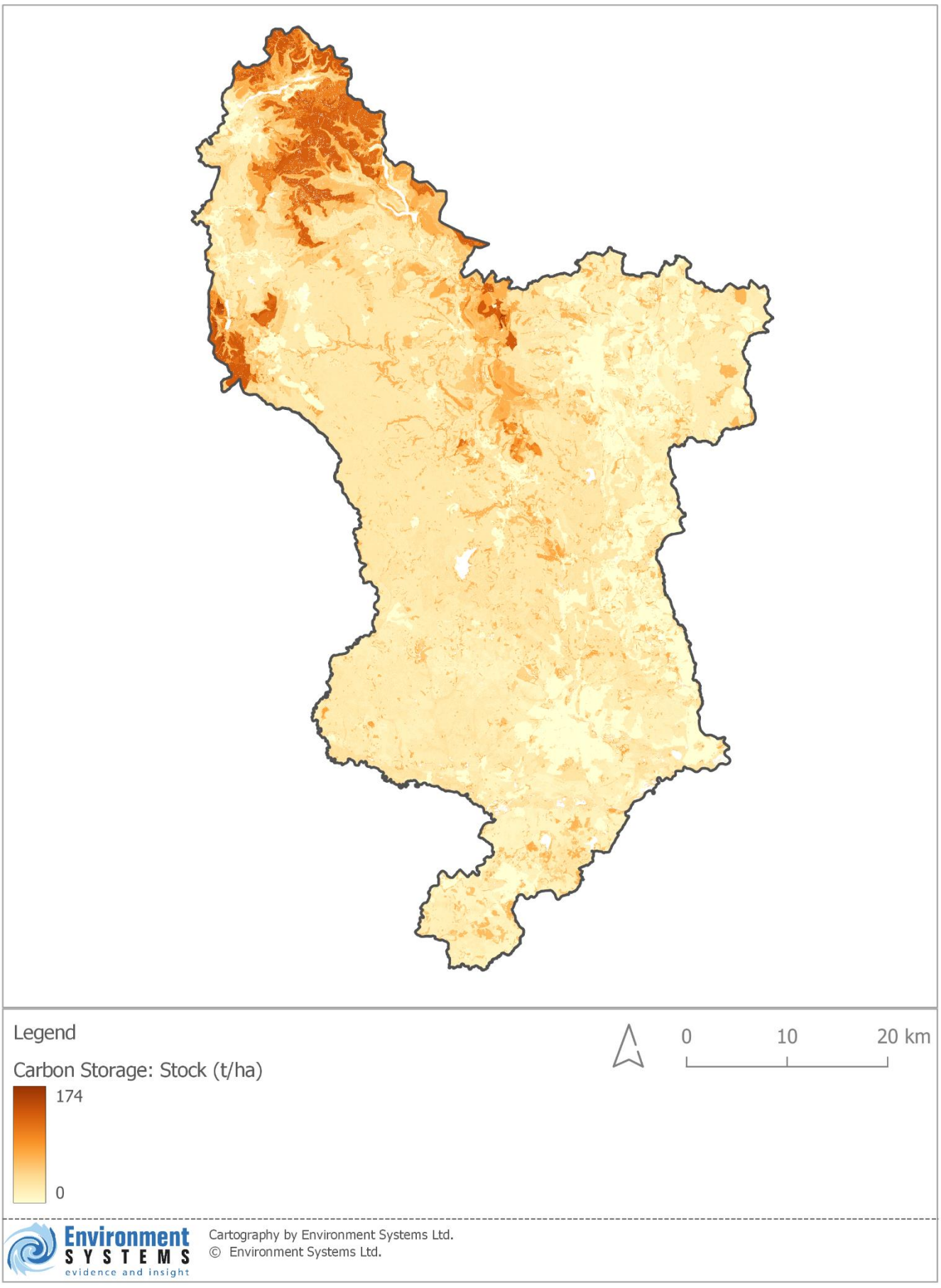

Figure 39: Current carbon storage (stock)

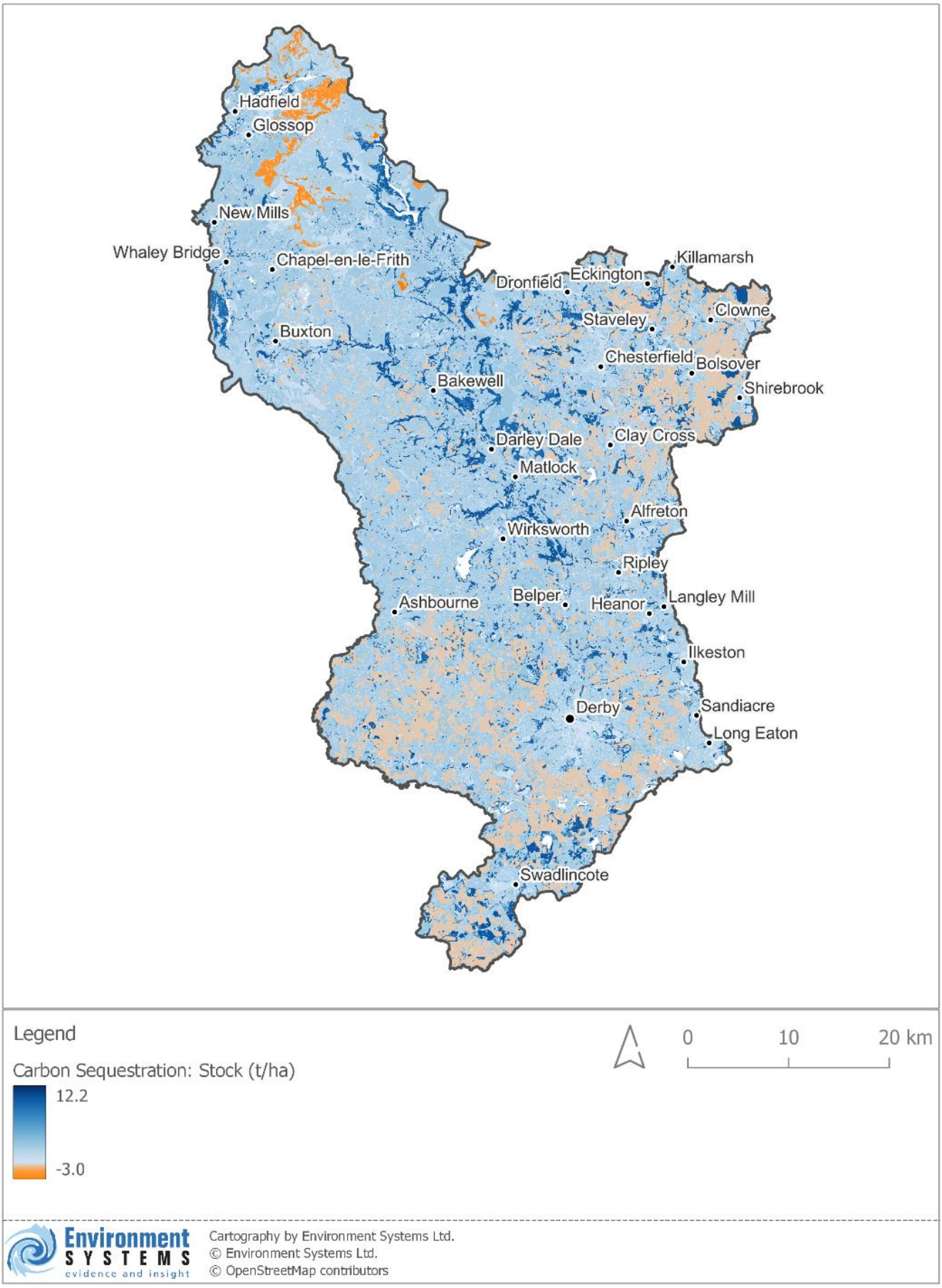

Figure 40: Current carbon sequestration (stock)

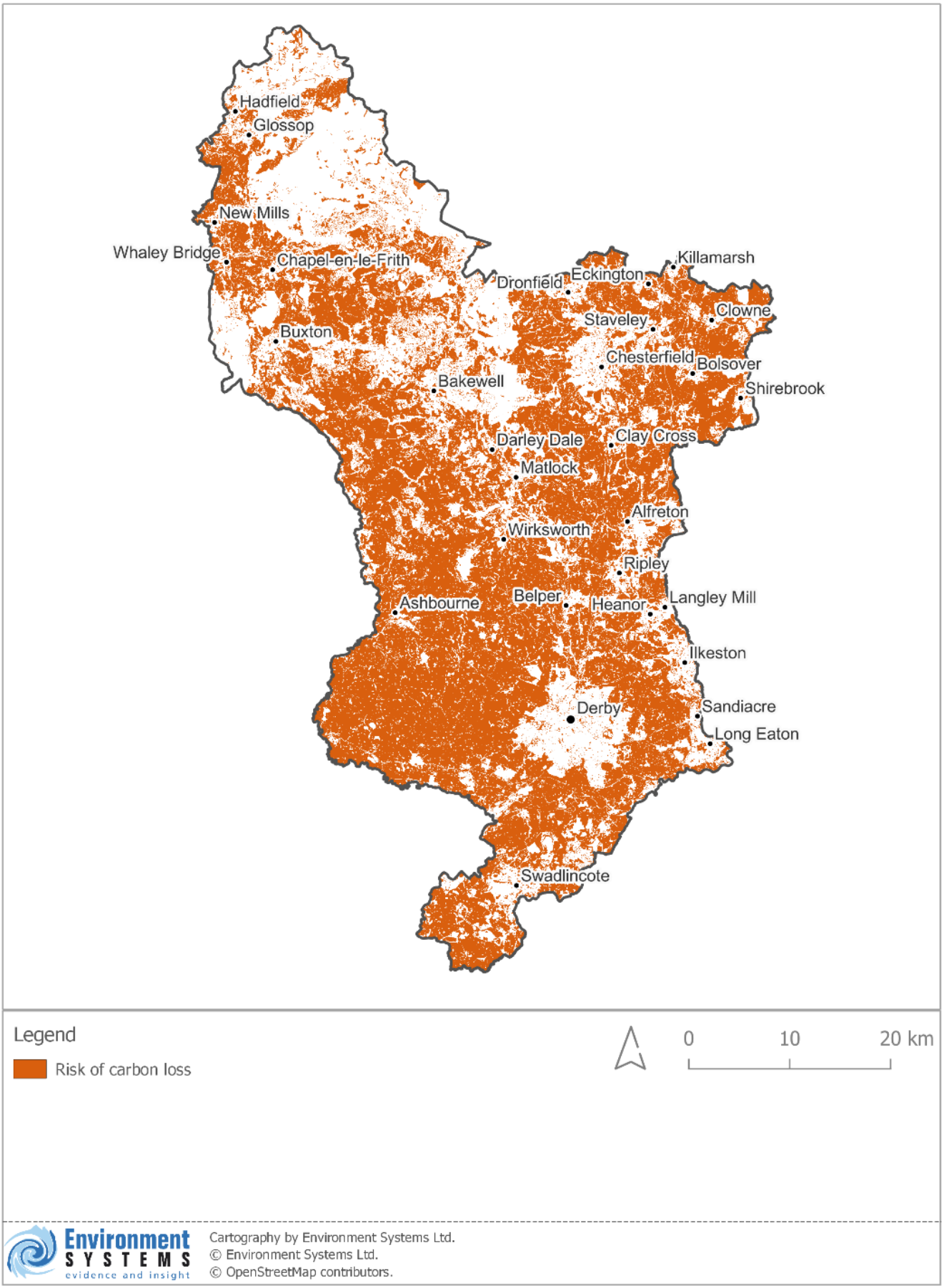

Figure 41: Carbon sequestration risks

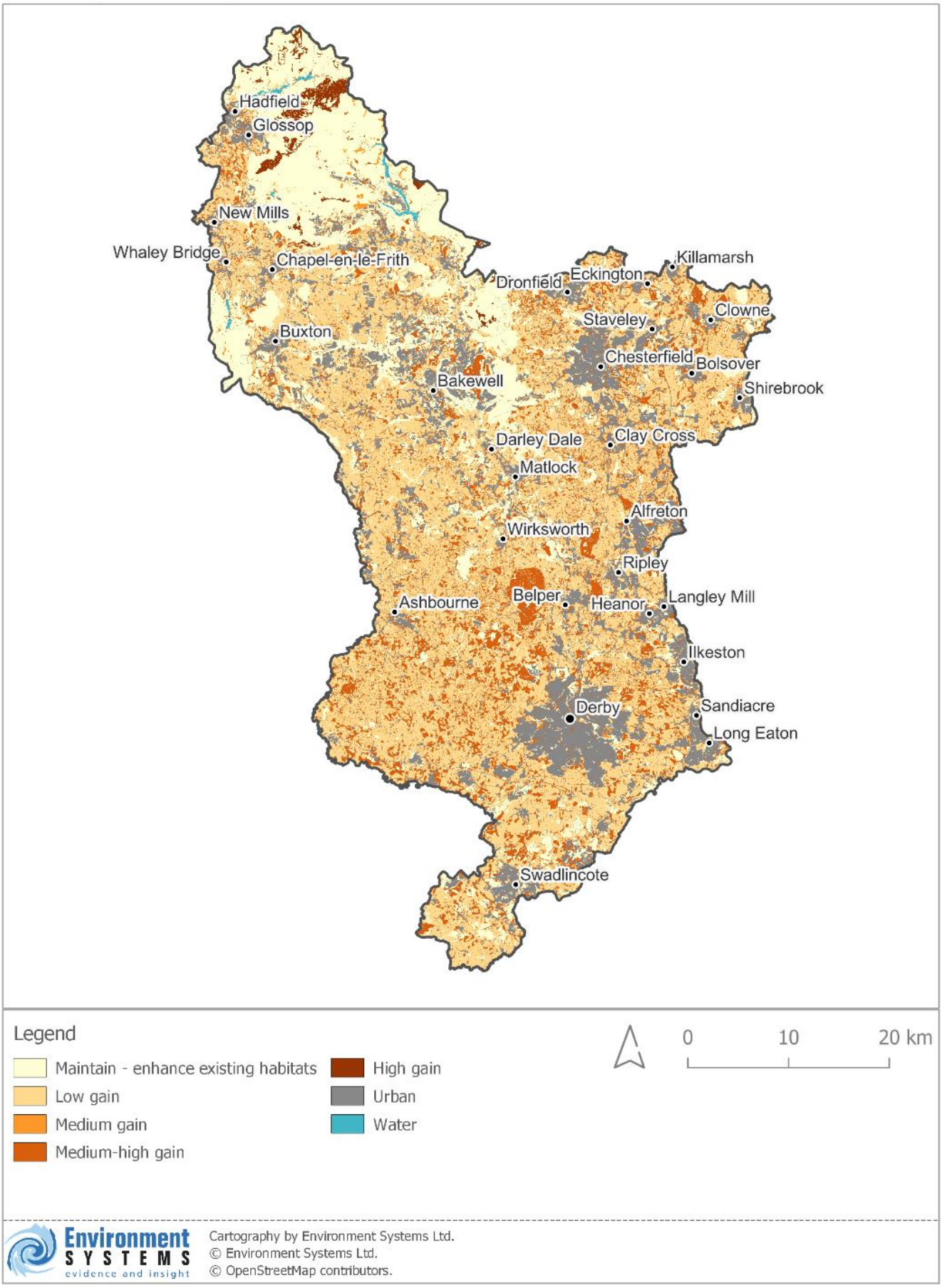

Figure 42: Carbon abatement opportunities: relative gain in carbon storage/sequestration

Recreation

For the purpose of this study recreation was considered as places where local people choose to visit in their spare time, including facilities such as parks, sports pitches and other relatively local greenspaces, as opposed to places that are considered more as a tourism destination, which have been considered as a separate theme in this study. However, there is cross-over between the two, as local people may choose to visit a major tourist honeypot, and tourists may also make use of smaller, more local assets and facilities during the course of their stay.

The input datasets considered in the recreation analysis are shown in Figure 43. These datasets were analysed by ORVal in order to assign the respective visitor numbers and monetary value of each input feature, based on the underlying data from the habitat map. This method for assigning the relative value of the recreational features was chosen in order to maintain parity with the methodology used to produce the baseline Natural Capital Accounts, which also used ORVal for calculating recreational value.

Figure 44 displays the relative value of recreational areas in terms of visitor numbers. The highest visitor numbers are found within the Peak District National Park, where the most extensive recreational spaces are located. In Derby City, Chesterfield, and within the National Forest area there are high visitor numbers in much less extensive recreational areas.

Recreation risk has been mapped by showing residential areas that do not currently have sufficient access to greenspace, based on the ANGSt framework. ANGSt considers how far people have to travel from their homes to access a greenspace area, as well as how large the individual greenspaces are. For the purpose of this study areas of risk have been identified as areas where the current distribution of greenspaces does not meet the ANGSt standard, which states that everyone should have access to all of the following accessible greenspaces meeting the following criteria:

- A 2ha site within 300 m of home (Figure 45)
- A 20 ha site within 2km of home (Figure 46)
- A 100 ha site within 5km of home (Figure 47)
- A 500 ha site within 10km of home (Figure 48)

When using these risk maps, consideration should be given to the fact that recreational assets outside the Derbyshire boundary were not accounted for; the risk areas identified reflect the level of access to accessible greenspace within the county of Derbyshire only, and some areas marked as being at-risk may in fact have access to assets and facilities located outside of the county.

The risk maps identify a disparity in the level of greenspace access between western and eastern Chesterfield. They also reveal large risk areas within Derby City despite the high density of input features considered by the study; this is because although there are a large

number of recreation features included in the modelling, many of these are small and do not meet the ANGSt minimum size standards.

Key points and recommendations for nature-based action: Recreation

- **Chesterfield** is relatively well-served in terms of access to smaller areas of greenspace, although opportunities should be sought to increase access in to greenspace in the east of the town.
- **Derby City** has low levels of accessible greenspace when assessed using ANGSt size criteris; opportunities could be sought to increase the accessibility of existing restricted-access sites (for example private sports clubs), in addition to establishing new accessible greenspace areas via habitat creation schemes, in order to create multi-functional greenspaces that provide recreation, biodiversity, and other ecosystem service benefits.
- **Many rural toens and villages have poor access to greenspace:** in spite of being situated within the countryside, or with the National Park itself. In such areas the surrounding greenspaces may not be accessible due to access restrictions relating to land ownership (e.g. farmland) or infrastructure (e.g. footpath, road and pavement network). Schemes that enhance access to greenspace in these areas should be considered.

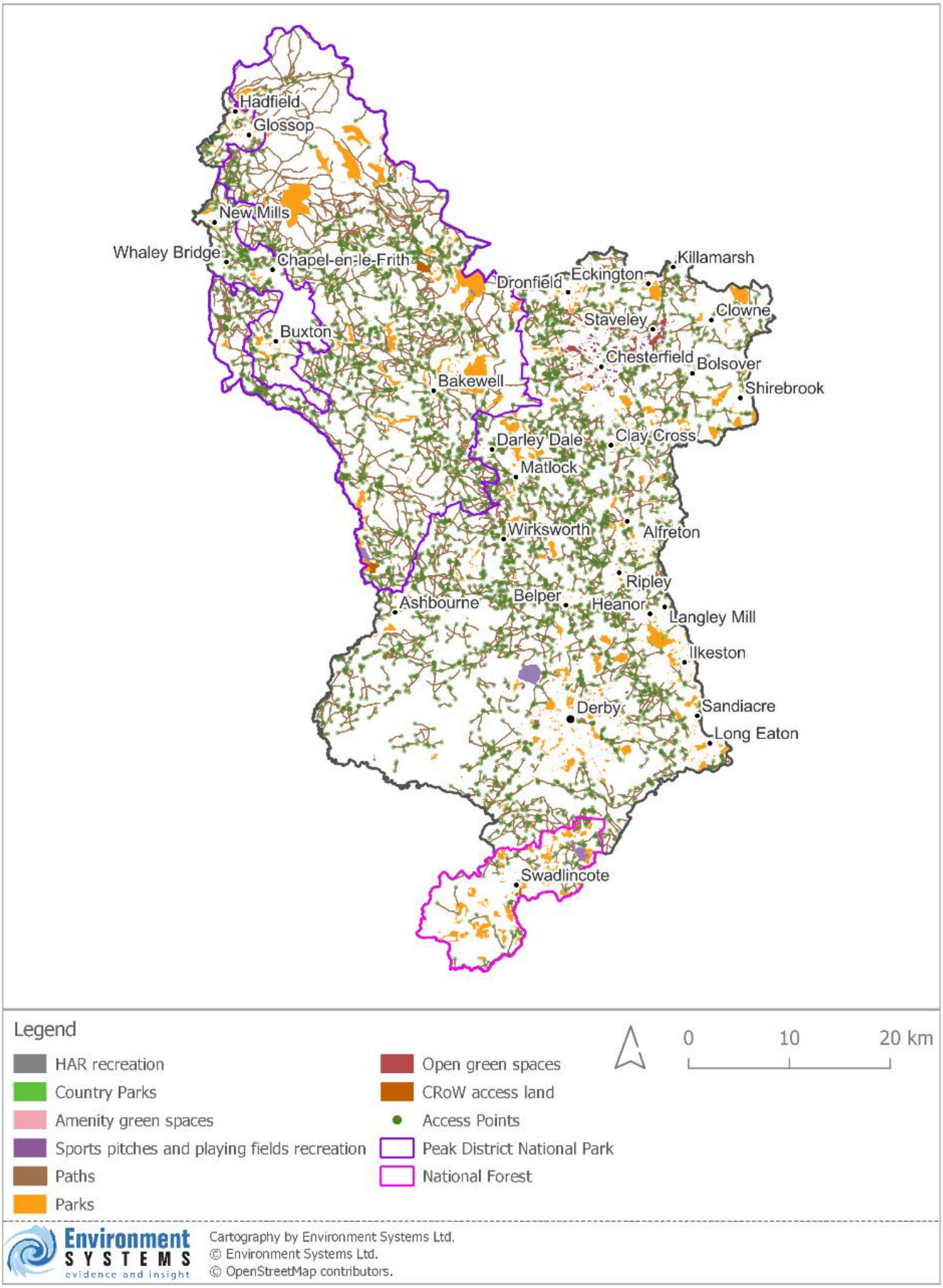

Figure 43: Areas of high importance for recreation: input datasets

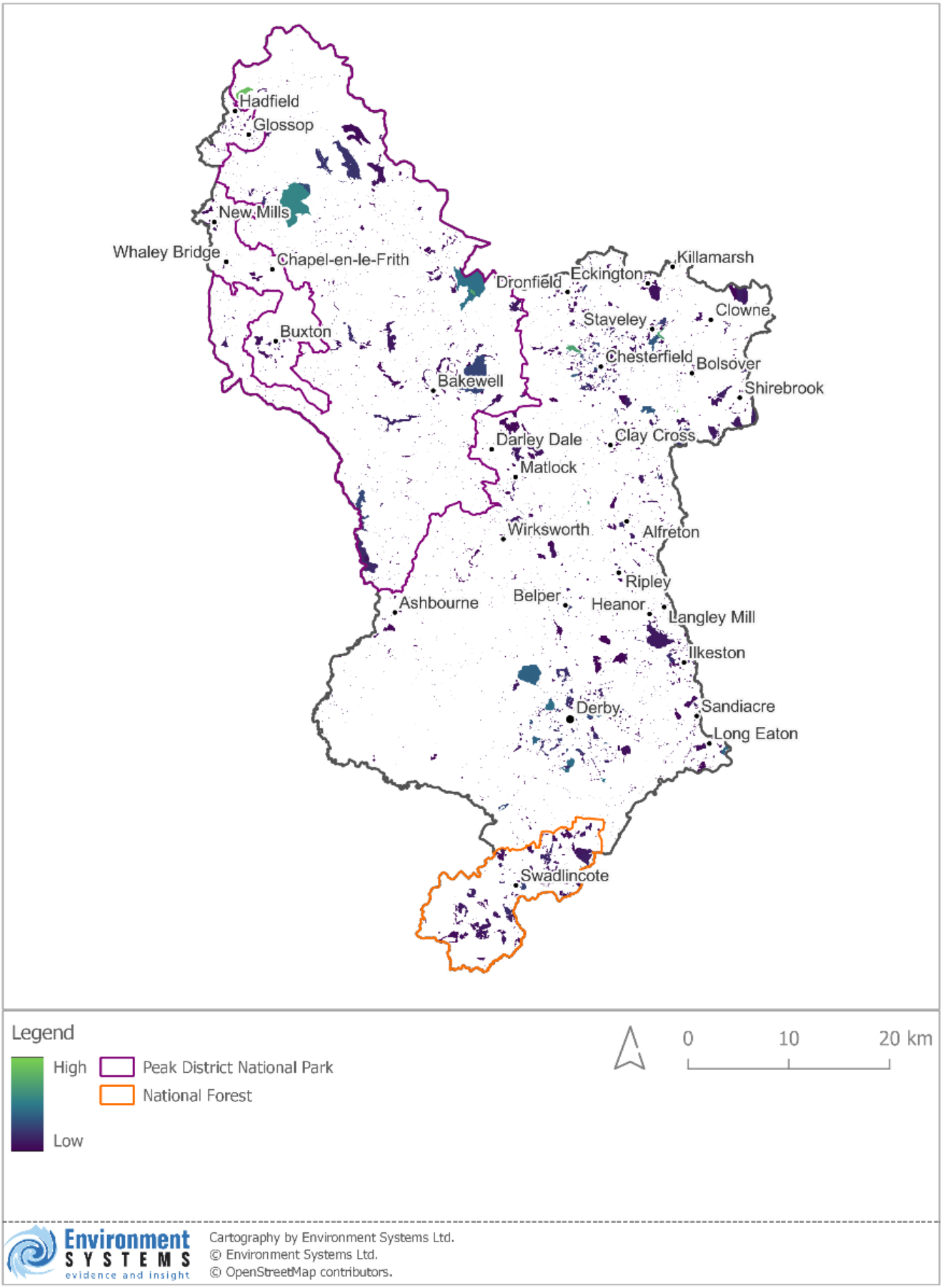

Figure 44: Areas of high importance for recreation in terms of visitor numbers

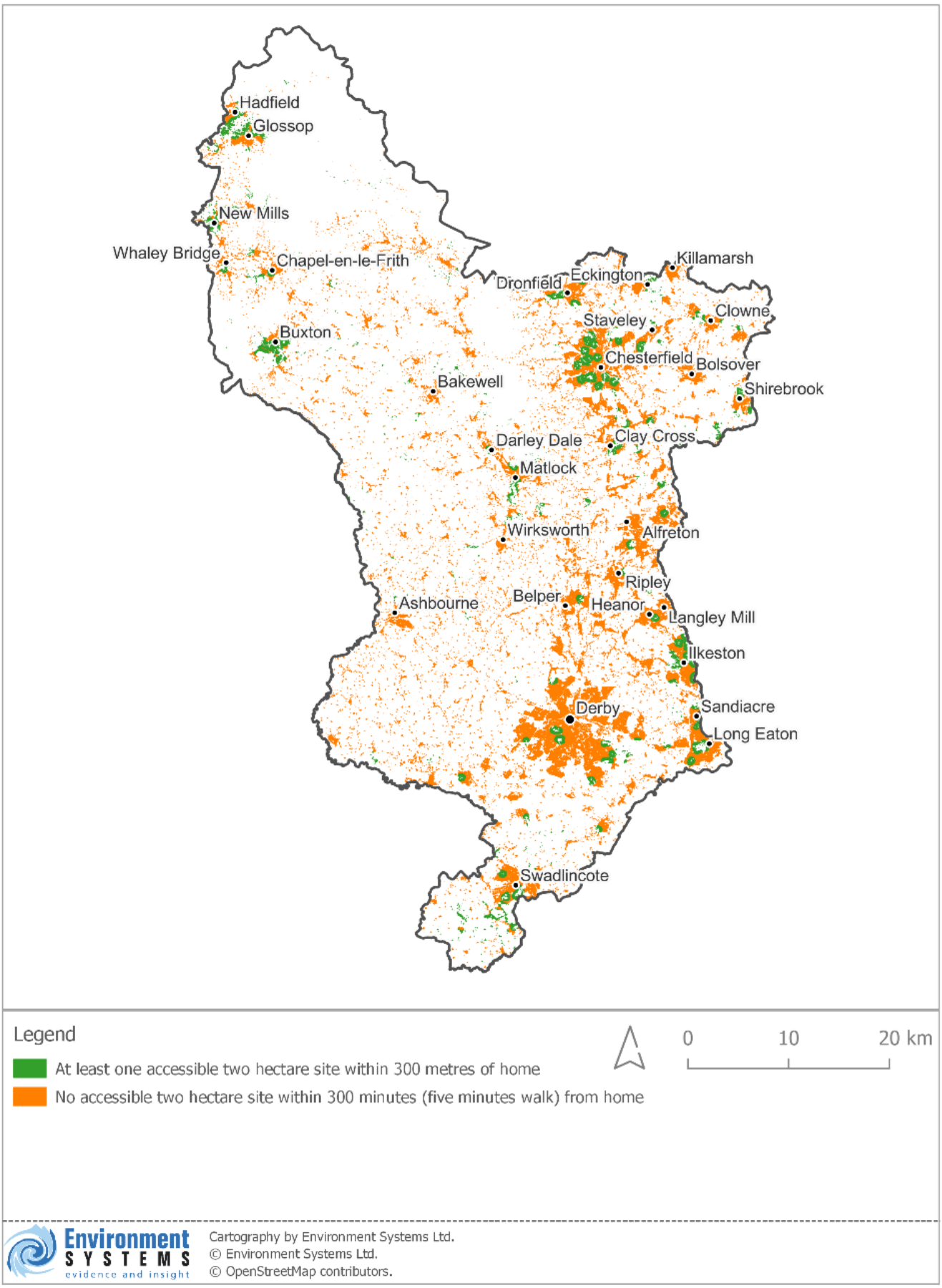

Figure 45: Recreation risks: urban areas with and without access to a 2ha recreational site

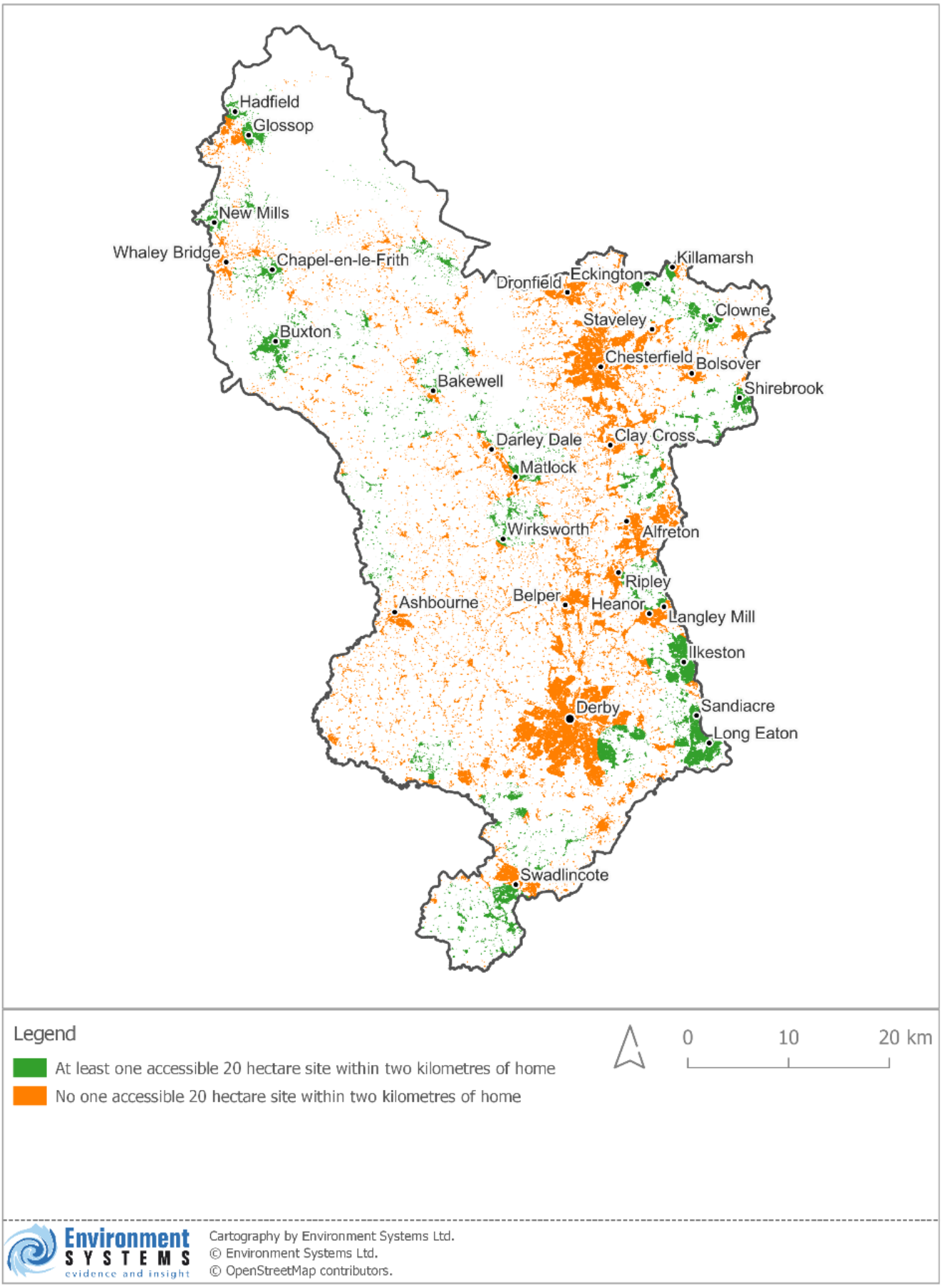

Figure 46: Recreation risks: urban areas with and without access to a 20ha recreational site

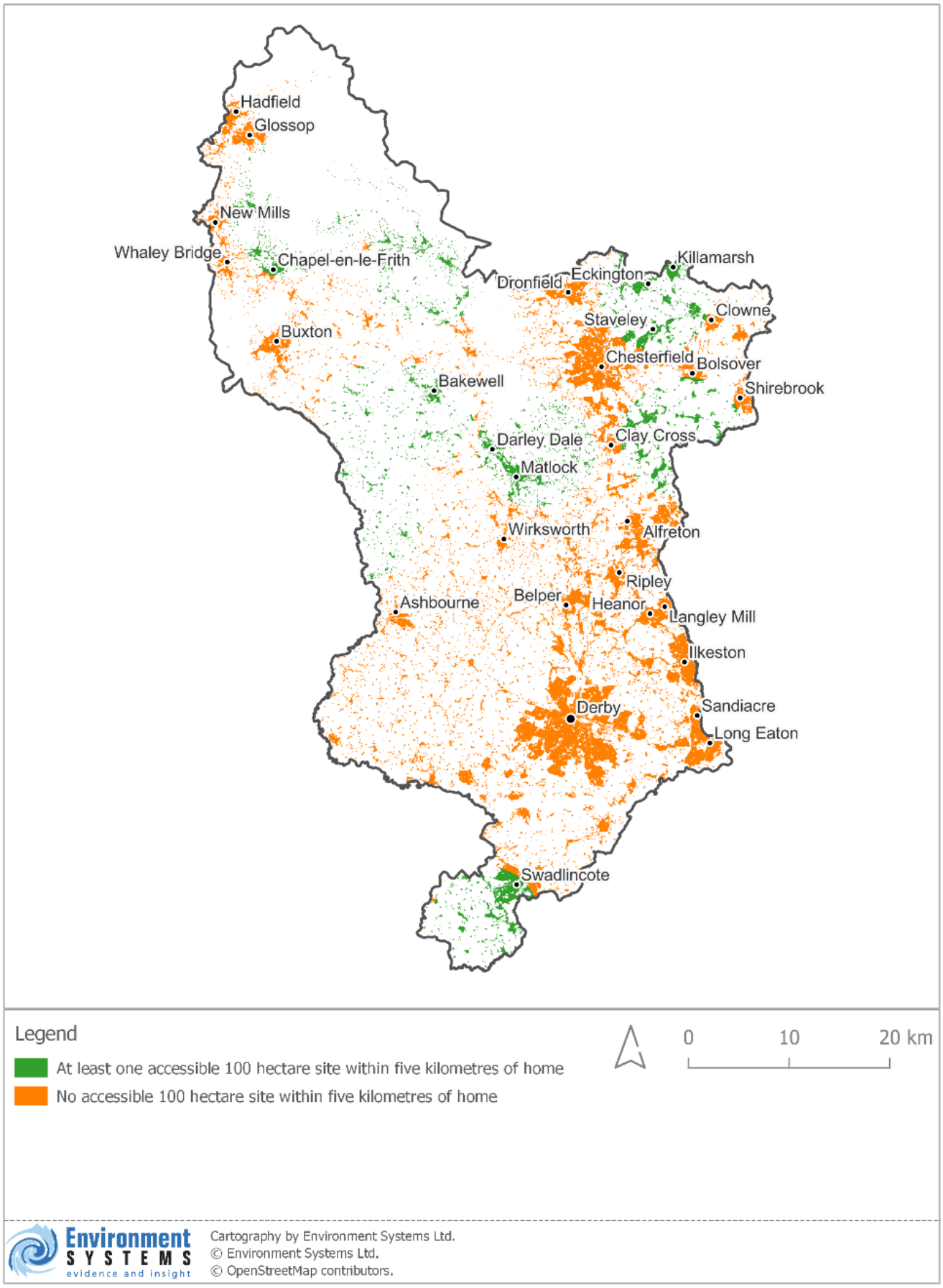

Figure 47: Recreation risks: urban areas with and without access to a 100ha recreational site

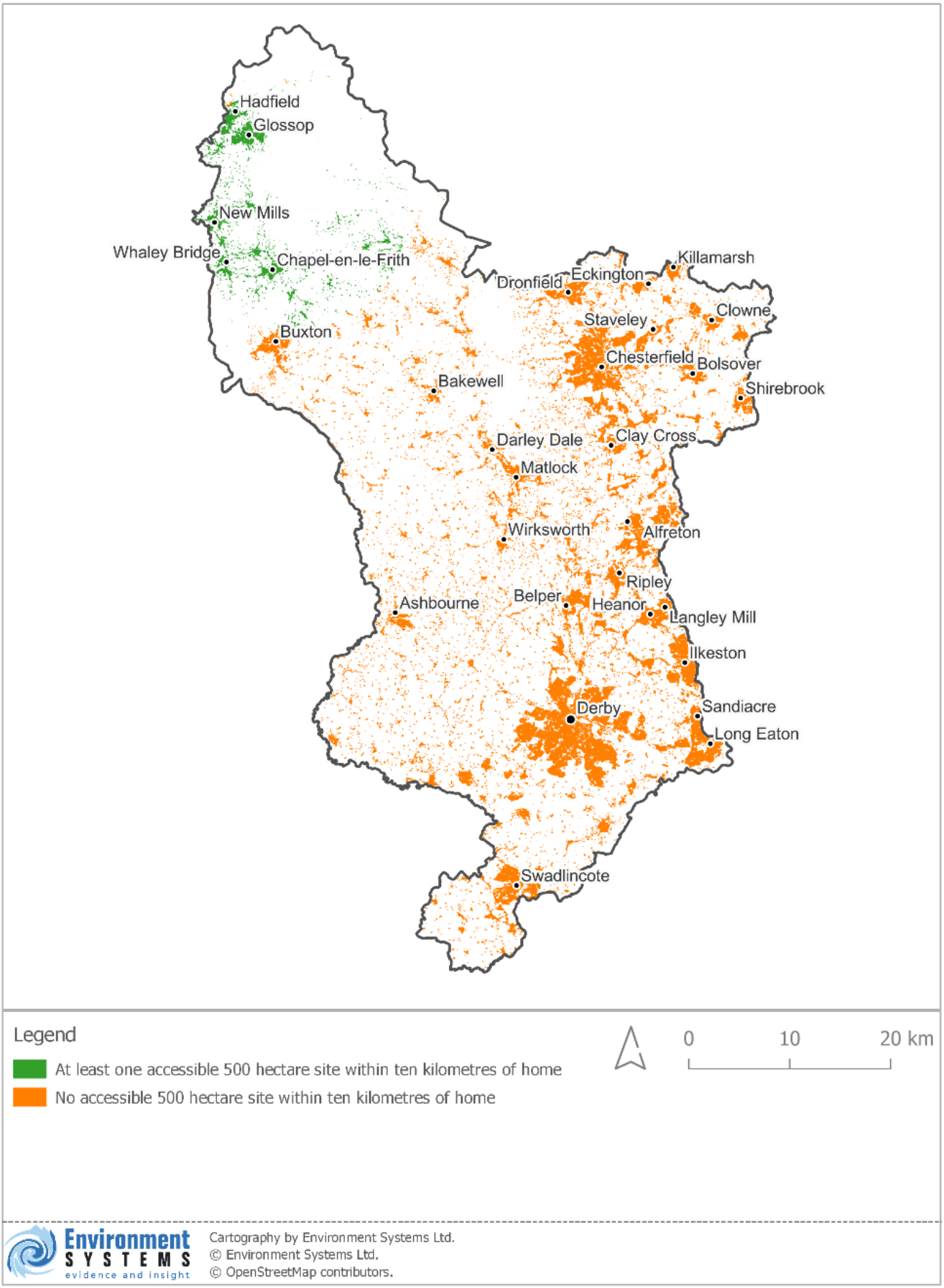

Figure 48: Recreation risks: urban areas with and without access to a 500ha recreational site

Tourism

The input datasets used to identify areas of importance for tourism are shown in Figure 49, and the relative value of individual features is shown in Figure 50. Clusters of sites important for tourism are shown in Figure 51 and it can be seen that a high density of important sites occurs within the Peak District National Park. This map also shows the significance of the National Forest, and Chesterfield, a town which is richly dense in small-footprint tourism assets, such as listed buildings. The Derwent Valley is also identified as a region of high tourism value.

Key points and recommendations for nature-based action: Tourism

- **Peak District National Park,** via its extensive path network, is an important tourist destination but this popularity can create problems for example through peat erosion. Peat restoration, particularly on Kinder Scout, is a high priority in order to protect these vulnerable soils and the carbon they store, and preserve enjoyment of the landscape for generations to come.
- **The National Forest region** is important for providing a high density of tourism destinations in southern Derbyshire, offering potential to alleviate excessive tourism pressure in other parts of the county. Numerous cycling routes and forest trails are located in the region; woodland and heathland restoration could be designed to complement the creation of new paths.
- **The Trent Valley** region currently provides relatively low levels of tourism value, but partnership working under the Transforming the Trent Valley project[15] creates opportunities for tourism to be significantly enhanced in this area.
- **A number of stately homes and historic sites** are important sites for tourism in Derbyshire, including Hardwick Hall, Chatsworth House, Bolsover Castle and Calke Abbey. This presents opportunities to work with large-scale landowners such as National Trust and English Heritage, to co-ordinate action for nature recovery in line with the Natural Capital Strategy, on a landscape scale; the existing landscape partnership between the National Trust, RSPB, The Wildlife Trusts and Woodland Trust is one such example.
- **Reservoirs** such as Carsington Water and Ladybower are important locations for watersport tourism and trail walking; actions to protect and enhance water quality would benefit these areas. Working with landowners such as Severn Trent Water, new habitat resoration schemes could be realised in the surrounding areas that extend the existing options for public access, while also benefitting nature recovery and other ecosystem services.
- **The Derwent Valley** is a significant area for tourism, and the riverine and native woodland habitats are an important part of this, which should be protected and enhanced. Upstream actions to mitigate flood risk would benefit this area.

[15] Transforming the Trent Valley: https://www.thetrentvalley.org.uk/

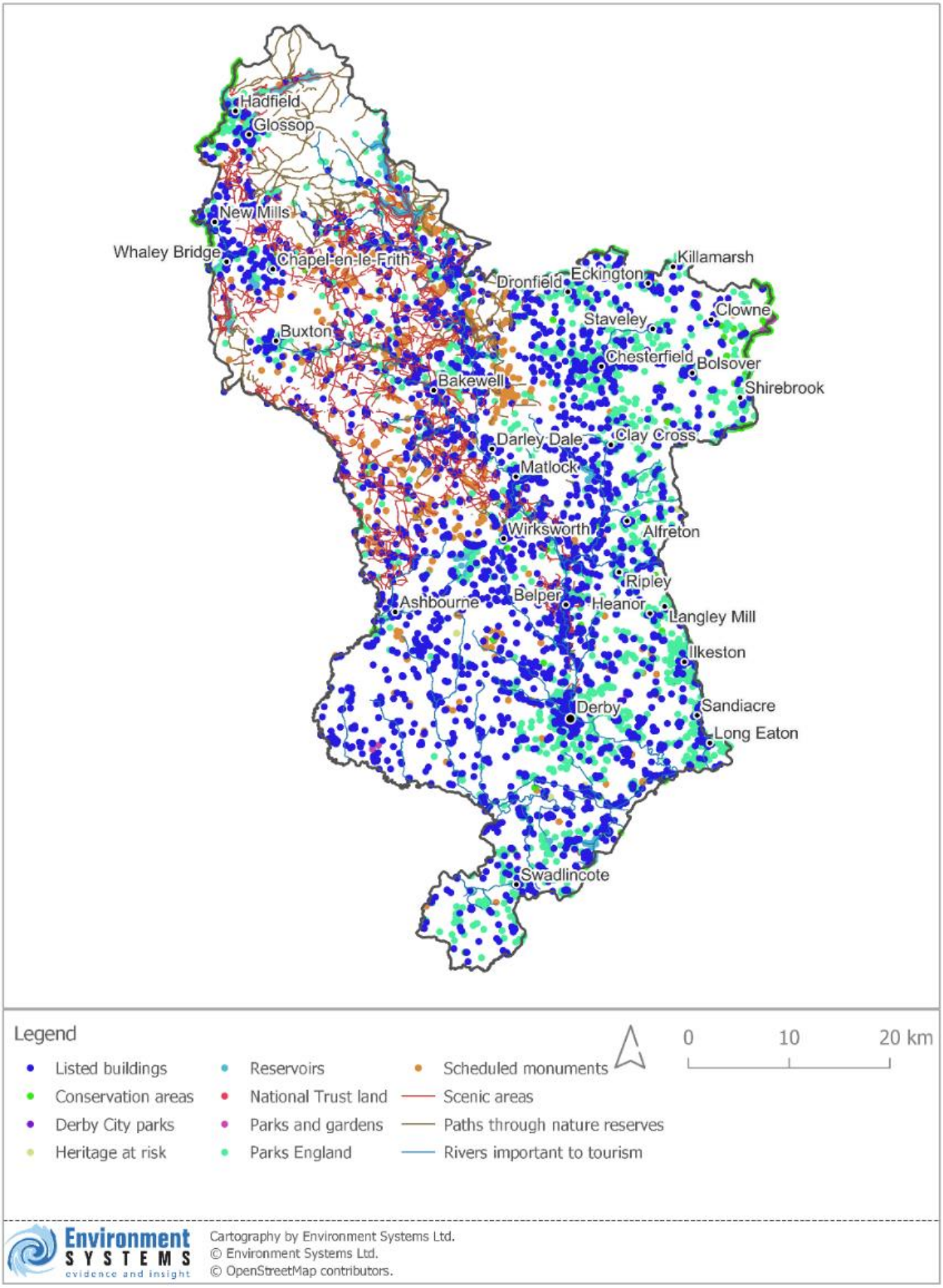

Figure 49: Areas of high importance for tourism: input datasets

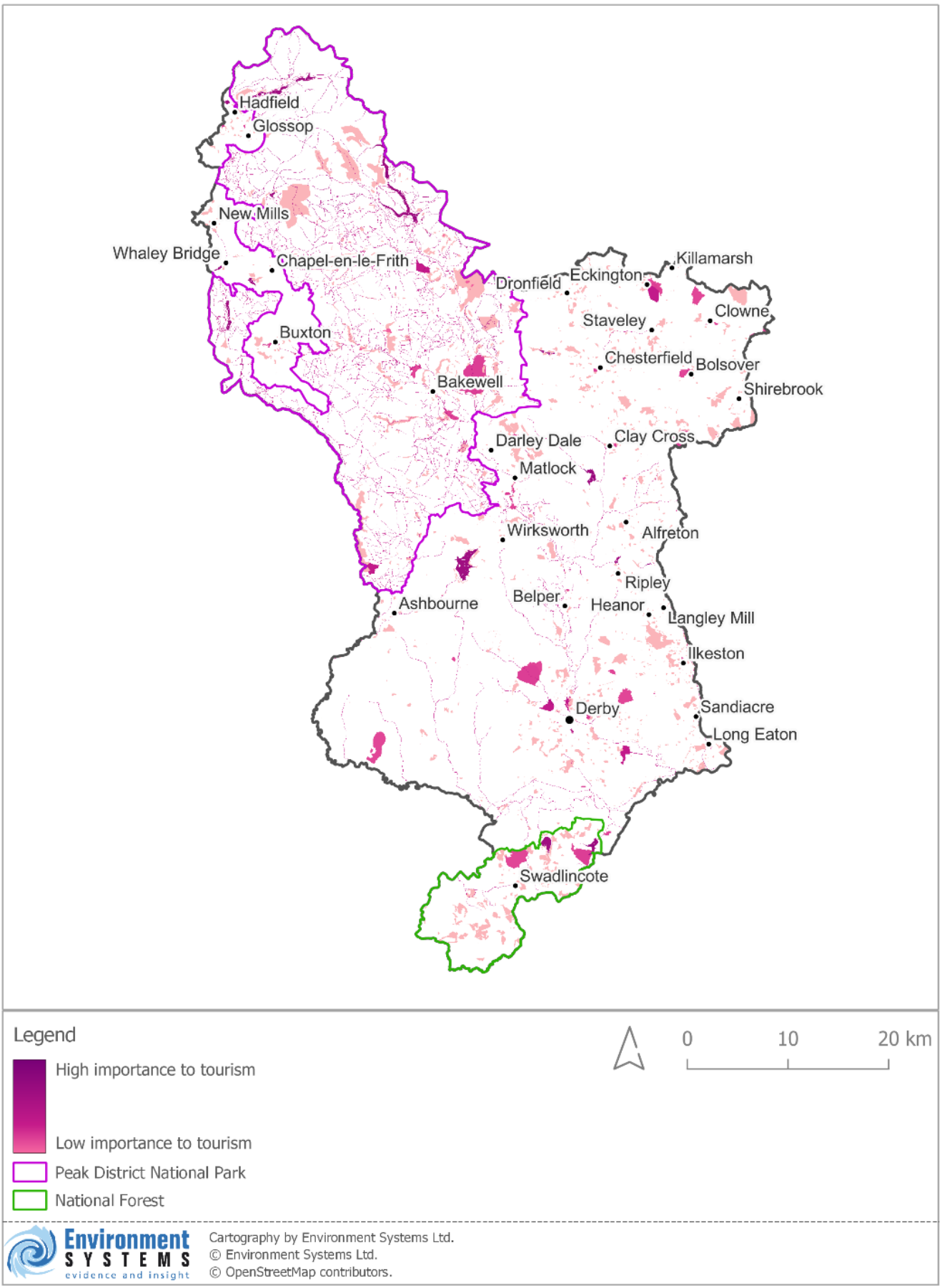

Figure 50: Areas of high importance to tourism: current stock

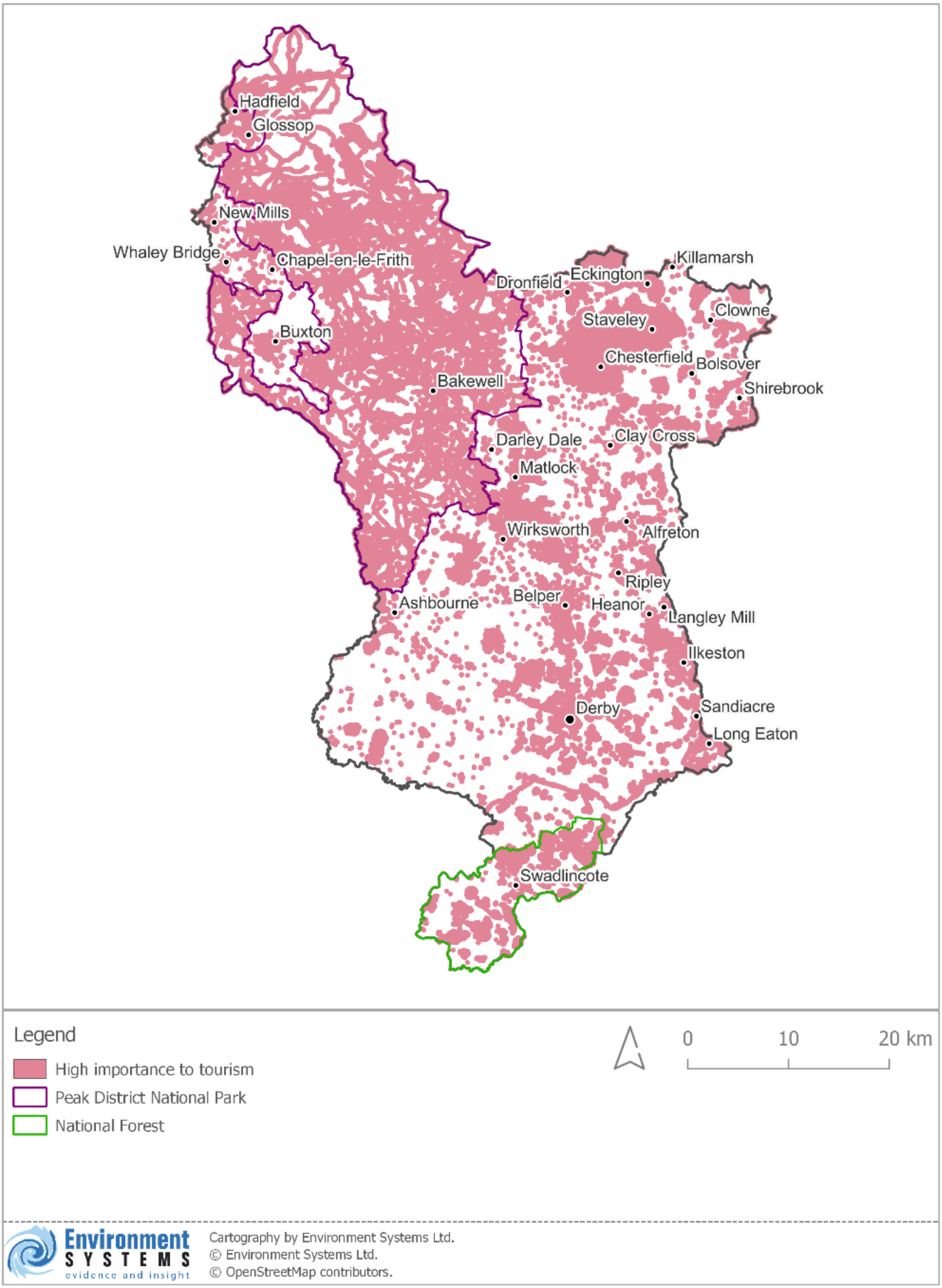

Figure 51: Clustered tourism sites; groupings of sites of high importance for tourism

Contribution of agriculture to landscape character

Agriculture is an important component of Derbyshire's landscape character; centuries of agricultural enclosure and land management practices have crafted the distinctive landscapes people value today. Figure 52 displays the relative contribution of the agricultural areas of Derbyshire, in terms of the current level of visual intactness of the area, and the presence of important cultural and historic assets on agricultural land.

An emerging risk to the existing agricultural aspect of landscape character is the drive for woodland planting for climate change mitigation. Figure 53 identifies areas where the visual intactness of the agricultural landscape may be particularly at risk, due to the presence of woodland opportunities within the ecological network; the highest risk to landscape character from woodland establishment is concentrated within the White Peak and the border separating the Peak District National Park and the Peak Fringe and Lower Derwent. This does not necessarily mean that woodland planting could not be considered in these places, but that sensitivity should be given to the size and location of any planting, and how the landscape character can be maintained. In some places the agricultural component of landscape character may be judged to be more significant than others, but the cumulative impact of woodland planting should be considered, in addition to the impact of individual planting sites.

Another risk to the agricultural aspect of landscape character could come from renewable energy generation; Figure 54 identifies places where the landscape character could be significantly degraded by solar and wind developments. The highest risk to landscape character from the development of renewable energy is concentrated within the areas of Southern Magnesian Limestone, Peak Fringe and Lower Derwent and the Needwood and South Derbyshire Claylands, Melbourne Parklands and the Mease/Sense Lowlands.

Key points and recommendations for nature-based action: Contribution of agriculture to landscape character

- **Changes in agricultural practices,** driven by market forces, are changing the landscape character of agricultural areas. Agricultural areas are a particularly important component of the landscape in parts of Derbyshire Peak Fringe and Coalfield Estatelands, and parts of South West Peak. The baseline landscape character assessment and associated habitat priorities analysis (Chapter 5) and cultural historic assessment (Chapter 6) provide insights into the areas where agriculture is a key component of the landscape.

- **Extensive woodland planting** could significantly alter the contribution of agriculture to landscape character, particularly where the chosen tree species do not reflect the local native species mix. Derbyshire County Council's woodland planting strategy identifies the relative scale and type of woodlands suitable for each landscape character area; when considering new planting schemes, the cumulative impacts of existing and proposed plantations on landscape character should be considered.

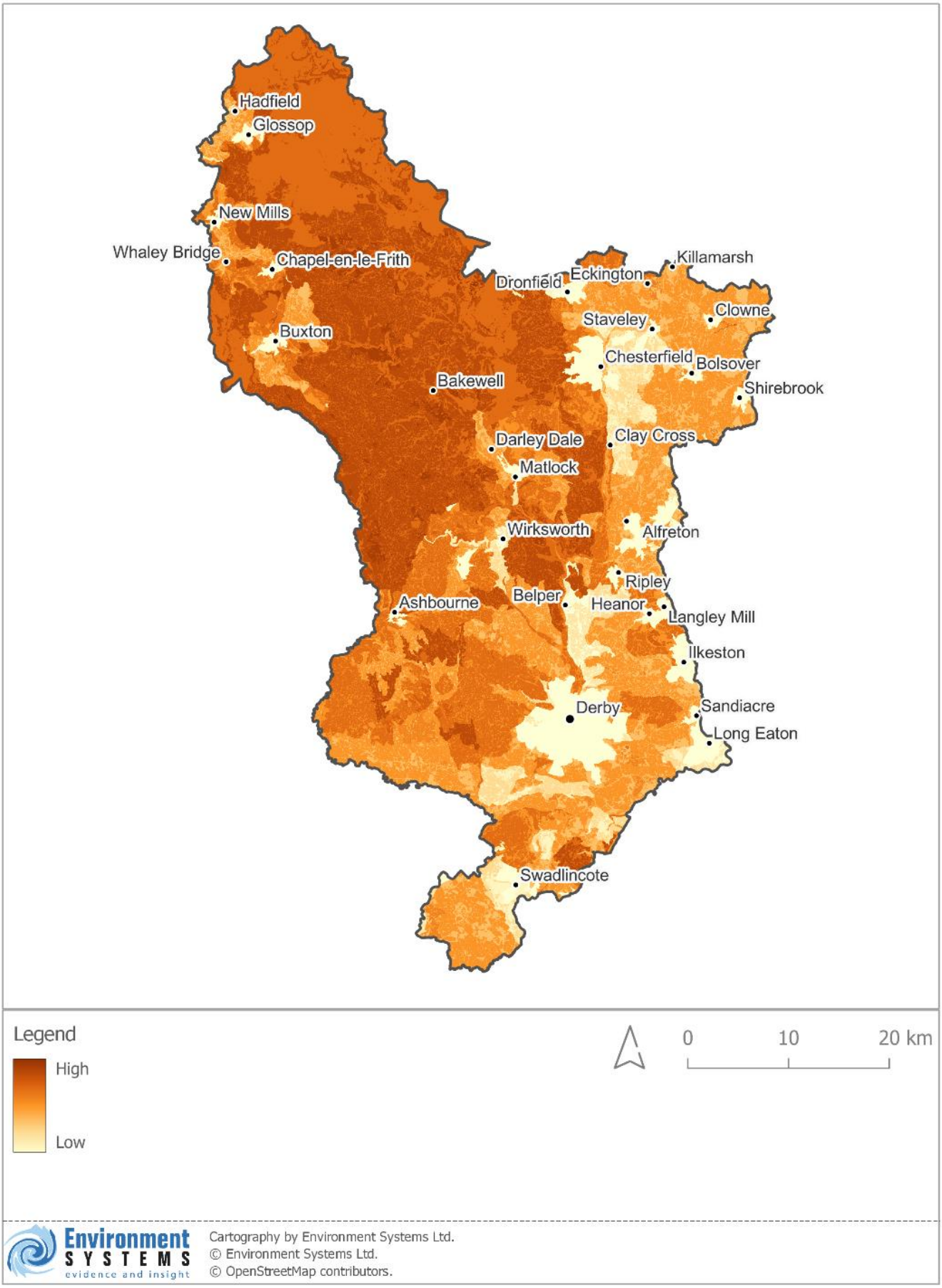

Figure 52: Relative contribution of agriculture to landscape character

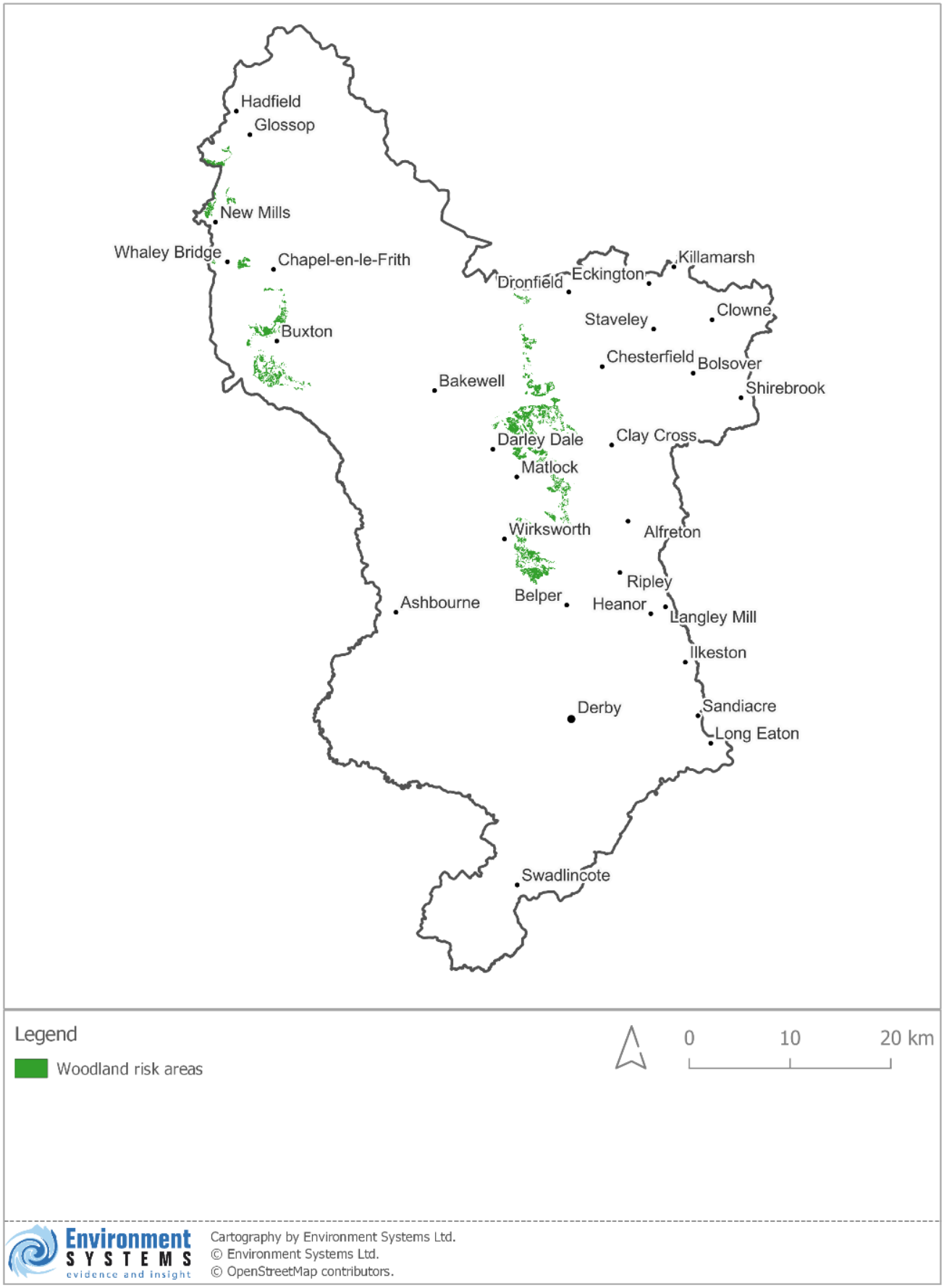

Figure 53: Potential risks to landscape character from woodland planting within the ecological network

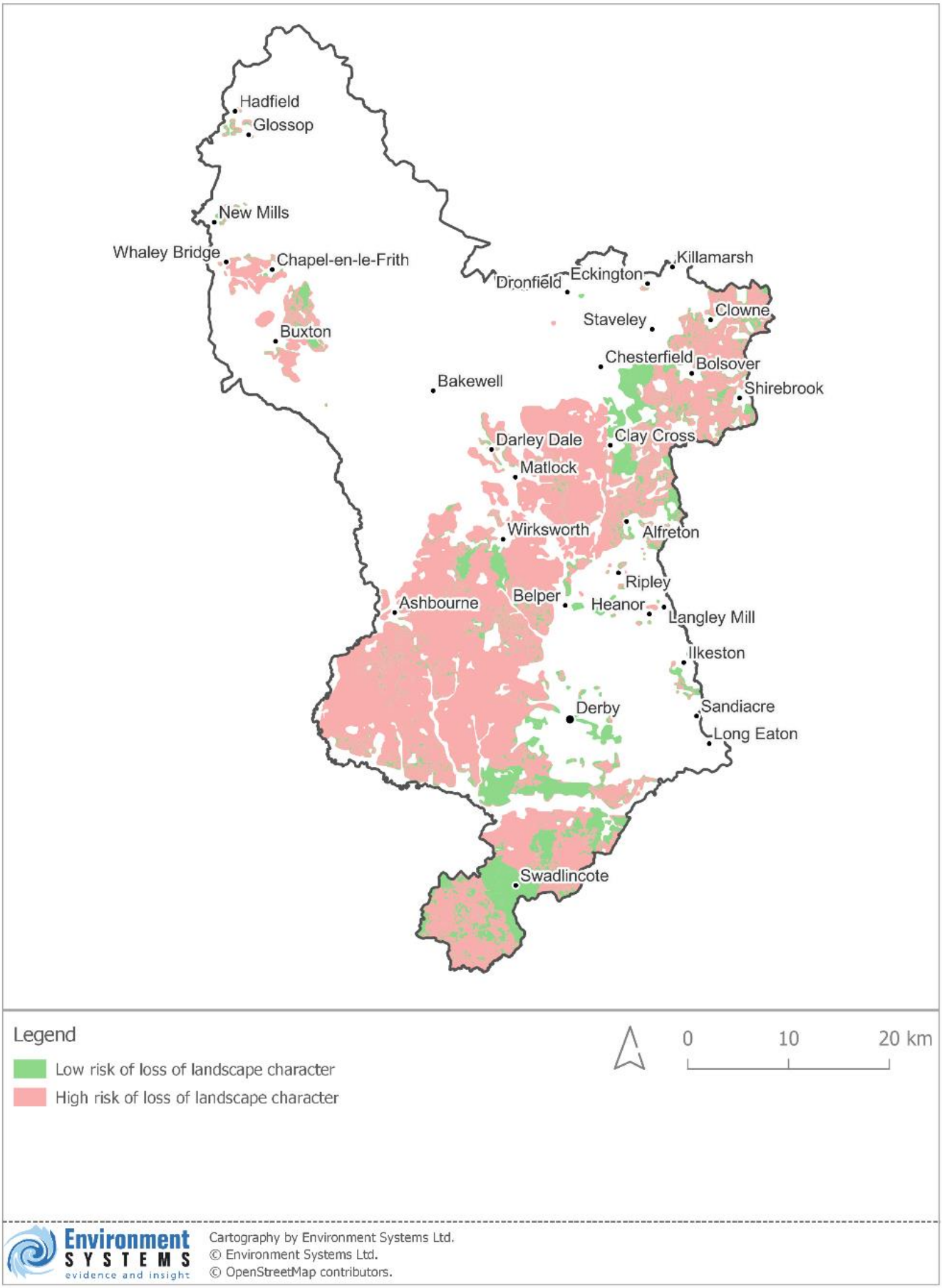

Figure 54: Potential risks to landscape character from solar and wind renewable energy projects Provision of multiple ecosystem service benefits for effective targeting of land management action

In a world of conflicting land use pressures, limited financial resources, and limited time in which to achieve our goals, effective means of targeting land management action are needed in order to maximise the level of benefits realised from nature-based solutions. When considering sites for habitat restoration the full range of priority ecosystem service themes should be considered to address related questions such as:

- Where are the most effective sites for enhancing biodiversity?
- Do any of these align with areas identified as a priority for Natural Flood Management or water quality regulation?
- Do the proposed actions secure or enhance existing carbon stocks?
- Are there opportunities for creating habitats that can address the needs of residents that currently have poor access to greenspace?

Examples of places where there are opportunities to deliver multiple ecosystem service opportunities including for biodiversity and to improve water quality regulation are shown in Figure 55 and for Natural Flood Management in Figure 56. In both cases, the multi-benefits can be met by a land management actions that are appropriate to the particular habitat type. For example, an opportunity for both biodiversity and water quality regulation would be the creation of riparian (grassland / woodland) buffer strips alongside rivers.

These maps identify that there are extensive areas where water quality regulation opportunities can be realised in the Peak District National Park and in west Derbyshire through enhancing the grassland and heathland ecological networks by restoring heath and species-rich grassland. In eastern and southern Derbyshire, water quality benefits can be achieved by targeted woodland planting initiatives (making consideration to landscape character sensitivities) which also strengthen the existing woodland network and development of the National Forest.

In terms of delivering Natural Flood Management (NFM) opportunities, there is a lot of scope for enhancing the grassland ecological network in the upland and mid-reach areas of river catchments. There are significant opportunities for enhancing the wetland network in the lowland valley areas to benefit NFM. It is notable that there were few opportunities for woodland creation that would meet the dual benefits of enhancing NFM and improving the woodland network connectivity; this is a reflection of the current distribution of the woodland network, and the extent of land clearance for agriculture. It highlights the fact that most of the areas with high hydrological connectivity in Derbyshire are currently unwooded.

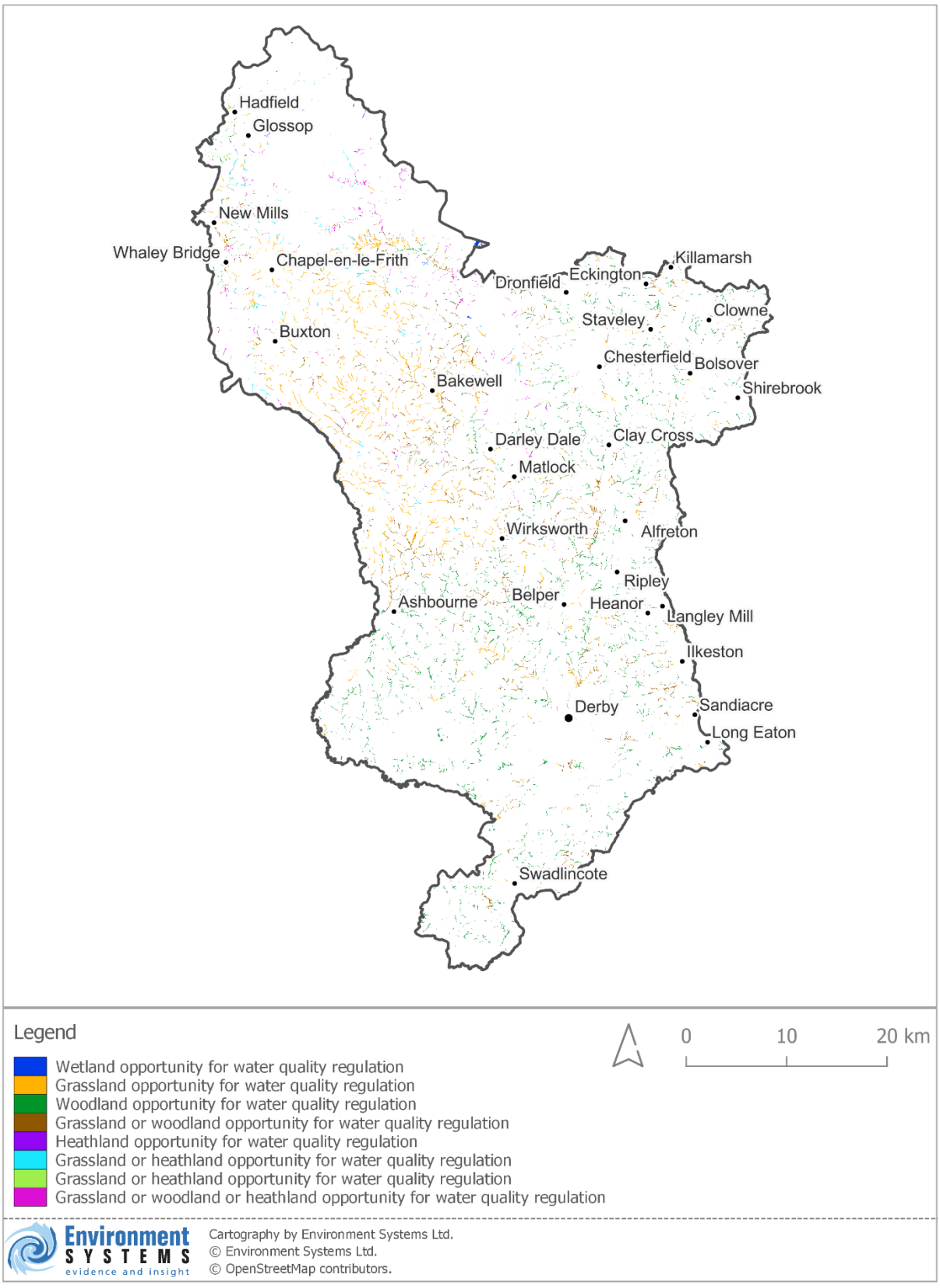

Figure 55: Biodiversity and water quality regulation multi-benefits

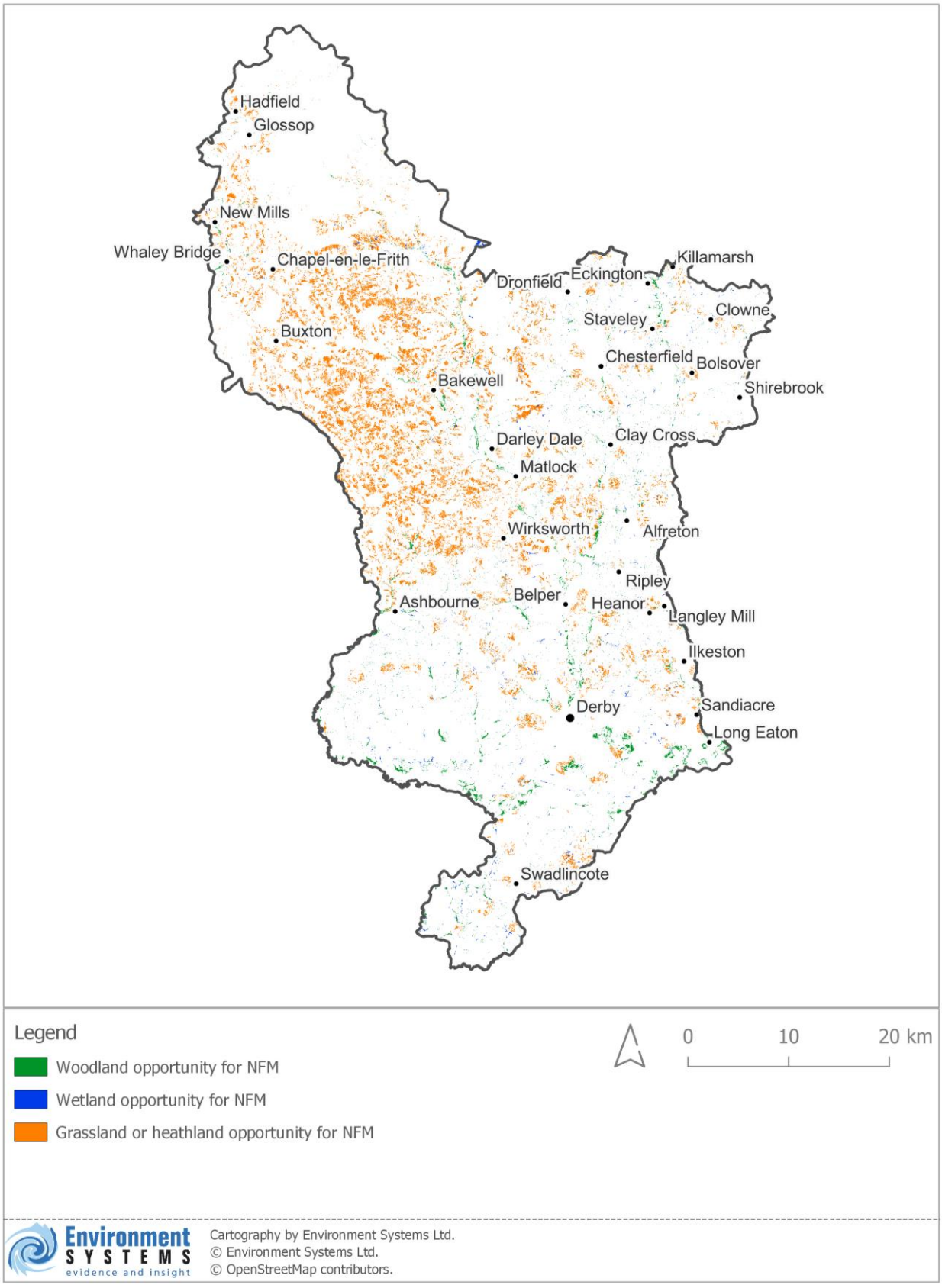

Figure 56: Biodiversity and Natural Flood Management multi-benefits

Chapter 4: The Natural Capital Accounts

Natural Capital Accounting

Natural Capital is "the stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people"[16].

A natural capital approach can be defined as distinguishing between the natural capital stocks and the flows of benefits they provide; projecting benefits into the future and linking them to the extent and condition of assets. The intention is to ensure that decisions prioritise maintaining the assets to sustain a range of benefits, and not to maximise one of the benefits at the expense of others or the natural capital asset itself.

This approach is reflected in the structure of natural capital accounts, shown in Figure 57. The accounts link together different types of physical and monetary assets and flow data. This study has developed natural capital accounts to understand the extent, condition and benefits of Natural Capital in Derbyshire. The results for Derbyshire as a whole are reported in this chapter, and sub-accounts for local government boundaries, landscape character areas and the Peak District National Park of Derbyshire are reported in Appendix 6.

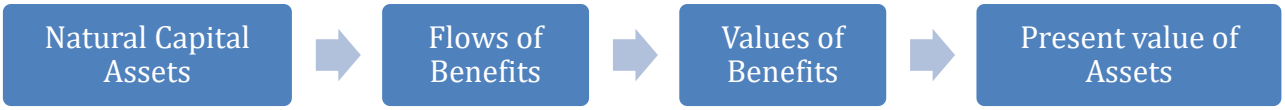

Figure 57: The structure of natural capital accounts

Accounting differs from one-off assessments by generating systematic and consistent evidence, enabling repeated updates. Accounting offers comparability across space and time, bringing rigour to the presentation of data on natural capital assets, the services they provide, the benefits and hence the value of those services, and the distribution of those benefits across society and into the future.

The approach to developing the Derbyshire baseline natural capital accounts is based on the Corporate Natural Capital Account (CNCA) framework for the Natural Capital Committee in 2015[17]. This framework is also the basis of BSI:8632 on Natural Capital Accounting for Organizations[18]. Natural capital accounting involves producing a natural capital balance sheet and a natural capital income statement mirroring traditional

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[16] Source: Natural Capital Protocol *https://naturalcapitalcoalition.org/natural-capital-protocol/*

[17] eftec, RSPB and PWC (2015) Developing Corporate Natural Capital Accounts for the Natural Capital Committee. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/516968/ncc-research-cnca-final-report.pdf

[18] Available at: *https://shop.bsigroup.com/products/natural-capital-accounting-for-organizations-specification?pid=000000000030401243*

financial accounting. The intention is to present information to decision makers in a format they are familiar with so that the organisation's impacts and dependencies on natural capital are considered more explicitly and in conjunction with other forms of capital.

The **natural capital balance sheet** has two parts:

1. Asset Values (of the benefits natural capital produces for business and the wider society)
2. Liabilities (of spending to maintain natural capital).

This project considers the asset values. It was not possible to consider liabilities within this project's resources. The report presents a Natural Capital Asset Register, Physical Flows Accounts and Monetary Flow Accounts, which come together to form a **Natural Capital Asset Account**.

The natural capital balance sheet and its supporting schedules answer five key questions, those which the Natural Capital Asset Account can address are the first three of these (shown in bold):

- **What assets do we own and/or manage?**
- **What benefits do they provide and to whom?**
- **What are these benefits worth?**
- **What does it cost to maintain the assets?**
- **How do costs compare to benefits over time?**

Three supporting schedules hold the information gathered for the Derbyshire account:

- **Natural Capital Asset Register** – which records the stock of natural capital assets in terms of their extent, condition and spatial configuration (e.g. size and status of designated sites). These indicators help determine the health of natural capital assets and their capacity to provide benefits[19].
- **Physical Flow Accounts** – which quantify the benefits that the assets deliver in physical terms. Changes in the quantity / quality of the assets and their benefit provision over time are also shown.
- **Monetary Value Accounts** – which estimate the economic value of the benefits in monetary terms and discounts the projected future flow of these benefits to provide the present value for the assets. This uses data from actual markets and other (non-market) values. The value of the benefit should be the net of the cost of producing the benefit.

The monetary flow and cost accounts distinguish private values to business from external values to the rest of society. Where understanding and evidence allow, calculation of

[19] The natural capital asset register is also the basis for scoping the natural capital risk register, and for a materiality assessment to determine the content of the flow and liabilities accounts.

asset values can take account of expected changes to future costs and benefits of management, and external factors such as population growth or climate change.

This part of the project was executed through three main tasks:

Task 1 - Data collection: established data requirements, including discussions with Derbyshire County Council, Peak District National Park Authority and Derby City Council to identify relevant stakeholders to contact for data inputs to help produce the account. eftec developed a data collection spreadsheet to gather this data.

Task 2 – Support to build the natural capital accounts: The development of the asset register was undertaken by project lead partners Environment Systems. Data was provided on both the extent and condition of natural capital assets with the County level and sub-regional level. eftec used this data to complete the calculation processes for quantifying benefits and expressing the values in monetary terms.

Task 3 – Review of results: initial draft results were presented to stakeholders on the 8th June 2022, the results have since been updated are summarised in this report.

The natural capital approach and overall method for producing natural capital accounts for Derbyshire are described in Chapter 2. A more specific description of the methods used to evaluate the benefits included in the accounts is provided in Appendix 7. The distribution of benefits between private benefits to business sectors and benefits to wider society, is also noted in the reporting.

Scope of the account

The scoping stage defined the spatial and temporal boundary of the account, the data sources available and the types of benefits from natural capital covered; these are summarised in

Table 2. The list of potential benefits to assess reflects the list of individual benefits included in Defra's (2020) 'Enabling a Natural Capital Approach' (ENCA), shown in Table 3.

Table 2: Natural Capital Asset Account parameters

Parameter	Description
Spatial	The spatial boundary for the account is Derbyshire county– the results have been broken down into the eight district and borough councils within Derbyshire, Derby City and the Peak District National Park (see Appendix 6).
Temporal	The baseline year for the analysis is 2021 and all values are reported in 2021 prices using HM Treasury (2022b) GDP deflators. The results are provided in annual terms and present value over a 60-year time period for both catchments, as recommended by the HM Treasury (2022a) Green Book. A discount rate of 3.5% is applied in the present value calculations for all benefits. Where possible, future values take into account expected trends in the quantity and/or value of the benefit. Where this information is not available, renewable benefits are assumed to be constant over time.
Data sources	National and regional datasets are the initial source for evidence and assumptions, with local level information sources drawn on where feasible. Sources used are in line with Defra's Enabling a Natural Capital Approach (ENCA) guidance (Defra, 2020).

Table 3: Potential benefits to assess

- Agricultural output
- Fishing (commercial)
- Timber
- Water supply
- Renewable energy
- Minerals
- Carbon sequestration
- Air quality regulation
- Flood risk management
- Noise reduction
- Temperature regulation
- Recreation
- Physical health
- Mental health
- Education
- Volunteering
- Amenity
- Biodiversity
- Soil
- Water quality
- Landscape
- Non-use values

Materiality assessment

A materiality[20] assessment is used to determine which of the benefits listed above should be included in the account, given the natural capital assets in scope. All the individual benefits in Defra's ENCA guidance (2020), listed above, were considered for inclusion in

[20] This is defined in the Natural Capital Protocol as "an impact or dependency on natural capital is material if considering it, as part of the set of information used for decision making, has the potential to alter that decision" (p. 43, Capitals Coalition, 2016).

the account[21]. The assessment has been undertaken using a service-asset attribute matrix which aims to show:

- Which ecosystem services are material for each asset within the Derbyshire account boundary;
- Of these material ecosystem services, which benefits have been assessed and how; and
- Which have not been possible to measure in biophysical units or value in monetary terms and why.

The materiality assessment for the Derbyshire account is shown in Table 4.

The following benefits are considered material but have not been measured in these accounts:

- **Flood risk management** – It is difficult to quantify the benefit provision without more detailed modelling (e.g. identifying flood risk areas and natural capital assets providing flood risk benefits)
- **Mental health benefits of engagement with nature** – Following current ENCA guidance (Defra, 2020a), only physical health benefits are valued in this report as there is currently insufficient evidence to value mental health benefits in general terms. While the evidence for mental health benefits from green space is strong, it is context dependent and not readily quantifiable for the purposes of accounting and policy analysis.

[21] Defra's ENCA (2020) also reflects 'bundled' benefits which include amenity, soil, landscape and non-use values. These are not considered for this account to avoid double-counting with the individual benefits already included (e.g., recreation).

Table 4. Materiality assessment, 2021

Private & Public Benefits **At September, 2022**	**Natural Capital Assets**						
	Arable	Freshwater	Grassland	Mountain, moorland and heath	Woodland	Urban	Other
Agricultural output	●		●				
Fishing (commercial)							
Timber					●		
Water supply		●	●	●	●		
Renewable energy	○	●	○	○			●
Minerals							●
Carbon sequestration	●		●	●	●		
Air quality regulation					●		
Flood risk management	○	○	○	○	○	○	○
Noise reduction						○	
Temperature regulation						○	
Recreation	●	●	●	●	●	●	●
Physical health	●	●	●	●	●	●	●
Mental health	○	○	○	○	○	○	○
Tourism	●	●	●	●	●	●	●
Education[1]	●	●	●	●	●	●	●
Volunteering	●	●	●	●	●	●	●
Water quality		●					
Biodiversity	◖	◖	◖	◖	◖	◖	◖

Legend

Material service provision	
No material service provision	
Benefit estimated in quantitative and monetary terms	●
Benefit estimated in non-monetary terms	◖
Not assessed	○

[1]Education estimates only reflects South Derbyshire and volunteering only reflects Lowland Derbyshire due to data limitations in the other areas.

Outputs

Asset Register

Figure 58 and Table 5 summarise the asset extent account for Derbyshire by UK broad habitat.

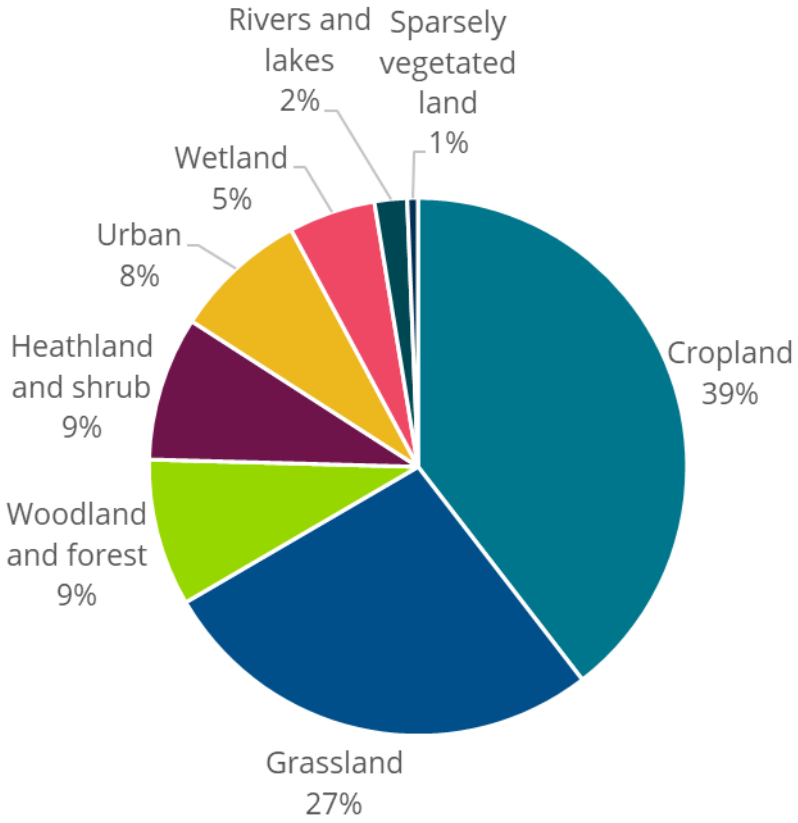


Figure 58. Asset extent Derbyshire, 2021 (produced at September 2022)

Table 5 Asset extent Derbyshire (ha), 2021 (produced at September 2022)

Habitat	Area (ha)
Cropland	104,000
Grassland	71,200
Woodland and forest	23,300
Heathland and shrub	22,800
Urban	21,200
Wetland	13,700
Rivers and lakes	5,200
Sparsely vegetated land	1,700
Total	263,100

Data reflecting the condition of natural capital assets is shown in Table 6 which presents the coverage of terrestrial designations, flood risk zones and habitat connectivity within

Derbyshire, and Table 7 which shows the condition data on the water environment including Water Framework Directive status.

Table 6 Terrestrial designations in Derbyshire, 2021 (produced in September 2022)

Indicator		
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**
Favourable condition	4,600	16%
Unfavourable recovering condition	23,000	81%
Unfavourable declining condition	270	1%
Unfavourable no change	520	2%
Part destroyed	1	0.004%
Destroyed	5	0.02%
Total	28,330	100%
Other designated areas	**Areas (hectares)**	**% of total area**
Country Parks	1,600	1%
Local Nature Reserves	670	0.3%
National Nature Reserves	1,800	1%
Special Areas of Conservation	27,000	10%
Special Protection Areas	25,000	10%
Ancient Woodland	7,700	3%
Green Belt	240	0.1%
Parks and Gardens	3,000	1%
Flood risk	**Areas (hectares)**	
Flood zone 2	19,000	
Flood zone 3	15,000	
Accessibility		
Area of greenspace (ha)	14,000	
Length of footpaths (m)	3,800,000	
Habitat connectivity	**Areas (hectares)**	**% of total habitat area**
Grassland		
Core network	12,000	5%
Stepping stone	200	0.1%
Remaining network	110,000	42%
Outside network	140,000	54%
Heathland		
Core network	11,000	5%
Stepping stone	50	0.02%
Remaining network	42,000	18%
Outside network	180,000	77%
Wetland		
Core network	15,000	6%
Stepping stone	1,100	0.4%
Remaining network	90,000	34%
Outside network	160,000	60%
Woodland		
Core network	14,000	5%
Stepping stone	4,600	2%
Remaining network	130,000	48%
Outside network	120,000	45%

Source: Day, B. H., and G. Smith (2018), Habitat Asset Register, Natural England data

Table 7. Water Framework Directive waterbodies in Derbyshire, 2021 (produced at September 2022)

Water Framework Directive status[22]		
Rivers	Length (kilometres)	% of total length
High	320	45%
Good	250	35%
Moderate	87	12%
Poor	51	7%
Total	708	100%
Lakes	Area (hectares)	% of total area
High	1,500	18%
Good	3,000	35%
Moderate	3,700	44%
Poor	300	4%
Total	8,500	100%

Source: *Day, B. H., and G. Smith (2018)*

Physical and Monetary Flow Account

The estimated annual physical and monetary values for each benefit are summarised in Table 9. The physical and monetary estimates in Table 9 are given a confidence rating, which is described in **Error! Not a valid bookmark self-reference.**.

Table 8. Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derbyshire. Table 9 shows significant values for provisioning (e.g. water supply and minerals), regulating (e.g. air quality regulation) and cultural (e.g. recreation) services, as well as significant physical health benefits in relation to physical activity. Overall, there is medium to high confidence for most benefits, except for the

[22] *Source: Environmental Agency (2021) Catchment Data Explorer. Available at: https://environment.data.gov.uk/catchment-planning/*

estimated tourism expenditure, education and volunteering attributed to nature, which are low confidence.

The total annual net value of ecosystem benefits and services produced within Derbyshire is £2.6 billion in 2021 prices. Key benefit values include carbon sequestration by habitats (£2 billion, 77% of total benefits), mineral production (£298 million, 11% of total benefits) and recreation (£181 million, 7% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£95 million) and livestock (-£249 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts.

Table 9. Derbyshire Physical and Monetary Flow Account (annual values , 2021

At September, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	241,979	H	Gross margin of arable crop production	24	H
	Livestock production (heads/yr)	460,488	H	Gross margin of livestock production	72	H
Timber	Volume of softwood removals (m3/yr)	25,402	M	Value of softwood removals	1	M
Water supply	Surface water abstraction for public water supply (m3/yr)	534,967,247	H	Resource rent value of surface water abstractions for public water supply	123	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	4,053,711	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	9	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	85,895	M	Resource rent value of renewable energy	1	M
Minerals	Volume of minerals extracted (tonnes/yr)	22,557,750	H	Ex-works value of mineral production	298	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	8,028,901	M	Value of CO2e sequestered in habitats	1,966	M
	CO2e emitted by habitats (tCO2e/yr)	(387,305)	M	Value of CO2e emitted by habitats	(95)	M
	CO2e emitted by livestock (tCO2e/yr)	(1,017,527)	M	Value of CO2e emitted by livestock	(249)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	158,226	H	Value of PM2.5 removal by woodland	20	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	49,708,989	M	Adult recreation welfare value (under 3 hours)	181	M
Physical health	Number of active visits (no. active visits/yr)	25,600,129	M	Avoided treatment medical costs	86	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	4,082,960	L	Domestic tourism expenditure attributed to natural capital	105	L
Education	Number of volunteer days (days/yr)	27,817	L	Value of volunteer days	1	L
Volunteering	Number of education visits (visits/yr)	5,110	L	Value of educational visits	0.02	L
Water quality	Length of WFD rivers (km)	702	H	Welfare of avoiding deterioration in rivers	9	M
	Area of WFD lakes (km2)	8,598	H	Welfare of avoiding deterioration in lakes	62	M
				Total value	**2,619**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	30,000	H		Not valued	•
Other material unquantified benefits						
Flood risk management						
Mental health						

Natural Capital Asset Account

Table 10 shows the benefits than can be provided by natural capital in Derbyshire if current annual benefits and quantified trends continue over 60 years. Overall, Derbyshire's natural capital assets have an asset value of £87 billion in present value terms. Within the account climate change is considered as a known but mostly unquantified trend.

Table 10 also reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £73 billion in present value terms. A further £14 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derbyshire accounting boundary include:

- Partial estimates of the education and volunteering benefits throughout the Derbyshire, as data for each district and borough council was limited.
- There is insufficient data to represent some expected future changes (such as climate change risks) in the account, therefore the values may change due to costs and/or impacts of climate change or other trends. These future costs will partly depend on the actions taken to mitigate and adapt to climate change.
- The non-monetised and unquantified benefits listed in Table 10 are expected to be material. Further work could include undertaking a baseline biodiversity assessment for the region; however, this is expected to require support from other stakeholders.
- The maintenance costs associated with natural capital and their distribution (e.g., tree thinning, greenspace maintenance) should be included in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 10. Derbyshire Natural Capital Asset Account, £m PV60, 2021

	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	619	-	619
	Gross margin of livestock production	2,029	-	2,092
Timber	Value of softwood removals	22	-	22
Water supply	Resource rent value of Surface water abstractions for public water supply	3,226	-	3,226
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	235	-	235
Renewable energy	Resource rent value of renewable energy	37	-	37
Minerals	Ex-works value of mineral production	7,481	-	7,481
Carbon sequestration	Value of CO2e sequestered in habitats	-	72,066	72,066
	Value of CO2e emitted by habitats	-	(3,476)	(3,476)
	Value of CO2e emitted by livestock	-	(9,133)	(9,133)
Air quality regulation	Value of PM2.5 removal by woodland	-	532	532
Recreation	Adult recreation welfare value (under 3 hours)	-	4,736	4,742
Physical health	Avoided treatment medical costs	-	3,481	3,482
Tourism	Domestic tourism expenditure attributed to NC	-	2,744	2,744
Education	Value of volunteer days	-	18	18
Volunteering	Value of educational visits	-	0.5	0.5
Water quality	Welfare of avoiding deterioration in rivers	-	224	224
	Welfare of avoiding deterioration in lakes	-	1,631	1,631
Total gross asset value		13,691	72,824	86,515
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 30,000 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				

Breakdown of results within Derbyshire

Sub-boundary accounts have been developed for the administrative areas and National Character Areas that fall within Derbyshire County, as well as for the Peak District National Park. Appendix 6 contains the reporting results for each sub-boundary area.

The sub boundary accounts are a sub-division of the Derbyshire account, applying the same methods where possible. The methodology for the benefit calculations is set out in Appendix 7.

Summary

Through working with Derbyshire County Council, Peak District National Park Authority, Derby City Council and stakeholders a Natural Capital Asset Account has been developed for the Derbyshire, the nine administrative areas, ten National Character Areas and the Peak District National Park. It provides an understanding of the overall scale and significance of benefits provided by

natural capital assets. It aligns with the Green Book (HM Treasury, 2022a) and Defra's Enabling the Natural Capital Accounting approach (ENCA) methods.

The account has been developed with a good coverage of data, including extensive habitat mapping (see Section 3) using the UKHab classification, and the measurement and valuation of 13 different benefits. The account provides a good baseline; however, it isn't able to capture everything in monetary terms due to data and methodological constraints.

The account can be used in different ways. Firstly, it provides data that can be used to make a business case to central government for support and funding to invest in natural capital. Secondly, it gives a consistent evidence base for different groups and decision-makers to refer to. For example, Biodiversity Net Gain, environmental land management schemes (ELMS[23]; where participating landowners receive payments for managing land in support of environmental objectives such as sustainable farming and nature recovery) design, and other policies can work from connected data. However, good communication is required to ensure the data is used properly.

Thirdly, the accounting structure also allows for comparison of the sub-regions using a consistent approach and data. Finally, while the account provides useful information to help manage natural capital it should be noted the positive values do not mean that the natural capital assets are being managed sustainably. To assess this, more understanding of future trends (e.g. climate change) and estimations of maintenance costs would need to be factored in.

[23] https://www.gov.uk/government/publications/environmental-land-management-schemes-overview

Chapter 5: Natural Capital Baseline Assessment - landscape character

Baseline landscape character

This chapter comprises a natural capital baseline assessment which includes comment on baseline landscape character. The baseline landscape character details:

- The key characteristics of Derbyshire's landscape
- The landscape character attributes
- Land management actions to maintain and enhance landscape character

It provides an objective account and high-level review of possible management actions from a landscape perspective with all information extracted from existing written published data and publicly available spatial datasets.

The key characteristics of Derbyshire's landscape

The baseline landscape character starts at the national level and includes consideration of existing published assessments such as the National Character Area (NCA) profiles prepared by Natural England. The NCA's identify ecosystem services within each broad character area.

The Landscape Character Baseline assessment reviewed the five major NCAs within the county (highlighted bold below) and a further five NCAs that make a significant contribution to the landscape of the county. The following NCAs have been included within the Landscape Character Baseline Figure 59:

- NCA 30: Southern Magnesian Limestone;
- NCA 38: **Nottinghamshire, Derbyshire and Yorkshire Coalfield;**
- NCA 50: **Derbyshire Peak Fringe & Lower Derwent;**
- NCA 51: **Dark Peak;**
- NCA 52: **White Peak**;
- NCA 68: **Needwood and South Derbyshire Claylands;**
- NCA 69: Trent Valley Washlands;
- NCA 70: Melbourne Parklands;
- NCA 71: Leicestershire & South Derbyshire Coalfield; and
- NCA 72: Mease/ Sence Lowlands.

The findings of the NCA mapping have been compared with existing local character assessments prepared by both DCC[24] and the Peak District National Park

[24] The Landscape Character of Derbyshire, 2014

(PDNP)[25]. Each LCT within the 10 NCA's has also been reviewed to give a finer grain of detail to this document.

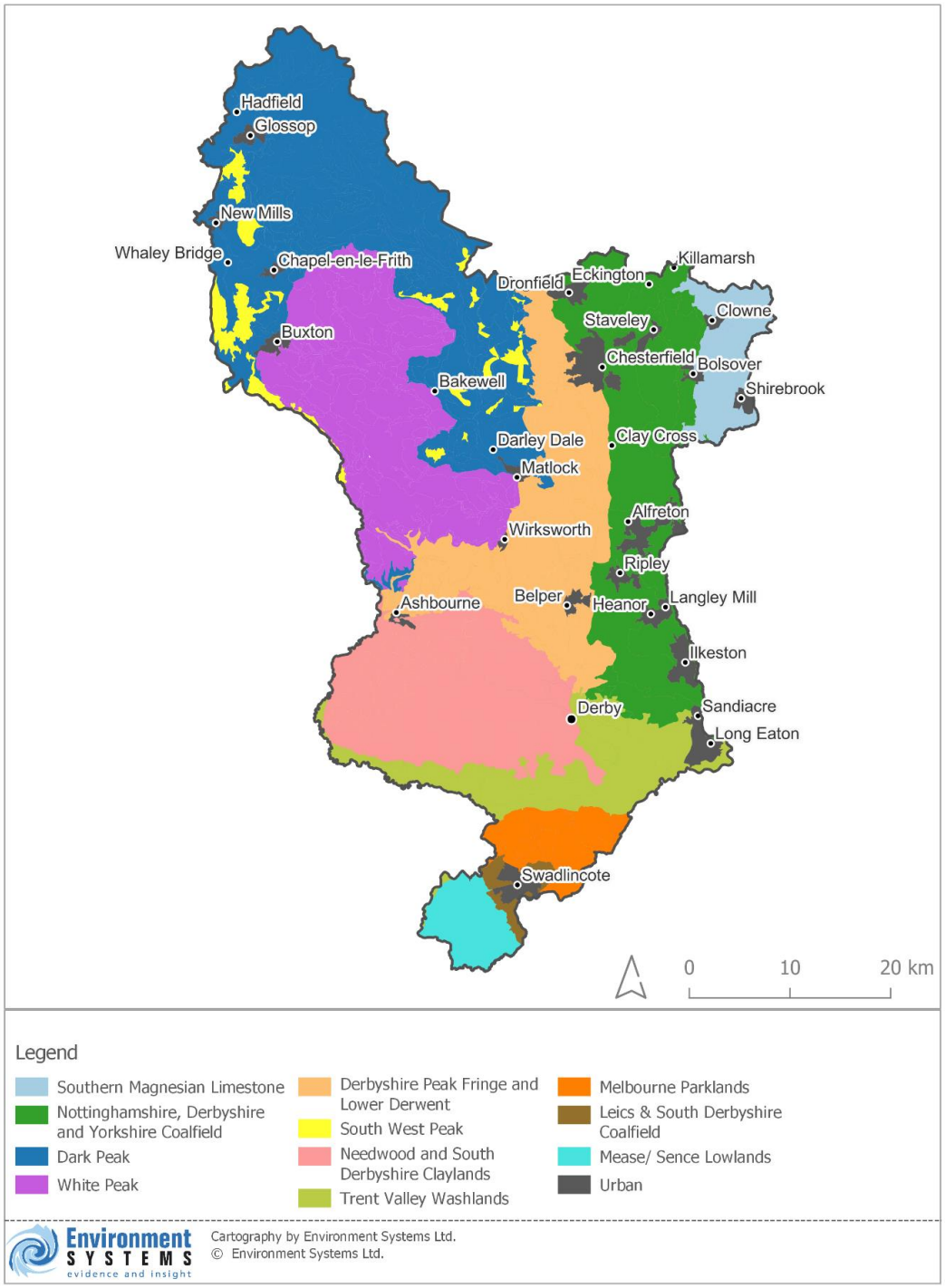


Figure 59: Natural England's National Character Areas in Derbyshire, with interpretation of boundaries across the Derby City urban area

[25] The Landscape Strategy and Action Plan for the Peak District National Park, 2009

The key characteristics of each NCA are described in Appendix 8. An example for NCA 30: Southern Magnesian Limestone follows:

- Underlying limestone creates an elevated ridge with smoothly rolling landform; river valleys cut through the ridge, in places following dramatic gorges. There are also some dry valleys.
- Fertile, intensively farmed arable land, with large fields bounded by clipped hawthorn hedges, creating a generally large-scale, open landscape.
- Semi-natural habitats, strongly associated with underlying limestone geology, include lowland calcareous grassland and limestone scrub on the free draining upland and gorges with wetland habitats associated with localised springs and watercourses, but all tend to be small and fragmented.
- Large number of abbeys, country houses and estates with designed gardens and parklands, woodlands, plantations and game coverts.
- Long views over lowlands to the east and west, and most prominent in the south;
- Woodlands combining with open arable land to create a wooded farmland landscape in places, where traditionally coppiced woodlands support dormouse populations.
- Unifying influence of creamy white Magnesian Limestone used as a building material and often combined with red pantile roofing.
- Localised industrial influences, especially in the Aire and Don valleys, and in the south and along the fringe of the Coal Measures to the west, with former mines and spoil heaps (many now restored), power lines, settlements, industry and transport routes. Bramham Park is one of a number of large country houses that have designed gardens and parklands.
- Influenced by the transport corridor of the A1 which is apparent in an otherwise undisturbed rural countryside.
- Archaeological evidence, with some notable prehistoric sites, reflects the longstanding importance of the area for occupation and transport.
- A comparison of the NCA profiles has been made with existing and more detailed local character assessments prepared by:
- Derbyshire County Council: The Landscape Character of Derbyshire (2014); and,
- The Peak District National Park: The Landscape Strategy and Action Plan for the Peak District National Park (2009).
- Consideration of these additional character assessments allowed a more detailed and Derbyshire-specific assessment to be carried out.
- Each NCA comprises landscape character types (LCT) as shown Figure 60 and Figure 61, and these have also been reviewed using the more detailed local character assessments to provide more contextual detail.

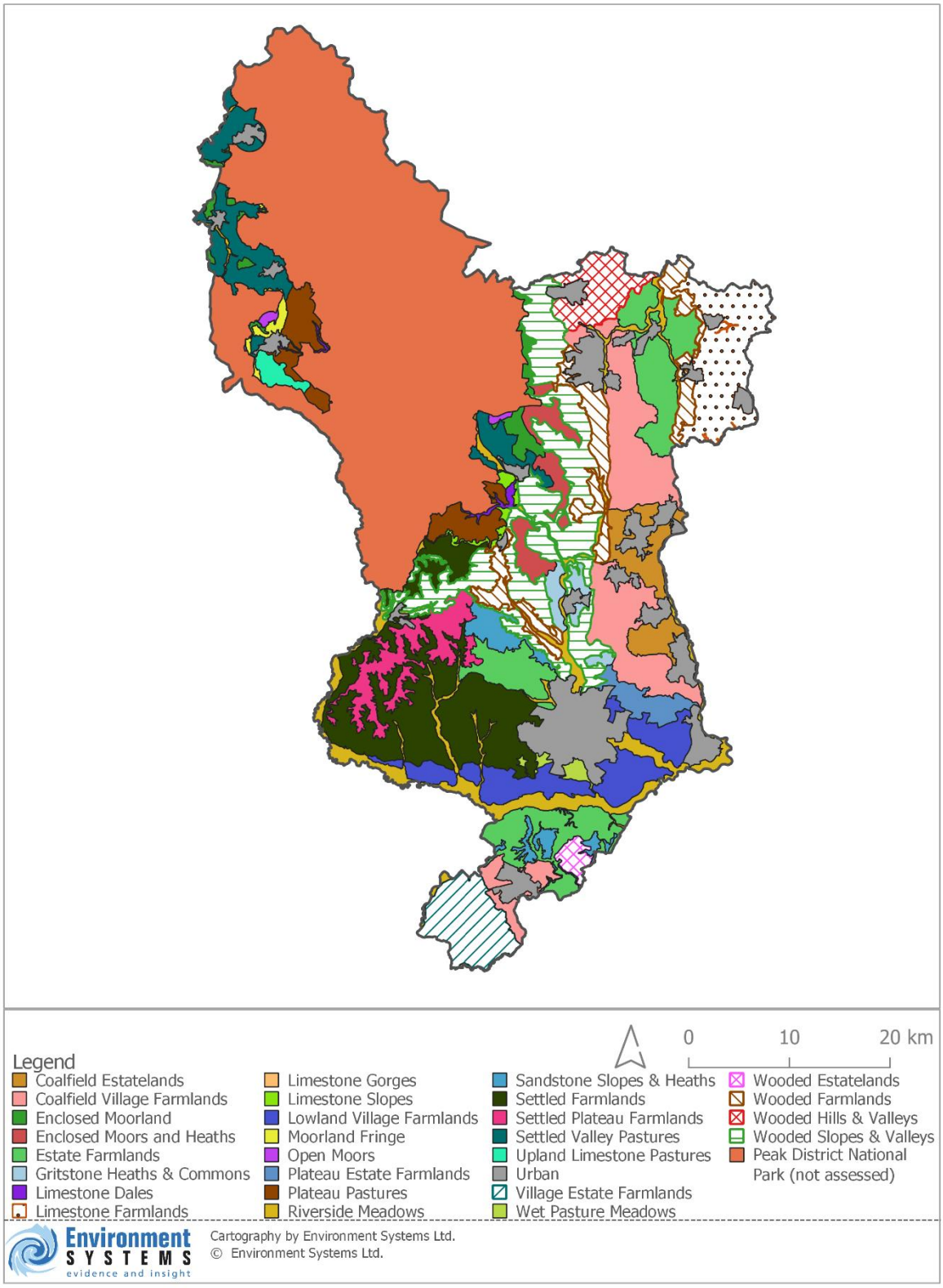


Figure 60: Landscape Character Types within Derbyshire (outside of PDNP, including an interpretation of NCA boundaries within Derby City

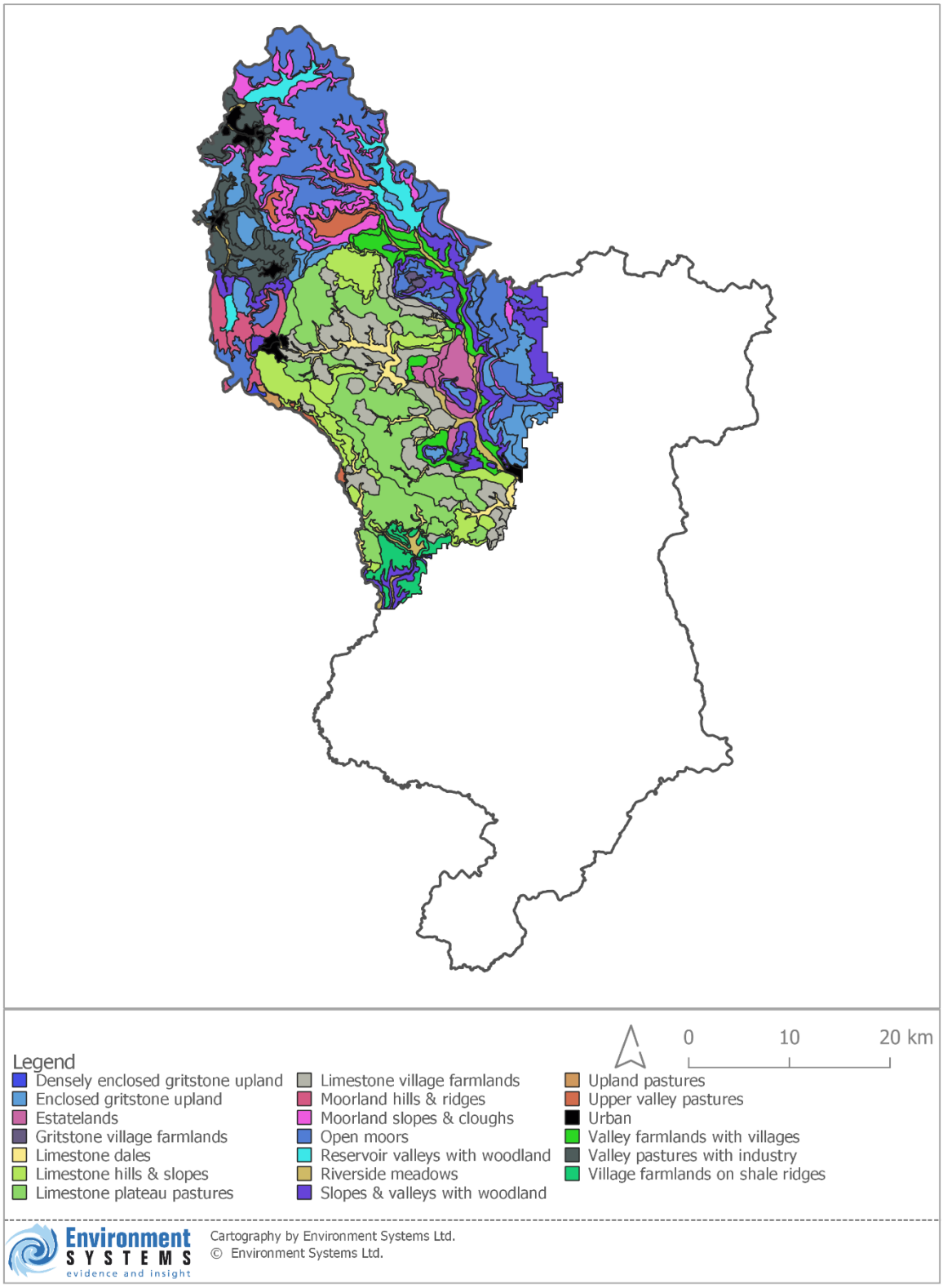


Figure 61: Landscape Character Types in Peak District National Park

An example for the LCT Limestone farmlands within NCA 30: Southern Magnesian Limestone follows:

A gently rolling, agricultural landscape, characterised by large scale open farmland, estate woodlands and limestone villages.

Key Characteristics:

- Gently rolling limestone plateau
- Fertile soils supporting productive arable farmland
- Large and medium estate woodlands
- Amenity trees around small rural villages and isolated farmsteads
- Large regular fields bounded by hedgerows
- Straight roads with uniform width verges
- Nucleated settlement pattern
- Historic buildings constructed of limestone with red clay pantile roofs
- Panoramic views across lowland to the west
- Long distance views over plateau often ending in a wooded skyline

Distinctive Local Characteristics:

- Long distance views are characteristic, due to the gentle relief, lack of hedgerow trees and large arable fields;
- Large and medium estate woodlands including areas of ancient woodland; and Hardwick Hall and Bolsover Castle.

The landscape character attributes

The distinctive elements and features of each LCT have been identified and listed for each LCT (Appendix 8).

Limestone Farmlands	Current Landscape Character Attributes
Land Use	Arable
Main Habitat Type	Farmland
Other Habitat Type	Woodland
Woodland Character	Occasional large plantations
Woodland Vision	Occasional large plantations
Woodland Type	Ash, oak, elm with hazel
Hedgerow Trees	Insignificant
Watercourse	None
Amenity Trees	Localised around settlement
Boundary Type	Thorn hedgerows
Settlement Character	Villages and sparsely scattered farmsteads
Traditional Materials	Limestone with red clay pantile roof
Cultural Interests	Hardwick Hall, Bolsover Castle, Green Lanes

Using landscape character to inform decision making

The distinctive elements and features of each LCT have been identified and appropriate land management actions for future habitat conservation, enhancement, or creation were identified for eight broad habitat types (Grassland; Woodland and forest; Heathland and shrub; Wetland; Sparsely vegetated land; Urban; Cropland; Rivers and lakes) within each LCT-NCA region.

Maps have been produced which identify areas where each broad habitat is of high interest for conservation, restoration or creation, divided into three levels of significance:

- Principal Habitat – habitat is a prominent and key characteristic of the area
- Secondary Habitat – habitat is a variable and local characteristic of the area
- Locally Significant – habitat is unusual, often a minor characteristic of the area

For the purpose of mapping, an interpretation of NCA/LCT boundaries within the 'urban' region of Derby City was provided by Derbyshire County Council, in order to carry out a case study of applying landscap character-based recommendations to an urban area.

The unofficial interpretative dataset of LCT boundaries within Derby City has been incorporated into the analysis in order to provide context for the City of Derby urban area within this baseline study. However, no analysis of this data has been carried out in relation to the setting of management actions, although it can be inferred that they would be similar to the wider LCT as documented in the baseline study.

Combining the PDNP LCTs with wider Derbyshire LCTs creates a total of 47 unique LCTs within Derbyshire. The LCTs for Derbyshire (excluding PDNP) are illustrated in Figure 60, while the LCTs for PDNP are shown in Figure 61.

Using the management action recommendations in the baseline landscape character assessment, with modifications applied in consultation with Derbyshire County Council and PDNPA, each broad habitat type was assigned a principal habitat priority classification (principal, secondary, or locally significant habitat as defined above), for each LCT.

A greater level of detail was applied to the characterisation of the favoured Heathland & shrub habitat type in many LCT regions, and also for some Wetland areas, In order to improve the targeting of management actions for these broad habitat types. In these cases the following sub-categories were assogned to the principal habitat priority class, identifying the preferred habitat sub-type in the region; heather/moorland, thorn-dominated scrub, or hedgerows. The resulting maps are shown in Figure 62-Figure 69.

Where LCT regions are not shown to have a particular habitat as a principal habitat priority, it means that the region either does not contain notable examples of the specified habitat type, or expanding the habitat type is not a priority because this would be detrimental to the landscape character. Alternatively, it could be because it would be preferable to invest in expanding and restoring the habitat type in other LCTs.

The habitat priorities for each LCT have been defined by recent work undertaken by Derbyshire County Council; this includes an interpretation of the NCA/ LCT boundaries within the Derby City 'urban' NCA region, based on local landscape and geological characteristics, in order to allow habitat priorities and management recommendations to be mapped within this urban area, as a case study. Due to the unofficial nature of the NCA/LCT boundaries applied to the Derby City region, these areas are shown as partially transparent within the maps.

Other urban areas have not been included in the analysis of priority land management actions, due to the unavaiability of boundary data defining the different LCTs within these zones; however, should such data become available in the future the same methodology could be applied.

A large-scale map of Grassland habitat principal habitat priority areas within the Derby City area is shown in Figure 70. A full suite of large-scale maps of habitat priorities for Derby City can be found in Appendix 10.

A detailed breakdown of the habitat-specific land management priorities for each LCT is shown in Figure 71-Figure 75; these management actions have been drawn from the Baseline Landscape Character Assessment (Appendix 8), with amendments applied to heathland and wetland areas where sub-categorisation of the habitat had been undertaken. The habitat priorities and management actions are listed in tabular format in Appendix 9.

The proposed land management actions have been reviewed by an expert panel with local knowledge to provide additional input on appropriate management action.

Locations where grassland nature-based solutions (NBS) support the LCT are shown in Figure 71. Locations where heathland and wetland restoration / NBS support the LCT are shown in Figure 72 and Figure 73, respectively. Locations where woodland NBS support the LCT are shown in Figure 74.

A large-scale map of locations in Derby City where grassland NBS support the applied LCT boundaries is shown in

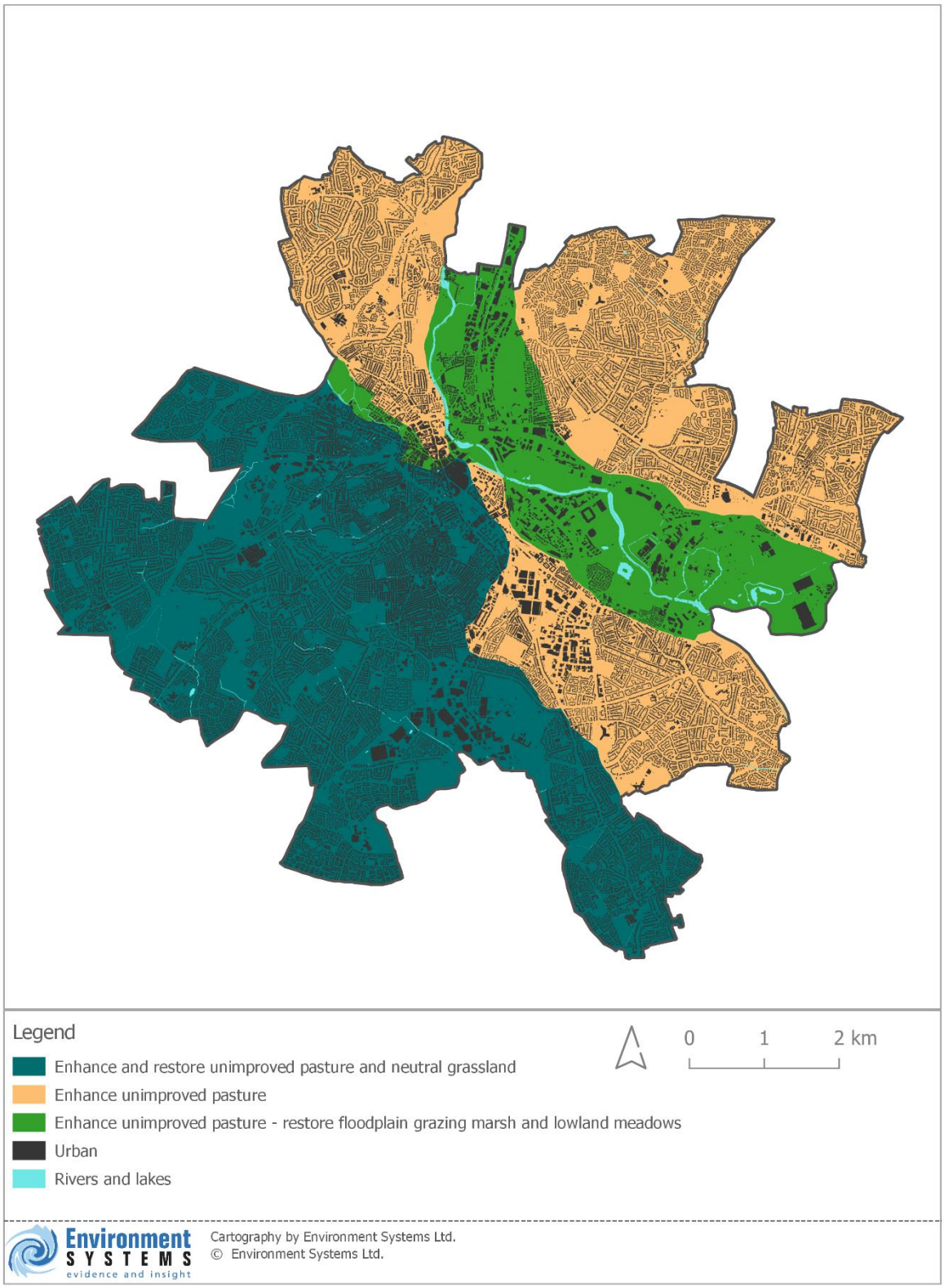


Figure 76. A full suite of large-scale maps of NBS actions for Derby City is provided in Appendix 10. These maps should be viewed as a guide to be followed by more detailed investigation of site suitability prior to land management decisions being taken, due to the unique opportunities and constraints to NBS solutions within the urban environment; an analysis of which was outside the scope of this work.

Key findings: preferred habitat actions within LCT regions

- Grassland action is a priority in most LCTs in Derbyshire
- Woodland acrion is desired across most LCTs in Derbyshire, but is preferred in the east, in the Derwent valley, and in the southern tip (National Forest area) of the county.
- Heathland action is a priority in the majority of LCTs, with the exception of areas within White Peak, where the habitat is of more localised significance. It is a preferred habitat in Needwood & South Derbyshire Claylands, and Peak Fringe & Lower Derwent.
- A balance will need to be struck between heath enhancement/expansion and grassland or woodland expansion to work towards a sustainable habitat matrix.
- Restoration and enhancement of existing semi-natural grasslands, and floodplain grazing marsh, is a priority for many LCTs.
- Hedgerow planting is a priority for many LCTs, as is riparian/floodplain woodland planting, and restoration of ancient woodland sites.
- River restoration, and enhancement of the natural continuity of river corridors, is a priority in most LCTs.
- Wetlands are a priority for many LCTs, with the areas dominated by limestone geology being a notable exception. Priority actions focus on enhancing existing wet meadows and marshes, and restoration of upland and lowland bog habitats.
- Cropland priorities focus on improving the ecological value of intensive farmlands, and conserving and enhancing the mixed farm landscape where it is still present.
- The land management recommendations are a guide, and should be field-checked in prior to action being taken at the specific site level.

A future pathway for defining more targeted recommendations for Derby City (and other urban areas) should incorporate a Townscape Assessment, and consideration of management actions such as street trees, grass verge cutting regime, green roofs and walls, SuDS, and garden wilding.

Landscape character considerations influence decision-making on the prioritisation of natural capital opportunities. The rules used for modelling ecosystem service stock, risk and opportunities maps reflect this. For example:

- hedgerow planting and woodland creation is not appropriate for the White Peak and other areas in Derbyshire where the policy vision developed by Derbyshire County Council in landscape character spatial data is to maintain an open/unwooded landscape character.

- there are limited opportunities for wetland creation in some places characterised by limestone geology (e.g. the Southern Magnesian Limestone character type).

The final decisions on what types of management action should be taken where must combine the outputs of the ecosystem service opportunity mapping with the outputs of the baseline landscape character assessment; in many places it would be biophysically possible to undertake multiple habitat restoration options; for example planting riparian buffer strips of either woodland or species-rich grassland composition; the final decision on which habitat type, land use and matrix of habitats are most suitable for a particular location will be influenced by the landscape character considerations, as well as whether the area lies within a particular ecological network.

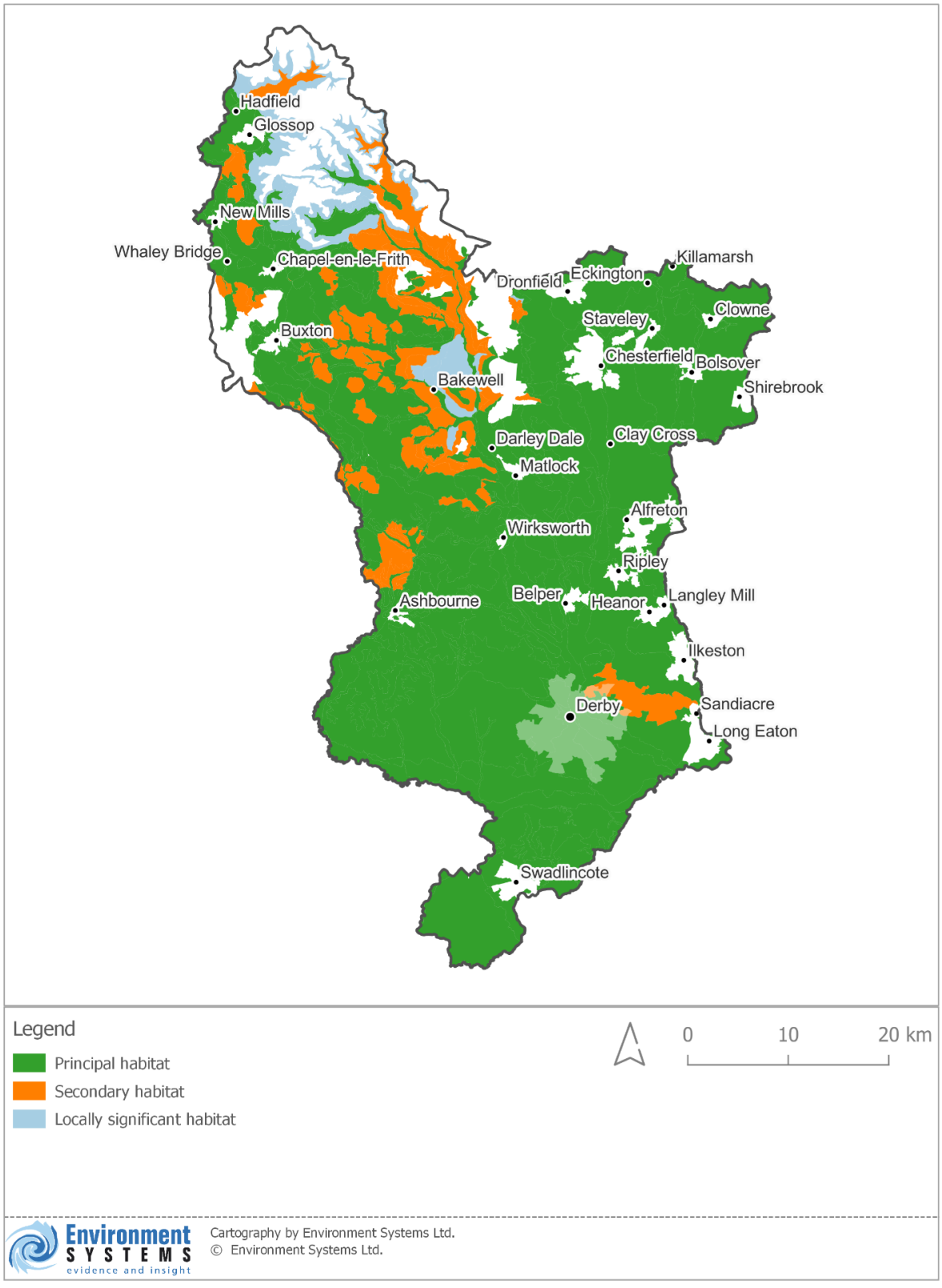


Figure 62: Landscape Character Types where the Grassland broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

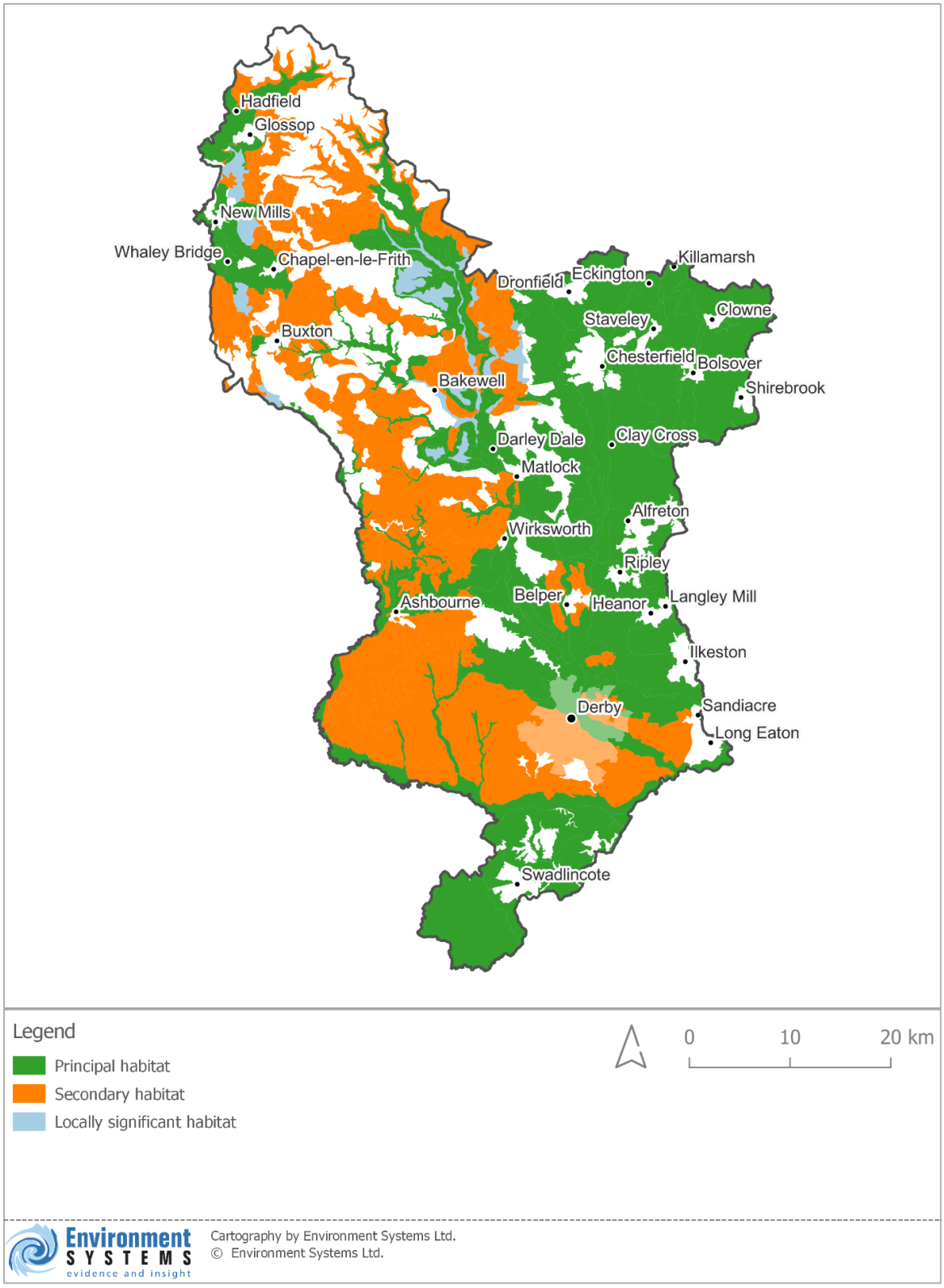


Figure 63: Landscape Character Types where the Woodland & Forest broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

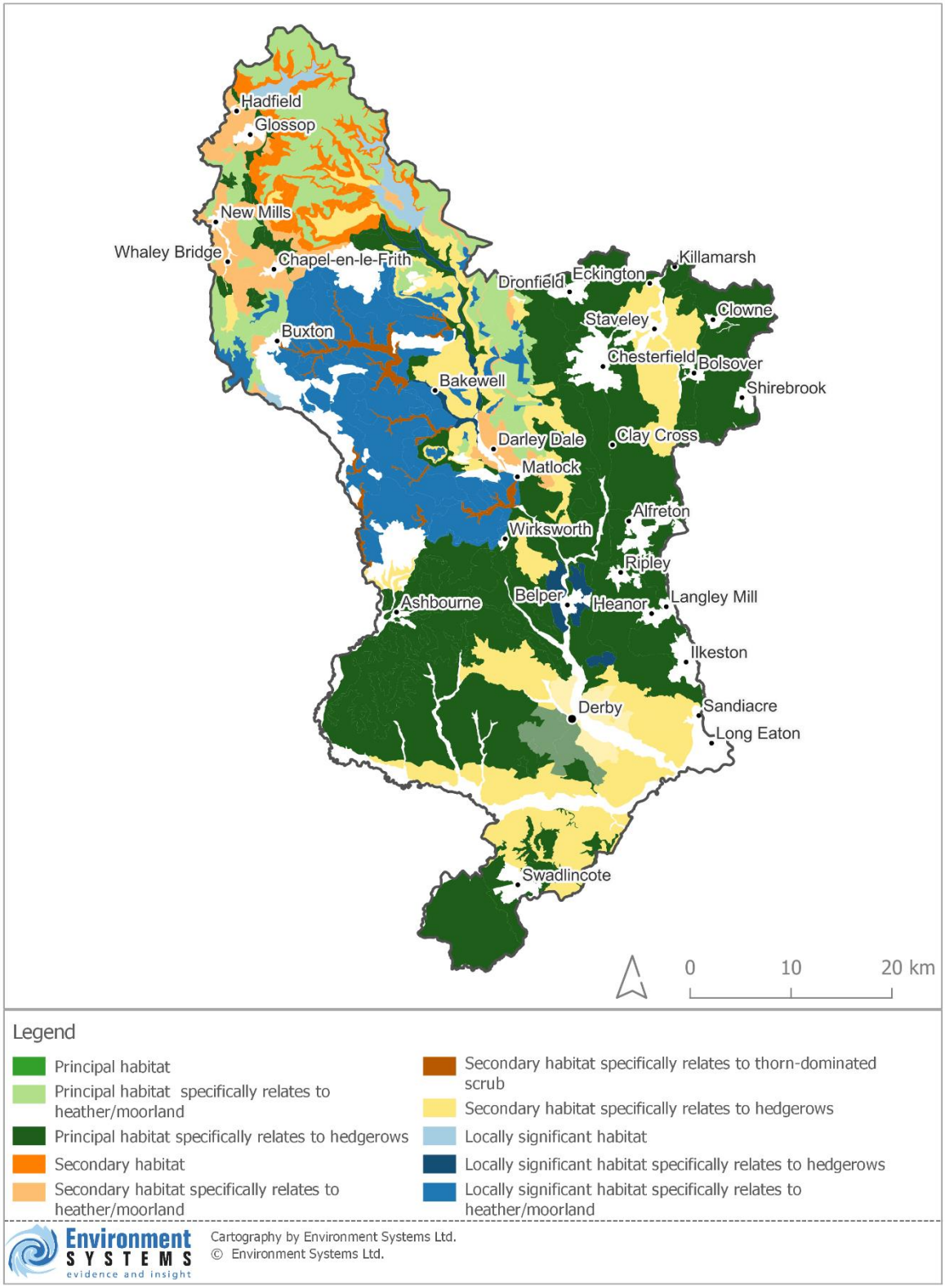


Figure 64: Landscape Character Types where the Heathland & Shrub broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

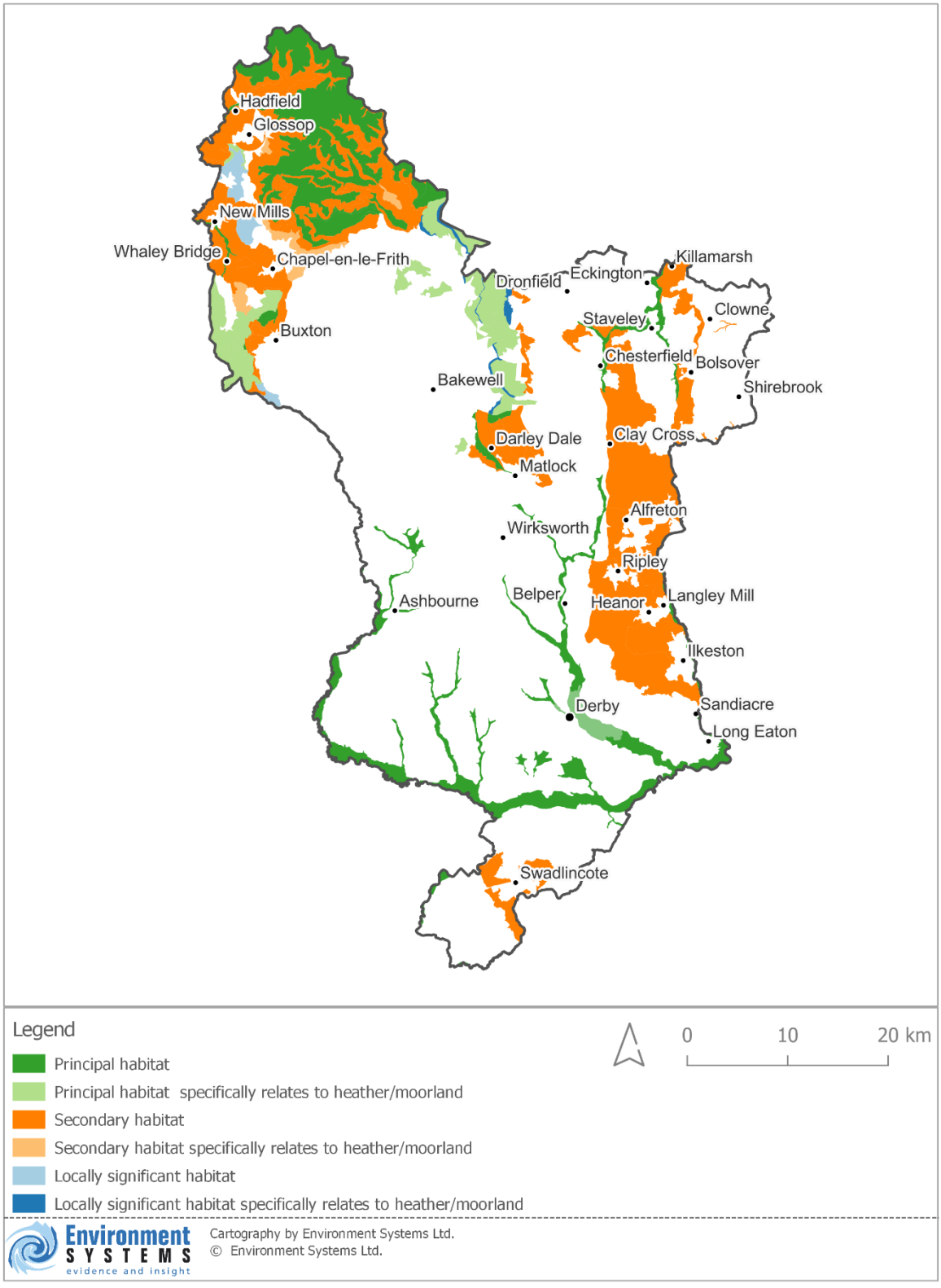


Figure 65: Landscape Character Types where the Wetland broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

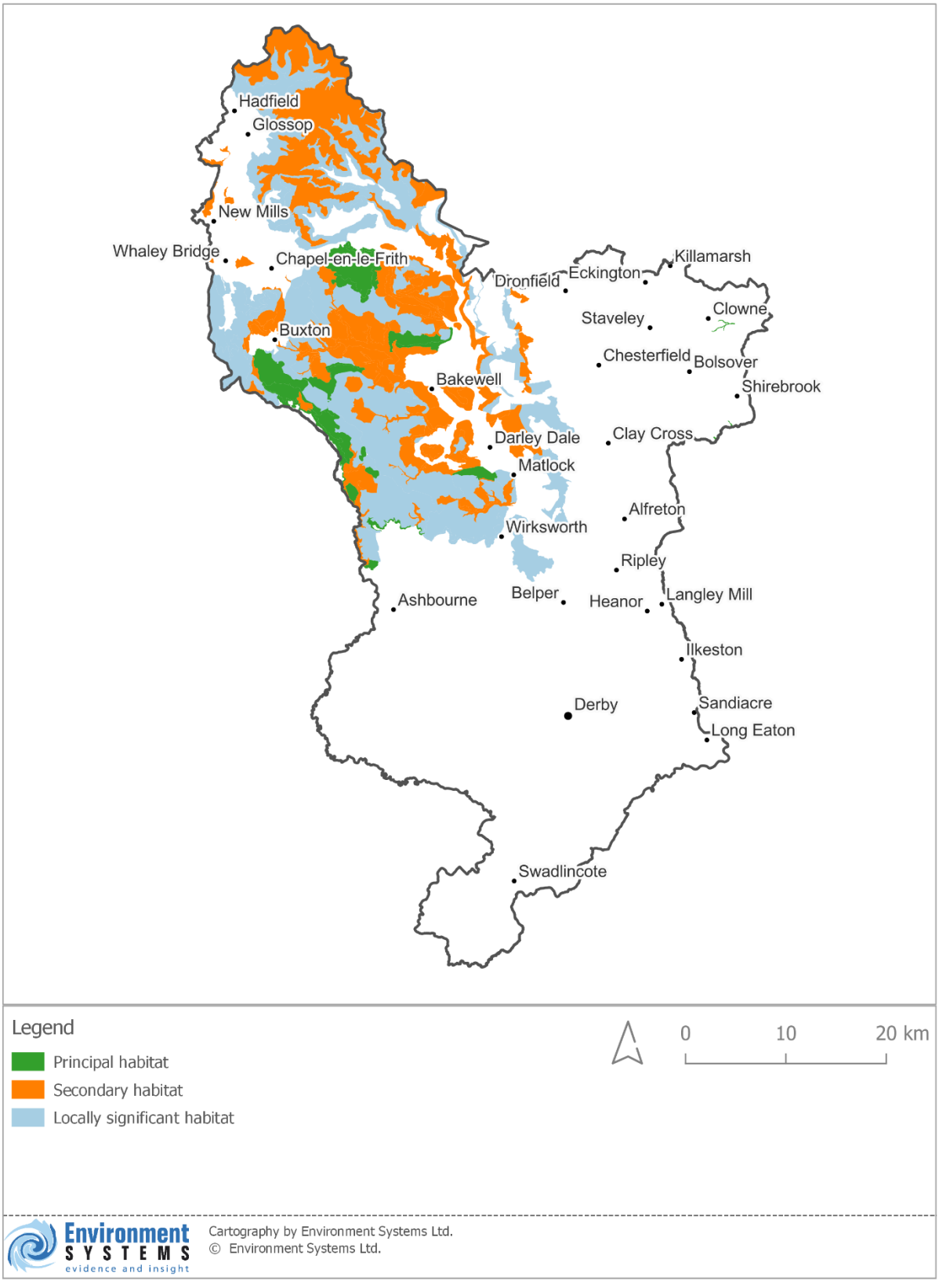


Figure 66: Landscape Character Types where the Sparsely vegetated land broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

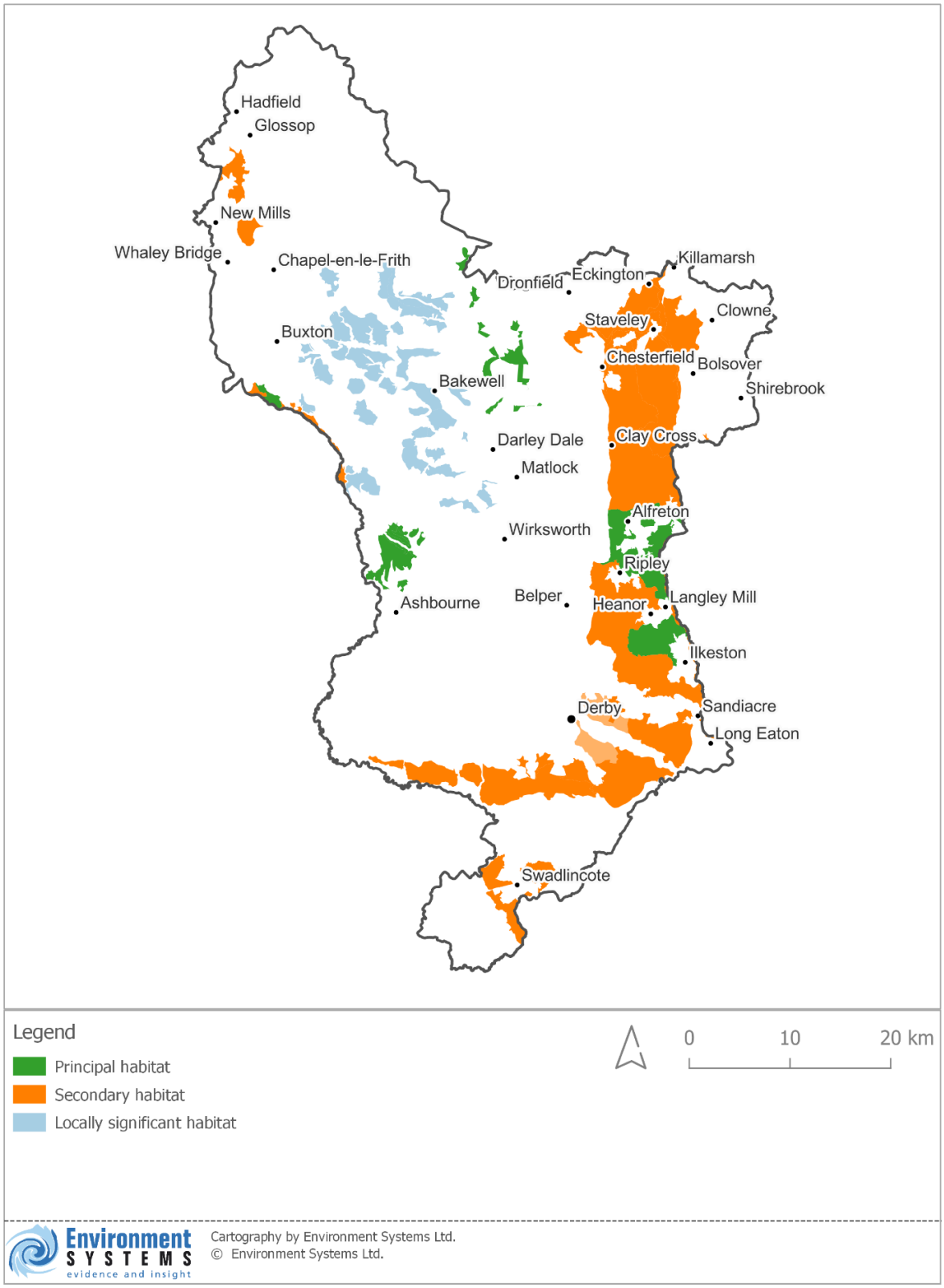


Figure 67: Landscape Character Types where the Urban broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

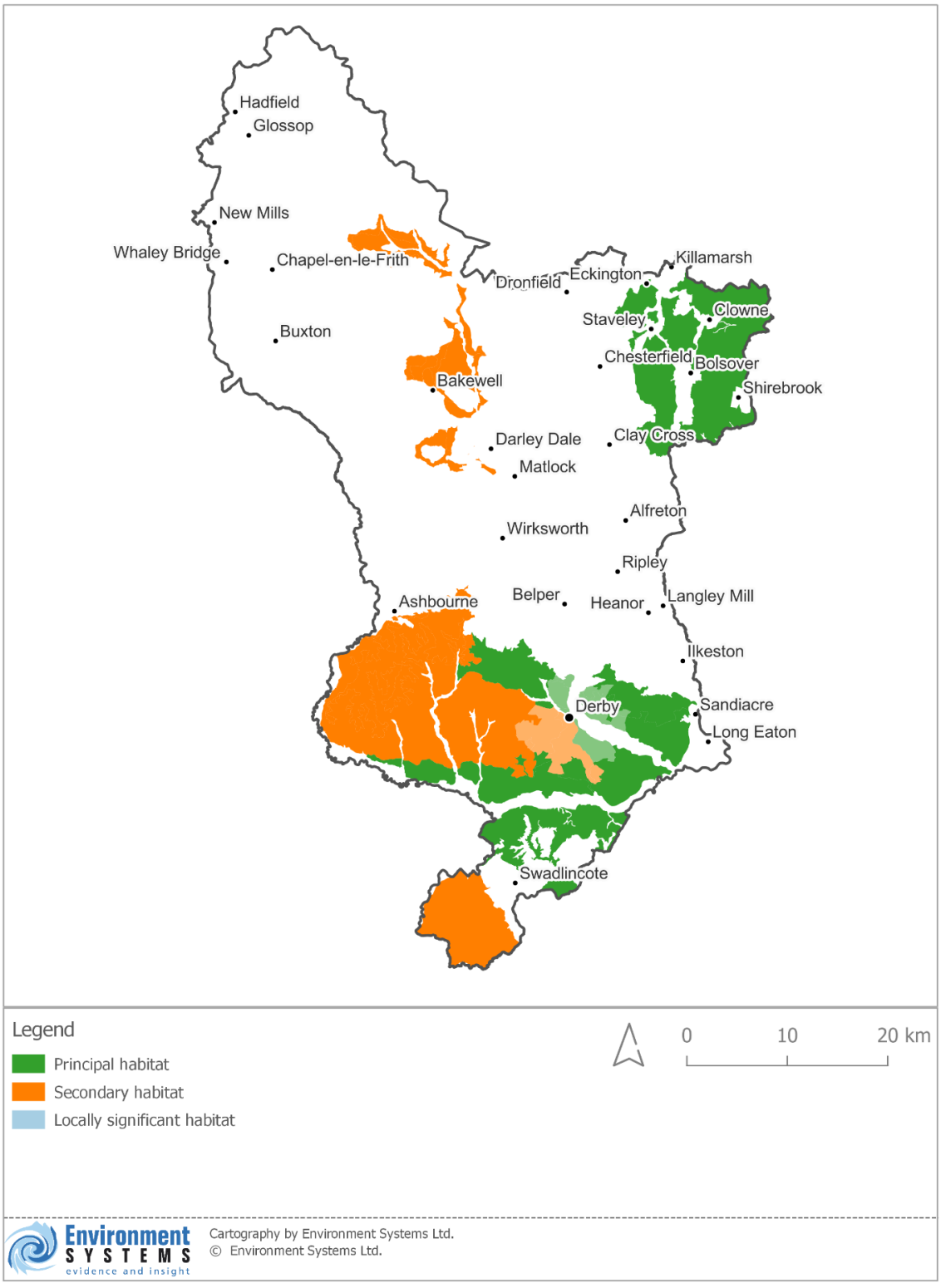


Figure 68: Landscape Character Types where the Cropland broad habitat type is a priority for conservation, restoration or habitat creation (interpreted boundary areas mapped as partially transparent)

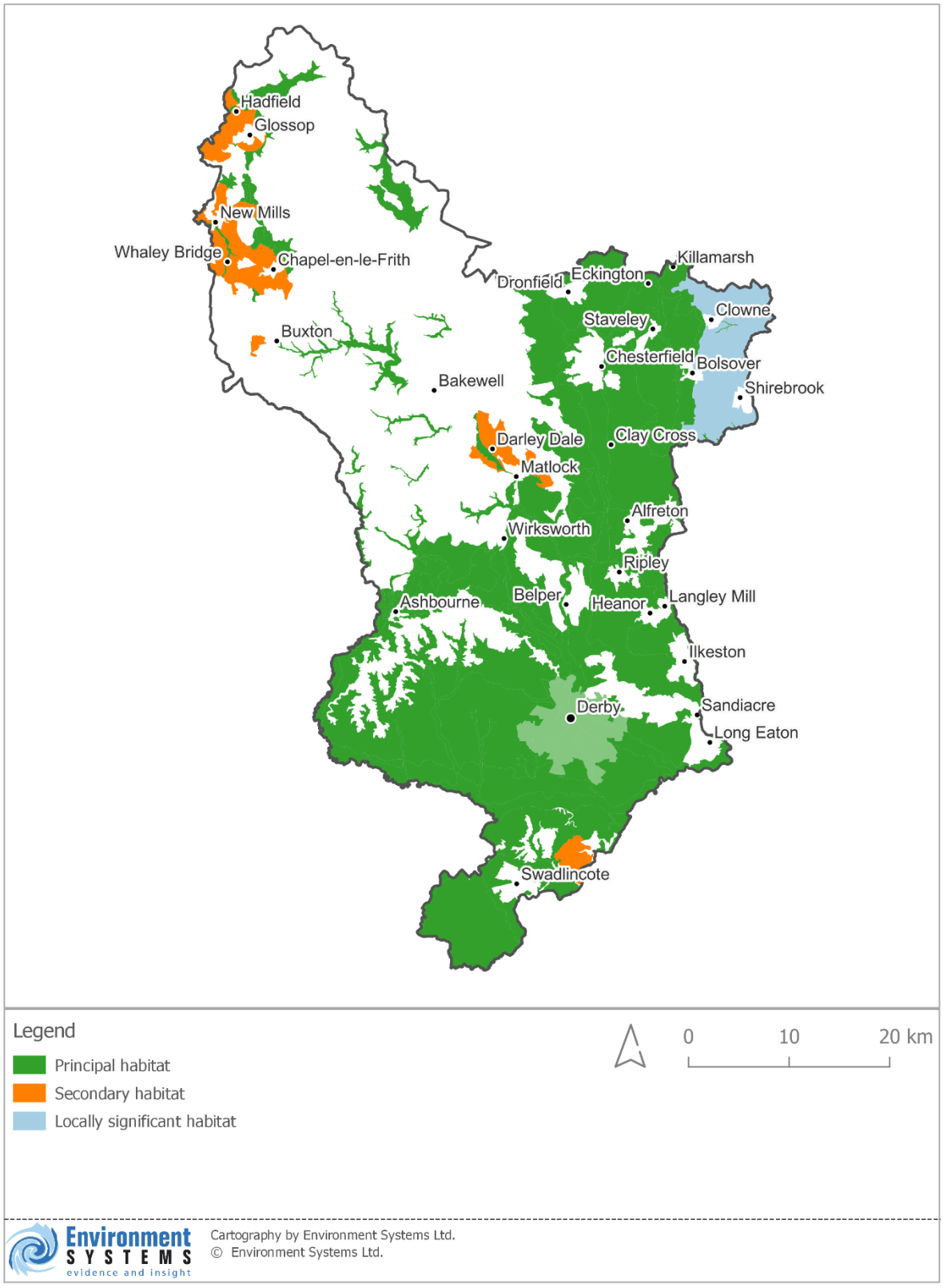


Figure 69: Landscape Character Types where the Rivers & Lakes broad habitat type is a priority for conservation, restoration or habitat creation (interpreted areas mapped as partially transparent)

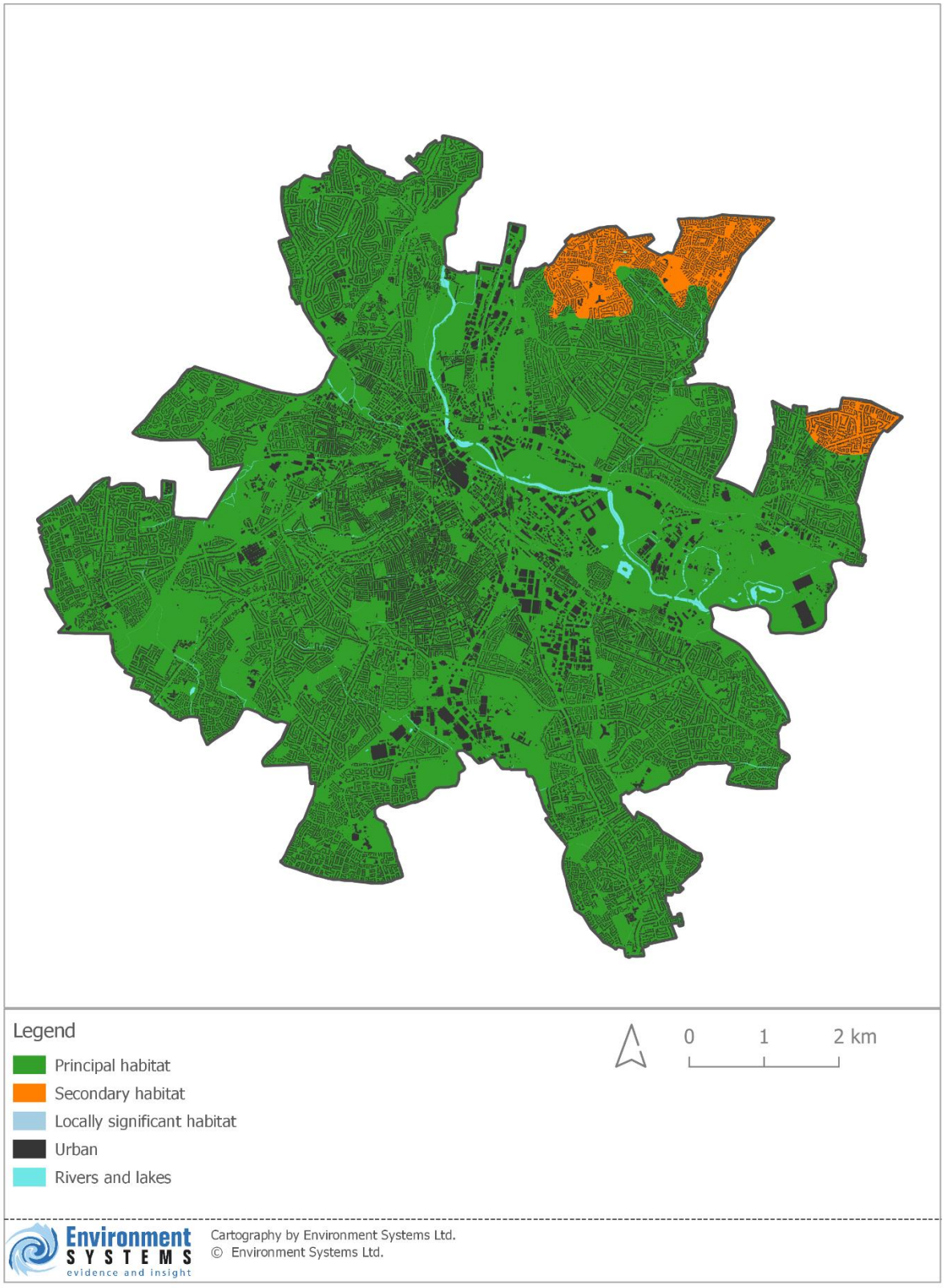


Figure 70: Landscape Character Types (interpreted boundaries) within Derby City where the Grassland broad habitat type is a priority for conservation, restoration or habitat creation

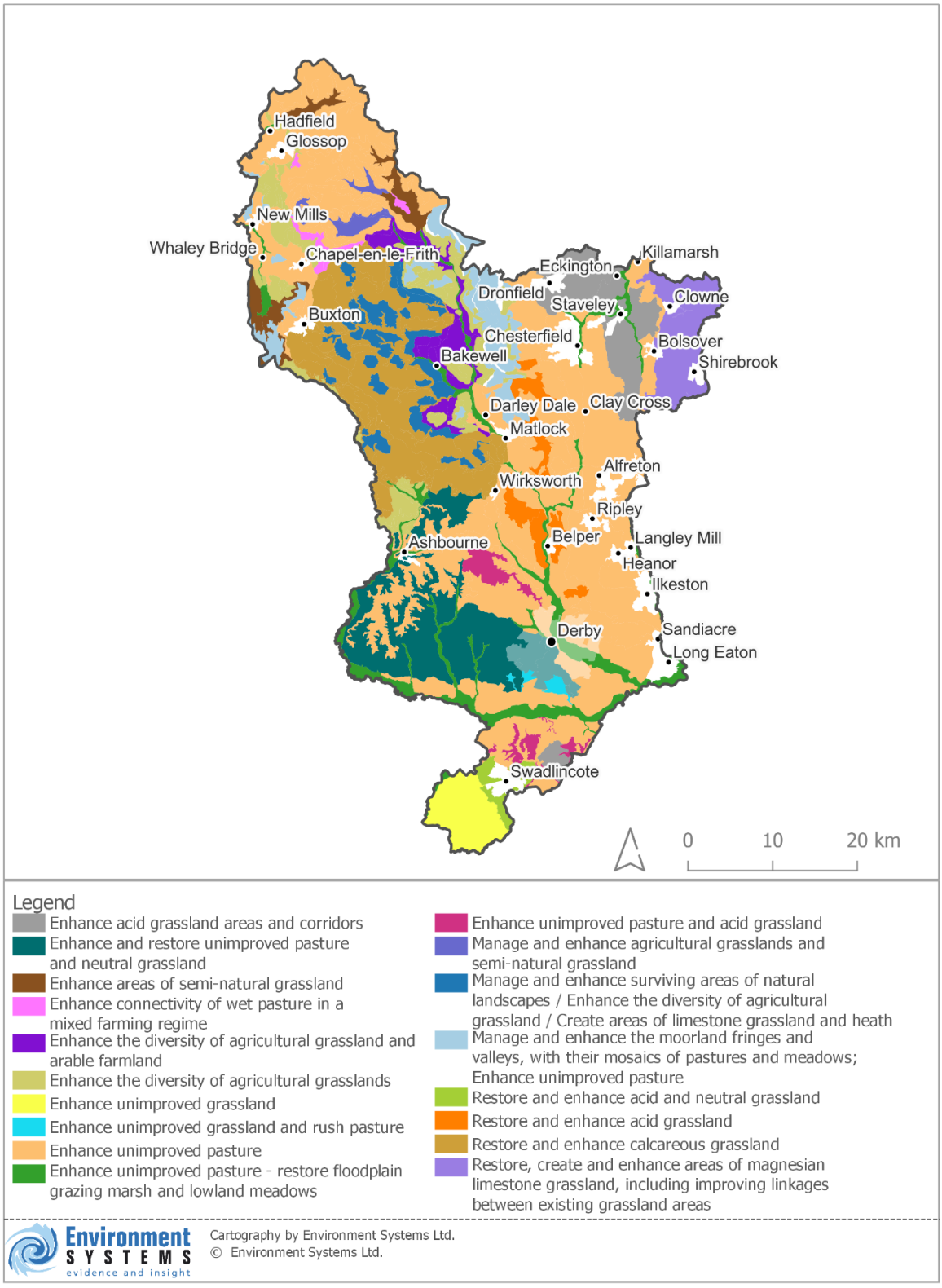


Figure 71: Locations where grassland-based habitat restoration or nature-based solutions could support the Landscape Character Type (interpreted boundary areas mapped as partially transparent)

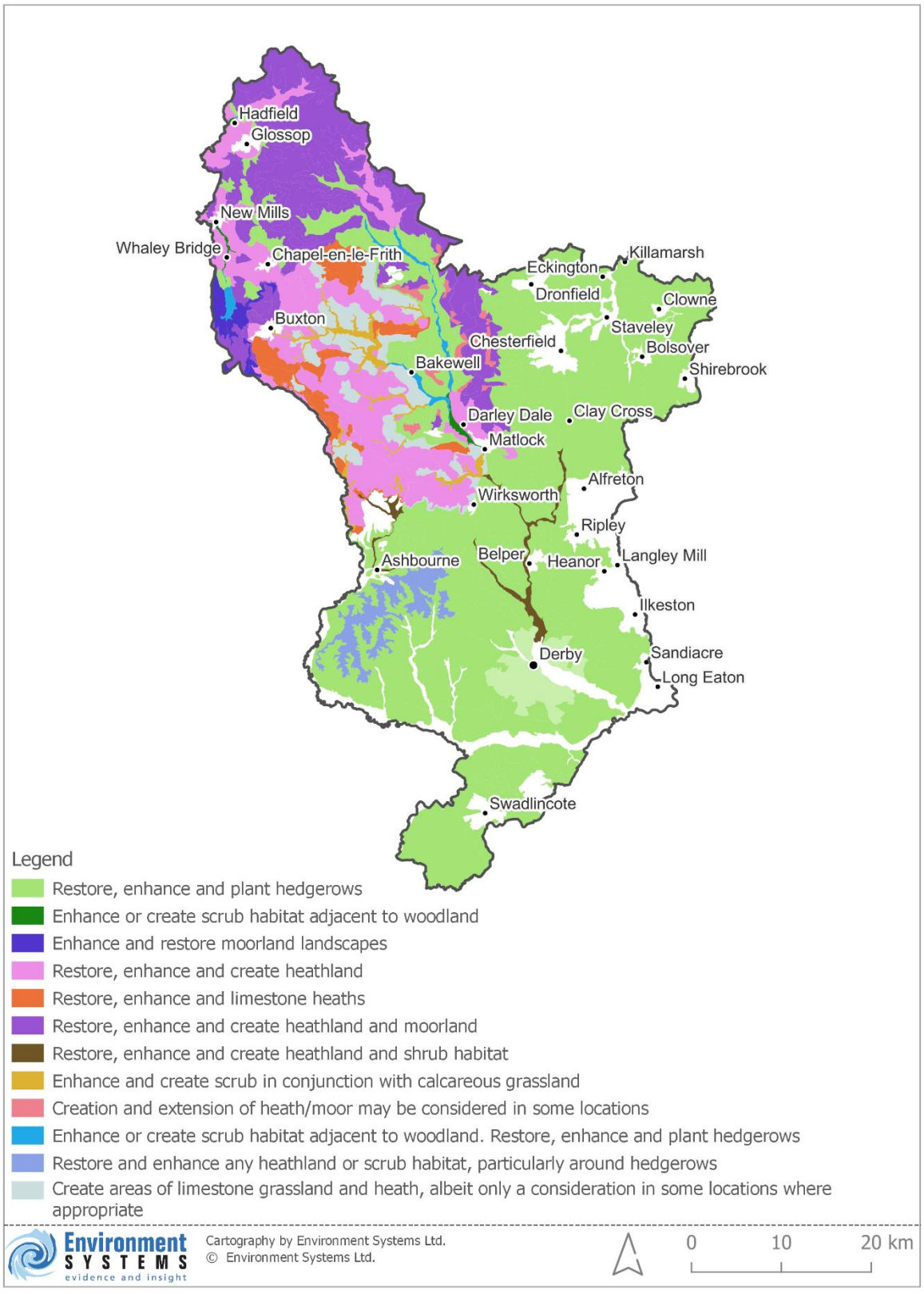


Figure 72:Locations where heathland-based habitat restoration or nature-based solutions could support the Landscape Character Type (interpreted boundary areas mapped as partially transparent)

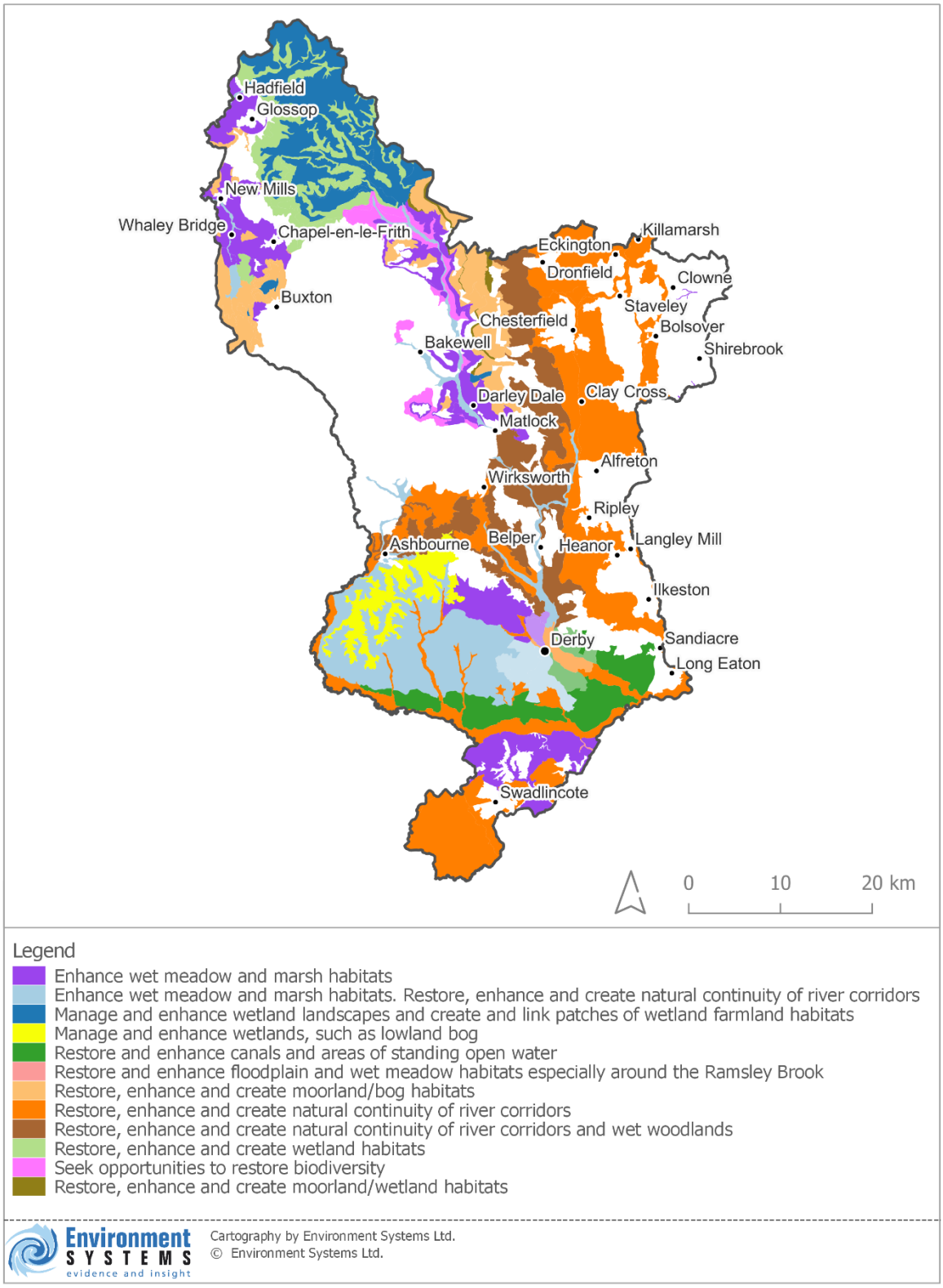


Figure 73: Locations where wetland-based habitat restoration or nature-based solutions could support the Landscape Character Type (interpreted boundary areas mapped as partially transparent)

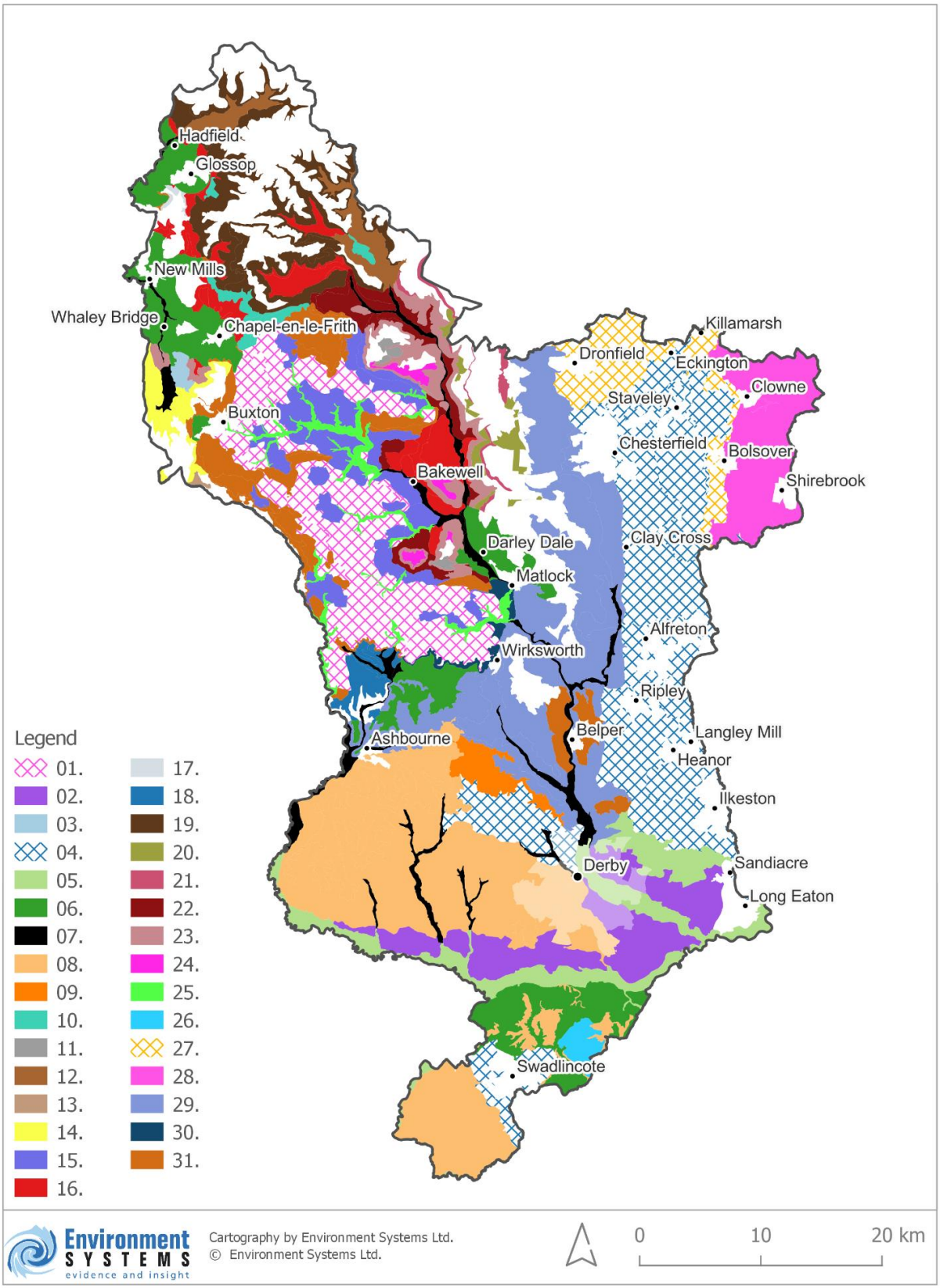


Figure 74: Locations where woodland-based habitat restoration or nature-based solutions could support the Landscape Character Type (interpreted boundary areas mapped as partially transparent); key to LCT regions shown in Figure 75)

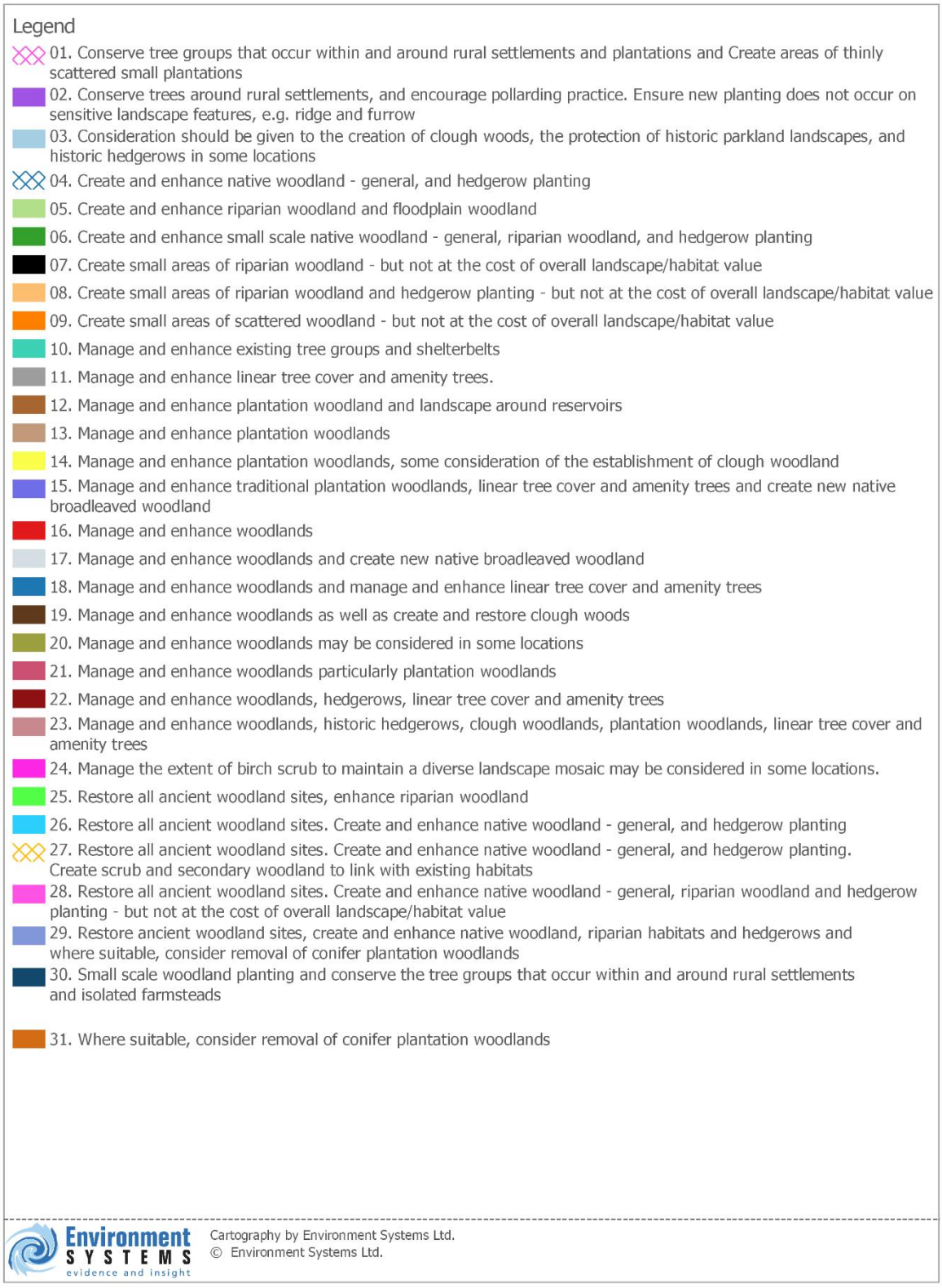


Figure 75: Key to LCT regions as applied to woodland NBS actions (Figure 74)

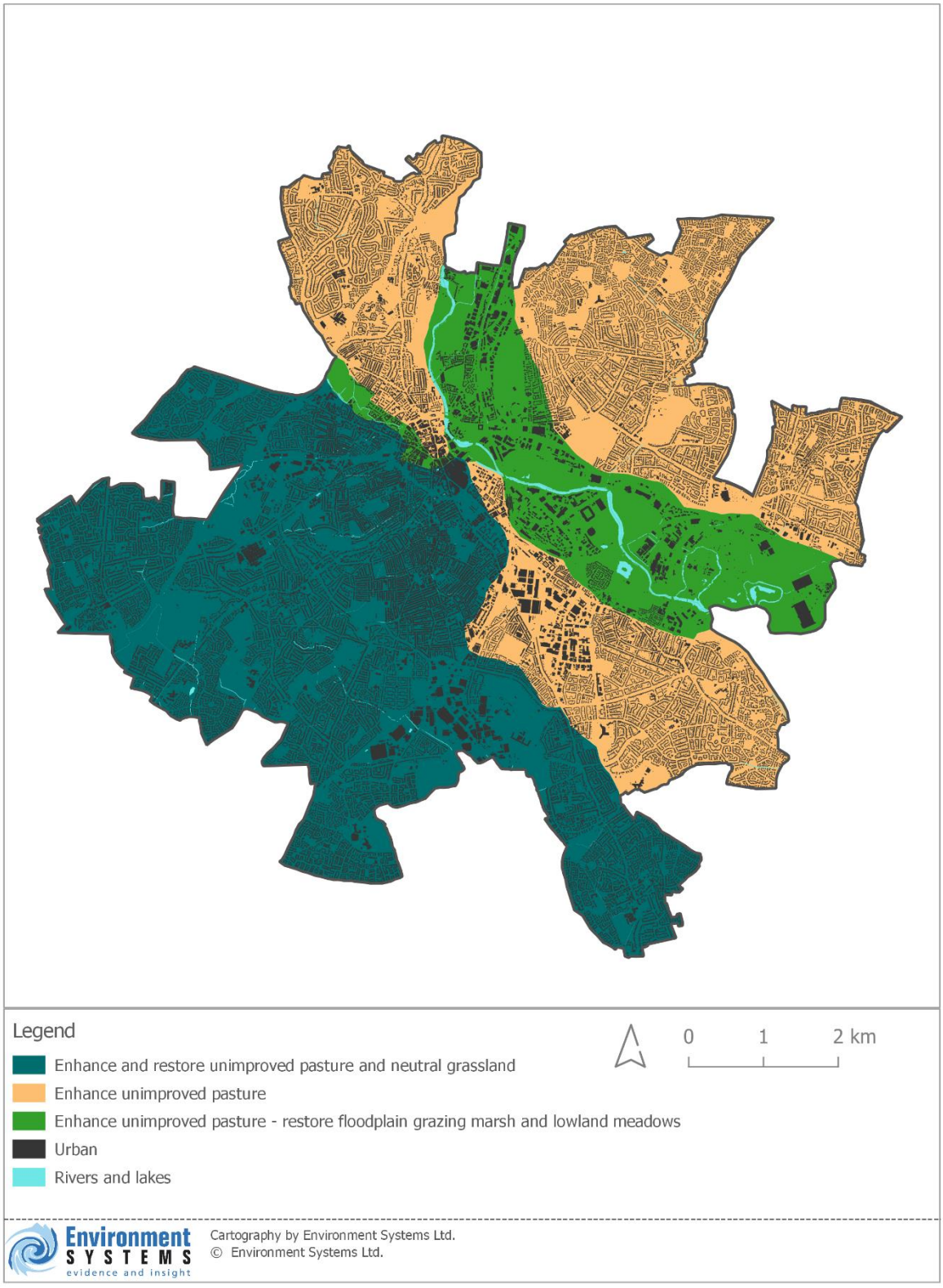


Figure 76: Locations where grassland-based habitat restoration or nature-based solutions could support the Landscape Character Type in Derby City (interpreted LCT boundary data)

Chapter 6: Cultural Historic Heritage

In Derbyshire it is recognised that heritage assets may contribute to, constrain or influence the delivery of natural capital projects, and decision making seeks to ensure the appropriate protection and enhancement of heritage assets as well as natural capital.

The natural capital of a heritage asset may be an integral element of the asset whilst at the same time allowing for/facilitating the provision of ecosystem services. For example, woodland within a Registered Park and Garden holds natural capital but in terms of heritage significance Illustrates a design Intention important to an understanding of the designed landscape of the park. Any natural capital projects affecting the woodland would need to consider the effect on significance of the park.

Furthermore, outside the footprint of a heritage asset, a woodland or other natural capital stock which includes important habitat types/natural capital resources may be an important element of setting contributing towards the significance of a heritage asset. Change to these resources could adversely or positively affect a heritage asset and its ecosystem services through 'setting' change.

This association between heritage assets and habitat, while largely coincidental, therefore means that natural capital change could affect heritage assets and/or ecosystem services. Due to overlaps between natural and heritage capitals, plus the lack of market values attributable to certain cultural services, sub-optimal decisions can be made around 'capital maintenance' and indeed valuable assets are often implicitly given zero value and overlooked.

Decision making related to the maintenance and enhancement of natural capital should therefore consider the effect of proposals on designated heritage assets, whether this be proposals within the footprints of designated heritage assets or within the 'setting' of those assets; natural capital gain should be sympathetic/beneficial to heritage assets, wherever possible, and to the ecosystem services which they provide. Natural capital and ecosystem services that derive from heritage assets should be considered concurrently wherever this is appropriate to do so.

Whilst designated status is not necessarily an indication of the potential for natural capital and the provision of ecosystem services, it can be a useful starting point to enable the natural capital of heritage assets to be considered. The designated heritage assets present within the non-urban areas of Derbyshire include:

- World Heritage Sites;
- Scheduled Monuments;
- Grade I and II* Listed Buildings;
- Registered Parks and Gardens (RPGs); and
- Registered Battlefields.

Urban areas are excluded due to their more limited potential for natural capital projects in comparison to non-urban areas. Grade II Listed Buildings are excluded due to the size of the Grade II dataset and the relative significance of these assets, albeit the general principles presented with respect to Grade I and II* Listed Buildings would still apply to Grade II Listed Buildings.

To assist in the understanding of the ecosystem services that a heritage asset may hold, the potential ecosystem services discussed in this section are those provided in Enabling a

Natural Capital Approach.[26] These include 'cultural services' which recognises the importance of intangible services such as the sense of public wellbeing that can derive from appreciation of artistic expression, spiritual fulfilment, sense of place and community and educational resources inherent to certain heritage assets.

Assets are principally described by their designated status. However, where specific sub-types of assets require particular focus, or where there are nuances associated with their natural capital context, this is highlighted.

A dataset on cultural heritage has been collated and analysed and conclusions drawn for purposes of preliminary review and discussion, in order to assist in the longer-term development of a methodology that can be applied to specific heritage assets. It informs the natural capital strategy but does not consider the detailed effect of natural capital projects on specific heritage assets/types of assets, an exercise which would require project specific consideration on a case-by-case basis.

The results of this review are shown in Appendix 11. They are listed by type of designation and the ecosystem services they might be expected to interact with. The risks and opportunities for each ecosystem service are also reviewed.

[26] Department for Environment, Food and Rural Affairs (2020)

Chapter 7: Monitoring plan

This chapter provides a summary of the monitoring plan produced for the Natural Capital Strategy (Appendix 12); it is designed to help the continued monitoring of natural capital within Derbyshire, with a focus on habitats as key resources underpinning the delivery of natural capital strategy. Monitoring natural capital:

- Supports initiatives for nature recovery, biodiversity net gain, and wider ecosystem service delivery by providing a mechanism whereby the success of the schemes can be judged.
- Identifies and quantifies both known and unexpected changes to natural capital that affect the value of the resource.

Key to monitoring is maintaining an up-to-date habitat map as habitats are the factor which is most likely to show quantifiable change within the timeframe of a few years. By contrast, the other factors used in modelling such as landform, soil, geology and land hydrology are much less likely to do so. The update process for the Habitat map is shown in Figure 77.

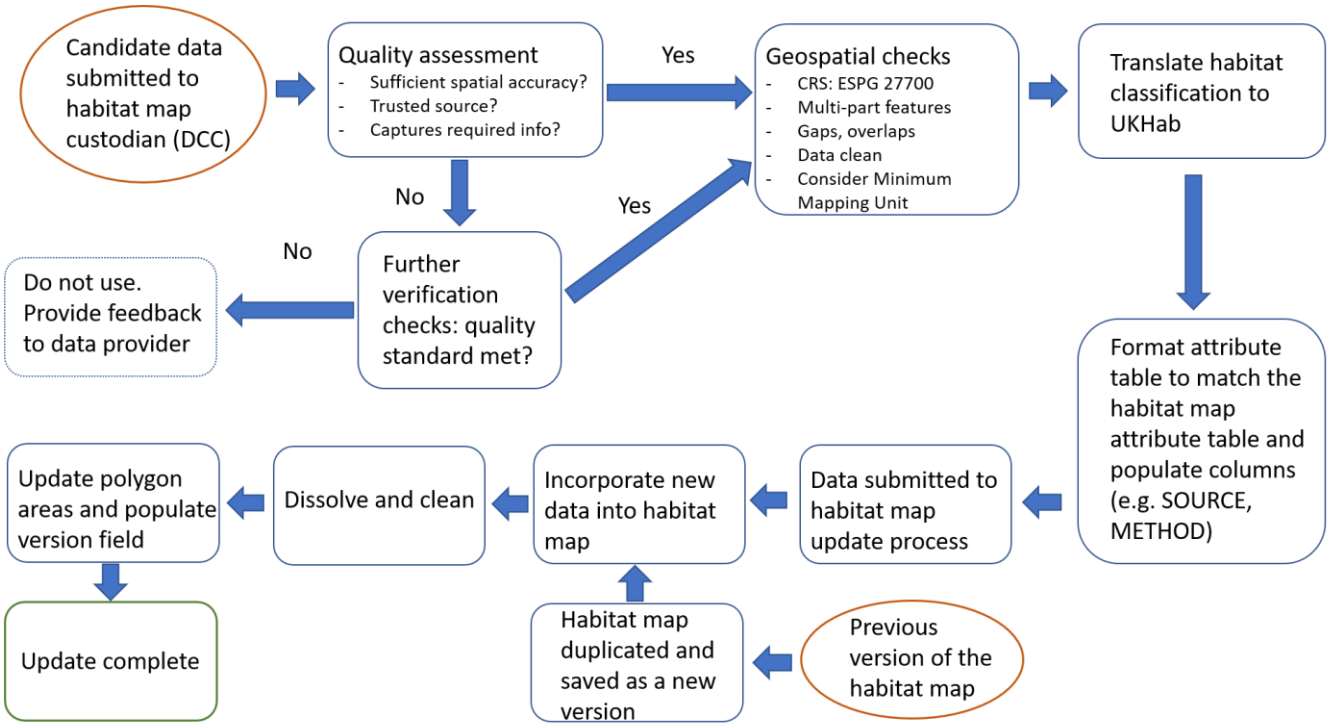


Figure 77: Habitat map update process

The accounts and ecosystem services should be re-run at least every five years as change can be expected within this timeframe that is material to the natural capital accounts. This change will be as a result of increased investment in nature-

based solutions together with increasing pressures on land, including those from climate change.

The Derbyshire natural capital asset account will also need to be periodically updated to monitor the benefits and underlying assets presented in the account. The level of analysis and frequency for such updates depends on changes to underlying data and available resources, but some aspects of the account can be readily updated on an annual basis. For example, market benefits such as water supply and minerals data can be updated to the latest annual market values. Other benefits require data inputs from external models (such as air quality regulation) which are updated less frequently. More detailed updates to the accounts would be beneficial if spatial plans or other strategic documents are renewed and the recommended frequency of this is a 5-yearly update as set out in the monitoring plan.

Chapter 8: The impacts of climate change

Climate change has the potential to significantly disrupt the natural capital of Derbyshire; the predicted changes in temperature and rainfall patterns in particular will alter growing conditions, meaning that some places become less suitable for supporting particular species and habitats, while other places become more suitable.

This is significant because for natural capital, the 'what' (what species, habitats, soils etc.) is very important for determining the level of benefits people can derive. Equally important is the 'where'; where in the landscape those assets are located, because the level of ecosystem service delivered by an asset depends on where it is situated in the landscape, and how that relates to other assets.

Climate change will not affect all assets equally, and it is important to understand how changing extents and distribution of natural assets could affect ecosystem services in Derbyshire; which places could come under more pressure and require more support.

This section presents an overview of some of the climatic trends that are projected to occur in Derbyshire, based on two sources of climate data; UKCP1827 (for analysis of changes in agricultural land grade), and WorldClim28 (for analysis of bioclimatic variables).

Climate change models are complex, and it is important to recognise the spatial limitations of the data, which is of coarser spatial resolution than the datasets used for production of the habitat map and ecosystem service maps. However, the data provide a valuable insight into the types of changes that will be faced by Derbyshire, and how these could impact natural capital and ecosystem service delivery.

Rainfall and temperature changes

Rainfall and temperature trends were investigated through analysis of WorldClim bioclimatic data. Analysis of the maximum temperature of the warmest month of the year (WorldClim Bioclimatic variable 5) identified that maximum temperatures are predicted to increase by 8oC consistently throughout Derbyshire by 2080.

Temperature increases, and an increase in heatwave events, are particularly significant for densely populated and deprived urban areas, where there is a greater risk of heat stroke and other impacts on health and well-being. To mitigate the effects of heat, green corridors and cooling features such as trees and wetlands are expected to become increasingly valuable, particularly in urban environments.

[27] https://www.metoffice.gov.uk/research/approach/collaboration/ukcp
[28] https://www.worldclim.org

Temperature increases also influence the distribution of many species. Derbyshire is currently at the northern limit of the distribution of many native 'southern' species; e.g. wild service tree (Sorbus torminalis), and the southern limit of the distribution of many native 'northern' species; e.g. northern brown argus butterfly (Aricia artaxerxes). Temperature changes could alter the distribution of native species in Derbyshire, through the impact of changes in site suitability or competition from other species.

Temperature seasonality (WorldClim bioclimatic variable 4) is expected to increase throughout Derbyshire between the present day and 2080 (Figure 79), meaning that heat waves are predicted to become more frequent. However, there is spatial variation in the magnitude of these changes; lowland areas, which coincide with the most productive agricultural land, are predicted to experience greater fluctuations in temperature than the uplands; this will increase pressure on farmers and pose an increased risk to agricultural food production.

Two aspects of precipitation were analysed; annual precipitation, and the seasonality of rainfall (coefficient of variation). Annual precipitation describes the total rainfall received during the course of the year, while the seasonality of precipitation describes how spread out throughout the year the precipitation events are. A comparison was undertaken between rainfall parameters for the present day (based on WorldClim historical average data) and modelled data for 2080 under climate change scenario Shared Socio-economic Pathway (SSP) 370 (Meinshausen et al., 2020).

The analysis showed that very little change in annual precipitation between the present day and 2080, with a maximum of 4mm difference in rainfall received at any location; this is not a significant change in the total annual rainfall. However, visualisation of the change in seasonality of rainfall (WorldClim bioclimatic variable 15) identifies that there will be changes in the pattern of precipitation events Figure 81. This means that although the total amount of rainfall received throughout the year in 2080 will be very similar to that of today, the seasonality will increase; the rainfall will fall in sharper, more intense bursts, with longer dry periods between them. The northern and upland parts of Derbyshire are predicted to be subjected to greater change in seasonality than the lowlands; while seasonality throughout the lowlands is predicted to double compared to the present day, the uplands are predicted to experience a six-fold increase in seasonality.

This trend is very significant for agriculture, habitats and individual species, as the required amount of rainfall may be less likely to fall at key times of year, for example to support germination and fruiting, or to stop ponds from drying out. Conversely, more intense bursts of rainfall are likely to increase surface water runoff increasing, flood risk, and causing soil erosion and water quality issues. This highlights the importance of taking early action in support of natural flood management, soil conservation, and protection of waterbodies from harmful inputs.

Blanket bog and other rainfall-fed habitats are particularly vulnerable to climate change. These habitats support unique flora and fauna, and are also extremely

valuable for their surface water regulation and carbon storage properties, due to the underlying peat layer. Peatland habitats are key targets for habitat maintenance and restoration in order to protect and enhance these vital ecosystem services, but there is a risk that these habitats will become less resilient under climate change due to changes in hydrology; should the habitats not receive enough rainfall, the conditions will not be suitable for peat formation, making peat restoration projects less likely to succeed. Furthermore, damaged peatlands would be less able to recover, and be more likely to become a source of carbon emissions than those which sequester carbon.

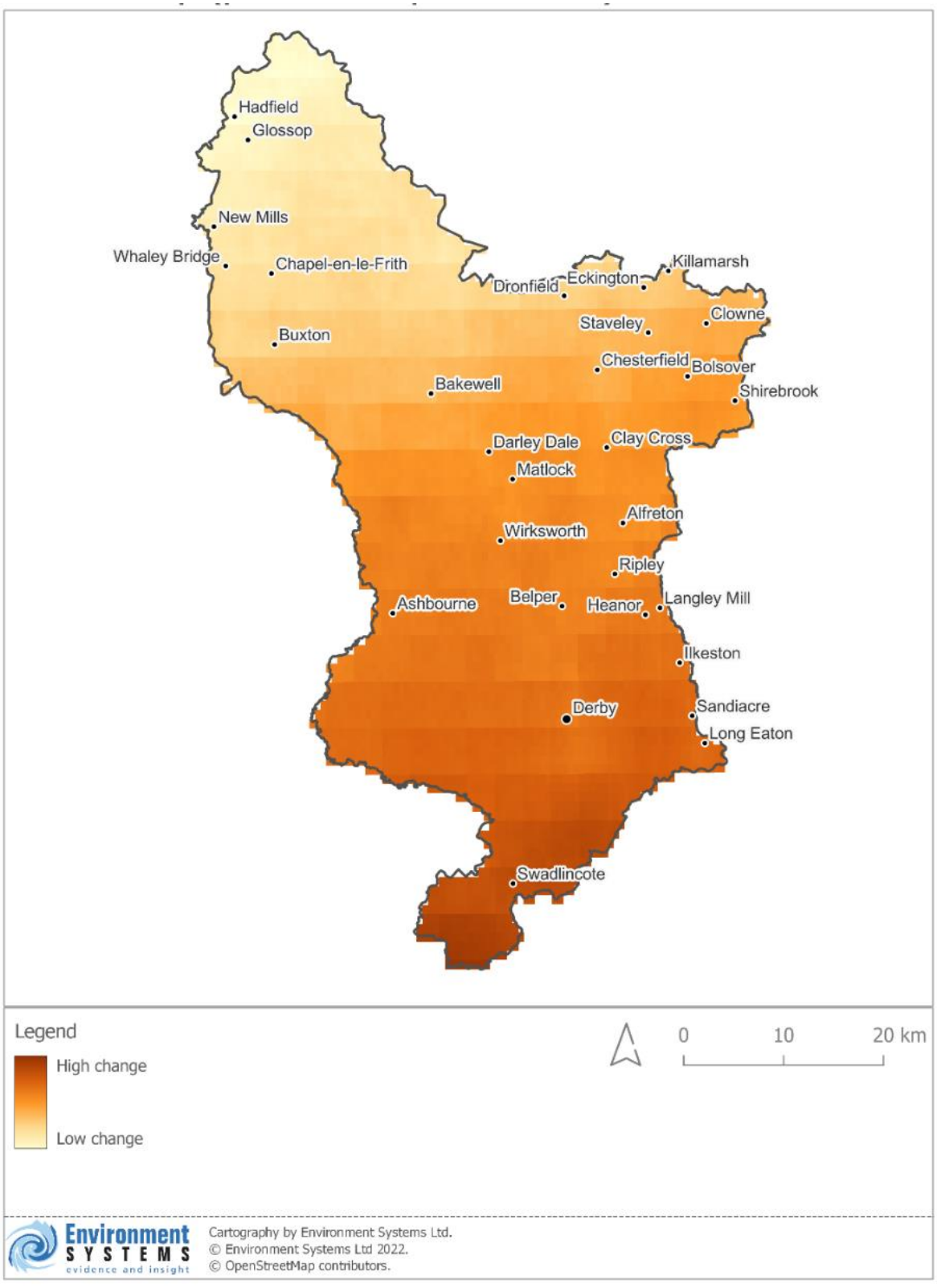


Figure 78: Change in seasonality due to temperature between the present day and 2080 (WorldClim ssp370)Impacts on habitats

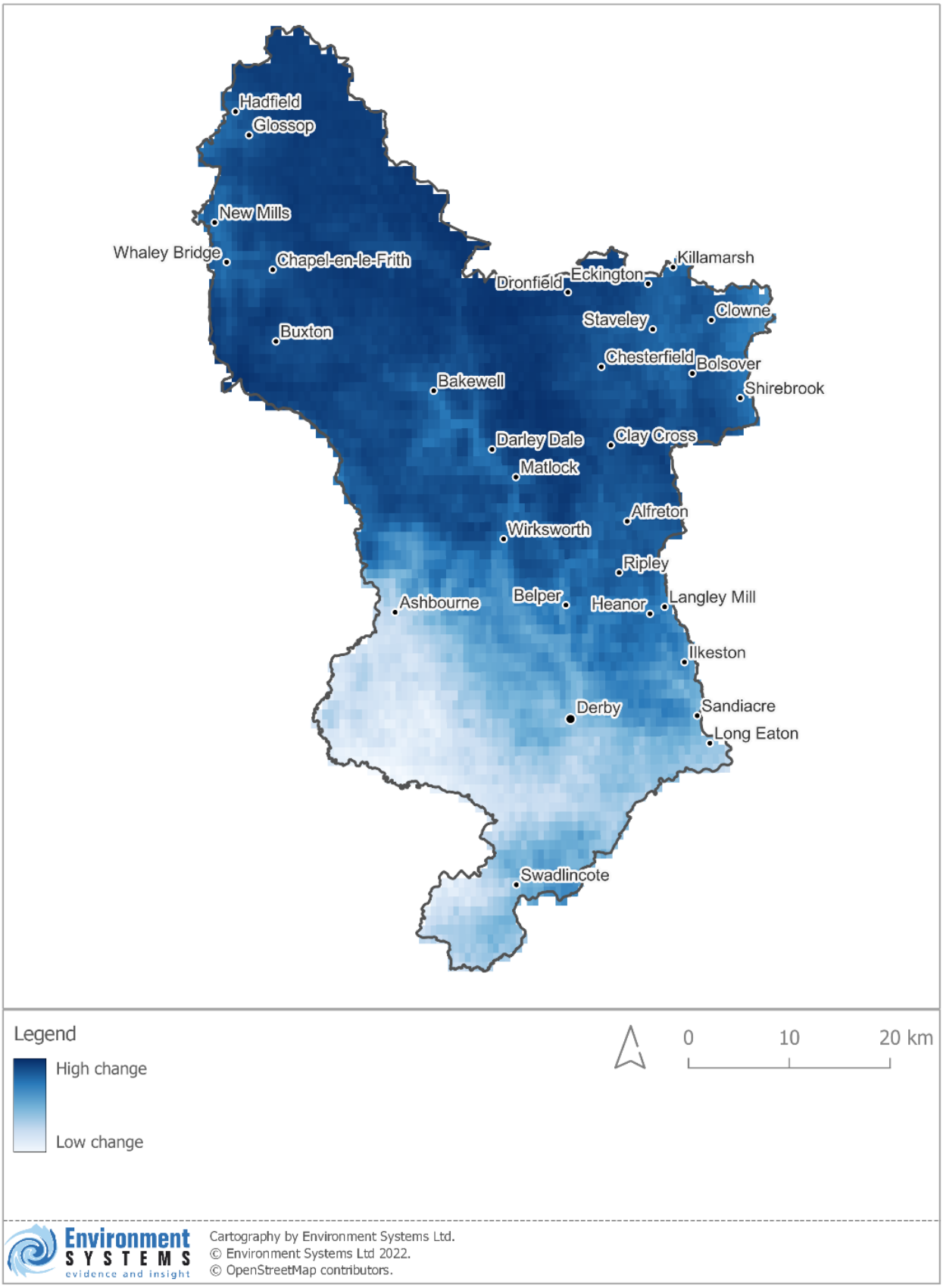


Figure 79: Change in seasonality due to precipitation between the present day and 2080 (WorldClim ssp370)Impacts on habitats

Although little difference in annual rainfall is predicted to occur throughout Derbyshire as a whole, the predicted change could be significant for habitats that are currently located at the extreme limit of their biophysical range. Analysis of trends in annual average rainfall (Figure 81) and the number of field capacity days (the number of days at which the soil pores are fully hydrated under gravity (Figure 83); shows a predicted decrease in the area of land where hydrological conditions will support the formation of blanket bog (although existing habitat could be stable if managed appropriately). This means that blanket bog habitats (peatlands) will come under increasing pressure due to climate change induced changes to hydrological conditions.

Parts of Kinder Scout, running south to the peaks of Brown Knoll and Lords Seat are predicted to become particularly vulnerable as they are located at the edge of the areas that are currently hydrologically suitable for peatland formation, and in the future peat formation is predicted to become less achievable. This provides a strong argument for targeting peatland restoration measures to this vulnerable area; by restoring peatlands the existing carbon stock locked away in the peat will be more resistant to oxidation due to drying-out. At the same time, protecting the peat resource also maintains the important water-regulating function of peat.

The management practice of burning heather moorland poses a risk to peat formation and peat condition if not controlled. However, under-managed moorlands build up large quantities of woody or dead heather, which are a significant wildfire risk. Therefore, woodland management plans must balance peat formation, habitat and species goals with wildfire risk, economics and logistical considerations.

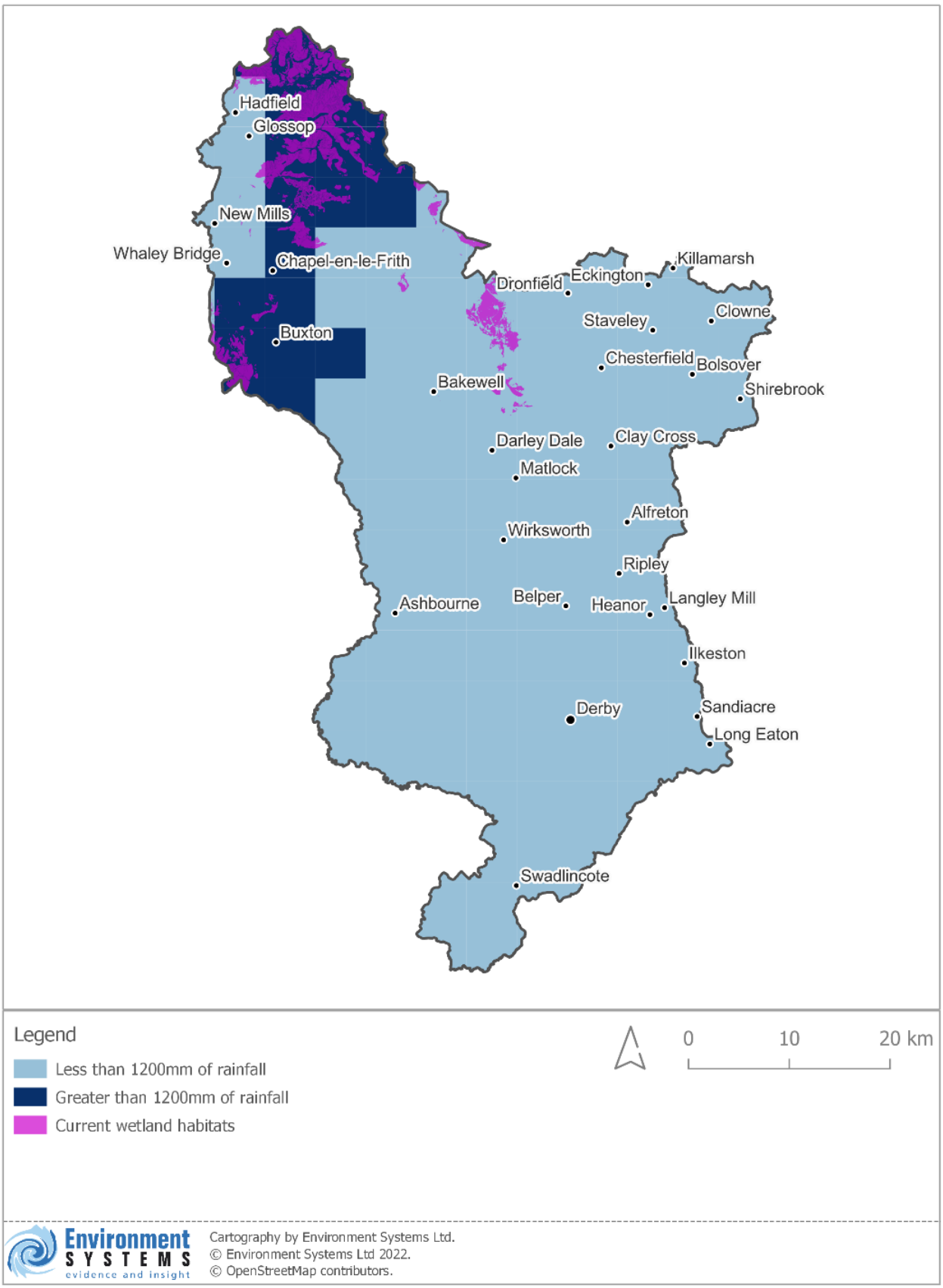


Figure 80: Comparison of areas receiving at least 1200mm Annual Average Rainfall in the present day (UKCP18 RCP 6.0)

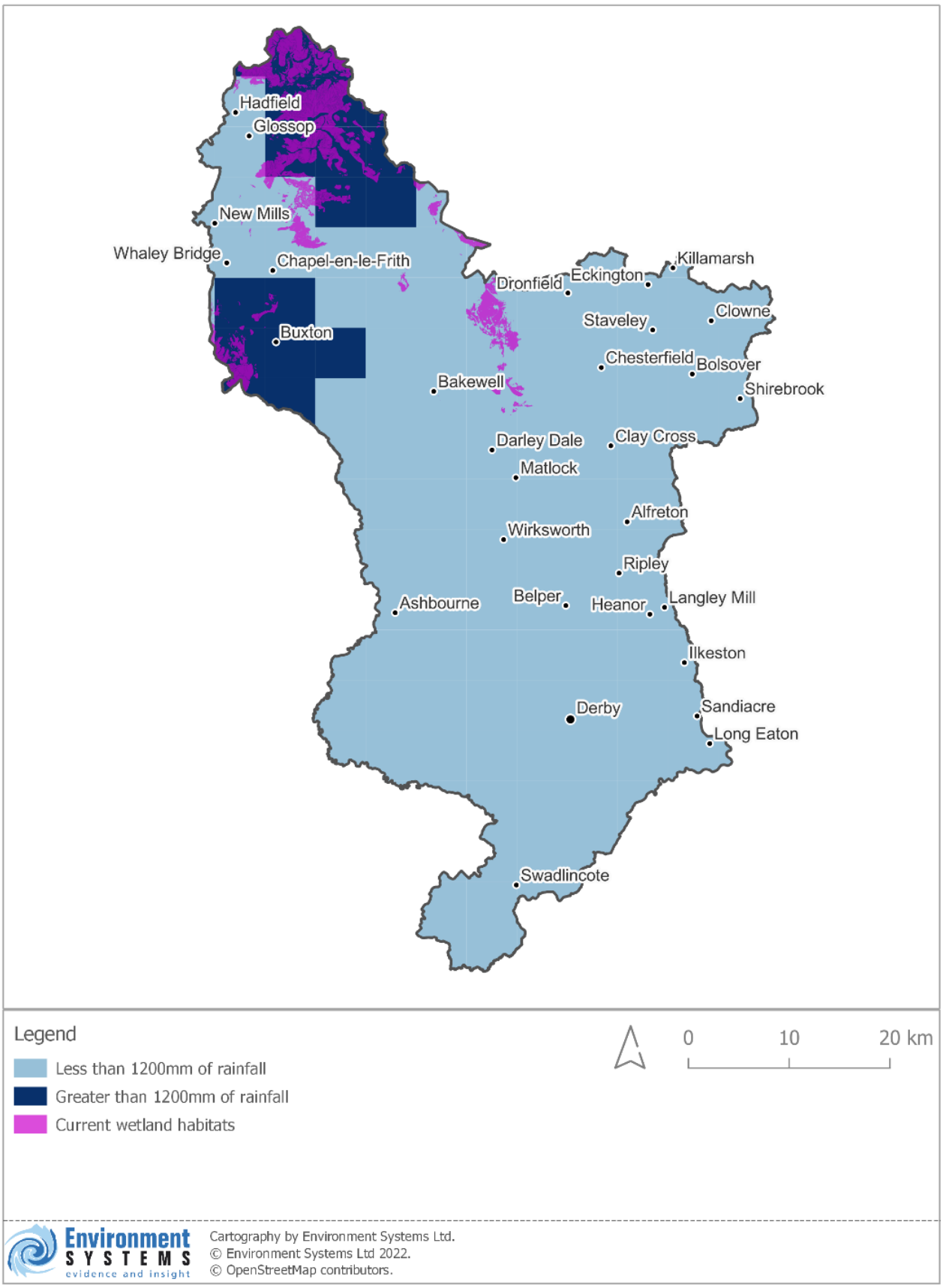


Figure 81: Comparison of areas receiving at least 1200mm Annual Average Rainfall in 2080 (UKCP18 RCP 6.0)

Impacts on agricultural land quality

Soil moisture characteristics are a fundamental component of the Agricultural Land Classification, which grades the land according to its capability for farming. Changes in temperature and precipitation patterns affect the soil moisture status, and different soil types will be affected by these changes to different extents according to their physical properties (i.e. the proportion of sand, silt, clay and organic matter) and management practice.

Figure 84 illustrates how agricultural land capability is predicted to change between the present day and 2080. Most areas will not see a change in the overall ALC grade, although the nature of the main limiting factors could change (for example a soil that is currently limited by wetness could by 2080 become limited instead by another factor, but retain the same grade overall if the level of limitation is comparable). Some areas have the potential to improve in soil quality for agriculture; these areas are located near the upland fringes, which suggests that they are currently limited by soil wetness, but under climate change (particularly the trend of increasing precipitation and temperature seasonality; longer hot/dry spells) these soils become less limited by wetness, and the climate more favourable for crop growth.

Conversely, some areas display a decrease in agricultural land quality by 2080. An analysis of the main limiting factor in ALC terms reveals that this change is largely due to an increase in soil drought conditions. Figure 86 shows a substantial increase in areas where drought becomes a main, or joint equal, limiting factor for agriculture; and this includes significant areas of land that is currently good quality, Grade 2 and Grade 3 land, around the Chesterfield/ S Yorkshire Notts & Derbyshire Coalfield area, and in the Trent Valley. In these areas, particular consideration should be given towards supporting agricultural management practices for enhancing soil carbon (which improves soil moisture retention), increasing on-farm water storage (including wetland creation), agroforestry, or growing alternative, drought resilient crop varieties.

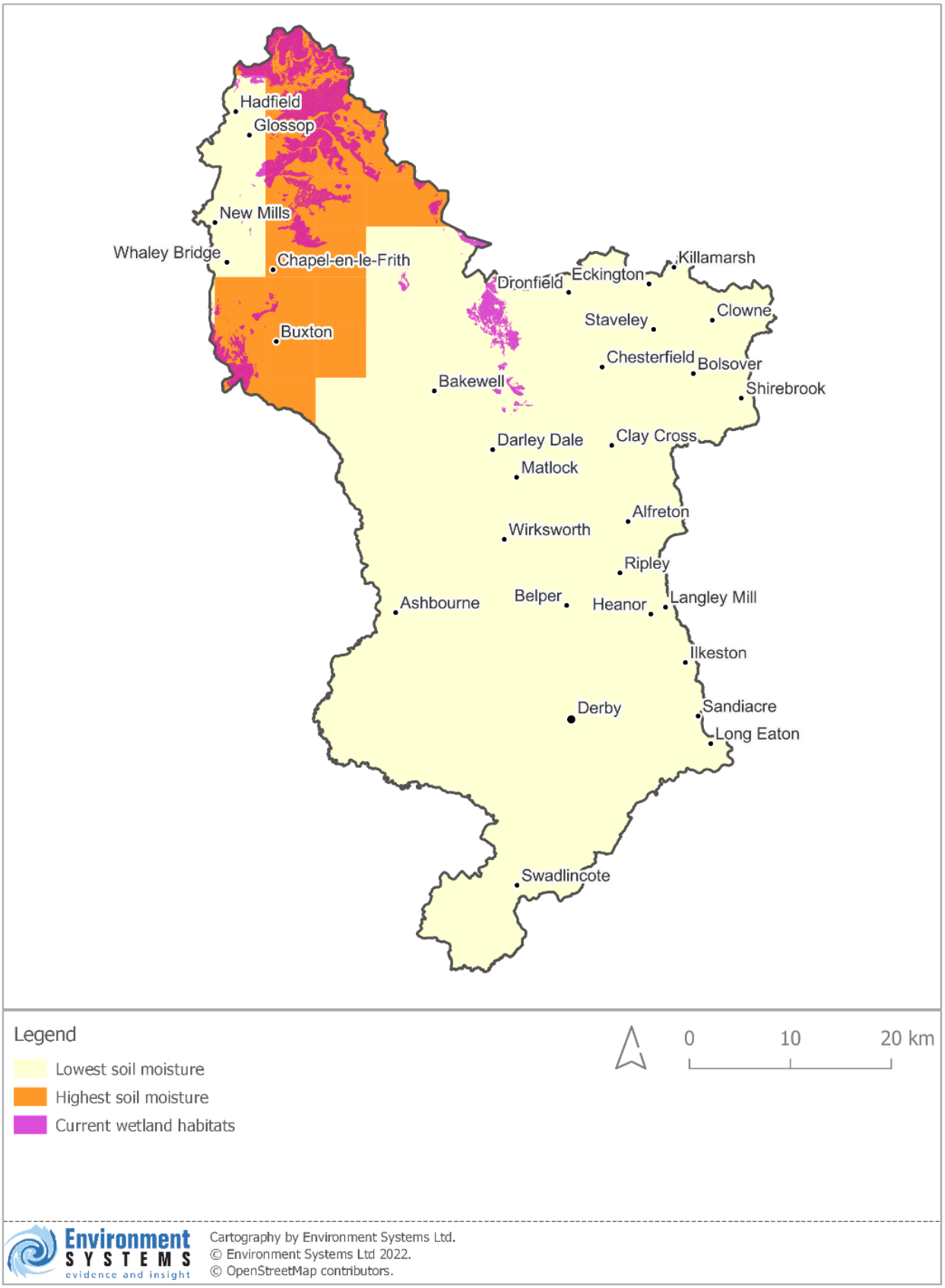


Figure 82: Comparison of areas where the soil experiences at least 270 Field Capacity Days in the present day (UKCP18 RCP 6.0)

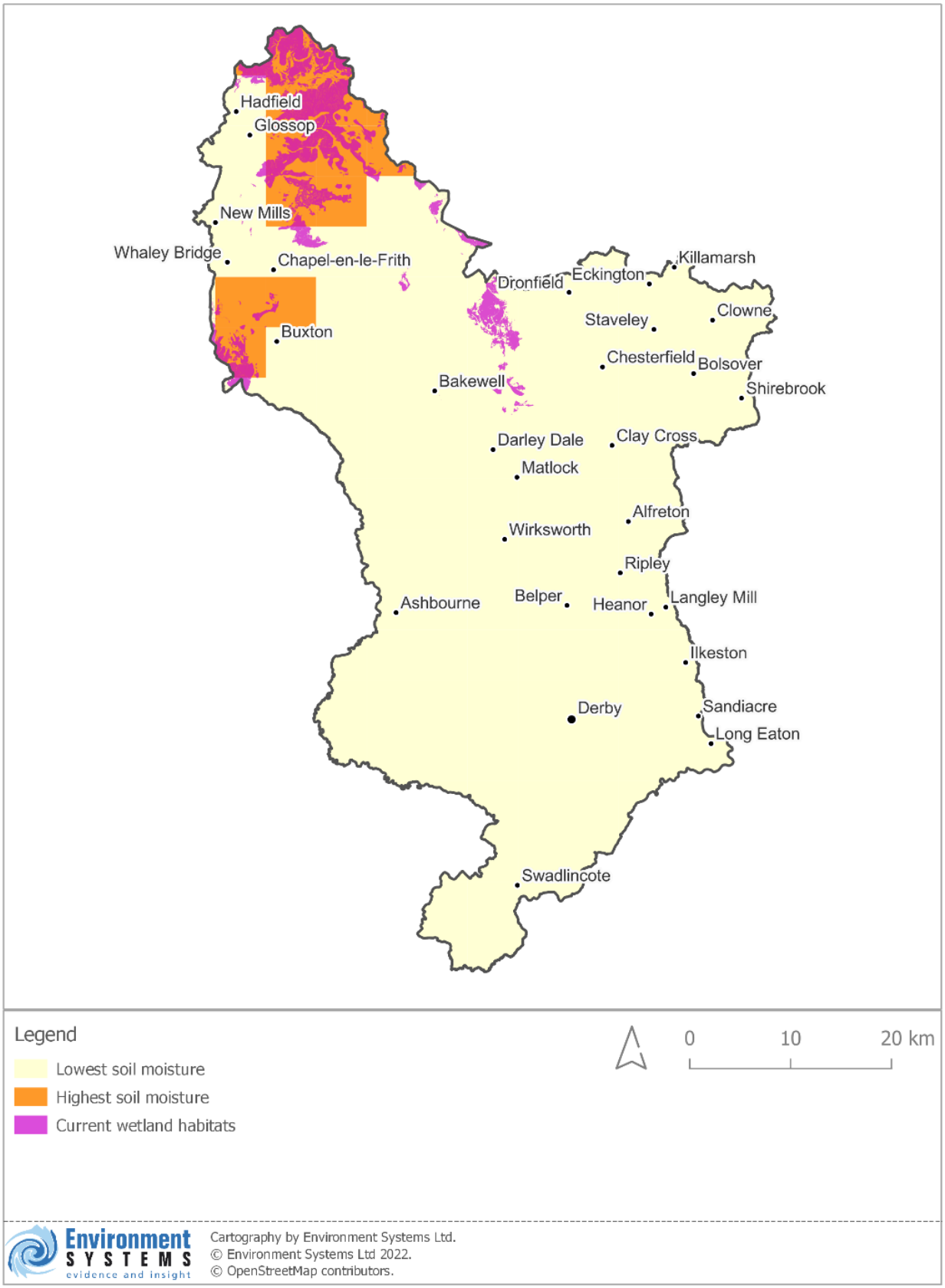


Figure 83: Comparison of areas where the soil experiences at least 270 Field Capacity Days in 2080 (UKCP18 RCP 6.0)

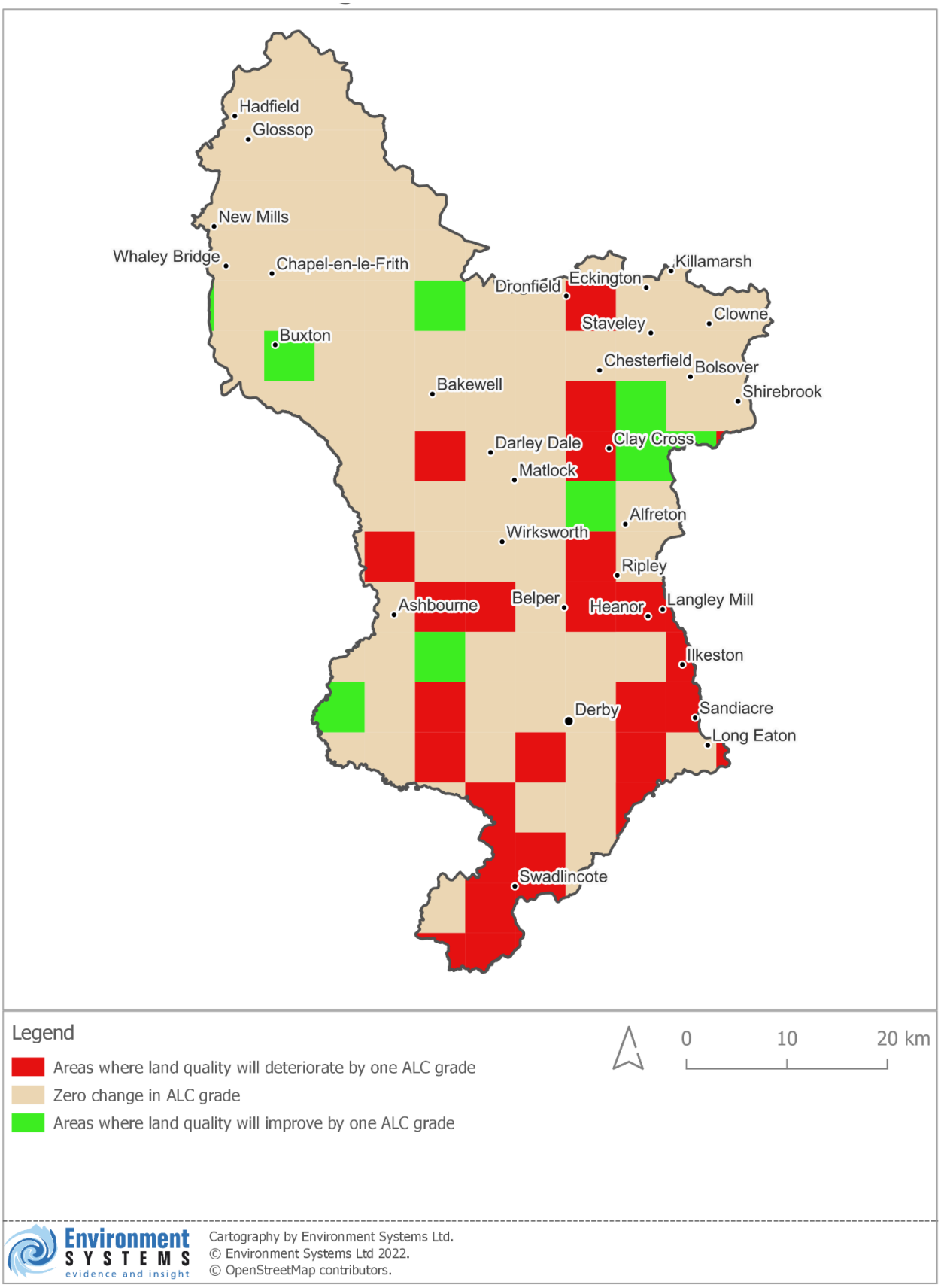


Figure 84: Predicted changes in Agricultural Land Classification grade between the present day and 2080 (UKCP18 RCP 6.0)

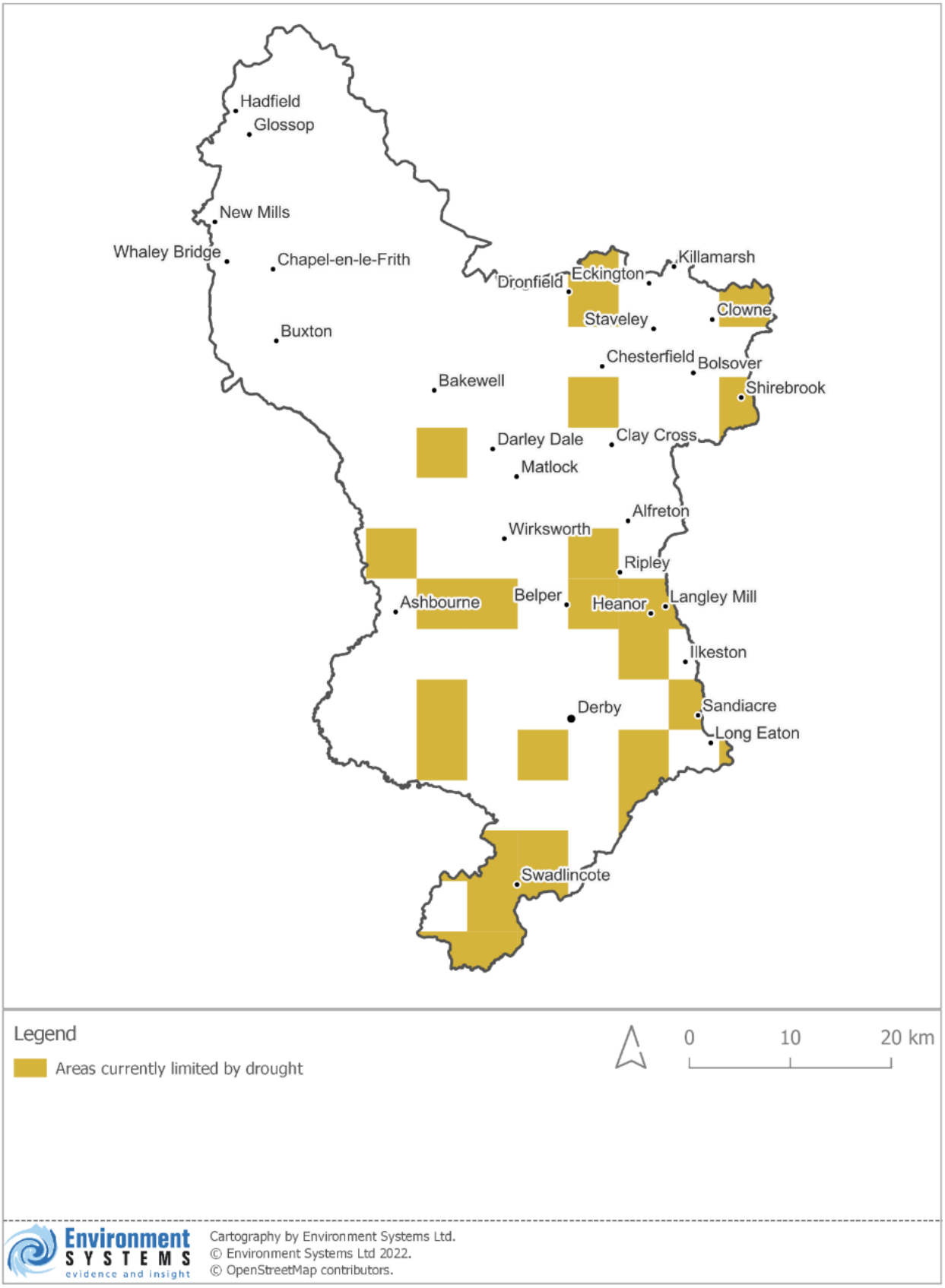


Figure 85: Areas where drought is a significant limiting factor for agriculture: present day UKCP18 RCP 6.0

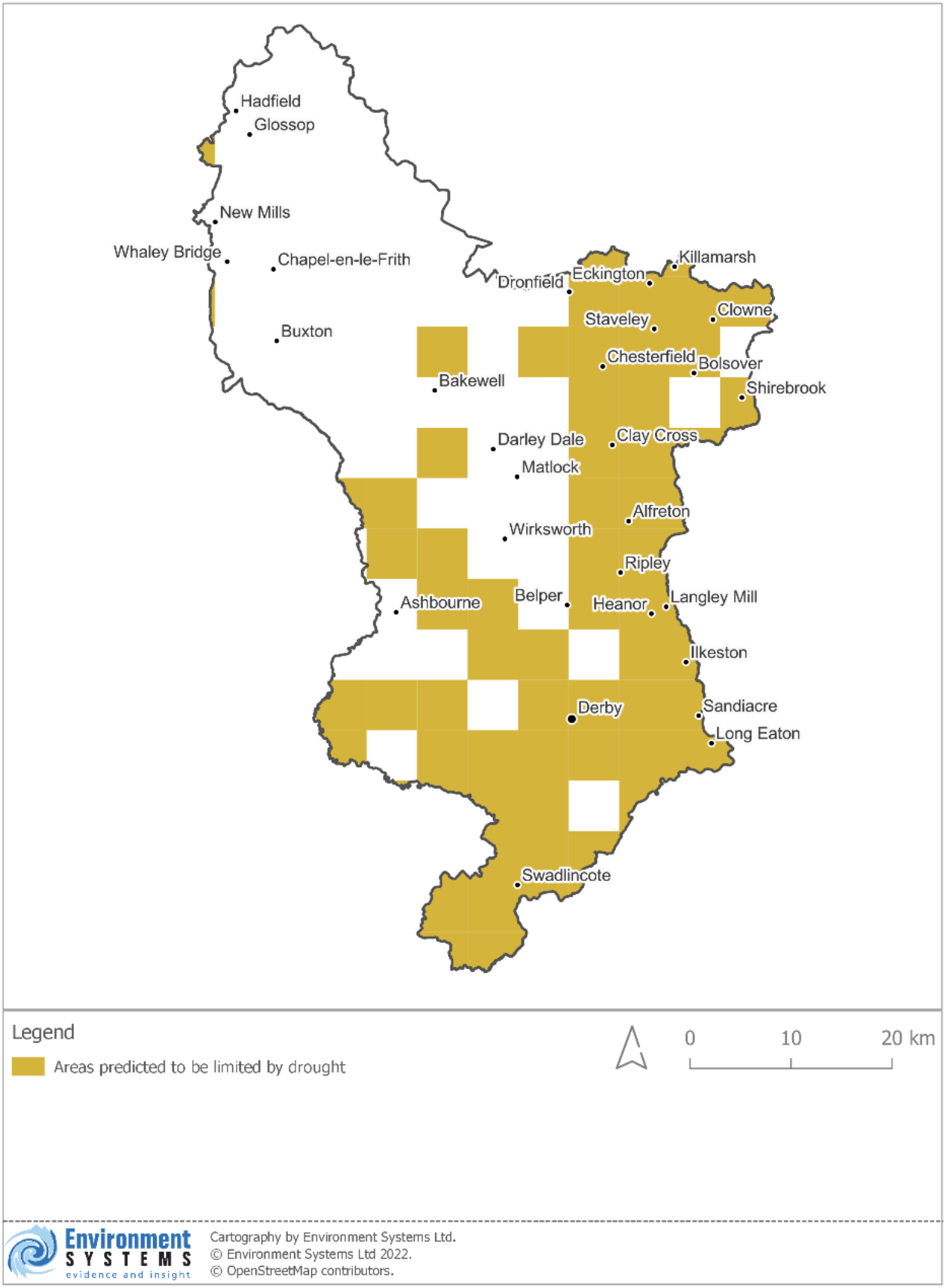


Figure 86: Areas where drought is a significant limiting factor for agriculture: 2080, UKCP18 RCP 6.0

Chapter 9: Identification of further funding mechanisms

There is a need to integrate goals for nature with funding streams, policy and statutory duties. Within this section we introduce funding mechanisms presented according to the primary benefit they seek to support (biodiversity, tourism etc). However, most have overarching or multiple goals which reflect the need for, and benefits of, partnership working.

Potential funding and delivery mechanisms are presented, some of which are currently open for calls for projects. These initiatives might be suitable to support direct delivery of, or attract investment in, natural capital and ecosystem services delivery in the county.

Funding mechanisms for nature-based solutions are increasing, seeking to address climate change, and deliver ecosystem service protection to the benefit people and biodiversity.

Accessing these funds mostly requires working in partnership. Derbyshire County Council, the City Council and National Park have the advantage here of having land within their ownership which can be offered up for partnership projects led by charities and NGOs. There are several funding schemes which work on this model and could benefit council owned land and local people. A good example is: www.fundingforall.org.uk/funds/ba-better-world-community-fund/.

Biodiversity

UK Government is establishing a range of funding and duties to underpin the NRN. This includes Countryside Stewardship and three future schemes that will reward environmental land management. A range of funding opportunities for nature have been announced. The 'Nature for Climate Fund' commits £640 million to support:

- creation, restoration and management of woodland and peatland habitats
- a tripling of afforestation rates across England
- restoration of 35,000 hectares of peatland by 2025

The Green Recovery Challenge Fund (£80 million) is for nature-based projects to restore nature, tackle climate change and connect people with the natural environment. It is helping to address environmental renewal and sustain and build capacity in the environment sector.

The funding base for the NRN is being broadened, for example by encouraging private and third sector businesses to invest in the natural environment and there is incentivising action for businesses in the development sector by mandating biodiversity net gain (BNG).

Outside of the larger partnership projects, funding mechanisms for biodiversity are being supplemented by the development of a BNG market in England. This is due to form after adoption of the proposals in the Environment Act (2021) and will allow land to benefit significantly from habitat restoration to enhance biodiversity for both plants and other species. The demand for restoration arises from developers who are taking land for development and who are required to offset the biodiversity loss of such schemes. The Natural Capital Strategy for Derbyshire is a key mechanism for guiding the development of such offsetting schemes. The maps of opportunities for biodiversity identify land where offsetting activities will be likely to deliver biodiversity enhancement more quickly and with

more resilience than other locations; this comprises places that mainly fall within the existing ecological networks. Land which is marked as providing multiple ecosystem benefits on the opportunity maps will be especially valuable to wider society if used for this purpose.

There is currently limited voluntary trading in BNG schemes. Economic modelling work has been undertaken which gives an indication of the potential market price for Biodiversity Units (BUs). However, these prices have significant uncertainty, and are likely to vary depending on the types of habitats BUs are needed for. Prices will also vary between the locations BUs are needed. BUs may be sold immediately but the time taken to deliver them from different habitats can vary significantly. The price per BU is therefore uncertain, but could range from £11,000 to £25,000, with an expected mid-point of £15,000 in a county such as Derbyshire29 30. Levels of demand are also hard to predict, but can be estimated from past rates of development, planned infrastructure, housing and other developments in local plans.

The annual loss of biodiversity in Derbyshire is predicted, based on recent patterns of development, at 363 BUs per year. This does not take account of future targets to accelerate land use development (e.g. for housebuilding). It is estimated that only Derby City is likely to have any shortage of BU supply to meet demand, all other LPAs in Derby should have an adequate supply. Therefore, Derby's demand can be met by supply from neighbouring authorities. The data for Derby is uncertain, as modelling urban development is harder; for example the biodiversity metric is more difficult to apply when quantifying previously developed land impacts. As the surrounding LPAs around Derbyshire also have adequate supply of BUs to meet demand, there is unlikely to be additional demand within Derbyshire from neighbouring planning authority areas.

Agricultural subsidies

The public goods generated by agriculture and land management justify the payment of public money to land managers through agricultural subsidies. The intention for Environmental Land Management Schemes (ELMS) is to allow land managers to receive its payments and sell other services in markets. However, rules for simultaneously receiving payments from the future ELMS and payments for BUs (so-called 'stacking') are not clear, especially in the light of the recent changes in government policy and the abandonment of biodiversity recovery, climate change mitigation and potentially the ELMS scheme.

Nature-friendly farming, regenerative agriculture and re-wilding are growing areas of interest to some farmers and land managers. The maps within the Derbyshire Natural Capital Strategy are a key resource for gaining on overall understanding of where biodiversity-focussed action is likely to deliver the greatest benefit.

Using council owned land, it will be possible to apply for future grants related to Natural England's NRN. This is a grant which ties in with the major commitment in the government's 25 Year Environment Plan. By bringing together partners, legislation and funding, Natural

[29] eftec, WSP, ABPmer (2021). Biodiversity Net Gain Market Analysis Tool

[30] Defra (2019). Biodiversity net gain and local nature recovery strategies. Impact assessment. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

England are seeking projects to restore and enhance the natural environment and launch periodic funding calls (www.gov.uk/government/publications/nature-recovery-network).

Water quality

For water quality, there is potential for agricultural land managers to generate revenue from payments to reduce nutrient inputs. Not all nutrient reductions may qualify – farmers are expected to contribute their 'fair share' of reductions in catchments with elevated levels of nutrients. However, a growing driver of market potential is 'nutrient neutrality' for housing developments, which is now being implemented in some catchments. These schemes aim to use reductions in nutrient inputs, in particular phosphates, in a catchment to offset the increased nutrient levels resulting from treating the additional wastewater from new housing.

Nutrient neutrality is a relatively new concept, and so there remains uncertainty as to how extensively it will work and what payment levels it will generate. However, based on catchment trading schemes in other parts of the UK a revenue of £100/ha/year is assumed in return for nutrient management actions, and may be possible for areas 500m either side of a watercourse. Along a kilometre of a watercourse's length, this could cover 100 ha and result in revenue of £10,000 per year. The majority of payments will come from developers who need a nutrient neutrality statement to support their development or water companies with specific water quality issues. The Derbyshire water quality stock and opportunity maps are good evidence base for identifying potential sites for action. Site based, specific actions at a sub catchment scale, with a known value will need to be calculated for specific schemes. Environment Systems can provide further advice in this regard.

Flood risk

There are many locations in the UK where regular flooding is a problem, and this is expected to worsen with climate change. Natural flood management (NFM) measures including runoff management and floodplain storage are increasingly being considered as part of integrated flood management within catchments, to deliver reductions in existing flood risk and/or increase resilience to future expected flood risk. The maps produced in this plan show where the land is currently suppling NFM benefit and where opportunities are which are likely to benefit NFM based actions.

The value of, and therefore potential income from, NFM actions, will depend on their cost and the extent to which they will reduce flood risk to downstream property. These factors are very location specific, and so a typical payment rate cannot be estimated.

Carbon

Markets for land management actions that reduce concentrations of greenhouse gases in the atmosphere are now operating for woodland (under the Woodland Carbon Code (WCC)) and peatland restoration under the Peatland Cabon Code. Other habitats such as grasslands can also sequester carbon and reduce GHG concentrations, and codes are being developed to take account of this and actions such as planting hedgerows. These additional codes are not sufficiently developed to link specific land management actions to quantities of GHG reductions and the market is not yet ready, although county councils are looking to support codes for habitat types relevent to their areas.

The extent and condition of woodland and peatland habitats are identified in the Derbyshire accounts, and within the ecosystem opportunity maps along with estimates of current sequestration/ emissions. Both the woodland and peatland codes provide a specific method for calculating GHG benefits and the tCO2e that can be traded. Funding for carbon credits can be obtained from private investment in each project through a range of organisations. Such funding tends to cover larger sites with peatland which is within the peatland codes eligible classes.

The Climate Action Fund (UK) currently has an open call for demonstration projects, this could be a potential avenue for council land where climate change is the key benefit. https://naturalengland.blog.gov.uk/2022/07/14/new-grant-scheme-opens-nature-based-solutions-for-climate-change-at-the-landscape-scale/

The Heritage Lottery Fund has a current call for the National Lottery Community Fund's £100 million Climate Action Fund. www.tnlcommunityfund.org.uk/funding/programmes/climate-action-fund-programme

Up to £8 million is available to community projects throughout the UK that are focusing on the link between nature and climate. There is again the opportunity for council owned land to be included in partnership projects as groups can apply for National Lottery funding of up to £1.5 million over two to five years to support place-based and UK-wide partnerships that use nature to encourage more community-led climate action and help communities tackle climate change. Development grants of £50,000 to £150,000 over 12 to 18 months are also available for those communities wanting to develop initial ideas.

For peatland restoration, it is important to target extensive areas of actively eroding, flat, bare peat and actively eroding haggs and gullies, which are likely to be found in Peak District. This is because if private finance is to be sought the project will need to be of significant scale and extent in terms of restoration. Understanding opportunities for restoration by using the peatland code is essential and many organisations use a trusted adviser to plan and prepare restoration projects. There are good examples of success in restoring larger areas of peat where the community of local land managers/owners get together to create a community interest company (CIC) or partnership (e,g, Moors for the Future) so that all key stakeholders are involved and there is clarity on the distribution of future carbon payments.

Recreation and public health

The Derbyshire account quantifies the recreational and health benefits supported by public access to the natural environment. This includes access via public rights of way and open access land, which land managers must maintain, or permissive footpaths. Provision of enhanced access to greenspace usually results in increased levels of physically activity, which has a positive impact on public health. This can be quantified and valued, but health funding for such provision is uncommon. Funding is usually targeted at specific health interventions (e.g. providing specific activities in outdoor environments for those at risk of, or suffering from, mental ill-health). Funding for these activities generally support the provision of the activity, rather than the management of the outdoor environment location. The provision of enhancements to ensure adequate access to green space for new communities can potentially be funded via Section 106 agreements, so new housing developments are also a potential funder.

Tourism

Linking tourism to better preserved natural green spaces is the subject of an open ESA research call https://business.esa.int/funding/space-for-tourism which has a broad scope and seeks demonstrator projects to show how space-based technology and data can help facilitate successful actions that benefit tourism. The Derbyshire Natural Capital plan used ESA data and further analysis could be done, so this and other similar calls may be a potential funding stream to consider.

There is potential to grow the tourism sector beyond the Peak District, especially along the River Trent corridor. This could be facilitated a new environmental/leisure corridor using biodiversity net gain funding associated with minerals extraction and housing growth (see Trent Valley Vision).

Natural Environment Investment Readiness Fund

Of relevance for funding nature-based projects to address challenges including flood risk, water quality improvement, climate mitigation and biodiversity decline, is the Natural Environment Investment Readiness Fund (NEIRF). The NEIRF supports the government's goals in the 25 year Environment Plan, Green Finance Strategy and 10 Point Plan for a Green Industrial Revolution. It aims to stimulate private investment and market-based mechanisms that improve and safeguard our domestic natural environment by helping projects get ready for investment.

The NEIRF is a competitive grants scheme providing grants of between £10,000 and £100,000 to support the development of environmental projects in England that:

- help achieve one or more natural environmental outcomes from the 25-year environment plan
- have the ability to produce revenue from ecosystem services to attract and repay investment
- produce an investment model that can be scaled up and reproduced
- Proposals should focus on generating revenue from ecosystem services, rather than goods or commodities. Examples of ecosystem services that could produce revenue include:
- selling 'catchment services' (such as improved water quality and natural flood management benefits) resulting from natural environment improvements
- selling biodiversity units from a habitat bank, using the Natural England biodiversity offsetting metric; and
- selling carbon credits from woodland creation or peatland restoration, using the Woodland Carbon Code or Peatland Code

Obtaining the most funding for land

There is potential for combinations of ecosystem services to be sold from the same area of land. If this is delivered under different contracts it is called 'stacking'. An example would be where a land manager sells carbon credits and BUs separately. If delivered under a single contract it is called 'bundling', for example, where a high-value biodiversity and carbon credit is sold, such as under the Peatland Code.

Clear rules are required from Government on whether and how stacking and bundling will operate within UK environmental markets. They bring opportunities for increased incentives for environmental management, but present risks to market credibility (e.g., through lack of additionality). This market is emerging.

Other websites which help find funding

Some websites provide a 'one-stop shop' for organisations who are seeking funding for projects that use nature based solutions. An example is:
https://www.fundingforall.org.uk/available-funds/

This site does not directly fund organisations or individuals but seeks to help applications for funds from other trusts and foundations to increase the chances of success. The website hosts the latest grants currently open to applications.

General help in finding funding can also be found at:
https://www.grantsonline.org.uk/news/16051.html

The Landscape Enterprise Networks (LENS) (https://landscapeenterprisenetworks.com/) is a system for organising the buying and selling of nature-based solutions. LENS brings a diversity of private and public-sector organisations together around a common interest in funding nature-based solutions within a given geography. LENs then brokers negotiations, and eventually transactions, between these buyers and groups of landowners who can deliver them on the ground.

Chapter 10: The Natural Capital Strategy: conclusions and recommendations

Conclusions

This report, along with the modelling, mapping, proposed land management actions and financial accounts comprises Derbyshire's Natural Capital Strategy.

The natural capital baseline assessment provides a strong evidence base for Derbyshire County Council, PDNPA, Derby City Council and local stakeholders. It quantifies the extent, condition and monetary value of existing natural capital assets in the county. The strategy proposes appropriate implementation of nature-based solutions to support nature recovery by taking account of biodiversity considerations, natural capital (and the ecosystem services it provides), landscape character, and cultural heritage.

The natural capital accounts identify the natural assets in Derbyshire and the moneraty value of the benefits they give to the county. The natural capital baseline account shows that natural capital within Derbyshire is worth £2.6 billion per year. This value is formed of key provisioning services such as agriculture (£96 million), public water supply (£132 million), and minerals (£298 million). Natural Capital also plays a large role in benefits for recreation (£181 million), tourism (£105 million) and physical health (£86 million). Carbon sequestration by habitats in Derbyshire is worth £1.6 billion per year; 62% of the total natural capital of Derbyshire.

Combining this data with quantified future trends, the value of natural capital assets In Derbyshire Is estimated at £86bn over the next 60 years. There is insufficient data to represent some expected future changes (such as climate change risks) in the account. Therefore the values may change due to future trends, and will partly depend on the actions taken to mitigate and adapt to climate change.

The account can be used in different ways to help manage natural capital:

- It provides data that can be used to make a business case to central government for support and funding to invest in natural capital.
- It gives a consistent evidence base for different groups and decision-makers to refer to (e.g. Biodiversity Net Gain, ELMS design).
- The accounting structure also allows for comparison of the sub-regions using a consistent approach and data.

A habitat map has been created for the whole of Derbyshire to inform the natural capital baseline accounts and a new dataset of hedgerows has been specifically created to support the natural capital strategy. The coverage and level of detail that these maps provide gives Derbyshire County Council a particularly good start in designing local nature recovery projects.

The ecological networks created for woodland, heathland, wetland and grassland tie in well with the national networks produced by Natural England for the NRN. They provide the evidence to develop Derbyshire's LNRS to expand, improve and connect the NRNs across Derbyshire's cities, towns and countryside.

Understanding the delivery, risks and opportunities associated with the nine key ecosystem services enhances the information available to deliver LNRS and other aspects of Derbyshire's natural capital strategy. It is enhanced further by taking account of landscape character. It improves knowledge of where to focus management action, such as tree planting and peatland restoration, and how to broaden the range of environmental benefits delivered to provide a 'bundle' of environmentally and socially beneficial outcomes.

Grassland, woodland and wetland management action is a priority in most Landscape Character Types (LCTs) in Derbyshire, as is hedgerow planting (outside the White Peak), restoration of ancient woodland sites, riparian/floodplain woodland planting, river restoration and enhancement of the natural continuity of river corridors.

Restoration and enhancement of existing semi-natural grasslands, and floodplain grazing marsh, is a priority for all except the Enclosed Moorland, Open Moors, and Wooded Hills & Valleys LCTs. Wetlands are a priority for many LCTs, with priority actions for grassland focussed on enhancing existing wet meadows and marshes, and restoration of upland and lowland bog habitats. Heath has restricted distribution across Derbyshire and a balance will need to be struck between heath enhancement/expansion and grassland enhancement/expansion to work towards a sustainable habitat matrix.

Cropland priorities focus on improving the ecological value of intensive farmlands, and conserving and enhancing the mixed farm landscape where it is still present. Eight LCTs are identified as being under particular pressure from urban development.

The suite of maps and associated guidance are a key resource for realising the maximum benefit from any actions as they strengthen spatial planning for environmental net gain (including biodiversity net gain) and natural capital enhancement projects.

A dataset on cultural heritage has been collated and analysed and conclusions drawn for purposes of preliminary review and discussion, in order to assist in the longer-term development of a methodology that can be applied to specific heritage assets. It informs the natural capital strategy but does not consider the detailed effect of natural capital projects on specific heritage assets/types of assets, an exercise which would require project specific consideration on a case-by-case basis.

Climate change has the potential to significantly disrupt the natural capital of Derbyshire. The information presented puts Derbyshire in a strong position to address the challenges of climate change and biodiversity decline, and provides basline evidence for carbon accounting that can be used to monitor progress towards delivering net zero commitments.

Predicted changes in temperature and rainfall patterns in particular will alter the growing conditions, meaning that some places become less suitable for supporting particular species and habitats, while other places become more suitable. Future peat formation on blanket bog is predicted to become less achievable in parts of Kinder Scout. The upland fringes will become more important for arable crops, and drought will affect many of the areas where crops are currently grown.

These and other trends will affect the values provided by Derbyshire's natural capital In future, and actions to adapt to future climate change will be Important to maintain natural capital assets.

Monitoring provides a mechanism for judging and quantifying the success of natural capital projects, including to funders, and for identifying unexpected changes to natural capital that affect the materiality of the accounts. A monitoring plan for the Natural Capital Strategy focuses on the need to update information on habitats and associated natural capital values, as a key driver in natural capital assessment. Habitats are likely to show quantifiable change within timeframes of a few years and a process for keeping the habitat map up-to-date is identified.

Funding for the implementation of nature-based solutions is growing rapidly; key funding streams, including government funding specifically to support NRNs, have been identified in readiness for partnership working on nature recovery projects. Central to this is the 'Nature for Climate Fund' for the creation, restoration and management of woodland and peatland habitats and a tripling of afforestation rates across England. There is also the 'Green Recovery Challenge Fund' for nature-based projects. There is an increasing emphasis on private and third sector businesses to invest in the natural environment, including through mandating biodiversity net gain.

The coverage and level of detail provided by the mapping and analysis gives Derbyshire council a particularly good start on designing local nature recovery projects that are in keeping with landscape character. The data and analysis can be revisited and further developed to at a finer scale of detail for site specific projects; it can also be extended to encompass further ecosystems services, and different constraints. When applying for funding there is the evidence to show where taking action can deliver enhancement to multiple ecosystem services.

Recommendations

Implementation priorities for nature recovery

Maximum value from the Natural Capital Strategy will be realised by embedding the findings into local government strategy and development planning. This requires users to understand the range of Information provided - mapping and quantification of assets, measurement of ecosystem services, and monetary valuation of annual benefits and assets. This will ensure an integrated approach to planning, that will lead to making the most of opportunities for natural capital protection and enhancement and bring wider understanding of the societal benefits of natural capital.

- Recommendation 1: The findings of the Natural Capital Strategy should be incorporated into future Development Plans and embedded into a wide range of relevant policy. Key actions for incorporation into these plans and policies are summarised in the boxes of 'key points and recommendations' presented under each ecosysterm service theme in Chapter 3: Spatial Distribution of Ecosystem Services, Risks and Opportunities. These should be cross-referenced against the lanscape character considerations in Chapter 5: Using landscape character to inform decision making.

The boxes of key points and recommendations in Chapter 3 and Chapter 5 allow specific land management actions to be targeted to specific regions within Derbyshire. Many of the

recommendations will have multiple benefits across several ecosystem service themes. For example cross-slope hedgerow planting for improved surface water regulation will increase carbon sequestration, and can enhance biodiversity and water quality regulation. Therefore, while different locations within Derbyshire will have different ecosystem service priorities (e.g. flood risk or water quality issues), it is important to view mitigative action holistically, identifying the wide range of benefits and NBS action can provide across all of the ecosystem service themes, and in building resilience to climate change.

Derbyshire currently has a very strong woodland network in some areas and where hedgerows occur these greatly enhance woodland connectivity. There are clear opportunities to strengthen the woodland network by planting and this is a way to deliver significantly towards net zero through carbon sequestration. However, planting must be done in the right place.

- Recommendation 2: The maps and proposed land management guidance for LCTs are always used to ensure appropriate siting of woodland expansion in order to deliver the carbon, biodiversity, water regulation and landscape benefits. Through development of the National Forest there is an opportunity to enhance connectivity of large areas of core woodland habitat that are currently relatively isolated

Peat formation on blanket bog is predicted to become less achievable in parts of Kinder Scout due to climate change.

- Recommendation 3: This provides a strong argument for targeting peatland restoration measures to this vulnerable area; by restoring peatlands the existing carbon stock locked away in the peat will be more resistant to oxidation due to drying-out. At the same time, protecting the peat resource also maintains the important water-regulating function of peat.

Climate change analysis has shown the upland fringes becoming more important for arable crops and drought is predicted to affect many of the areas where crops are currently grown.

- Recommendation 4: In agricultural areas particular consideration should be given towards supporting agricultural management practices for enhancing soil carbon (which improves soil moisture retention), increasing on-farm water storage (including wetland creation), agroforestry, or growing alternative, drought resilient crop varieties.

There is a large number of highly fragmented grassland habitat patches within the Needwood & South Derbyshire Claylands, and Peak Fringe & Lower Derwent regions; the grassland network is not currently working well in these areas. These core habitat patches are likely to be less resilient/ more vulnerable to pressures as a result. Agri-environment schemes are likely to be key to supporting the recovery of the grassland network in these areas.

- Recommendation 5: For grassland opportunities, a site-level assessment is likely to be needed to assess habitat condition and ensure the most appropriate nature-based solutions.
- Recommendation 6: For heathland expansion, investigate areas of coniferous plantation that may have been on former heath sites; such areas could revert quickly back to heath habitat.

The key to realising funding, including for nature-based solutions on land owned by the councils and national park authority is to form partnerships with local stakeholders.

- Recommendation 6: The 'Nature for Climate Fund' and 'Green Recovery Challenge Fund' should be explored for funding for creation, restoration and management of woodland and peatland habitats, afforestation opportunities, and nature-based projects.
- Recommendation 7: Consider joining the NRN Delivery partnership as this will open up networking opportunities, including a regular NRN conference, workshops and meetings.

There is an increasing emphasis on private and third sector businesses to invest in the natural environment, including through mandating biodiversity net gain.

- Recommendation 8: There is potential to grow the tourism sector beyond the Peak District, especially along the River Trent corridor. This could be facilitated a new environmental/ leisure corridor using biodiversity net gain funding associated with minerals extraction and housing growth (see Trent Valley Vision).

Keeping the Natural Capital Strategy up to date

The level of analysis and frequency for updating underlying data and the timing of re-assessment of natural capital depends on the rate of changes to underlying data and available resources.

- Recommendation 9: When new LCTs from PNDPA are available these should be incorporated into the analysis of ecosystems services to assess the implications for future land management.
- Recommendation 10: An update cycle of five years is recommended for the habitat map and re-running the ecological network and ecosystem services modelling.
- Recommendation 11: More detailed updates to the accounts would be beneficial at the time that spatial plans (recommended at least every five years) or other strategic documents are renewed. Some aspects of the natural capital asset account can be readily updated on an annual basis (e.g. water supply and minerals data can be updated to the latest annual volumes, and market price values can be updated annually).

Improving the Natural Capital Account

Improvements could be made to broaden and strengthen future versions of the accounts.

- Recommendation 12: Refining the partial benefit estimates included in the account that are material, but only calculated for parts of Derbyshire (e.g. education and volunteering). Local data collection is required to quantify these on a local and regional scale and will require liaison with local and regional stakeholders.

As described in Chapter 6, a complete natural capital account would include an assessment of current and planned spending on maintaining the extent and condition of the natural capital assets, including in response to future trends (e.g. climate change) providing the benefits assessed. This enables comparison of expected costs and benefits, and consideration of whether enough resources are being put into the right actions to ensure those benefits and the natural capital assets that provide them are sustained over time.

- Recommendation 13: Assess the cost of maintaining natural capital assets, including current spending levels and actions needed in response to future pressures, e.g. from climate change. At the Derbyshire scale this would require buy-in from key public and private stakeholders who manage the majority of relevant spending and their willingness to provide such data.

The economic value of natural capital assets is calculated by aggregating the value of benefits they can provide over time. Expected future changes in the quantity and/or value of benefits are reflected in the estimates where relevant data is available (such as increasing value of mitigating carbon emissions). However, there is insufficient data to represent some expected future changes (such as climate change risks) in the account.

Furthermore, while the account provides useful information to help manage natural capital it should be noted positive values do not necessarily mean that the natural capital assets are being managed sustainably. To assess this, more understanding of future trends (e.g. climate change) and estimations of maintenance costs would need to be factored in.

- Recommendation 14: Better understanding is needed of future trends in benefits from natural capital, including those caused by climate change. Monitoring trends from the baseline will over time build a greater understanding of how sustainably natural capital assets are being managed.

Communication of the Natural Capital Strategy:

The Natural Capital Strategy would benefit from further communication materials.

- Recommendation 15: A Storyboard is developed to communicate the Natural Capital Strategy to stakeholders and the wider public to improve accessibility of the findings and promote the key messages. This would include making selected large scale and/or interactive copies of the habitat maps available.
- Recommendation 16: A process could be developed to demonstrate, promote and track the activity being carried out to deliver the Natural Capital Strategy. This could involve development of a dedicated web resource; planning and cost analysis would be needed to ensure adequate staff resources.

List of appendices

Derbyshire Natural Capital Strategy - Appendices 1-5

Contents

Appendix 1 - UK Habitat Classification (UKHab) habitat definitions

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
c	Cropland	Regularly or recently cultivated agricultural, horticultural and domestic habitats.			Includes ploughed land, intensive orchards.	
c1a	Arable and horticulture	Arable cropland (including perennial, woody crops, and intensively managed, commercial orchards), commercial horticultural land (such as nurseries, commercial vegetable plots and commercial flower growing areas), freshly-ploughed land, annual leys, rotational set-aside and fallow.			Cereal field margins and field boundaries. Sown grasslands less than one year old.	Domestic gardens and allotments.
c1b	Temporary grass and clover leys	Temporary grass or legumes in rotation with grain or tilled crops, usually as a soil conservation measure.				
c1c	Cereal crops	Crops in the cereal group of domesticated grasses: wheat, barley, oats, maize.				
c1d	Non-cereal crops	Crops other than those defined in c1c.				

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
f	Wetland	Any habitat that is waterlogged (water table at surface with standing water for between 50% and 70% of the year)				Wet woodland/Carr (see w1d). Wet habitats where the water table is always within 40cm of the surface and soil containing free water for most of the year (see g or h). Seasonally wet habitats, inundated for part of the year but becoming mesic in the summer.
f1	Bog	Rain fed (ombrotrophic) inundated or waterlogged habitats where peat has formed in the past.			Peat bogs that have been cut/harvested.	Soligenous or topogenous wetlands which are defined under Fen, Marsh and Swamp (see f2); these include drained agricultural peatlands such as the Fens and Somerset Levels.

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
f1a	Blanket bog	Blanket bogs are characterised by the presence of a peat deposit (>0.5m deep), formed from Sphagnum and other peat forming species, which is draped across large expanses of the landscape like a blanket. All but the steepest slopes are permanently waterlogged.	Blanket bogs are rain fed (ombrotrophic) and broadly convex, meaning that surface flow-lines diverge downslope from the crown of the bog unit.		Intermediate habitats around the margins of blanket bog where the major part of the bog morphology is determined by the underlying mineral terrain.	Blanket bog may be part of a habitat mosaic which includes upland fens, flushes and swamps (see f2c), which are are fed by groundwater (minerotrophic). Intermediate habitats around the margins where the raised dome(s) of the system predominates (see f1b).
f1a5	Blanket bog (H7130)	As f1a where peat forming species are still dominant or abundant, notably Sphagnum papillosum, Sphagnum magellanicum, Sphagnum tenellum and Sphagnum capillifolium, Hare's-tail Cottongrass Eriophorum vaginatum (dominant or scattered) and ericoid species less abundant than in f1a.		Annex 1: H7310 Blanket Bog.		

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
f1a6	Degraded blanket bog	As f1a, but where peat forming Sphagnum species have largely disappeared due to drainage of the bog (which may be obvious due to the presence of drainage channels (grips)), to be replaced typically by grasses, such as Purple Moor-grass Molinia caerulea and sometimes to the dominance of Heather Calluna vulgaris.			Includes blanket bog where peat has been largely removed by erosion, fire or peat cutting within a larger unit of blanket bog which still retains a substantial depth of peat. Such patches are classed as part of the blanket bog and in the absence of further damage can be expected to infill with peat again over time. It is not therefore appropriate to map or manage such	

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					areas as Upland heathland.	
f2	Fen marsh and swamp	Inundated or waterlogged lowland habitats differing from bogs in that water is supplied by ground water or slow-moving rainwater and this flows through them (they are soligenous) and peat does not form.	Often associated with valleys or hollows and include a wide range of vegetation types from tall broad-leaved wetland herb formations, vegetation dominated by small sedge fens, tall wetland sedge/herb/grass fens; fen meadows and rush dominated vegetation; acid poor-fens and reedbeds to bryophyte springs and flushes.			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
f2a	Lowland fens	Fens are wetlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall. Fens are also often associated with accumulation of undecomposed waterlogged plant litter in the form of peat but not all fens form peat as vegetative matter may be decomposed.	Fens are characterised by their hydrological regime, base-richness and nutrient status (fertility). Topogenous fens are those where water movements in the peat or soil are generally vertical. They include basin fens, fens of lake margins, some forms of flood-plain fen, and the lagg fens of raised bogs. Soligenous fens, on the other hand, develop where there is distinct water movement through the system, so such movements are predominantly lateral rather than vertical, and include valley mires, springs and flushes.			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			Rich fens are associated with water derived from baserich rocks such as chalk and other limestones and as such are generally confined to the lowlands. Many sites of rich fen are small and scattered often now occurring as "islands" of semi natural vegetation amongst a sea of agricultural land.			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
f2a8	Transition mires and quaking bogs; lowland (H7140)	The term 'transition mire' relates to vegetation that in floristic composition and general ecological characteristics is transitional between acid bog and Alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich. The vegetation normally has intimate mixtures of species considered to be acidophile and others thought of as calciphile or basophile as a result of base-rich water influence upon acidic nutrient poor bogs.	In some cases the mire occupies a physically transitional location between bog and fen vegetation, as for example on the marginal lagg of raised bog or associated with certain valley and basin mires. In other cases these intermediate properties may reflect the actual process of succession, as peat accumulates in groundwater-fed fen or open water to produce rainwater-fed bog isolated from groundwater influence. Many of these systems are very wet and unstable underfoot and can therefore	Annex 1: H7140 Transition mires and quaking bogs [lowland]		

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			also be described as 'quaking bogs'. Transition mires and quaking bogs can occur in a variety of situations, related to different geomorphological processes: in flood plain mires, valley bogs, basin mires and the lagg zone of raised bogs, and as regeneration surfaces within mires that have been cut-over for peat or areas of mineral soil influence within Blanket bogs (e.g. ladder fens in Scotland only).			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
f2b	Purple moor grass and rush pastures	The vegetation has a distinct character and consists of various species-rich types of fen meadow and rush pasture. Rush or/and Purple Moor-grass Molinia caerulea dominated vegetation usually on peaty-gley soils with Sharp-flowered Rush Juncus acutiflorus or Soft Rush Juncus effusus abundant to dominant.	Purple moor-grass and rush pastures occur on both poorly drained, usually acidic soils in lowland areas of high rainfall in western Europe as well as on more base-rich soils . In the UK, they are found in south-west England, particularly in Devon, southern Wales, south-west Scotland, perhaps extending as far north as northern Argyll, and in Northern Ireland, especially Fermanagh. Nationally, these agriculturally unimproved pastures are associated with saturated valley-sides and spring	In the west of Britain, Purple moor-grass and rush pastures have been termed Rhôs pasture. 'Rhôs' is a Welsh word meaning 'a wet, often heathy grazing pasture', often referred to as 'moors'. This term has been used widely for such grasslands in Wales but is a term also applied to this habitat in		

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			lines, on poorly draining acid soils with a mixture of wet heath, rush pasture, mire and scrub, typically with low grazing intensity although they may also occur on roadsides.	south west England. Grasslands of northern Devon and north east Cornwall, especially across the Culm Measures are also referred to as 'culm grasslands'.		
f2c	Upland flushes, fens and swamps	Inundated or waterlogged upland habitats differing from bogs in that water is supplied by ground water or slow-moving rainwater and this flows through them (they are soligenous) and peat does not form.	Often associated with valleys or hollows and include a wide range of vegetation types from tall broad-leaved wetland herb formations, vegetation dominated by small sedge fens, tall wetland			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			sedge/herb/grass fens; fen meadows and rush dominated vegetation; acid poor-fens and reedbeds to bryophyte springs and flushes.			
f2e	Reedbeds	Wetlands dominated by stands of the Common Reed Phragmites australis, with the water table at or above ground level for most of the year.	Reedbeds tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland may be associated with them.		Reedbeds with a saline influence including saline tolerant species e.g. Atriplex spp (use secondary code 138).	Similar habitats dominated by species such as Schoenoplectus, Typha and Phalaris fall into a category of 'other swamps' f2f.
g	Grassland	Vegetation, not on waterlogged soils, with more than 75% cover of herbaceous species (grasses, sedges, rushes, herbs, forbs) with halophytic species absent or occasional.			Includes pastures and (semi-)natural grasslands not on waterlogged soils. Includes vegetation dominated by Bracken.	Excludes crops (see c), reedbeds (see f2e), calaminarian grasslands (see s1c), vegetation dominated by a combination of Molinia and Juncus species on waterlogged soils.

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
g1	Acid grassland	Vegetation dominated by grasses and herbs on a range of limedeficient soils which have been derived from acidic bedrock or from superficial deposits such as sands and gravels. Such soils usually have a low base status, with a pH of less than 5.5.	Includes a range of types from open communities of very dry sandy soils in the lowlands, which may contain many annual species, through closed pastures on red brown earths, to damp acidic grasslands typically found on gleys and shallow peats.	Calcifugous swards.	Montane types. Vegetation with Bracken Pteridium aquilinum, except where the grassland type is clearly not acidic (see the appropriate grassland type and secondary code 12 "scattered bracken").	Acid grassland types on shingle habitats.
g1a	Lowland dry acid grassland	Lowland acid grassland typically occurs on nutrient-poor, generally free-draining soils with pH ranging from 4 to 5.5 overlying acid rocks or superficial deposits such as sands and gravels.	Includes both enclosed and unenclosed acid grassland throughout the UK lowlands (normally below c. 300m). It covers all acid grassland managed in functional enclosures. It often occurs as an		Swards on road verges. Dry calcareous grasslands of the Breckland, north to the North Norfolk coast where Vulpia ciliata ssp. ambigua is	Swards in old and non-functional enclosures in the upland fringes, which are managed as free-range rough grazing in association with unenclosed tracts of upland (see g1b).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			integral part of lowland heath landscapes, in parklands and locally on coastal cliffs.		a key component.	
g1	Bracken	Land with Bracken Pteridium aquilinum at >95% canopy cover at the height of the growing season.				Scattered patches of bracken or bracken patches
g2	Calcareous grassland	Vegetation dominated by grasses and herbs on shallow, welldrained soils which are rich in bases (principally calcium carbonate) formed by the weathering of chalk and other types of limestone or base-rich rock.	Although the base status of such soils is usually high, with a pH of above 6, it may also be more moderate and calcareous grassland communities can occur on soils with a pH as low as 5.	Calcicolous grasslands. Chalk grasslands. Limestone grasslands.		
g2a	Lowland calcareous grassland	Calcareous grasslands communities below the upper limits of agricultural enclosure.	Largely restricted to the warmer and drier climates of the southern and eastern areas of the United Kingdom.		Calcareous grassland on roadside verges. Calcareous grassland	Calcareous grassland in the unenclosed uplands (see g2b). Calcareous grassland on the Pennines (see g2b).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					around Morecambe Bay in Cumbria.	
g2	Upland calcareous grassland	Upland calcareous grasslands occur on lime-rich soils situated above the upper limit of agricultural enclosure, both in the submontane and montane zones.	Mostly occur above 250-300 m altitude, but the habitat is also found within unenclosed moorland at lower elevations, and descends to sea level in north-west Scotland. Upland calcareous grasslands typically occur as components of habitat mosaics (including both calcicoles and acidophiles).			
g3	Neutral grassland	Vegetation dominated by grasses and herbs on a range of neutral soils usually with a pH of between 4.5 and 6.5.	It includes enclosed dry hay meadows and pastures, together with a range of grasslands which are	Mesotrophic grasslands.		

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			periodically inundated with water or permanently moist.			
g3a	Lowland meadows	Lowland neutral meadows and pastures consist of a rich mixture of native grasses and broad-leaved herbs. They occur throughout lowland UK, often on shallow slopes or level ground with relatively deep soils that is neither strongly acidic nor lime-rich.	Most forms of neutral grassland across the enclosed lowland landscapes of the UK that have not been substantially modified. On many farms in different parts of the UK, use of particular fields for grazing pasture and hay cropping changes over time, but the characteristic plant community may persist with subtle changes in floristic composition.			Maritime grassland communities confined to coastal habitats (See s2a, 26), Anthoxanthum odoratum - Geranium sylvaticum grasslands (see g3b) and Molinia - Juncus pastures on waterlogged soils (see f2b).
g3a5	Lowland hay meadows (H6510)	Species-rich hay meadows on moderately fertile soils of river and tributary floodplains.	Seasonal flooding maintains an input of nutrients.	Annex 1: H6510 Lowland hay		

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
				meadows [Alopecurus pratensis, Sanguisorba officinalis]		
g3c	Other neutral grassland	Neutral grassland that does not meet the definition of either g3a or g3b. Perennial Rye-grass Lolium perenne is likely to be present at	Extremely widespread in the UK lowlands.		Special note: many surveyors may wish to add detail to this category. Please consider using the relevant secondary codes: management (e.g. "78 - abandoned" or "80 - unmanaged" gives much information on the nature of the sward); environmental qualifiers (e.g. "117 - dry", "118 - mesic", "120 - wet", "123 -	Species poor swards previously described as "semi-improved neutral grassland" (see g4).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					neutral grassland with calcicoles") and species features (e.g. "160 - sward type mosaic", "161 - tall or tussocky sward").	
g4	Modified grassland	Vegetation dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of Rye-grass Lolium spp. and White Clover Trifolium repens.				
h	Heathland and shrub	Vegetation with more than 25% cover of dwarf shrub species			Hedgerows of any height.	Lines of trees (see w1g6), scattered scrub (see 10), young trees (see 56, 57).
h1	Dwarf shrub heath	Vegetation that has a greater than 25% cover of plant species from the heath family (ericoids) or Dwarf Gorse Ulex minor.	Dwarf shrub heath generally occurs on well-drained, nutrientpoor, acid soils. Heaths do occur on more basic soils but these are more limited in		Both dry and wet heath types. Dwarf shrub dominated vegetation in	Dwarf shrub dominated vegetation in which species characteristic of peat-forming vegetation such as cotton-grass Eriophorum spp. and

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			extent and can be recognised by the presence of herbs characteristic of calcareous grassland. Occurs in both the lowlands and the uplands.		the montane zone.	peat-building sphagna are abundant, and [not "or" this is important] that occurs on deep peat (> 0.5 m) (see f1).
h1a	Lowland Heathland	A broadly open landscape on impoverished, acidic mineral and shallow peat soil, which is characterised by the presence of plants such as heathers and dwarf gorses, Crowberry Empetrum nigrum and grass species such as Bristle Bent Agrostis curtisii and Sheep's Fescue Festuca ovina.	It is generally found below 300 metres in altitude in the UK, but in more northerly latitudes the altitudinal limit is often lower. Lowland heathland can develop on drift soils and weathered flint beds over calcareous soils (limestone or chalk heath). Lowland heathland is a dynamic habitat which undergoes significant changes in different successional stages,		Small scale mosaic of patches dominated by dwarf shrubs and patches dominated by acid grassland (use 13 in combination with h1a or g1).	Grass dominated areas with less than 25% dwarf shrub cover (see g1).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			from bare ground (e.g. after burning or tree clearing) and grassy stages, to mature, dense heath.			
h1b	Upland Heathland	Heathland vegetation occurs widely on mineral soils and thin peats (				Dwarf shrub dominant vegetation on deep peat (see f1a). Heathland below the limit of agricultural enclosure (see h1a).
h2	Hedgerows	A boundary line of shrubs, provided that at one time the shrubs were stock proof and more or less continuous.			Includes: an earth bank or wall only where such a feature occurs in association with the hedgerow. Any bank, wall, ditch, tree or herbaceaous	

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					vegetation <20m.	
h2	Dense scrub	Patches of shrubs less than 5 metres tall with continuous (>90%) cover.			Patches with occasional trees more than 5 metres tall (see 11). Tree species less than 5m tall. Coastal scrub. Scattered Seabuckthorn Hippophae rhamnoides scrub on dunes (see h3c5).	Patches with shrub cover
h3f	Hawthorn scrub	Dense scrub with dominant Hawthorn Crataegus monogyna.				
r	Rivers and lakes	Inland surface waters (freshwater ecosystems).				

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
r1	Standing open water and canals	Natural systems such as lakes, meres and pools, as well as manmade waters such as reservoirs, canals, ponds and gravel pits.	Standing waters are usually classified according to their nutrient status and this can change naturally over time or as a result of pollution. There are three main types of standing waters, namely: oligotrophic (nutrient-poor), eutrophic (nutrient-rich), and mesotrophic (intermediate). These lake types exist along an environmental gradient and intermediate types occur. Other types of standing water include dystrophic (highly acidic, peatstained water), marl lakes, brackish-water lakes, turloughs and other		Includes the open water zone (which may contain submerged, free-floating or floating-leaved vegetation) and water fringe vegetation. Ditches with open water for at least the majority of the year.	Coastal saline lagoons (see t2g5). Marginal emergent vegetation that is greater than 5 m wide. Mappable adjacent wetland or wet woodland habitat.

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			temporary water bodies.			
r1c	Oligotrophic and dystrophic lakes	Oligotrophic and dystrophic lakes are water bodies mainly more than 2 ha in size which are characterised by their low nutrient levels and low productivity.	Their catchments usually occur on hard, acid rocks, most often in the uplands. This habitat type encompasses a wide range of size and depth, and includes the largest and deepest water bodies in the UK. Oligotrophic lakes usually have very clear water, whilst some examples with dystrophic characteristics have			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			peat-stained waters. Good examples may support some of the least disturbed aquatic assemblages in the UK.			
r1	Canals	An artificial watercourse for inland navigation or irrigation.				Excludes towpaths and other land between the canalside and the nearest field boundary.
r2	Rivers and streams	Rivers and streams from bank top to bank top, or, where there are no distinctive banks or banks are never overtopped, it includes the extent of the mean annual flood.			Includes: the open channel (which may contain submerged, freefloating or floating-leaved vegetation) water fringe vegetation and exposed	Adjacent wetland habitats.

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					sediments and shingle banks.	
s	Sparsely vegetated land	Unvegetated, disturbed (regularly or drastically periodically) or sparsely vegetated habitats (permanently or periodically naturally unvegetated areas) inhabited by stress tolerating vegetation.			Includes inland rock, supralittoral rock (sea-cliffs) supralittoral sediment (mud, sand and shingle) and coastal habitats (including dunes).	
s1	Inland rock	Natural and artificial exposed rock surfaces which are mappable, such as inland cliffs, caves, and screes and limestone pavements, as well as various forms of excavations and waste tips such as quarries and quarry waste.			Plant communities that colonise the cracks and fissures of rock faces. Certain types of tall herb and fern vegetation, which as a result of grazing are much reduced	

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					in extent and confined to areas inaccessible to grazing, such as cliff faces and ledges.	
s1	Inland rock outcrop and scree habitats	This habitat covers a wide range of rock types, varying from acidic to highly calcareous.	The habitat occurs throughout the uplands, and is particularly characteristic of high altitudes, but is also found at low altitudes notably in northern Scotland.		Includes mountain summit boulder fields.	Coastal cliff and ledge habitats (see s2a).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
s1b5	Limestone pavement	Outcrops of rock, typically horizontal or gently inclined, although a few are steeply inclined. The surface has been dissolved by water over millions of years into 'paving blocks', known as clints, with a complex reticulate pattern of crevices, known as grikes, between them. Record as s1b5 Limestone pavements (H8240)	Limestone pavements are a scarce and non-renewable resource. They were exposed by the scouring action of ice sheets during the ice age which ended some 10,000 years ago. Since then water action has widened the cracks in the pavements to form a complex pattern of crevices known as grikes between which are massive blocks of worn limestone called clints. Limestone pavements are of both geological and biological importance. The vegetation is rich in vascular plants, bryophytes and lichens and varies			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			according to geographical location, altitude, rock type and the presence or absence of grazing animals. Limestone pavement vegetation may also contain unusual combinations of plants, with woodland and wood-edge species well-represented in the sheltered grikes. The clints support plants of rocky habitats or are often unvegetated. In the absence of grazing scrub may develop. In oceanic areas scrub over limestone pavement is important for epiphytes.			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
s1c	Calaminarian grasslands	Calaminarian grasslands include a range of semi-natural and anthropogenic sparsely vegetated habitats on substrates characterised by high levels of heavy metals such as lead, chromium and copper, or other unusual minerals.	Associated with outcrops of serpentine and river gravels rich in heavy metals, as well as with artificial mine workings and spoil heaps. Seral succession is slowed or arrested by the toxicity of the substrate.			
u	Urban	Constructed, industrial and other artificial habitats			Constructed, industrial and other artificial habitats in rural areas.	Grasslands, woodlands, heathlands, wetlands, rivers, lakes, sparsely vegetated land in urban areas.
u1	Built-up areas and gardens	Urban and rural settlements, farm buildings, caravan parks and other man-made built structures such as industrial estates, retail parks, waste and derelict ground, urban parkland and urban transport infrastructure.			Allotments and most gardens	Mappable patches of other ecosystems that fall within an uirban area.

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
u1a	Open Mosaic Habitats on Previously Developed Land	Each of the following five criteria must be met. (1) Open mosaic habitat at least 0.25 ha in size. (2) Known history of disturbance or evidence that soil has been removed or severely modified by previous use(s). Extraneous materials/substrates such as industrial spoil may have been added. (3) Site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland. (4) Contains unvegetated, loose bare substrate and pools may be present. (5) The site shows spatial variation, forming a mosaic of one or more of early successional communities (a)–(h) above				

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
		(criterion 3) plus bare substrate, within 0.25 ha.				
u1c	Artificial unvegetated, unsealed surface	Land cleared for development, infrastructure construction or other purpose, currently unvegetated, but the soil surface is not sealed with impervious materials.				

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
w	Woodland and forest	Land with more than 25% cover of trees more than 5m in height.			Recently felled woodland (but not clear felled forestry plantations unless re-planted). Coppice. Coppice-with-standards. Lines of trees (but not hedgerows). Wet woodland. Bog woodland.	Hedgerows (see h2). Scrub (see h3 or 10). Clear felled forestry plantations (see w2), unless replanted.
w1	Broadleaved mixed and yew woodland	Vegetation dominated by trees that are more than 5 m high when mature, which form a distinct, although sometimes open canopy with a canopy cover of greater than 25%. It includes stands of both native and non-native broadleaved tree species and Yew Taxus baccata, where the percentage cover of these trees in the stand exceeds 20% of the total cover of the trees present.			Ancient or recent woodland and either semi-natural or planted. Recently felled broadleaved, mixed and yew woodland where there is a clear indication that it will return to	Hedgerows (see h2). Scrub (see h3 or 10). Woodlands that are dominated by conifer trees with less than 20% of the total cover provided by broadleaved or yew trees (see w2).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					woodland. Carr (woody vegetation on fens and bog margins).	
w1a	Upland oakwood	Record as w1a5 Western acidic oak woodland (H91A0)	It is found throughout the north and west of the UK with major concentrations in Argyll and Lochaber, Cumbria, Gwynedd, Somerset, Devon and Cornwall.			
w1b	Upland mixed ashwoods	Woods on base-rich soils in the north and west, in most of which Ash Fraxinus excelsior is a major species, although locally Oak Quercus spp., Birch Betula spp., Elm Ulmus spp., Small-leaved Lime Tilia cordata and even Hazel Corylus avellana may be the most abundant species.	Upland in the name reflects the abundance of this type of woodland on base-rich soils in upland Britain rather than to the altitude at which individual sites occur. Some			Ash woodlands on limestone pavements (see s1b).

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			are only just above sea level.			
w1d	Wet woodland	Wet woodland occurs on poorly drained or seasonally wet soils, usually with Alder Alnus glutinosa, Birch Betula spp. and Willows Salix spp. as the predominant tree species, but sometimes including Ash Fraxinus excelsior, Oak Quercus spp., Scots Pine Pinus sylvestris and Beech Fagus sylvatica on the drier riparian areas.	It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, in peaty hollows, along lake edges and fen marsh margins. These woodlands, sometimes known as carr, occur on a range of soil types including nutrient-rich mineral and acid, nutrient-poor organic ones. The boundaries with dryland woodland may be sharp or gradual and may			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
			change with time through succession, depending on the hydrological conditions and the treatment of the wood and its surrounding land. Therefore wet woods frequently occur in mosaic with other woodland key habitat types (e.g. with upland mixed ash or oakwoods) and with open key habitats such as fens.			
w1f	Lowland mixed deciduous woodland	Lowland mixed deciduous woodland includes woodland growing on the full range of soil conditions, from very acidic to base-rich; occurs largely within enclosed landscapes, usually on sites with well-defined boundaries, at relatively low altitudes,	Includes most established semi-natural woodland in southern and eastern England, and in parts of lowland Wales and Scotland.Many are ancient woods and they include classic			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
		although altitude is not a defining feature.	examples of ancient woodland in East Anglia and the East Midlands.			
w1g6	Line of trees	A line of trees at least 20 metres in length with open habitat on each side.			Grown out hedgerows, avenues, narrow windbreaks, willows and alders along watercourses.	Overgrown hedgerows still capable of being laid into a stockproof hedge.
w1h	Other woodland; mixed	A mixture of broadleaved and coniferous trees in which neither make up more than 80% of the tree cover. Mixed woodland that does not meet the definition of any other woodland types.	Likely to include woodland that is self-sown and/or recently established in either urban or rural situations.			

Primary Habitats	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
w2	Coniferous woodland	Vegetation dominated by trees that are more than 5 m high when mature, which form a distinct, although sometimes open canopy which has a cover of greater than 20%, with stands of both native and non-native coniferous trees species (with the exception of Yew Taxus baccata) where the percentage cover of these trees in the stand exceeds 80% of the total cover of the trees present.	Scots pine Pinussylvestrisis the only pine tree that is native to the UK, and forms native woodland only in Scotland. Semi-natural woods of Scots pine are normally called native pinewoods. The majority of coniferous woodlands in the UK are plantations of species that are either not native to the UK or to the sites on which they occur.		Recently felled coniferous woodland where there is a clear indication that it will return to woodland.	Woodlands that are made up of broadleaved, yew and conifer trees with less than 80% of the total cover provided by conifer trees.

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
10	Scattered scrub	Non-woodland habitats that include patches of scattered scrub, each below 0.04ha., with an overall cover of				
11	Scattered trees	Non-woodland habitats that include trees growing at low density, with canopy cover <20%.				
12	Scattered bracken	Habitats with Bracken, Pteridium aquilinum, at < 95% canopy cover at the height of the growing season.				
13	Scattered dwarf shrubs	Small scale mosaic of patches dominated by dwarf shrubs and patches dominated by acid grassland, with each type failing to meet separate mappable size.				
16	Tall herb	Stands of tall perennial or biennial dicotyledons, such as Rosebay Willowherb Chamerion angustifolium, Common Nettle Urtica dioica, Hogweed Heracleum sphondylium and Japanese Knotweed Reynoutria japonica.			Includes non-wooded stands of species such as Lemon-scented fern Oreopteris limbosperma, Lady-fern Athyrium filix-femina, Dryopteris species or Great	Excludes upland species-rich ledges (see s1a9).

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					Wood-rush Luzula sylvatica.	
17	Ruderal/ ephemeral	Short patchy plant associations typical of unmanaged areas in arable landscape, derelict urban sites, quarries and railway ballast.				
18	Calcareous - acidic mosaic	A small-scale mosaic of vegetation types with predominance of calcicole and calcifugous species.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
	Ponds (Priority Habitat)	Permanent and seasonal standing water bodies up to 2 ha in extent which meet one or more of the following criteria: (1) Habitats of international importance: Ponds that meet criteria under Annex I of the Habitats Directive. (2) Species of high conservation importance: Ponds supporting Red Data Book species, UK BAP species, species fully protected under the Wildlife and Countryside Act Schedule 5 and 8, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species. (3) Exceptional assemblages of key biotic groups: Ponds supporting exceptional populations or numbers of key species. Based on (i) criteria specified in guidelines for the selection of biological SSSIs (currently amphibians and dragonflies only), and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting >30 wetland plant species or >50 aquatic macroinvertebrate species) (4) Ponds of high ecological quality: Ponds classified in the top PSYM category ("high") for ecological quality (i.e.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
		having a PSYM score >75%). [PSYM (the Predictive SYstem for Multimetrics) is a method for assessing the biological quality of still waters in England and Wales; plant species and-or invertebrate families are surveyed using a standard method; the PSYM model makes predictions for the site based on environmental data and using a minimally impaired pond dataset; comparison of the prediction and observed data gives a % score for ponds quality]. (5) Other important ponds: Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context e.g. pingos, dune slack ponds, machair ponds.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
	Wood-pasture and parkland	Wood-pasture and parkland are mosaic habitats valued for their trees, especially veteran and ancient trees, and the plants and animals that they support. Wood-pasture and parkland habitats display at least some of the following characteristics (see context for additional qualifying characteristics): (1) Open grown trees, some of which are ancient or veteran and may be hollow and support significant amounts of dead and decaying timber. If managed, the ancient or veteran trees have generally been pollarded, although wood-pastures may incorporate other forms of tree management. The trees often exhibit a browse line at the maximum height that browsing animals can reach. (2) Scrub as individual plants or clumps, in some instances providing tree protection or opportunities for tree regeneration. (3)Evidence of past land use for extensive agriculture and transhumance systems (where livestock are moved between lowland in winter and upland or mountain grazing in the summer). Abandoned wood-pastures	Some sites have origins in medieval hunting forests (which may not have been completely treed) and emparkments, wooded commons, or pastures with trees in them. Many of these sites were later developed as landscaped parks creating a rich legacy of layers of designed landscapes and archaeological features also of historic importance. A range of native species usually			

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
		in the uplands are remnants of a lost land-use system which is still extant in many parts of continental Europe. These wood-pastures contain open grown veteran trees (often pollards) which may in some instances now be within a matrix of secondary woodland or scrub that has developed by regeneration and/or planting in the absence of grazing animals. (4) Wood-pasture or parkland that has been converted to other land uses such as arable fields, forestry and amenity land, but where surviving veteran trees are of nature conservation interest. Some of the characteristic wood-pasture and parkland species may be surviving this change in state in the short term while the veteran trees remain alive. Sites may contain ancient pollards (e.g. Hatfield Forest) and other less usual tree forms, which result from trees being managed for timber, fodder and other products in the presence of grazing animals.	predominates amongst the oldest trees but there may be nonnative trees which have been planted or regenerated naturally. Others are designed landscapes not originating from medieval parkland, but with veteran trees, including 19th century or later parklands with their origins in earlier agricultural landscapes.			

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
21	Traditional orchards	Habitat structure rather than vegetation type, topography or soils, is the defining feature of the habitat. Traditional orchards are structurally and ecologically similar to wood-pasture and parkland, with open- grown trees set in herbaceous vegetation, but are generally distinguished from these priority habitat complexes by the following characteristics: the species composition of the trees, these being primarily in the family Rosaceae; the usually denser arrangement of the trees; the small scale of individual habitat patches; the wider dispersion and greater frequency of occurrence of habitat patches in the countryside.			Traditional orchards include plantings for nuts, principally hazel nuts, but also walnuts.	
25	Coastal and floodplain grazing marsh	Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water.			Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities.	Extensive areas of tall fen species like reeds.

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
33	Ancient woodland site	England and Wales definition: land that is currently wooded and has been continually wooded, at least since 1600AD. Scotland definition: land that is currently wooded and has been continually wooded, at least since 1750AD. Northern Ireland definition: "long-established woodland" - land that has been continuously wooded since the first comprehensive maps of Ireland were produced in 1830-44.	Ancient woodland sites can include a) fragments of woodland in inaccessible areas (cliff, gorges etc), b) ancient high forest (mainly pine and birch in Scotland), c) relicts of wood pasture (unenclosed woodland in former medieval forests, old deer parks and wooded commons), d) ancient coppice woods.		The tree and shrub layer is composed of species native to the site derived from natural regeneration or coppice regrowth from individuals which were themselves derived from natural regeneration (Ancient semi-natural woodland - use codes 33 and 37). If an ancient woodland site has been replanted then use codes 33 and 36 - Plantation on Ancient Woodland Site, or "PAWS").	Land that was an ancient woodland site in the recent past but has now been converted to a non-woodland land-use.

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
36	Obviously planted trees which are predominantly even-aged, of uniform density and similar forms, normally occurring in rows.				Includes wooded ornamental gardens and arboretum collections.	
37	Semi-natural woodland	Composed of trees which are usually uneven-aged, of mixed density and forms, and which occur in natural groupings.				
38	Secondary woodland	Woodlands that have regrown on abandoned or neglected ground that had previously been used for agriculture, grazing or development of towns, villages, industry and roads.				Excludes plantations.
39	Freshwater - man-made	Freshwater bodies that have been dug by humans.			Includes artificial ponds, fishing lakes, water-filled sand and gravel pits, ornamental lakes, fen drains and ditches	Excludes: reservoirs (see 1040) and canals (see r1e).

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
					(especially in Coastal Floodplain and Grazing Marsh).	
51	Coppice	Crops of marketable broadleaved species that have at least 2 stems per stool and are either being worked or are capable of being worked on rotation. With the exception of hazel coppice more than half the stems should be capable of producing 1 m timber lengths of good form.				
53	Felled	Woodland areas that have been felled or stands where the stocking has been reduced to less than 20% and where it is expected that these areas will be replanted.				
56	Young trees - planted	Areas where planting is clearly visible, but the trees cannot yet be allocated between Conifer and Broadleaved due to their immaturity. These areas can be on either land new to woodland or where a felled crop has been replaced.				
57	Young trees - self-set	Tree seedlings or saplings of natural regeneration origin.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
58	Grazed	Managed by farm livestock, including exotic species.				Excludes habitat exclusively grazed by wild animals.
66	Frequently mown	Frequent mechanised cutting of grass as in garden lawns, golfcourse fairways and urban parks managed as short grassland.				
67	Dry stone wall	A wall consisting of stones without mortar or cement.				
73	Bare ground	Any type of bare soil or other unvegetated substrate. Link only with vegetated primary habitats that surround or are adjacent to much of the bare ground patch.				Excludes bare ground defined by their unvegetated state e.g. Intertidal mud.
105	Quarry - hard rock	A large, deep pit, from which stone has been extracted.				Excludes sand, gravel and marl pits.
106	Quarry - sand and gravel	Open mining for materials occurring as small grain sizes, such as sand and gravel.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
114	Solar panel array	An arrangement of ground-mounted or floating solar photovoltaic panels designed for renewable electricity generation.				Solar panels mounted on the roofs of buildings.
117	Dry	Water table < 100 cm of the surface, water available only during some periods				
119	Seasonally wet	Water table variable at the surface and waterlogged for the winter months or spring flooding season, becoming wet or mesic during the summer period.				
120	Wet	Water table within 40 cm of the surface and soil containing free water for most of the year.				
121	Waterlogged	Soils or vegetation saturated with water.				
127	Peat	Land with any depth of surface peat, bare or vegetated.				
129	Flush	Lines of water flow not forming streams – wetland vegetation indicators present.				
134	Base-rich substrate	Soil, water, tree bark or rock with high levels of calcium or magnesium ions.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
135	Acidic substrate	Soil, water, tree bark or rock with high levels of hydrogen ions.				
146	Exposed riverine sediments	Mounds of sediment which have recently been deposited in any channel of flowing water and then subsequently exposed by reduced water levels, including shoals, bars, berms, spits, sandbanks and shingle banks.				
160	Sward type mosaic	A grassland site with a mosaic of sward types such as short grazed/mown, tall flower-rich, tussocky.				
161	Tall or tussocky sward	Tall swards, with or without occasional tussocks, providing nectar, pollen, foodplants, seeds, dead seed heads and prey items for invertebrates and certain bird species.				
189	Scattered grass	A non-grassland habitat with a low cover of grasses.				
200	Parks and gardens	Areas of land designed, constructed, managed and maintained for casual leisure and recreation. Normally enclosed.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
300	Natural and semi-natural open space	Areas of undeveloped or previously developed land with residual natural habitats or which have been planted or colonised by vegetation and wildlife.				
431	Road island/verge	Land alongside roads and in the middle of roundabouts. Will usually be managed by the Local Authority or Highways Authority.				
510	Sports pitches	Flat areas of grassland or specially designed surfaces used for a range of outdoor sports, i.e. football, rugby and hockey and, in the summer, for cricket. They often have changing rooms and pavilions.			Includes athletics tracks.	Excludes sports pitches on educational land (see 710, 711, 712).
540	Golf course	Land enclosed and used for golf.			Includes golf ranges. Includes all land, including semi-natural habitats, within the golf course boundary.	
611	Children's Play Space; natural	A site set aside mainly for children containing the usual paraphernalia of swings, slides and roundabouts but on a soft surface such as grass or sand.				

Secondary Codes	Full title	Definition	Landscape and ecological context	Synonyms	Inclusions	Exclusions
810	Cemetery	Land outside the confines of a church or place of worship used as a place of burial.			Includes land associated with crematoriums, burial grounds and memorial sites.	
910	Allotments	Land used for the cultivation of fruit and vegetables with numerous plots rented to local people.			Includes Community Gardens and City Farms.	
1011	Pasture or meadow	Land used for grazing or managed as a meadow.				
1040	Reservoirs	An artificial water body created by a dam for water supply or irrigation purposes.			Includes drawdown zones.	Excludes the dam. Excludes fishing lakes, industrial lagoons, gravel pits, quarry pools.
1160	Introduced shrub	Non-native tall phanerophytes, mid phanerophytes or low phanerophytes planted in a garden or park setting e.g. winter jasmine.				

Appendix 2: Input datasets and conflation order used to produce the Habitat Asset Register

Conflation order	Dataset	Provider
1 (top)	Stonewalls (automated and manual refinement from EO-based classification)	Environment Systems
2	Hedgerows (automated and manual refinement from EO-based classification)	Environment Systems
3	Stakeholder feedback - site-specific manual updates	Environment Systems
4	Chesterfield greenspace data	Chesterfield Borough Council
5	Merged dataset containing stakeholder feedback relating to wood pasture, arable/amenity grassland, and bare ground	Environment Systems
6	Multi Surface Fill - OS MasterMap selection	Ordnance Survey
7	Ponds	Derbyshire Wildlife Trust
8	Lakes in Lowland Derbyshire	Derbyshire Wildlife Trust
9	Boundary features derived from Lidar, Sentinel-1, NDVI analysis (Sentinel-2), OS MasterMap boundary data	Environment Systems / Ordnance Survey
10	Allotments	Derby City Council
11	Local Wildlife Sites	Derbyshire Wildlife Trust
12	Purple moor grass and rush pasture	Derbyshire Wildlife Trust
13	Reedbeds	Derbyshire Wildlife Trust
14	Ancient Woodland 2018	Derbyshire Wildlife Trust
15	Ancient Woodland England	Natural England
16	Fen, Mire, & Bog	Natural England
17	Lowland fen	Derbyshire Wildlife Trust
18	Lowland Heathland	Derbyshire Wildlife Trust
19	Open Mosaic Habitat	Derbyshire Wildlife Trust
20	Open Mosaic Habitat	Natural England
21	Traditional Orchards	Natural England
22	Traditional Orchards	Derbyshire Wildlife Trust
23	National Trust Phase1 data	National Trust
24	Wood Pasture and Parkland Priority Habitat data	Natural England
25	National Forest Inventory	Forest Research
26	Historical Wood Pasture and Parkland	Derbyshire Wildlife Trust
27	Semi natural grassland sites	Derbyshire Wildlife Trust
28	Peak District National Park Priority Habitat Data	Peak District National Park Authority
29	Priority Habitat Inventory (PHI) North	Natural England

30	Non Priority Habitats	Peak District National Park Authority
31	Amenity Green Space	Derby City Council
32	Natural and Semi Natural Green Space	Derby City Council
33	New Parks 2021	Derby City Council
34	The Crop Map of England (CROME) merged with OS MasterMap derived arable areas	Rural Payments Agency / Ordnance Survey
35 (bottom)	EO-derived habitat classification (Sentinel-2 imagery)	Environment Systems

Appendix 3: UKHab classes mapped in the Habitat Asset Register

CLASS NAME	HARCLASS	L2_CODE	LD_CODE	SEC_CODE	UKHAB_L2	UKHAB_LD	UKHABSEC
1	u1	u	u1	431	Urban	Built-up areas and gardens	Road island/verge
12	c	c	c	No secondary code assigned	Cropland	Cropland	No secondary code assigned
13	c1	c	c1	No secondary code assigned	Cropland	Arable and horticulture	No secondary code assigned
15	c1c	c	c1c	No secondary code assigned	Cropland	Cereal crops	No secondary code assigned
16	c1d	c	c1d	No secondary code assigned	Cropland	Non-cereal crops	No secondary code assigned
17	f	f	f	No secondary code assigned	Wetland	Wetland	No secondary code assigned
18	f - 127	f	f	127	Wetland	Wetland	Peat
20	f1	f	f1	No secondary code assigned	Wetland	Bog	No secondary code assigned
21	f1 - 73, 127	f	f1	73, 127	Wetland	Bog	Bare ground, Peat
22	f1 - 117	f	f1	117	Wetland	Bog	Dry
24	f1 - 120	f	f1	120	Wetland	Bog	Wet
26	f1a	f	f1a	No secondary code assigned	Wetland	Blanket bog	No secondary code assigned
27	f1a - 117	f	f1a	117	Wetland	Blanket bog	Dry
28	f1a - 120	f	f1a	120	Wetland	Blanket bog	Wet
29	f1a5	f	f1a5	No secondary code assigned	Wetland	Blanket bog (H7130)	No secondary code assigned
30	f2	f	f2	No secondary code assigned	Wetland	Fen marsh and swamp	No secondary code assigned
31	f2 - 129	f	f2	129	Wetland	Fen marsh and swamp	Flush
32	f2 - 129, 134	f	f2	129, 134	Wetland	Fen marsh and swamp	Flush, Base-rich substrate
35	f2a - 16	f	f2a	16	Wetland	Lowland fens	Tall herb

36	f2a8	f	f2a8	No secondary code assigned	Wetland	Transition mires and quaking bogs; lowland (H7140)	No secondary code assigned
37	f2b	f	f2b	No secondary code assigned	Wetland	Purple moor grass and rush pastures	No secondary code assigned
38	f2c	f	f2c	No secondary code assigned	Wetland	Upland flushes, fens and swamps	No secondary code assigned
40	f2e	f	f2e	No secondary code assigned	Wetland	Reedbeds	No secondary code assigned
41	g	g	g	No secondary code assigned	Grassland	Grassland	No secondary code assigned
43	g - 119, 120, 121	g	g	119, 120, 121	Grassland	Grassland	Seasonally wet, Wet, Waterlogged
44	g - 16	g	g	16	Grassland	Grassland	Tall herb
45	g - 17	g	g	17	Grassland	Grassland	Ruderal/ ephemeral
46	g - 18, 160	g	g	18, 160	Grassland	Grassland	Calcareous - acidic mosaic, Sward type mosaic
47	g - 21	g	g	21	Grassland	Grassland	Traditional orchards
48	g - 25	g	g	25	Grassland	Grassland	Coastal and floodplain grazing marsh
49	g1	g	g1	No secondary code assigned	Grassland	Acid grassland	No secondary code assigned
51	g1 - 12	g	g1	12	Grassland	Acid grassland	Scattered bracken
52	g1 - 13	g	g1	13	Grassland	Acid grassland	Scattered dwarf shrubs
53	g1 - 161	g	g1	161	Grassland	Acid grassland	Tall or tussocky sward
54	g1 - 18, 160	g	g1	18, 160	Grassland	Acid grassland	Calcareous - acidic mosaic, Sward type mosaic
55	g1 - 58	g	g1	58	Grassland	Acid grassland	Grazed
57	g1a	g	g1a	No secondary code assigned	Grassland	Lowland dry acid grassland	No secondary code assigned
58	g1a - 13	g	g1a	13	Grassland	Lowland dry acid grassland	Scattered dwarf shrubs
60	g1c	g	g1c	No secondary code assigned	Grassland	Bracken	No secondary code assigned
61	g2	g	g2	No secondary code assigned	Grassland	Calcareous grassland	No secondary code assigned

64	g2a	g	g2a	No secondary code assigned	Grassland	Lowland calcareous grassland	No secondary code assigned
65	g2b	g	g2b	No secondary code assigned	Grassland	Upland calcareous grassland	No secondary code assigned
66	g3	g	g3	No secondary code assigned	Grassland	Neutral grassland	No secondary code assigned
68	g3 - 1011	g	g3	1011	Grassland	Neutral grassland	Pasture or meadow
69	g3 - 120	g	g3	120	Grassland	Neutral grassland	Wet
70	g3 - 161	g	g3	161	Grassland	Neutral grassland	Tall or tussocky sward
71	g3a	g	g3a	No secondary code assigned	Grassland	Lowland meadows	No secondary code assigned
72	g3c	g	g3c	No secondary code assigned	Grassland	Other neutral grassland	No secondary code assigned
73	g4	g	g4	No secondary code assigned	Grassland	Modified grassland	No secondary code assigned
74	g4 - 66, 1160	g	g4	66, 1160	Grassland	Modified grassland	Frequently mown, Introduced shrub
77	h1	h	h1	No secondary code assigned	Heathland and shrub	Dwarf shrub heath	No secondary code assigned
78	h1 - 120	h	h1	120	Heathland and shrub	Dwarf shrub heath	Wet
79	h1 - 189	h	h1	189	Heathland and shrub	Dwarf shrub heath	Scattered grass
80	h1a	h	h1a	No secondary code assigned	Heathland and shrub	Lowland heathland	No secondary code assigned
81	h1b	h	h1b	No secondary code assigned	Heathland and shrub	Upland heathland	No secondary code assigned
83	h1b - 120, 134	h	h1b	120, 134	Heathland and shrub	Upland Heathland	Wet, Base-rich substrate
84	h1b - 134	h	h1b	134	Heathland and shrub	Upland heathland	Base-rich substrate
85	h1b - 135	h	h1b	135	Heathland and shrub	Upland heathland	Acidic substrate
86	h1b - 189	h	h1b	189	Heathland and shrub	Upland heathland	Scattered grass
87	h2	h	h2	No secondary code assigned	Heathland and shrub	Hedgerows	No secondary code assigned
88	h3	h	h3	No secondary code assigned	Heathland and shrub	Dense scrub	No secondary code assigned

89	h3f	h	h3f	No secondary code assigned	Heathland and shrub	Hawthorn scrub	No secondary code assigned
90	r	r	r	No secondary code assigned	Rivers and lakes	Rivers and lakes	No secondary code assigned
91	r1	r	r1	No secondary code assigned	Rivers and lakes	Standing open water and canals	No secondary code assigned
92	r1 - 1040	r	r1	1040	Rivers and lakes	Standing open water and canals	Reservoirs
93	r1 - 39	r	r1	39	Rivers and lakes	Standing open water and canals	Freshwater - man-made
94	r1c	r	r1c	No secondary code assigned	Rivers and lakes	Oligotrophic and dystrophic lakes	No secondary code assigned
95	r1e	r	r1e	No secondary code assigned	Rivers and lakes	Canals	No secondary code assigned
96	r2	r	r2	No secondary code assigned	Rivers and lakes	Rivers and streams	No secondary code assigned
97	s	s	s	No secondary code assigned	Sparsely vegetated land	Sparsely vegetated land	No secondary code assigned
98	s1	s	s1	No secondary code assigned	Sparsely vegetated land	Inland rock	No secondary code assigned
99	s1b	s	s1b	No secondary code assigned	Sparsely vegetated land	Limestone pavement	No secondary code assigned
100	s1c	s	s1c	No secondary code assigned	Sparsely vegetated land	Calaminarian grasslands	No secondary code assigned
101	u	u	u	No secondary code assigned	Urban	Urban	No secondary code assigned
104	u1 - 1160	u	u1	1160	Urban	Built-up areas and gardens	Introduced shrub
105	u1 - 910	u	u1	910	Urban	Built-up areas and gardens	Allotments
106	u1a	u	u1a	No secondary code assigned	Urban	Open Mosaic Habitats on Previously Developed Land	No secondary code assigned
107	w	w	w	No secondary code assigned	Woodland and forest	Woodland and forest	No secondary code assigned
108	w - 10	w	w	10	Woodland and forest	Woodland and forest	Scattered scrub
109	w - 11	w	w	11	Woodland and forest	Woodland and forest	Scattered trees
111	w - 33	w	w	33	Woodland and forest	Woodland and forest	Ancient woodland site
112	w - 33, 36	w	w	33, 36	Woodland and forest	Woodland and forest	Ancient woodland site, Plantation

113	w - 33, 37	w	w	33, 37	Woodland and forest	Woodland and forest	Ancient woodland site, Semi-natural woodland
114	w - 33, 37, 120	w	w	33, 37, 120	Woodland and forest	Woodland and forest	Ancient woodland site, Semi-natural woodland, Wet
115	w - 36	w	w	36	Woodland and forest	Woodland and forest	Plantation
117	w - 51	w	w	51	Woodland and forest	Woodland and forest	Coppice
118	w - 53	w	w	53	Woodland and forest	Woodland and forest	Felled
119	w - 56	w	w	56	Woodland and forest	Woodland and forest	Young trees - planted
120	w - 56, 57	w	w	56, 57	Woodland and forest	Woodland and forest	Young trees - planted, Young trees - self-set
121	w1	w	w1	No secondary code assigned	Woodland and forest	Broadleaved mixed and yew woodland	No secondary code assigned
123	w1 - 33	w	w1	33	Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site
124	w1 - 33, 36	w	w1	33, 36	Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site, Plantation
125	w1 - 33, 37	w	w1	33, 37	Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site, Semi-natural woodland
126	w1 - 36	w	w1	36	Woodland and forest	Broadleaved mixed and yew woodland	Plantation
127	w1 - 37	w	w1	37	Woodland and forest	Broadleaved mixed and yew woodland	Semi-natural woodland
128	w1 - 38	w	w1	38	Woodland and forest	Broadleaved mixed and yew woodland	Secondary woodland
129	w1 - 53	w	w1	53	Woodland and forest	Broadleaved mixed and yew woodland	Felled
130	w1 - 56	w	w1	56	Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted
131	w1 - 56, 57	w	w1	56, 57	Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted, Young trees - self-set
133	w1a	w	w1a	No secondary code assigned	Woodland and forest	(Upland oakwood)	No secondary code assigned
136	w1a - 36	w	w1a	36	Woodland and forest	(Upland oakwood)	Plantation
137	w1a - 37	w	w1a	37	Woodland and forest	(Upland oakwood)	Semi-natural woodland
138	w1b	w	w1b	No secondary code assigned	Woodland and forest	Upland mixed ashwoods	No secondary code assigned

141	w1b - 36	w	w1b	36	Woodland and forest	Upland mixed ashwoods	Plantation
142	w1b - 37	w	w1b	37	Woodland and forest	Upland mixed ashwoods	Semi-natural woodland
143	w1d	w	w1d	No secondary code assigned	Woodland and forest	Wet woodland	No secondary code assigned
144	w1d - 37	w	w1d	37	Woodland and forest	Wet woodland	Semi-natural woodland
145	w1d - 38	w	w1d	38	Woodland and forest	Wet woodland	Secondary woodland
146	w1f	w	w1f	No secondary code assigned	Woodland and forest	Lowland mixed deciduous woodland	No secondary code assigned
147	w1f - 33, 37	w	w1f	33, 37	Woodland and forest	Lowland mixed deciduous woodland	Ancient woodland site, Semi-natural woodland
148	w1f - 37	w	w1f	37	Woodland and forest	Lowland mixed deciduous woodland	Semi-natural woodland
149	w1h - 36	w	w1h	36	Woodland and forest	Other woodland; mixed	Plantation
150	w2	w	w2	No secondary code assigned	Woodland and forest	Coniferous woodland	No secondary code assigned
151	w2 - 33, 36	w	w2	33, 36	Woodland and forest	Coniferous woodland	Ancient woodland site, Plantation
152	w2 - 36	w	w2	36	Woodland and forest	Coniferous woodland	Plantation
154	w2 - 53	w	w2	53	Woodland and forest	Coniferous woodland	Felled
155	s1a	s	s1a	No secondary code assigned	Sparsely vegetated land	Inland rock outcrop and scree habitats	No secondary code assigned
156	s - 105	s	s	105	Sparsely vegetated land	Sparsely vegetated land	Quarry - hard rock
157	h - 10	h	h	10	Heathland and shrub	Heathland and shrub	Scattered scrub
158	c1b - 1	c	c1b	1	Cropland	Temporary grass and clover leys	Intensively managed
159	c1b - 2	c	c1b	2	Cropland	Temporary grass and clover leys	Less intensively managed
161	f1a6	f	f1a6	No secondary code assigned	Wetland	Degraded blanket bog	No secondary code assigned
162	w1g6	w	w1g6	No secondary code assigned	Woodland and forest	Single line of trees	No secondary code assigned
163	s1a	s	s1a	No secondary code assigned	Inland rock outcrop and scree habitats		No secondary code assigned
165	u - 540	u	u	540	Urban	Urban	Golf course
167	s - 73	s	s	73	Sparsely vegetated land	Sparsely vegetated land	Bare ground

168	g - 73	g	g	73	Grassland	Grassland	Bare ground
169	u - 73	u	u	73	Urban	Urban	Bare ground
170	g - 20	g	g	20	Grassland	Grassland	Wood-pasture and parkland
171	g - 114	g	g	114	Grassland	Grassland	Solar farm
172	s - 105, 106	s	s	105, 106	Sparsely vegetated land	Sparsely vegetated land	Quarry - hard rock, Quarry - sand and gravel
173	w - 56	w	w	56	Woodland and forest	Woodland and forest	Planted woodland
174	f - 146	f	f	146	Wetland	Wetland	Exposed riverine sediments
175	g - 10	g	g	10	Grassland	Grassland	Scattered Scrub
177	r - 19	r	r	19	Rivers and lakes	Rivers and lakes	Ponds
178	g3a5	g	g3a5	No secondary code assigned	Grassland	Lowland hay meadows (H6510)	No secondary code assigned
179	u1c	u	u1c	No secondary code assigned	Urban	Artificial unvegetated, unsealed surface	No secondary code assigned
180	g - 810	g	g	810	Grassland	Grassland	Cemeteries
181	g - 610	g	g	611	Grassland	Grassland	Grassland/Childrens play areas
182	u - 200	u	u	200	Urban	Urban	Parks and gardens
183	u - 300	u	u	300	Urban	Urban	Natural and semi-natural open space
184	u - 510	u	u	510	Urban	Urban	Sport pitches
189	g - 67	g	g	67	Grassland	Grassland	Dry stone wall
193	u - 105	u	u	105	Urban	Urban	Quarry - hard rock
195	g3 -10	g	g3	10	Grassland	Neutral grassland	Scattered Scrub

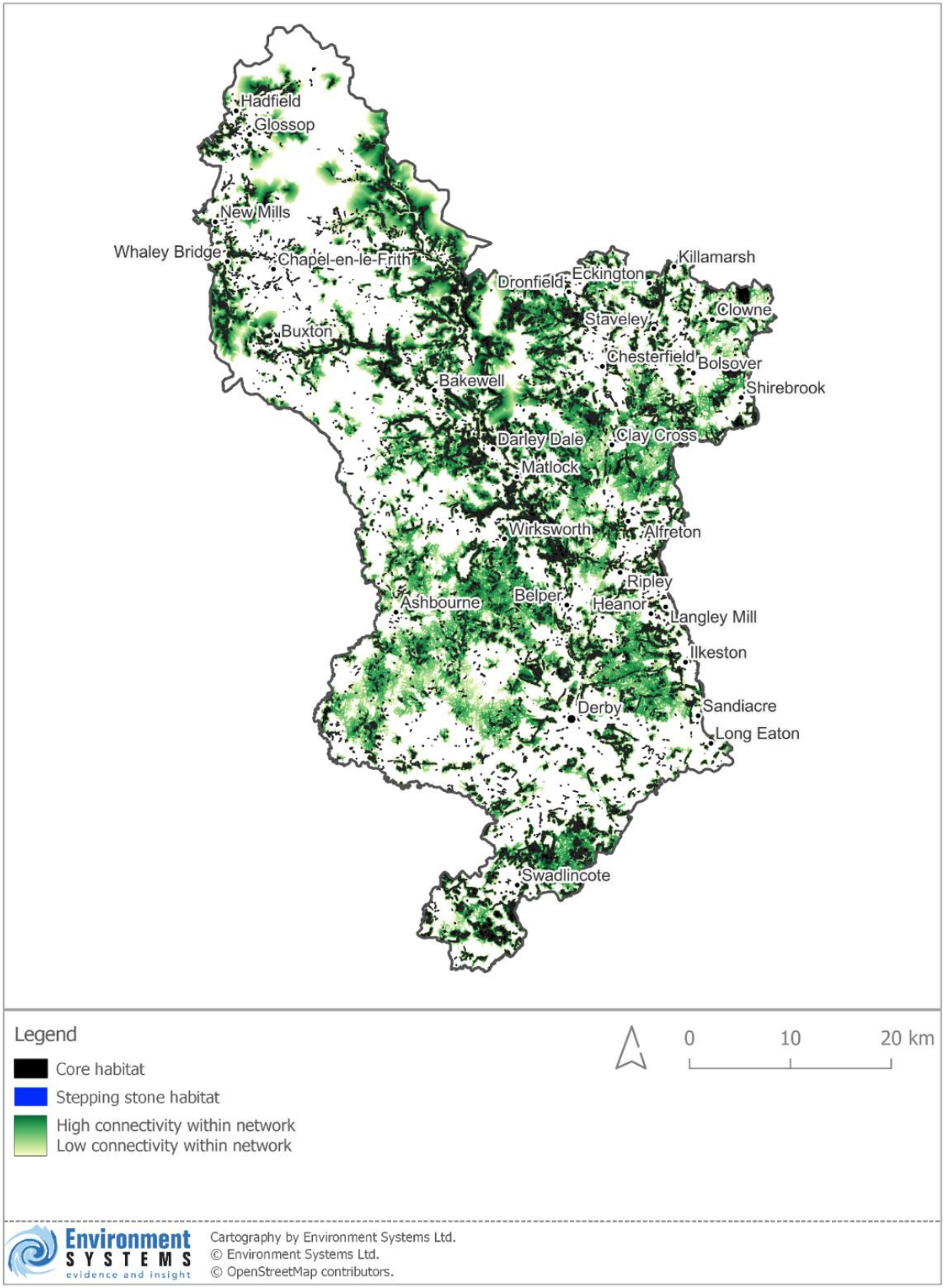
Appendix 4: Input datasets used in production of the ecosystem service stock, risk and opportunity maps

Dataset	Provider/Owner
Housing Allocations and Employment Land Allocations	Bolsover District Council
Housing Allocations	Chesterfield Borough Council
Natmap Vector (soil type)	Cranfield NSRI
Natmap Carbon	Cranfield NSRI
SP1104 rerun – climate change ALC scenarios	Cranfield NSRI
Renewable Energy Planning Database: quarterly extract	Department for Business, Energy & Industrial Strategy
5m resolution DEM	Derby City Council
Access points to paths	Derby City Council
Derby City parks	Derby City Council
Green spaces – parks	Derby City Council
Heritage at Risk	Derby City Council
Landscape Character 2013	Derby City Council
National Forest boundary	Derby City Council
Opportunity areas for large wind renewable energy	Derby City Council
Opportunity areas for small wind renewable energy	Derby City Council
Opportunity areas for ground-mounted solar renewable energy	Derby City Council
Paths	Derby City Council
Strategic Sites	Derby City Council
Visual intactness (October 2010 evaluation)	Derby City Council
Local Wildlife Sites	Derbyshire Wildlife Trust
Species data: bat roosts; GCN; notable invertebrate ponds; otter; water vole; while-clawed crayfish.	Derbyshire Wildlife Trust
Floodzone 2	Environment Agency
Floodzone 3	Environment Agency
Channel network (derived from 5m DEM using SCIMAP)	Environment Systems
Habitat Asset Register	Environment Systems
Slope: 5m resolution DEM	Environment Systems
Proposed Housing Allocations	Erewash Borough Council
Housing Allocations	High Peak Borough Council
Listed buildings	Historic England
Registered parks and gardens	Historic England
Scheduled monuments	Historic England
World Heritage Sites	Historic England
Agricultural Land Classification	Natural England
AONBs	Natural England
Country parks	Natural England
CRoW land	Natural England
LNRs	Natural England

NNRs	Natural England
Nature Recovery Networks for England	Natural England
Peak District National Park boundary	Natural England
Ramsar sites	Natural England
SACs	Natural England
SPAs	Natural England
SSSIs	Natural England
National Trust estates	National Trust
Master Map	Ordnance Survey
Vectormap	Ordnance Survey
Canals	Water Framework Directive
Selected rivers: Derwent, Dove, Trent	Water Framework Directive

Appendix 5: Methodology used in the production of individual SENCE and climate change maps

Woodland network



Connectivity was modelled using a cost-distance approach. All classes within the HAR were classified as either core type habitats (where species associated with the network type are natively found) or other habitat type. Larger blocks of core habitats are more resilient and

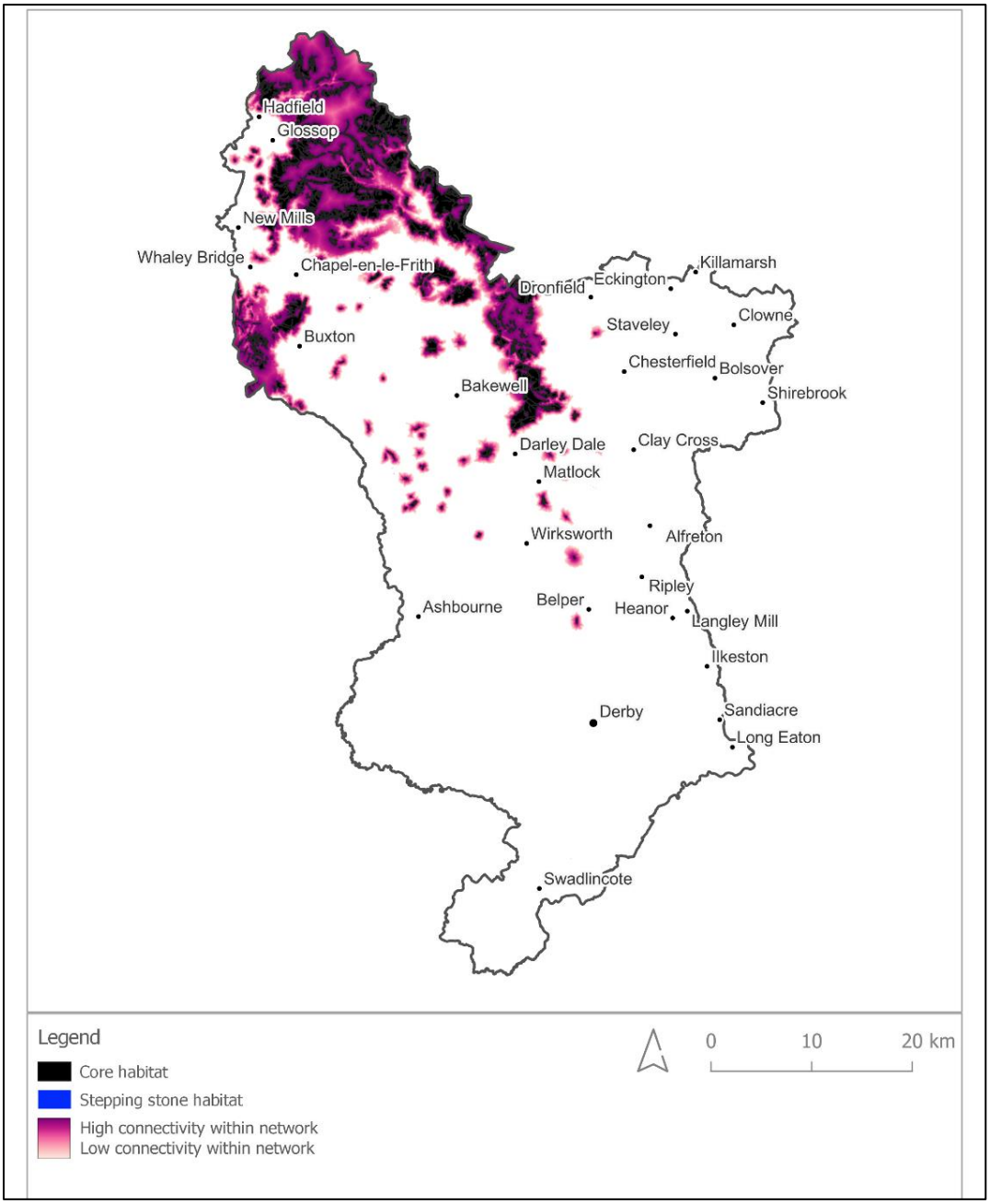
therefore retained as the 'core' class, whilst smaller areas were reclassified as 'stepping stones', i.e. areas that a species might use transiently while passing through, but would not choose to nest there. All habitats (core, stepping stone and 'other') were additionally assessed for movement cost; a value expressing how difficult it is for a species associated with the network to move through this non-core habitat. Core type habitats have an associated movement cost of 0 – the species are at home in these patches. The cost increases the harder a habitat is to transverse, with intensive agricultural land-use, waterbodies, or urban areas normally having the highest cost values. For this habitat type 'core' habitats were considered as areas of minimum 2ha size, while stepping stone habitats were of the same habitat type, but found in smaller patch sizes. A cut-off value was identified to determine the final extent of the network, in consultation with Derbyshire County Council, Peak District National Park Authority and Derbyshire Wildlife Trust. The table below identifies the HAR habitat types considered 'core' or 'stepping stone' for this habitat network.

UKHAB_L2	UKHAB_LD	UKHABSEC
Woodland and forest	(Upland oakwood)	No secondary code assigned
Woodland and forest	(Upland oakwood)	Plantation
Woodland and forest	(Upland oakwood)	Semi-natural woodland
Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site
Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site, Plantation
Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site, Semi-natural woodland
Woodland and forest	Broadleaved mixed and yew woodland	No secondary code assigned
Woodland and forest	Broadleaved mixed and yew woodland	Plantation
Woodland and forest	Broadleaved mixed and yew woodland	Secondary woodland
Woodland and forest	Broadleaved mixed and yew woodland	Semi-natural woodland
Woodland and forest	Lowland mixed deciduous woodland	Ancient woodland site, Semi-natural woodland
Woodland and forest	Lowland mixed deciduous woodland	No secondary code assigned
Woodland and forest	Lowland mixed deciduous woodland	Semi-natural woodland
Woodland and forest	Other woodland; mixed	Plantation

Woodland and forest	Upland mixed ashwoods	No secondary code assigned
Woodland and forest	Upland mixed ashwoods	Plantation
Woodland and forest	Upland mixed ashwoods	Semi-natural woodland
Woodland and forest	Wet woodland	No secondary code assigned
Woodland and forest	Wet woodland	Secondary woodland
Woodland and forest	Wet woodland	Semi-natural woodland
Woodland and forest	Woodland and forest	Ancient woodland site
Woodland and forest	Woodland and forest	Ancient woodland site, Plantation
Woodland and forest	Woodland and forest	Ancient woodland site, Semi-natural woodland
Woodland and forest	Woodland and forest	Ancient woodland site, Semi-natural woodland, Wet
Woodland and forest	Woodland and forest	Coppice
Woodland and forest	Woodland and forest	No secondary code assigned
Woodland and forest	Woodland and forest	Plantation
Woodland and forest	Woodland and forest	Planted woodland

Associated data file	**Value/Class name**
Ecological_Network_Woodland_SS_Core.gpkg	CLASS – Core: hex colour: #000000 CLASS – Stepping stone: hex colour: #ff7f00
Ecological_Network_Woodland.gpkg	Range: 0 – High: dark green 3000 – Low: light green

Heathland network



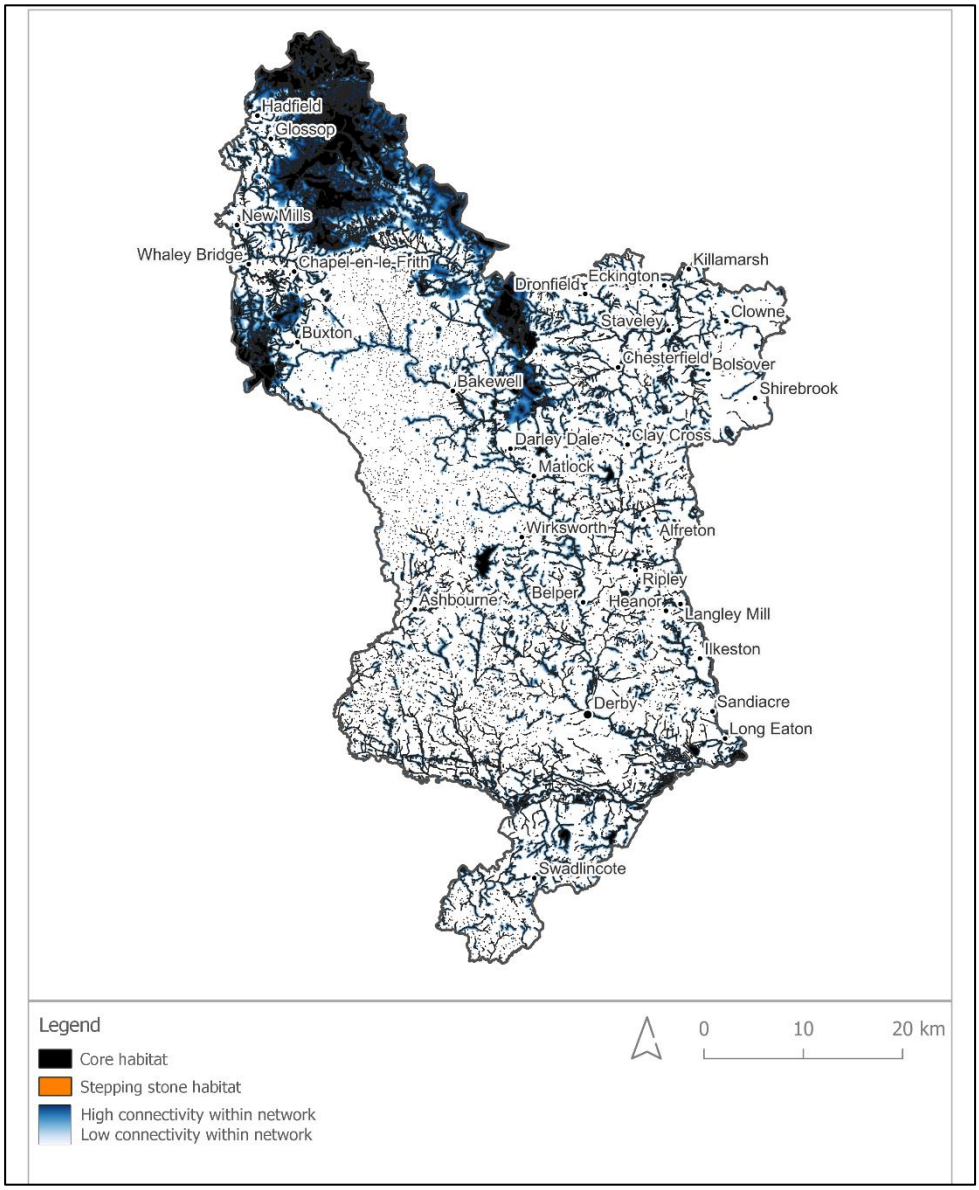
Connectivity was modelled using a cost-distance approach. All classes within the HAR were classified as either core type habitats (where species associated with the network type are natively found) or other habitat type. Larger blocks of core habitats are more resilient and therefore retained as the 'core' class, whilst smaller areas were reclassified as 'stepping stones', i.e. areas that a species might use transiently while passing through, but would not choose to nest there. All habitats (core, stepping stone and 'other') were additionally assessed for movement cost; a value expressing how difficult it is for a species associated with the network to move through this non-core habitat. Core type habitats have an associated movement cost of 0 – the species are at home in these patches. The cost increases the harder a habitat is to transverse, with intensive agricultural land-use, waterbodies, or urban areas

normally having the highest cost values. For this habitat type 'core' habitats were considered as areas of minimum 0.25ha size, while stepping stone habitats were of the same habitat type, but found in smaller patch sizes. A cut-off value was identified to determine the final extent of the network, in consultation with Derbyshire County Council, Peak District National Park Authority and Derbyshire Wildlife Trust. The table below identifies the HAR habitat types considered 'core' or 'stepping stone' for this habitat network.

UKHAB_L2	UKHAB_LD	UKHABSEC
Heathland and shrub	Dwarf shrub heath	No secondary code assigned
Heathland and shrub	Dwarf shrub heath	Scattered grass
Heathland and shrub	Dwarf shrub heath	Wet
Heathland and shrub	Lowland heathland	No secondary code assigned
Heathland and shrub	Upland heathland	Acidic substrate
Heathland and shrub	Upland heathland	Base-rich substrate
Heathland and shrub	Upland heathland	No secondary code assigned
Heathland and shrub	Upland heathland	Scattered grass
Heathland and shrub	Upland Heathland	Wet, Base-rich substrate

Associated data file	Value/Class name
Ecological_Network_Heathland_SS_Core.gpkg	CLASS – Core: hex colour: #000000 CLASS – Stepping stone: hex colour: #032cfc
Ecological_Network_Heathland.gpkg	Range: 0 – High: dark pink 8200 – Low: light pink

Wetland network



Connectivity was modelled using a cost-distance approach. All classes within the HAR were classified as either core type habitats (where species associated with the network type are natively found) or other habitat type. Larger blocks of core habitats are more resilient and therefore retained as the 'core' class, whilst smaller areas were reclassified as 'stepping stones', i.e. areas that a species might use transiently while passing through, but would not choose to nest there. All habitats (core, stepping stone and 'other') were additionally assessed for movement cost; a value expressing how difficult it is for a species associated with the network to move through this non-core habitat. Core type habitats have an associated movement cost of 0 – the species are at home in these patches. The cost increases the harder a habitat is to transverse, with intensive agricultural land-use, waterbodies, or urban areas normally having the highest cost values. For this habitat type 'core' habitats were considered as areas of minimum 0.2ha size, while stepping stone habitats were of the same habitat type, but found in smaller patch sizes. A cut-off value was identified to determine the final extent of the network, in consultation with Derbyshire County Council, Peak District National Park

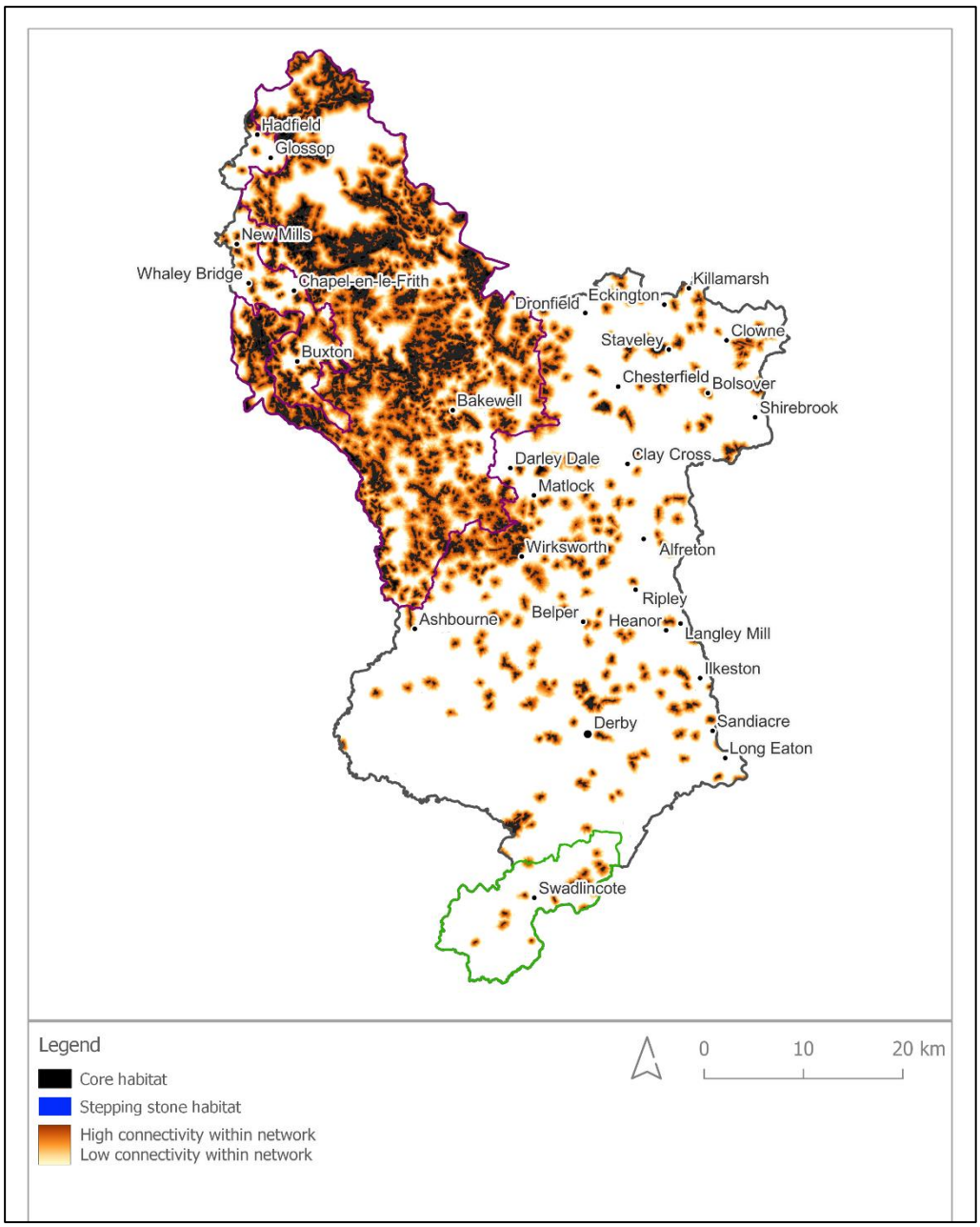
Authority and Derbyshire Wildlife Trust. The table below identifies the HAR habitat types considered 'core' or 'stepping stone' for this habitat network.

UKHAB_L2	UKHAB_LD	UKHABSEC
Rivers and lakes	Canals	No secondary code assigned
Rivers and lakes	Oligotrophic and dystrophic lakes	No secondary code assigned
Rivers and lakes	Rivers and lakes	No secondary code assigned
Rivers and lakes	Rivers and lakes	Ponds
Rivers and lakes	Rivers and streams	No secondary code assigned
Rivers and lakes	Standing open water and canals	Freshwater - man-made
Rivers and lakes	Standing open water and canals	No secondary code assigned
Wetland	Blanket bog	No secondary code assigned
Wetland	Blanket bog	Wet
Wetland	Blanket bog (H7130)	No secondary code assigned
Wetland	Bog	Bare ground, Peat
Wetland	Bog	Dry
Wetland	Bog	No secondary code assigned
Wetland	Bog	Wet
Wetland	Degraded blanket bog	No secondary code assigned
Wetland	Fen marsh and swamp	Flush
Wetland	Fen marsh and swamp	Flush, Base-rich substrate
Wetland	Fen marsh and swamp	No secondary code assigned
Wetland	Lowland fens	Tall herb
Wetland	Purple moor grass and rush pastures	No secondary code assigned
Wetland	Reedbeds	No secondary code assigned
Wetland	Transition mires and quaking bogs; lowland (H7140)	No secondary code assigned
Wetland	Upland flushes, fens and swamps	No secondary code assigned
Wetland	Wetland	No secondary code assigned
Wetland	Wetland	Peat
Woodland and forest	Wet woodland	No secondary code assigned
Woodland and forest	Wet woodland	Secondary woodland

Woodland and forest	Wet woodland	Semi-natural woodland

Associated data files	Value/Class name
Ecological_Network_Wetland_SS_Core.gpkg	CLASS – Core: hex colour: #000000 CLASS – Stepping stone: hex colour: #ff7f00
Ecological_Network_Wetland.gpkg	Range: 0 – High: dark blue 3000 – Low: light blue

Grassland network



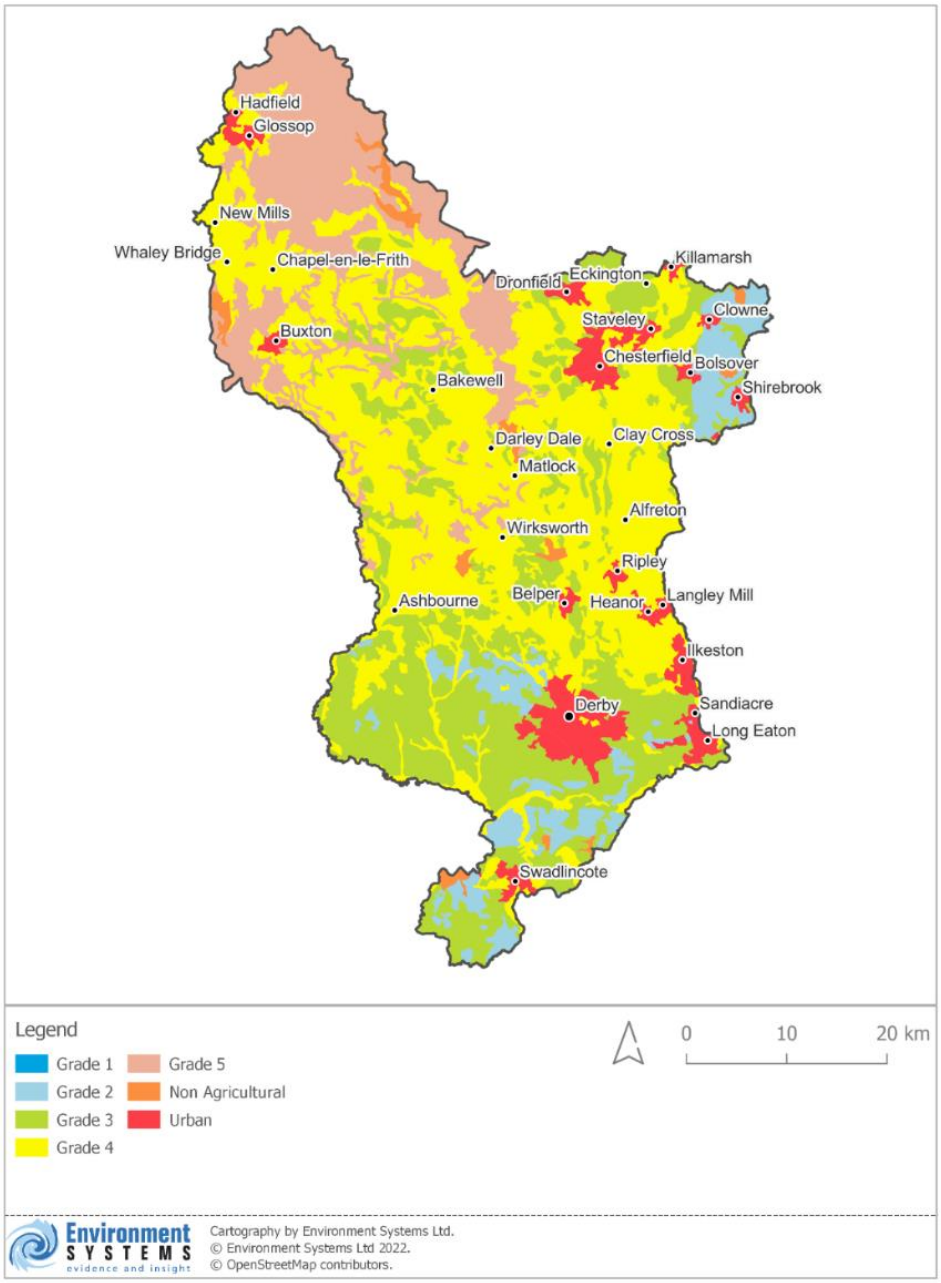
Connectivity was modelled using a cost-distance approach. All classes within the HAR were classified as either core type habitats (where species associated with the network type are natively found) or other habitat type. Larger blocks of core habitats are more resilient and therefore retained as the 'core' class, whilst smaller areas were reclassified as 'stepping stones', i.e. areas that a species might use transiently while passing through, but would not choose to nest there. All habitats (core, stepping stone and 'other') were additionally assessed for movement cost; a value expressing how difficult it is for a species associated with the network to move through this non-core habitat. Core type habitats have an associated movement cost of 0 – the species are at home in these patches. The cost increases the harder a habitat is to transverse, with intensive agricultural land-use, waterbodies, or urban areas normally having the highest cost values. For this habitat type 'core' habitats were considered as areas of minimum 0.25ha size, while stepping stone habitats were of the same habitat type, but found in smaller patch sizes. A cut-off value was identified to determine the final extent of the network, in consultation with Derbyshire County Council, Peak District National Park Authority and Derbyshire Wildlife Trust. The table below identifies the HAR habitat types considered 'core' or 'stepping stone' for this habitat network. Additionally, Derbyshire Wildlife Trust data mapping Open Mosaic Habitats were incorporated into the grassland network as core or stepping stone habitats, depending on the habitat patch size.

UKHAB_L2	UKHAB_LD	UKHABSEC
Grassland	Acid grassland	Calcareous - acidic mosaic, Sward type mosaic
Grassland	Acid grassland	Grazed
Grassland	Acid grassland	No secondary code assigned
Grassland	Acid grassland	Scattered bracken
Grassland	Acid grassland	Scattered dwarf shrubs
Grassland	Acid grassland	Tall or tussocky sward
Grassland	Calcareous grassland	No secondary code assigned
Grassland	Grassland	Calcareous - acidic mosaic, Sward type mosaic
Grassland	Lowland calcareous grassland	No secondary code assigned
Grassland	Lowland dry acid grassland	No secondary code assigned
Grassland	Lowland dry acid grassland	Scattered dwarf shrubs
Grassland	Lowland hay meadows (H6510)	No secondary code assigned
Grassland	Lowland meadows	No secondary code assigned
Grassland	Neutral grassland	No secondary code assigned
Grassland	Neutral grassland	Scattered scrub
Grassland	Neutral grassland	Tall or tussocky sward
Grassland	Neutral grassland	Wet

Grassland	Upland calcareous grassland	No secondary code assigned
Wetland	Purple moor grass and rush pastures	No secondary code assigned

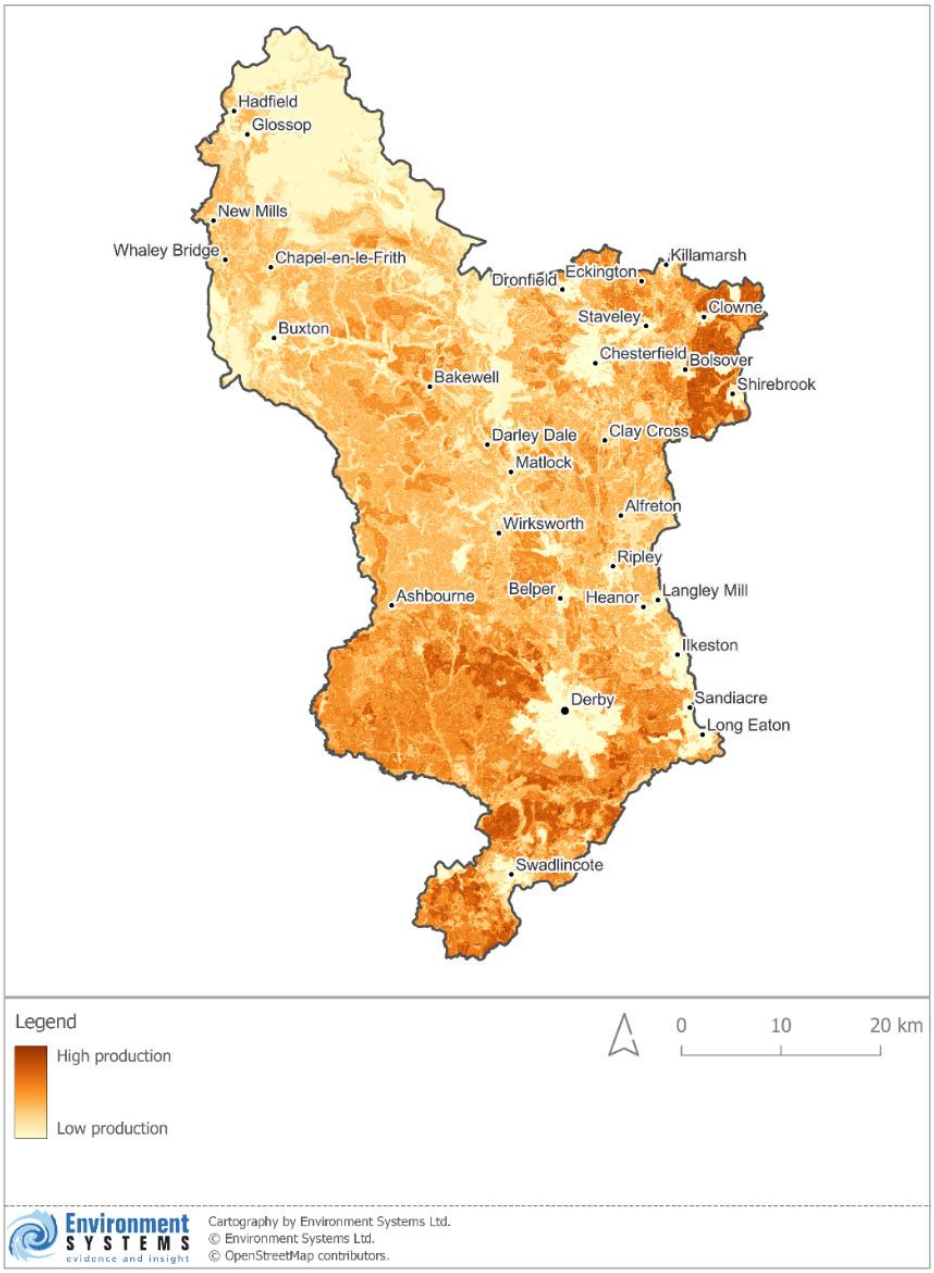
Associated data files	Value/Class name
Ecological_Network_Grassland_SS_Core.gpkg	CLASS – Core: hex colour: #000000 CLASS – Stepping stone: hex colour: #032cfc
Ecological_Network_Grassland.gpkg	Range: 0 – High Connectivity: hex: #993404 8200 – Low Connectivity: hex: #ffffd4

Agricultural Land Classification



This map shows the current agricultural capability of the land according to the Agricultural Land Classification, where Grade 1 is the best and most versatile land for agriculture, where there are few limitations to cultivation and good yields can be expected, and Grade 5 is the least productive land where there are greater challenges to cultivation. The ALC considers factors such as soil depth, stoniness, wetness, drought susceptibility, steepness of slope, and climate.

Agricultural production: current provision (stock)



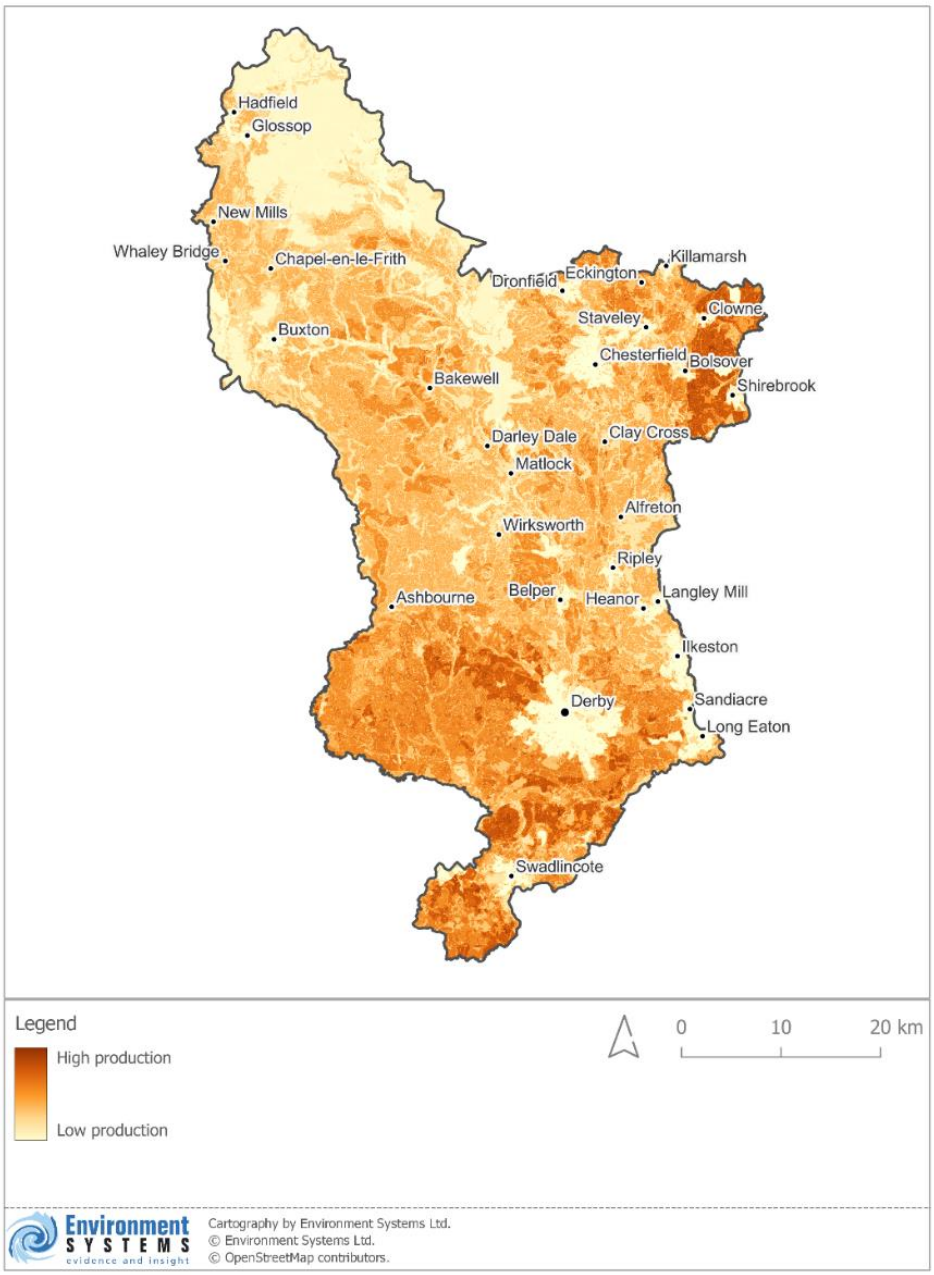
This map shows the relative level of agricultural provision based on habitat, soil type and slope.

Data input	Reason for usage	Indicative scoring
Habitat Asset Register	This was used as the base dataset; relative agricultural productivity was assessed for each habitat type	Cereal crops: high productivity Coastal and floodplain grazing marsh: moderate productivity Blanket bog: low productivity
Selection of agricultural polygons from the HAR,	The CROME data models the extent of specific crops, providing a greater level of detail as to	Soya, potato: high

attributed with the dominant CROME crop class	relative productivity; this dataset was used to amend the HAR productivity scores.	Winter oilseed: moderate Perennial Crops and Isolated Trees: low
Agricultural Land Classification	This dataset classifies the relative quality of the soil, topography and climate for agriculture; higher yields (greater agricultural productivity) are achieved from the better quality land	Grade 2 land: high productivity Grade 3 land: moderate productivity Grade 5 land: low productivity
Slope (derivative of 5m DEM)	Steep slopes are harder to work; the 5m resolution DEM allows much more detailed consideration of this factor than could be achieved by using the ALC data alone	Slopes of 7-11 degrees: reduce productivity by 10% Slopes of 11 - 18 degrees: reduce productivity by 25% Slopes greater than 40 degrees: reduce productivity by 40%

Associated data file	**Value/Class name**
Agricultural_Production_Current_Provision.gpkg	Range: 160 – High production: hex: #993404 0 – Low Production: hex: #ffffd4

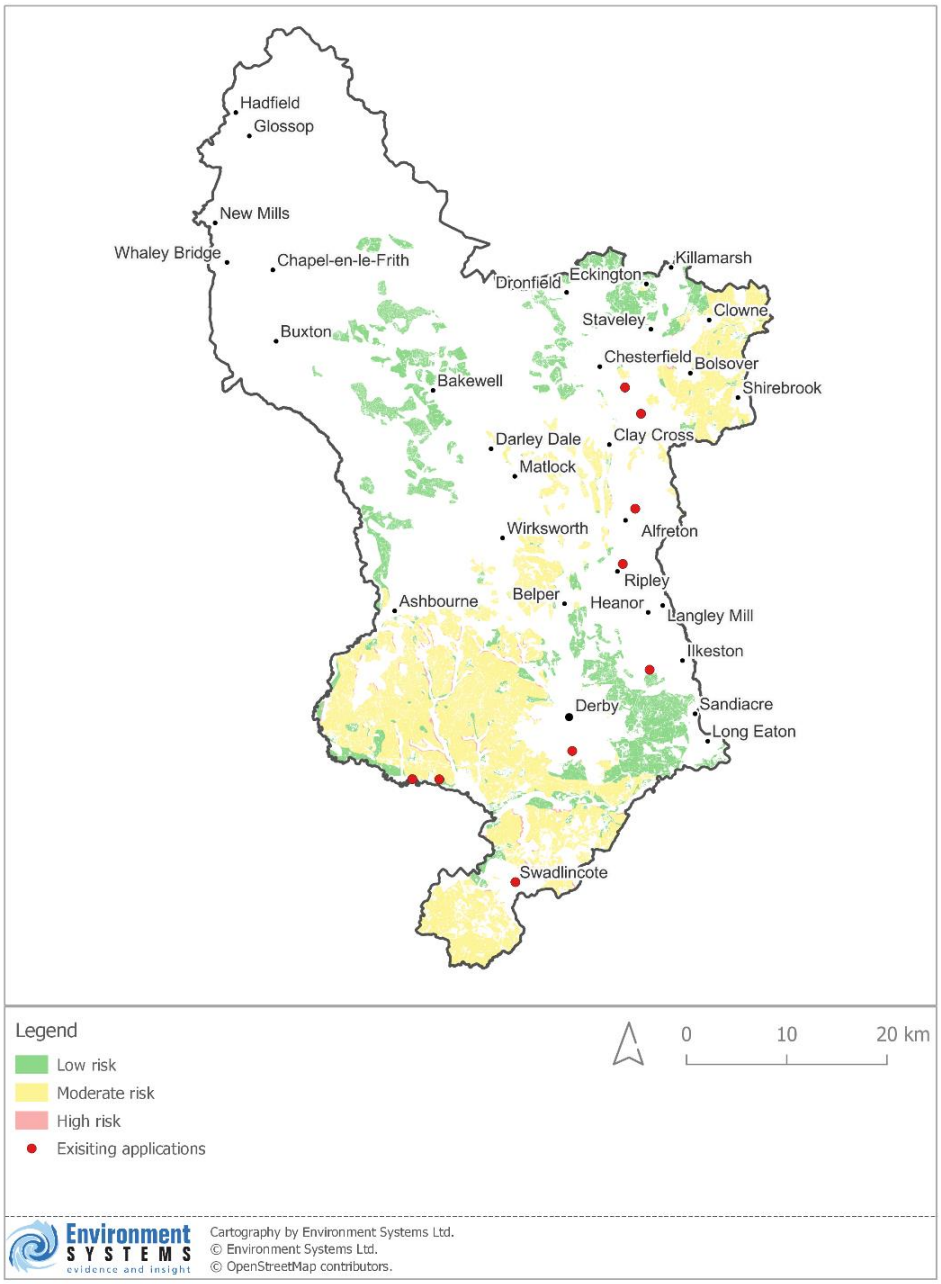
Risks to agricultural production: potential conflicts with woodland objectives



This map shows areas of opportunity for planting woodland (as shown in the map of woodland opportunities for biodiversity) that are located on the best quality agricultural land (ALC Grade 2 and Grade 3 land), located on agricultural areas extracted from the HAR.

Associated data file	Value/Class name
Agricultural_Production_Woodland_Risk.gpkg	1 - Within network: hex colour: #33a02c 10 - Outside network: hex colour: #ff7f00

Risks to agricultural production: ground-mounted solar PV



This map shows the modelled locations of ground-mounted solar PV opportunities as derived by georeferencing and manual digitisation of data presented in the Derbyshire Spatial Energy Study (Scene Connect 2022), and intersecting this with Grade 2 and 3 agricultural land (as derived from ALC data and the Derbyshire habitat map) so that only these higher land quality areas are shown. The Spatial Energy Study considered landscape character as an underpinning constraint. Nationally and internationally-designated protected sites were removed from the area, as it was deemed that these sites would not be at risk of development for renewables. Risk categories were assigned according to the level of constraint attributed to the area within the Study, as shown in the table below.

Level of constraint (Derbyshire Spatial Energy Study)	**Map risk class**
More constrained	Low risk
Constrained	Moderate risk
Less constrained	High risk

The map has been overlain by current and proposed medium, large and very large solar energy applications (>1MW) listed in the Renewable Energy Planning Database for July 2022 (Department for Business, Energy & Industrial Strategy, 2022).

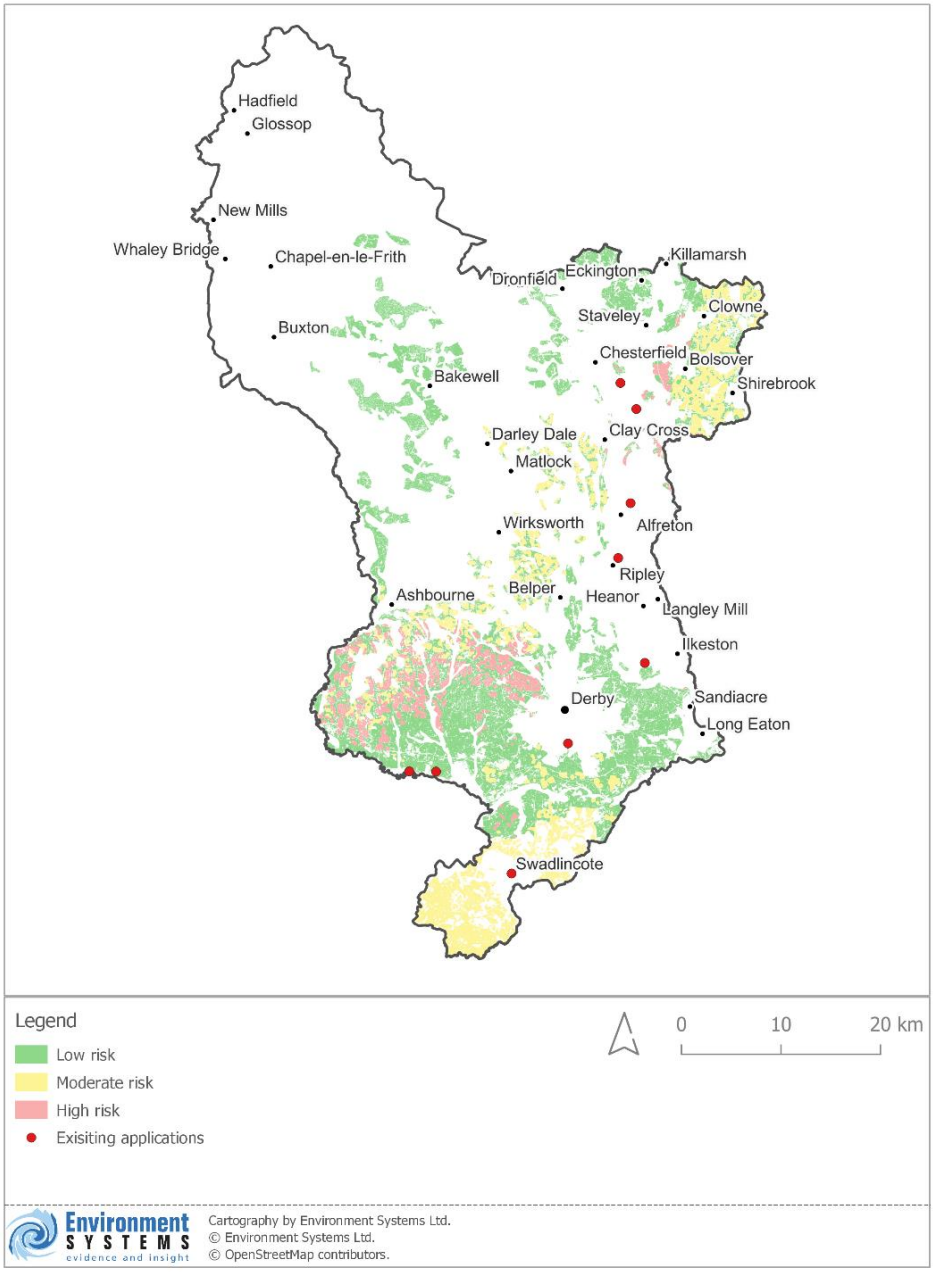
Associated data file	**Value/Class name**
Agricultural_Production_Solar_Sites.gpkg	Whole dataset: Existing applications hex colour: #e31a1c
Agricultural_Production_Solar_Energy_Risk.gpkg	Type: More Constrained - Low risk: hex colour: #8ed88a Type: Constrained - Moderate risk: hex colour: #fdf595 Type: Less Constrained - High risk: hex colour: #f9aead

References:

Department for Business, Energy & Industrial Strategy, 2022. Renewable Energy Planning Database for July 2022. https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract [Accessed 2022-08-15]

Scene Connect (2022) Derbyshire Spatial Energy Study. Evidence base for policy makers. Derbyshire County Council

Risks to agricultural production: small wind



This map shows the modelled locations of small-scale (15-50m) wind development opportunities (>1MW) as derived by georeferencing and manual digitisation of data presented in the Derbyshire Spatial Energy Study (Scene Connect 2022), and intersecting this with Grade 2 and 3 agricultural land so that only these higher land quality areas are shown. The Spatial Energy Study considered agricultural land grade, National Park and National Forest areas as underpinning constraints. Nationally and internationally-designated protected sites were removed from the area, as it was deemed that these sites would not be at risk of development for renewables. Risk categories were assigned according to the level of constraint attributed to the area within the Study, as shown in the table below.

Level of constraint (Derbyshire Spatial Energy Study)	**Map risk class**
More constrained	Low risk
Constrained	Moderate risk
Less constrained	High risk

The map has been overlain by current and proposed solar energy applications (>1MW) listed in the Renewable Energy Planning Database for July 2022 (Department for Business, Energy & Industrial Strategy, 2022).

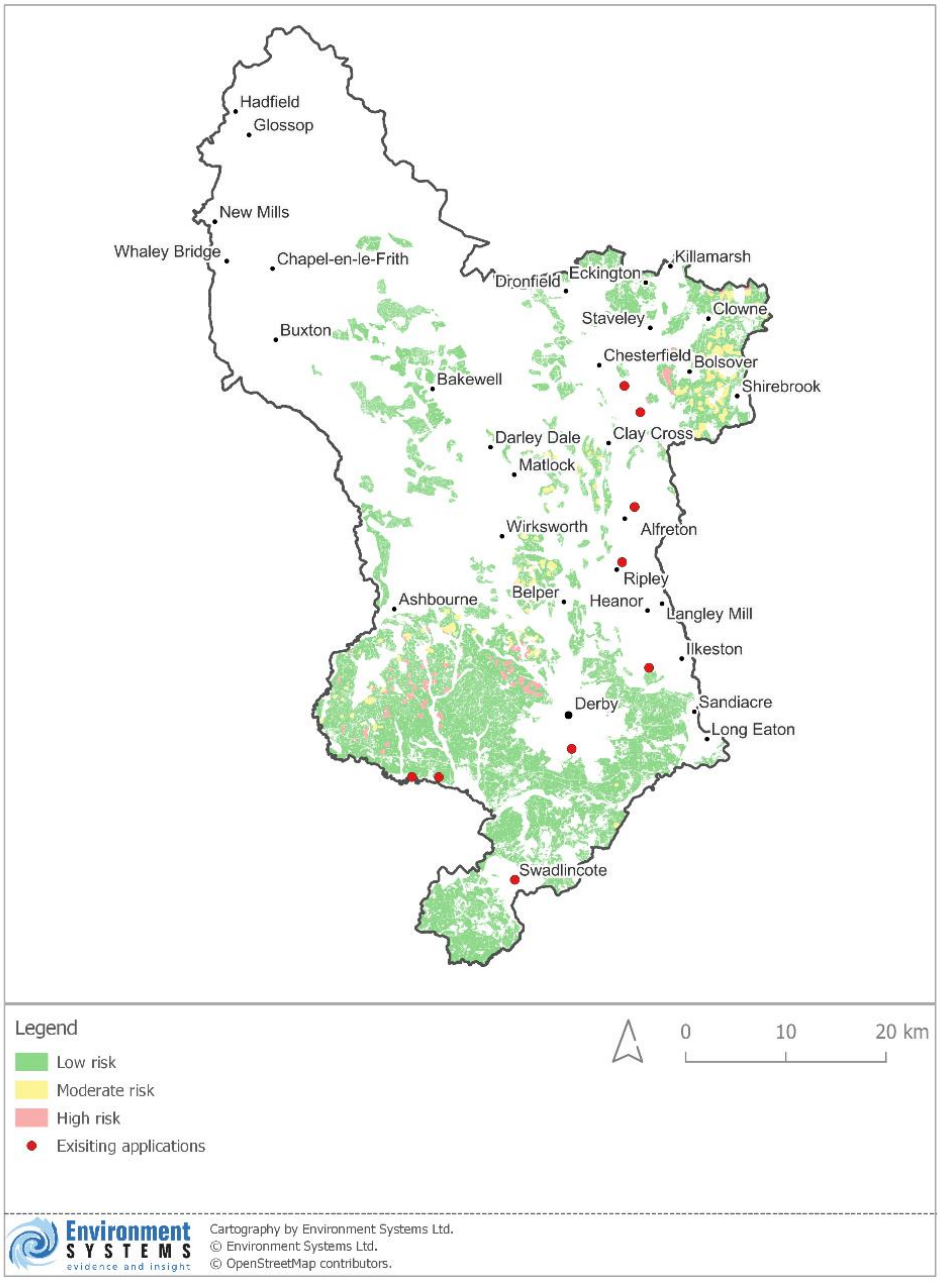
Associated data file	**Value/Class name**
Agricultural_Production_Small_Wind_Risk.gpkg	Type: More Constrained - Low risk: hex colour: #8ed88a
	Type: Constrained - Moderate risk: hex colour: #fdf595

References:

Department for Business, Energy & Industrial Strategy, 2022. Renewable Energy Planning Database for July 2022. https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract [Accessed 2022-08-15]

Scene Connect (2022) Derbyshire Spatial Energy Study. Evidence base for policy makers. Derbyshire County Council

Risks to agricultural production: large wind



This map shows the modelled locations of large-scale (>50m) wind development opportunities (>1MW) as derived by georeferencing and manual digitisation of data presented in the Derbyshire Spatial Energy Study (Scene Connect 2022), and intersecting this with Grade 2 and 3 agricultural land so that only these higher land quality areas are shown. The Spatial Energy Study considered landscape character as an underpinning constraint. Nationally and internationally-designated protected sites were removed from the area, as it was deemed that these sites would not be at risk of development for renewables. Risk categories were assigned according to the level of constraint attributed to the area within the Study, as shown in the table below.

Level of constraint (Derbyshire Spatial Energy Study)	**Map risk class**
More constrained	Low risk
Constrained	Moderate risk
Less constrained	High risk

The map has been overlain by current and proposed wind energy applications (>1MW) listed in the Renewable Energy Planning Database for July 2022 (Department for Business, Energy & Industrial Strategy, 2022).

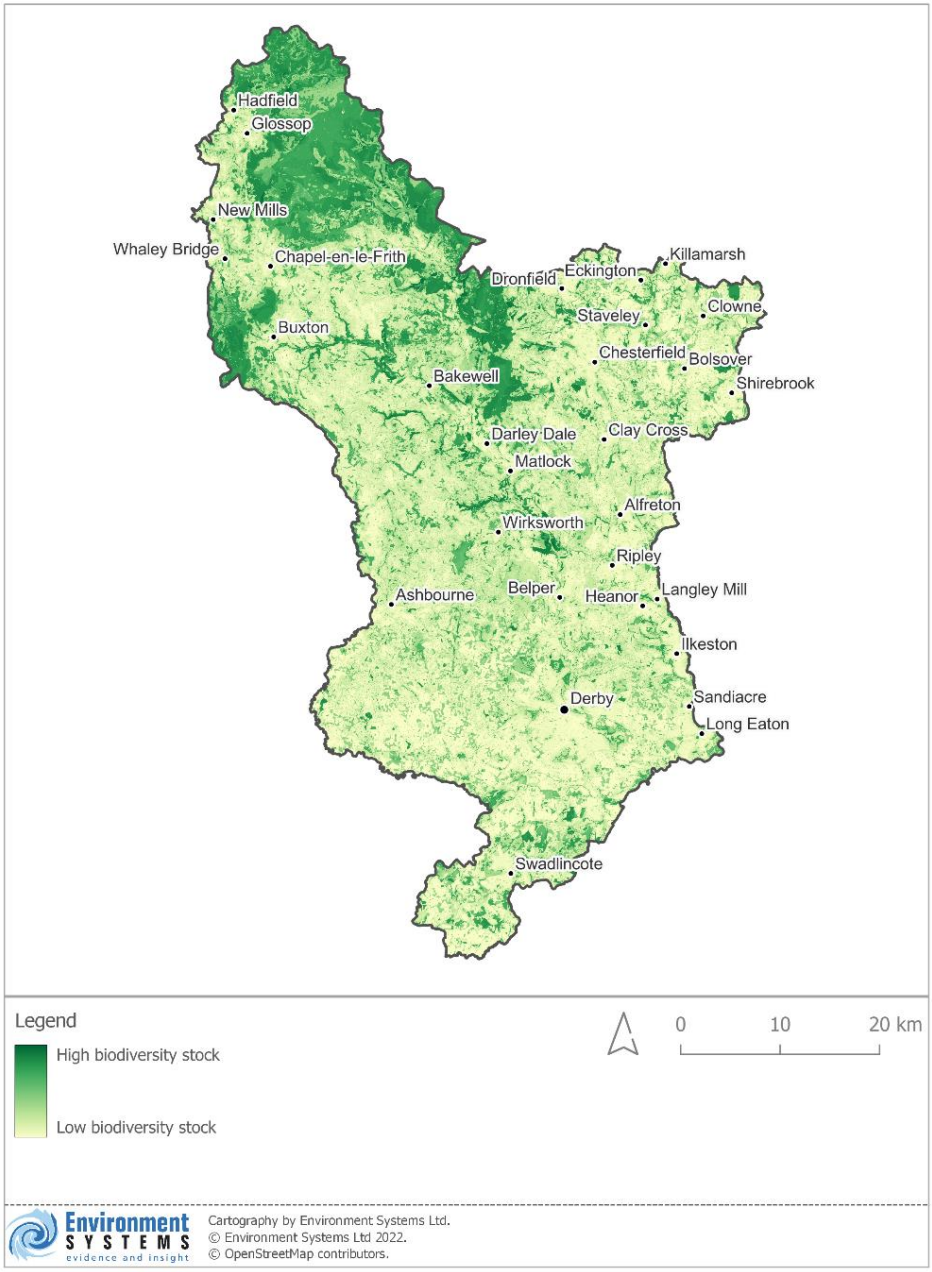
Associated data files	**Value/Class name**
Agricultural_Production_Large_Wind_Risk.gpkg	Type: More Constrained - Low risk: hex colour: #8ed88a Type: Constrained - Moderate risk: hex colour: #fdf595 Type: Less Constrained - High risk: hex colour: #f9aead

References:

Department for Business, Energy & Industrial Strategy, 2022. Renewable Energy Planning Database for July 2022. https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract [Accessed 2022-08-15]

Scene Connect (2022) Derbyshire Spatial Energy Study. Evidence base for policy makers. Derbyshire County Council

Biodiversity: current provision (stock)



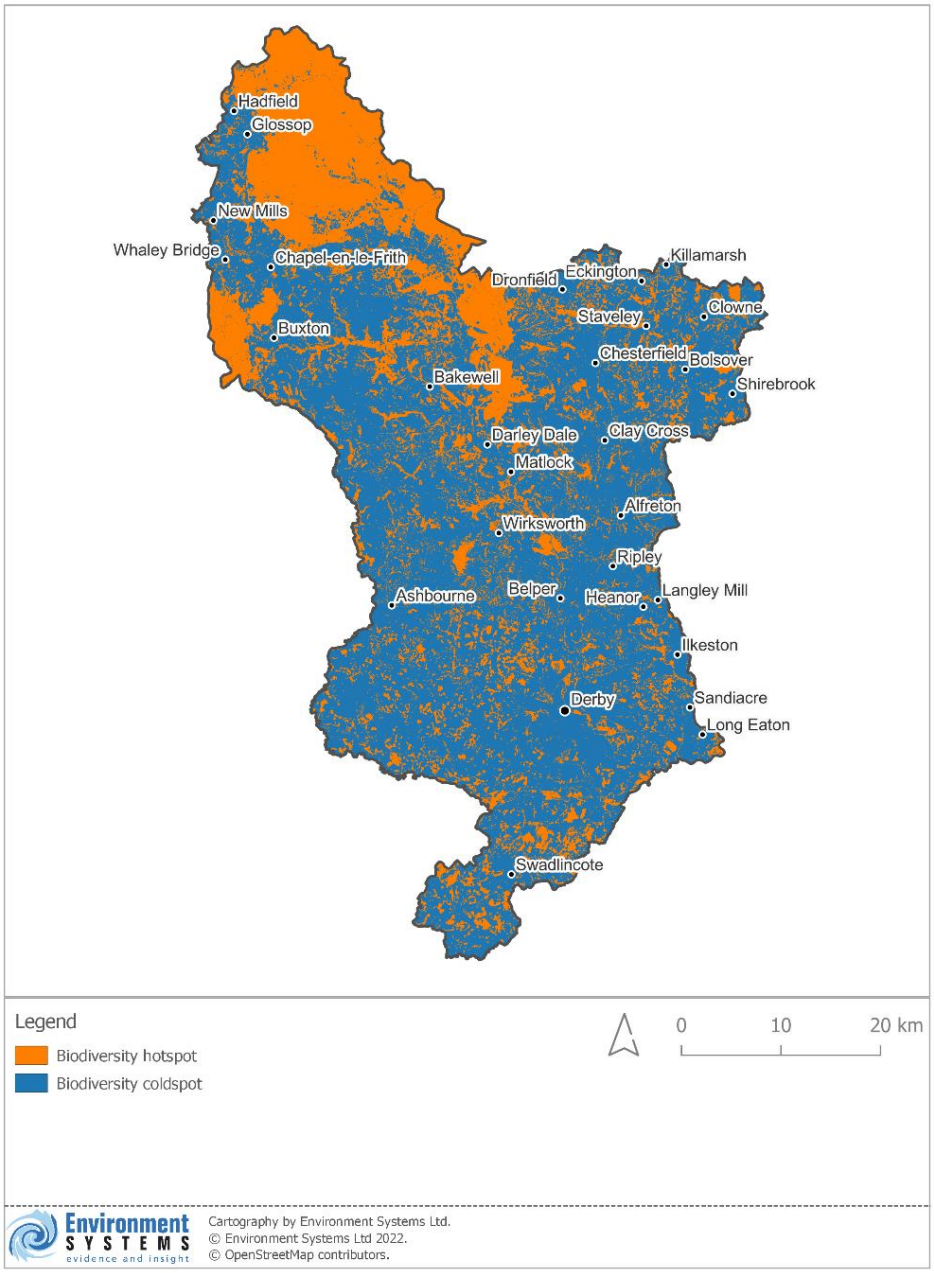
This map shows the current relative levels of biodiversity across Derbyshire, on a scale of low to high.

Data input	Reason for usage	Indicative scoring
Habitat Asset Register	Base dataset used to assess the biodiversity of individual habitat patches	• Native woodland: high biodiversity value • Intensively managed grassland: low biodiversity value

Ancient Woodland Inventory and DWT Ancient Woodland data	Overlay with HAR to ensure maximum biodiversity value for the habitat type was applied	• Habitat is ancient woodland: assign maximum woodland biodiversity value
DWT open mosaic habitats	Overlay with HAR to ensure maximum biodiversity value for the habitat type was applied	• Habitat is open mosaic habitat: apply minimum value threshold, to ensure OMH areas are assigned a high biodiversity value.
Rasterised DWT species data: bat roosts; GCN; notable invertebrate ponds; otter; water vole; while-clawed crayfish.	Overlay with HAR to increase the biodiversity value of the pixel	• Notable species present; increase biodiversity value of the pixel
Grassland, Heathland, Wetland and Woodland ecological networks	Overlay each individual network with the HAR to increase the biodiversity value of the areas within the ecological networks. Areas that are part of multiple networks will have the largest increase in value.	• Habitat is core habitat: largest increase in biodiversity value • Habitat is stepping stone habitat: moderate increase in biodiversity value • Habitat is part of the wider network (not core or stepping stone): slight increase in biodiversity value • Habitat is not part of the ecological network: no increase in biodiversity value

Associated data file	**Value/Class name**
Biodiversity_Stock.gpkg	Range: 0 – Low biodiversity stock: hex: #ffffcc 190 – High biodiversity stock: hex: #006837

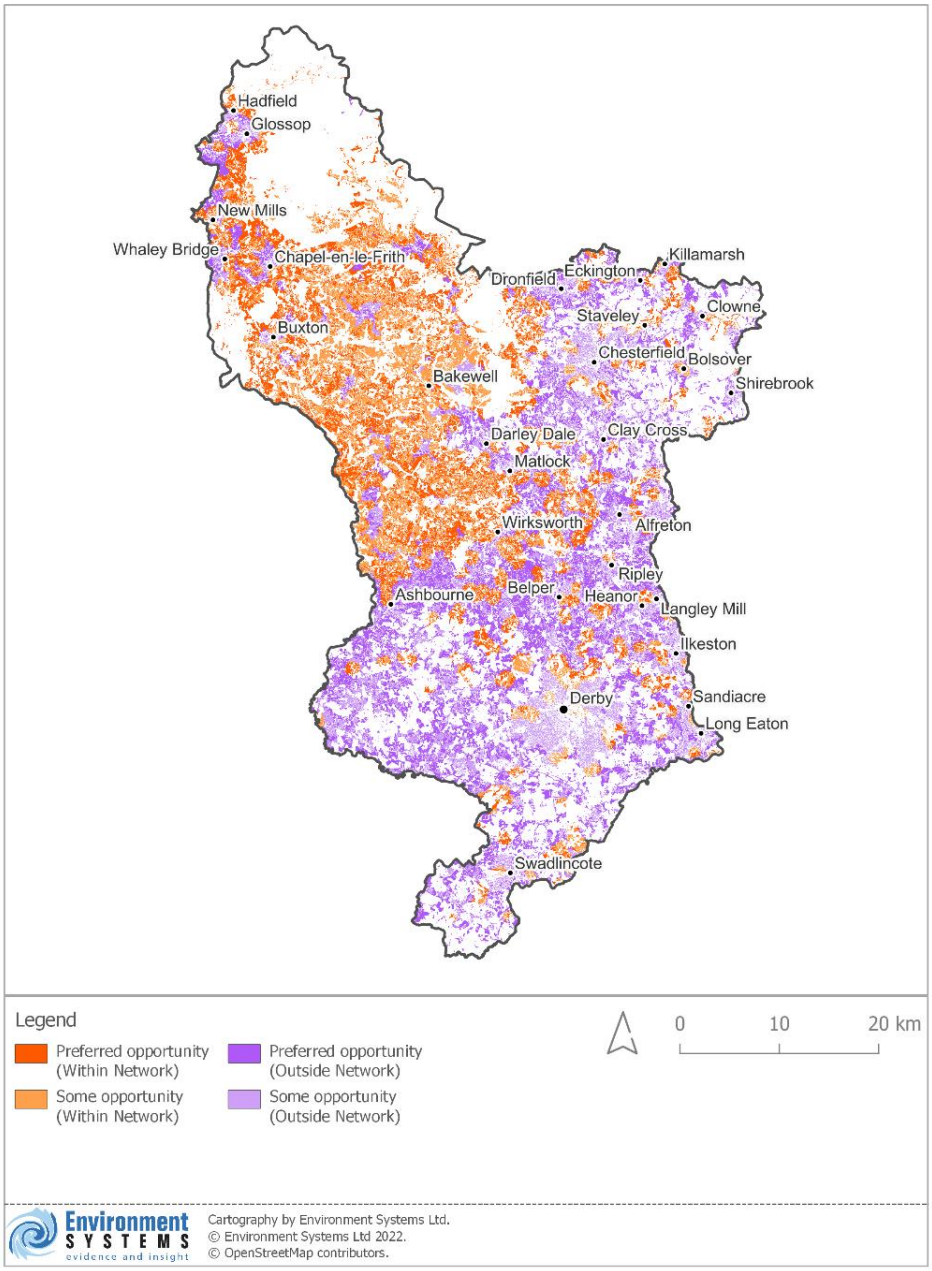
Biodiversity hotspots / coldspots



This map has been created from the biodiversity current provision (stock) map; it highlights the areas of highest biodiversity as 'hotspots' and areas of lower biodiversity as 'coldspots'.

Filename	Value/Class name
Biodiversity_Hotspots.gpkg	1 – Biodiversity Hotspot: hex: #ff7f00 2 – Biodiversity Coldspot: hex: #1f78b4

Opportunities for establishing species-rich grassland



This map shows areas of opportunity for creating grassland habitat, based on the Habitat Asset Register. The opportunities are classified as 'preferred' opportunities if the existing habitat could be readily converted to a high biodiversity value grassland, and 'some opportunity' if the existing habitat would be more difficult, or take longer to convert to species rich grassland. The opportunities are also classified according to whether they lie within the grassland ecological network, or outside the network. HAR habitat classes identified as opportunities for establishing this habitat type are shown in the table below.

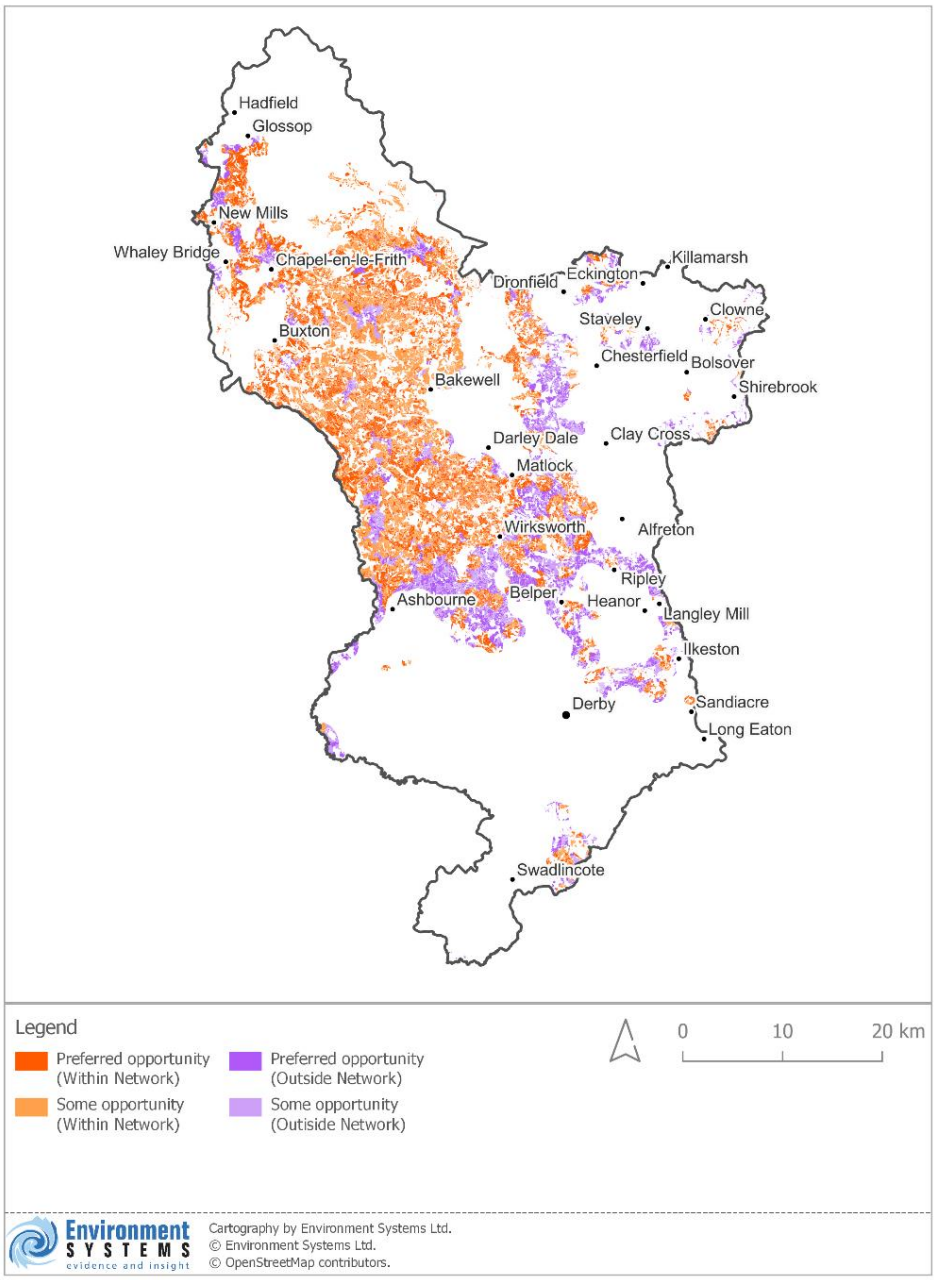
UKHAB_L2	UKHAB_LD	UKHABSEC	Opportunity type

Grassland	Bracken	No secondary code assigned	Preferred opportunity
Grassland	Grassland	Bare ground	Preferred opportunity
Grassland	Grassland	Coastal and floodplain grazing marsh	Preferred opportunity
Grassland	Grassland	No secondary code assigned	Preferred opportunity
Grassland	Grassland	Ruderal/ ephemeral	Preferred opportunity
Grassland	Grassland	Seasonally wet, Wet, Waterlogged	Preferred opportunity
Grassland	Grassland	Tall herb	Preferred opportunity
Grassland	Neutral grassland	Pasture or meadow	Preferred opportunity
Grassland	Other neutral grassland	No secondary code assigned	Preferred opportunity
Grassland	Temporary grass and clover leys	Less intensively managed	Preferred opportunity
Sparsely vegetated land	Sparsely vegetated land	Bare ground	Preferred opportunity
Sparsely vegetated land	Sparsely vegetated land	No secondary code assigned	Preferred opportunity
Urban	Artificial unvegetated, unsealed surface	No secondary code assigned	Preferred opportunity
Urban	Urban	Bare ground	Preferred opportunity
Urban	Urban	Natural and semi-natural open space	Preferred opportunity
Grassland	Grassland	Cemeteries	Some opportunity
Grassland	Grassland	Wood-pasture and parkland	Some opportunity
Grassland	Modified grassland	Frequently mown, Introduced shrub	Some opportunity
Grassland	Modified grassland	No secondary code assigned	Some opportunity
Grassland	Temporary grass and clover leys	Intensively managed	Some opportunity
Heathland and shrub	Dense scrub	No secondary code assigned	Some opportunity
Urban	Built-up areas and gardens	Road island/verge	Some opportunity
Urban	Urban	Parks and gardens	Some opportunity

Associated data file	**Value/Class name**

Biodiversity_Grassland_Opportunities.gpkg	2 - Preferred opportunity (Outside Network): hex colour: #b059f7 11 - Preferred opportunity (Within Network): hex colour: #ff5a00 210 - Some opportunity (Within Network): hex colour: #ffa04c 400 - Some opportunity (Outside Network): hex colour: #cfa0f8

Grassland opportunities located within Natural England grassland NRNs



This map was created by intersecting the opportunities for establishing species-rich grassland that lie within the ecological network, with processed Natural England Nature Recovery Network (NRN) data.

The following processing was undertaken to the NRN data prior to intersecting with the biodiversity opportunities:

NRN data for the following habitats were merged to make a single NRN dataset for grasslands, clipped to the Derbyshire boundary:

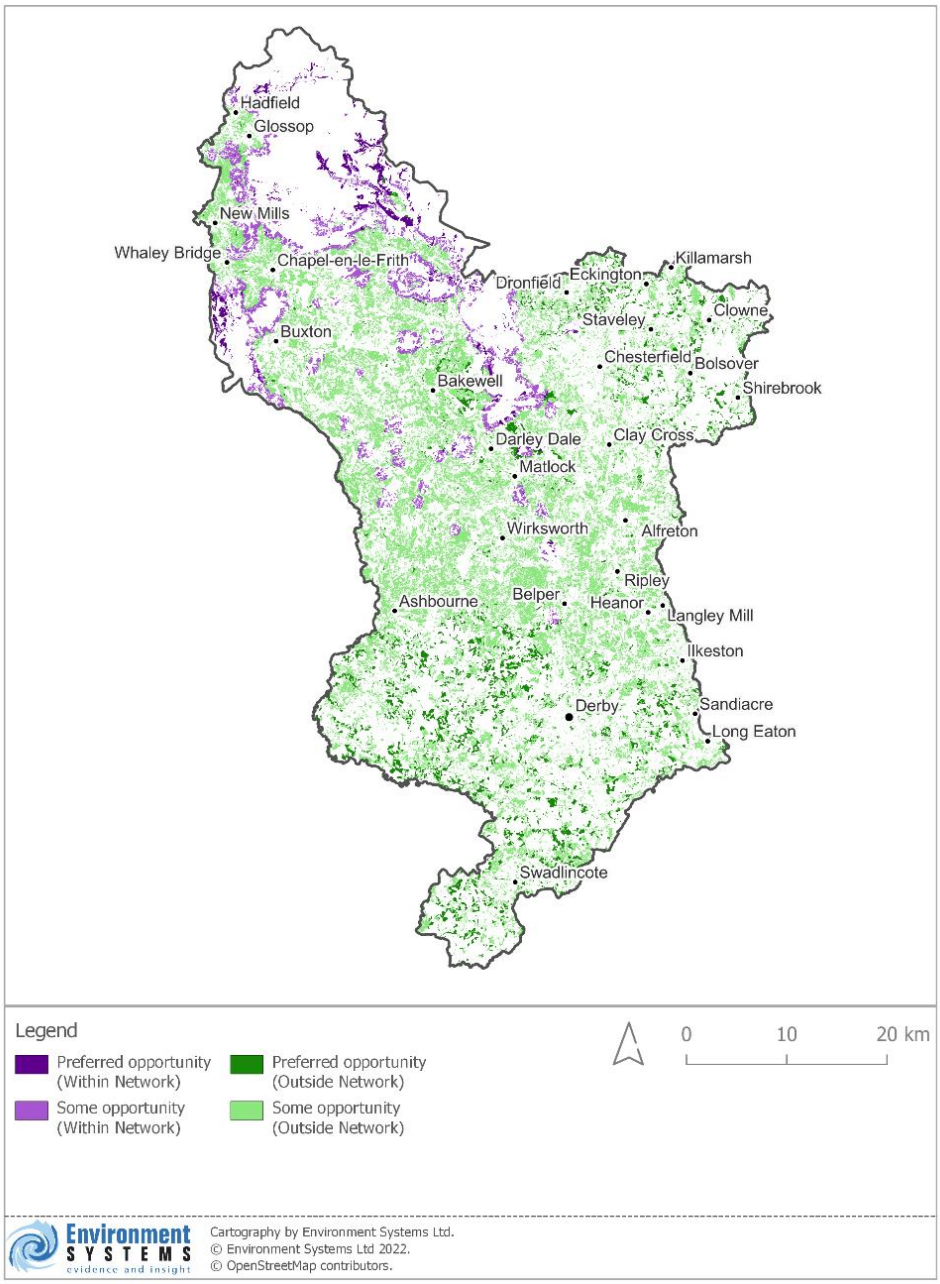
- Lowland Calcareous Grassland
- Lowland Dry Acid Grassland
- Lowland Meadows
- Upland Calcareous Grassland
- Upland Hay Meadows

Within the merged NRN data any areas that contained areas of Primary Habitat or Associated Habitat (of any grassland habitat type) were removed, so that the remaining areas to be intersected with the biodiversity opportunity data consisted of areas that were part of the wider NRN network, comprising the following classes:

- Restorable Habitat
- Fragmentation Action Zone
- Network Enhancement Zone 1
- Network Enhancement Zone 2
- Network Expansion Zone

Associated data file	Value/Class name
Biodiversity_Grassland_Opportunities_in_NRN.gpkg	DN: 2 - Preferred opportunity: hex colour: #b059f8 DN: 11 - Preferred opportunity: hex colour: #ff5a00 DN: 210 - Some opportunity: hex colour: #ffa04c DN: 400 - Some opportunity: hex colour: #cfa0f8

Opportunities for establishing heathland



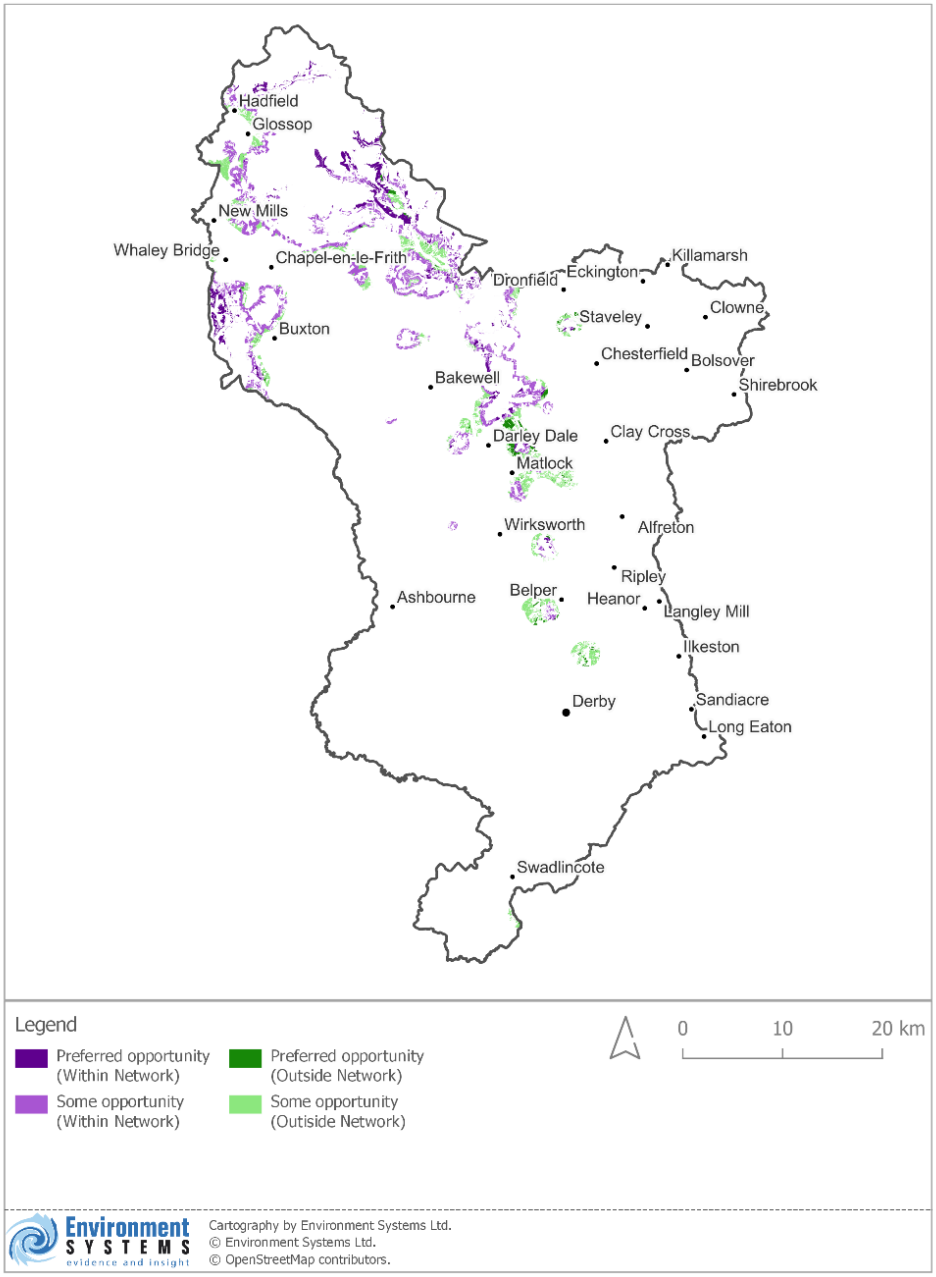
This map shows areas of opportunity for creating heathland habitat, based on the Habitat Asset Register. The opportunities are classified as 'preferred' opportunities if the existing habitat could be readily converted to heathland, and 'some opportunity' if the existing habitat would be more difficult, or take longer to convert to heathland. The opportunities are also classified according to whether they lie within the heathland ecological network, or outside the network. Areas outside the network are likely to be extremely difficult to establish new heathland due to a deficiency in soil mycorrhiza; locations on coniferous woodland may be an exception to this. HAR habitat classes identified as opportunities for establishing this habitat type are shown in the table below.

UKHAB_L2	UKHAB_LD	UKHABSEC	Opportunity type
Grassland	Bracken	No secondary code assigned	Preferred opportunity
Grassland	Neutral grassland	Pasture or meadow	Preferred opportunity
Grassland	Other neutral grassland	No secondary code assigned	Preferred opportunity
Heathland and shrub	Dense scrub	No secondary code assigned	Preferred opportunity
Heathland and shrub	Heathland and shrub	Scattered scrub	Preferred opportunity
Woodland and forest	Broadleaved mixed and yew woodland	Felled	Preferred opportunity
Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted	Preferred opportunity
Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted, Young trees - self-set	Preferred opportunity
Woodland and forest	Coniferous woodland	Ancient woodland site, Plantation	Preferred opportunity
Woodland and forest	Coniferous woodland	Felled	Preferred opportunity
Woodland and forest	Coniferous woodland	No secondary code assigned	Preferred opportunity
Woodland and forest	Coniferous woodland	Plantation	Preferred opportunity
Woodland and forest	Woodland and forest	Felled	Preferred opportunity
Woodland and forest	Woodland and forest	Scattered scrub	Preferred opportunity
Woodland and forest	Woodland and forest	Scattered trees	Preferred opportunity
Woodland and forest	Woodland and forest	Young trees - planted	Preferred opportunity
Woodland and forest	Woodland and forest	Young trees - planted, Young trees - self-set	Preferred opportunity
Grassland	Grassland	No secondary code assigned	Some opportunity
Grassland	Grassland	Ruderal/ ephemeral	Some opportunity
Grassland	Grassland	Seasonally wet, Wet, Waterlogged	Some opportunity
Grassland	Grassland	Tall herb	Some opportunity

Grassland	Modified grassland	No secondary code assigned	Some opportunity
Grassland	Temporary grass and clover leys	Less intensively managed	Some opportunity
Sparsely vegetated land	Sparsely vegetated land	Bare ground	Some opportunity
Sparsely vegetated land	Sparsely vegetated land	No secondary code assigned	Some opportunity

Associated data file	**Value/Class name**
Biodiversity_Heathland_Opportunities.gpkg	2 - Preferred opportunity (Outside Network): hex colour: #178808 11 - Preferred opportunity (Within Network): hex colour: #5f008e 210 - Some opportunity (Within Network): hex colour: #a855d2 400 - Some opportunity (Outside Network): hex colour: #8ce77e

Heathland opportunities located within Natural England heathland NRNs



This map was created by intersecting the opportunities for establishing heathland that lie within the ecological network, with processed Natural England Nature Recovery Network (NRN) data.

The following processing was undertaken to the NRN data prior to intersecting with the biodiversity opportunities:

NRN data for the following habitats were merged to make a single NRN dataset for heathlands, clipped to the Derbyshire boundary:

- Lowland Heathland

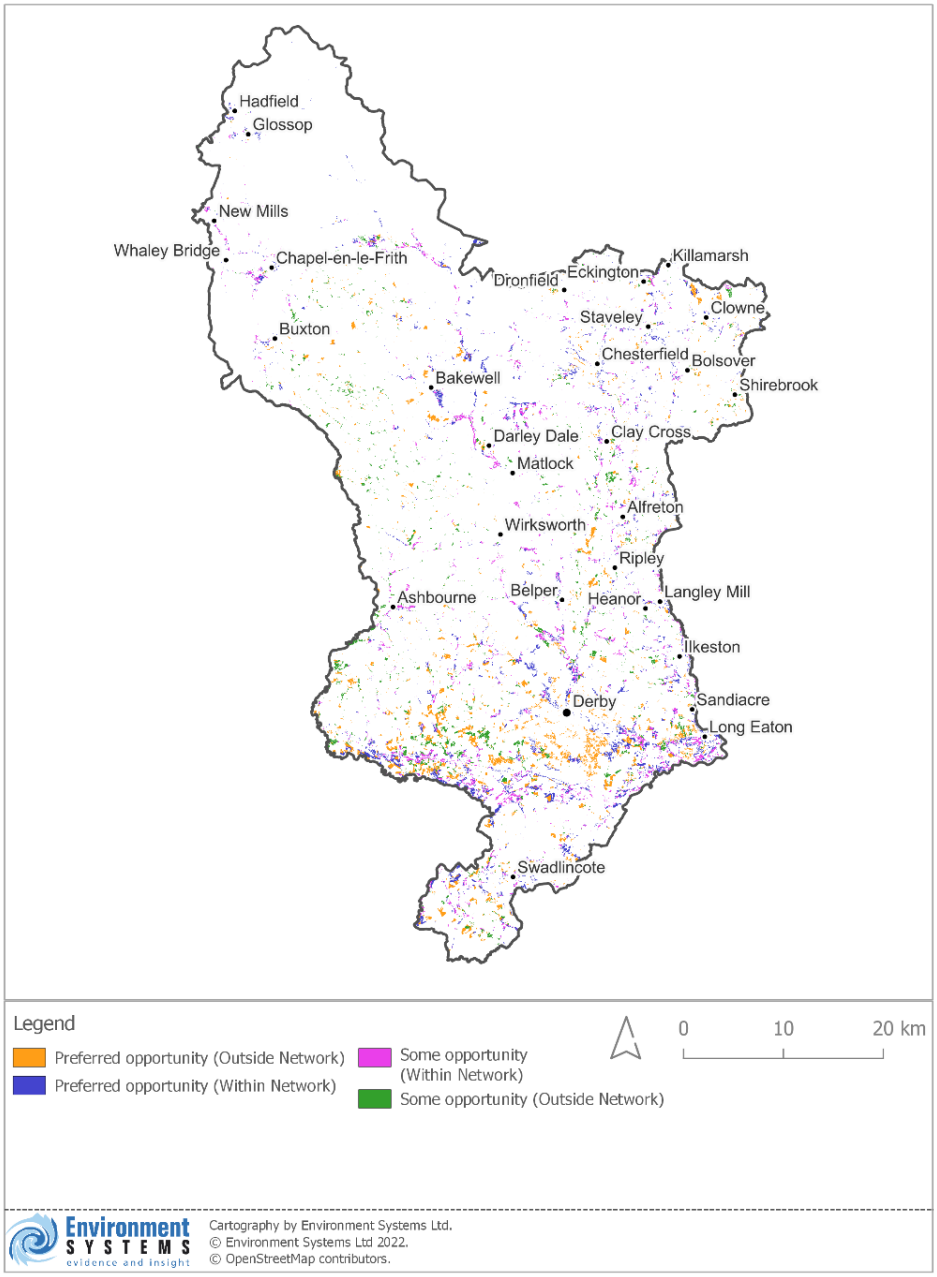
- Upland Heathland

Within the merged NRN data any areas that contained areas of Primary Habitat or Associated Habitat (of any heathland habitat type) were removed, so that the remaining areas to be intersected with the biodiversity opportunity data consisted of areas that were part of the wider NRN network, comprising the following classes:

- Restorable Habitat
- Fragmentation Action Zone
- Network Enhancement Zone 1
- Network Enhancement Zone 2
- Network Expansion Zone

Associated data file	Value/Class name
Biodiversity_Heathland_Opportunities_NRN.gpkg	DN: 2 - Preferred opportunity: hex colour: #178808 DN: 11 - Preferred opportunity: hex colour: #5f008e DN: 210 - Some opportunity: hex colour: #a855d2 DN: 400 - Some opportunity: hex colour: #8ce77e

Opportunities for establishing wetland

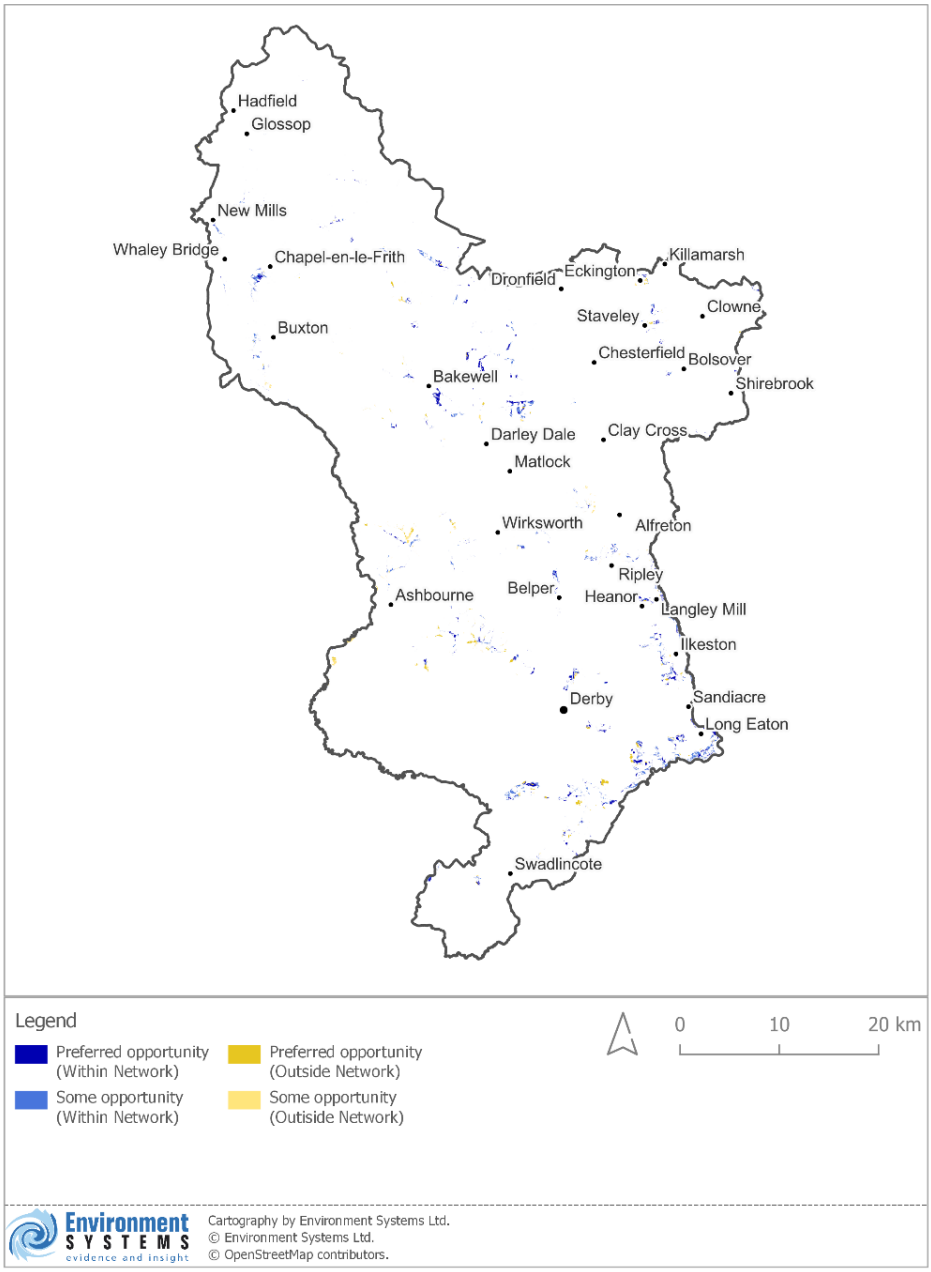


This map shows areas of opportunity for creating wetland habitat, based on the Habitat Asset Register, areas of close proximity to the drainage channel network (derived from the 5m DEM), areas of shallow slopes/flat ground (less than 3° slope), and geology (limestone areas as defined by the Landscape Character Types, and Natmap soil data were classed as a constraint; no wetland opportunities were classified in these areas). The opportunities are classified as 'preferred' opportunities if the existing habitat could be readily converted to a wetland, and 'some opportunity' if the existing habitat would be more difficult, or take longer to convert to a wetland. The opportunities are also classified according to whether they lie within the wetland ecological network, or outside the network. HAR habitat classes identified as opportunities for establishing this habitat type are shown in the table below.

UKHAB_L2	UKHAB_LD	UKHABSEC	Opportunity type
Grassland	Grassland	Coastal and floodplain grazing marsh	Preferred opportunity
Grassland	Grassland	No secondary code assigned	Preferred opportunity
Grassland	Grassland	Seasonally wet, Wet, Waterlogged	Preferred opportunity
Grassland	Modified grassland	Frequently mown, Introduced shrub	Preferred opportunity
Grassland	Modified grassland	No secondary code assigned	Preferred opportunity
Grassland	Neutral grassland	Pasture or meadow	Preferred opportunity
Grassland	Other neutral grassland	No secondary code assigned	Preferred opportunity
Sparsely vegetated land	Sparsely vegetated land	No secondary code assigned	Preferred opportunity
Wetland	Blanket bog	Dry	Preferred opportunity
Grassland	Grassland	Ruderal/ ephemeral	Some opportunity
Grassland	Grassland	Tall herb	Some opportunity
Grassland	Temporary grass and clover leys	Less intensively managed	Some opportunity

Associated data file	Value/Class name
Biodiversity_Wetland_Opportunities.gpkg	2 - Preferred opportunity (Outside Network): hex colour: #e7c621 11 - Preferred opportunity (Within Network): hex colour: #0000b1 210 - Some opportunity (Within Network): hex colour: #4875dc 400 - Some opportunity (Outside Network): hex colour: #ffe57c

Wetland opportunities located within Natural England wetland NRNs



This map was created by intersecting the opportunities for establishing wetland that lie within the ecological network, with processed Natural England Nature Recovery Network (NRN) data.

The following processing was undertaken to the NRN data prior to intersecting with the biodiversity opportunities:

NRN data for the following habitats were merged to make a single NRN dataset for wetlands, clipped to the Derbyshire boundary:

- Blanket Bog

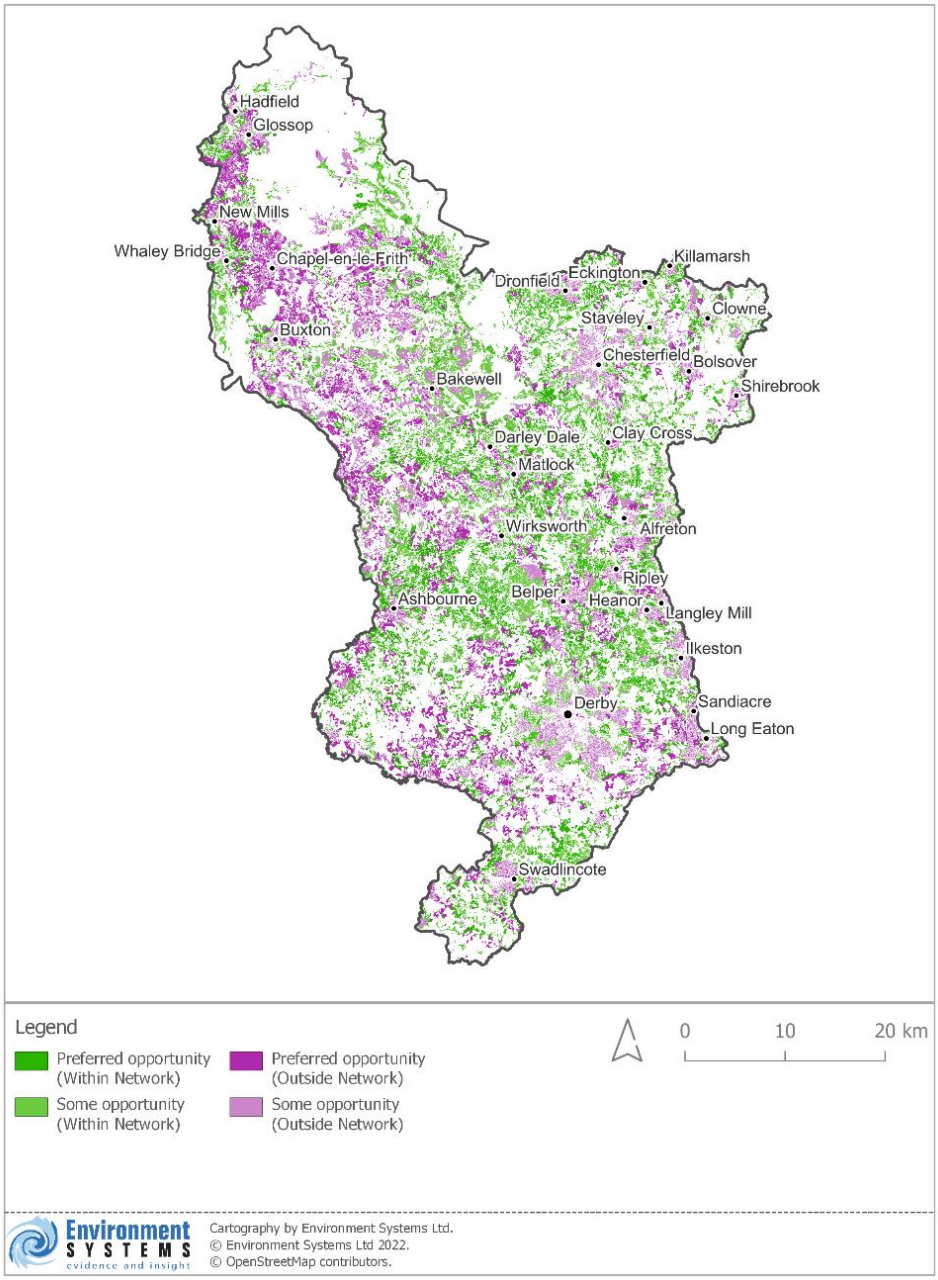
- Lakes
- Lowland Fen
- Lowland Raised Bog
- Purple Moor-Grass Rush Pasture
- Reedbeds
- Rivers
- Upland Fens, Flushes, Swamps

Within the merged NRN data any areas that contained areas of Primary Habitat or Associated Habitat (of any wetland habitat type) were removed, so that the remaining areas to be intersected with the biodiversity opportunity data consisted of areas that were part of the wider NRN network, comprising the following classes:

- Restorable Habitat
- Fragmentation Action Zone
- Network Enhancement Zone 1
- Network Enhancement Zone 2
- Network Expansion Zone

Associated data file	Value/Class name
Biodiversity_Wetland_Opportunities_NRN.gpkg	DN: 2 - Preferred opportunity: hex colour: #e7c621 DN: 11 - Preferred opportunity: hex colour: #0000b1 DN: 210 - Some opportunity: hex colour: #4875dc DN: 400 - Some opportunity: hex colour: #ffe57c

Opportunities for establishing woodland



This map shows areas of opportunity for creating woodland habitat, based on the Habitat Asset Register. The opportunities are classified as 'preferred' opportunities if the existing habitat could be readily converted to woodland, and 'some opportunity' if the existing habitat would be more difficult, or take longer to convert to woodland. The opportunities are also classified according to whether they lie within the woodland ecological network, or outside the network. HAR habitat classes identified as opportunities for establishing this habitat type are shown in the table below.

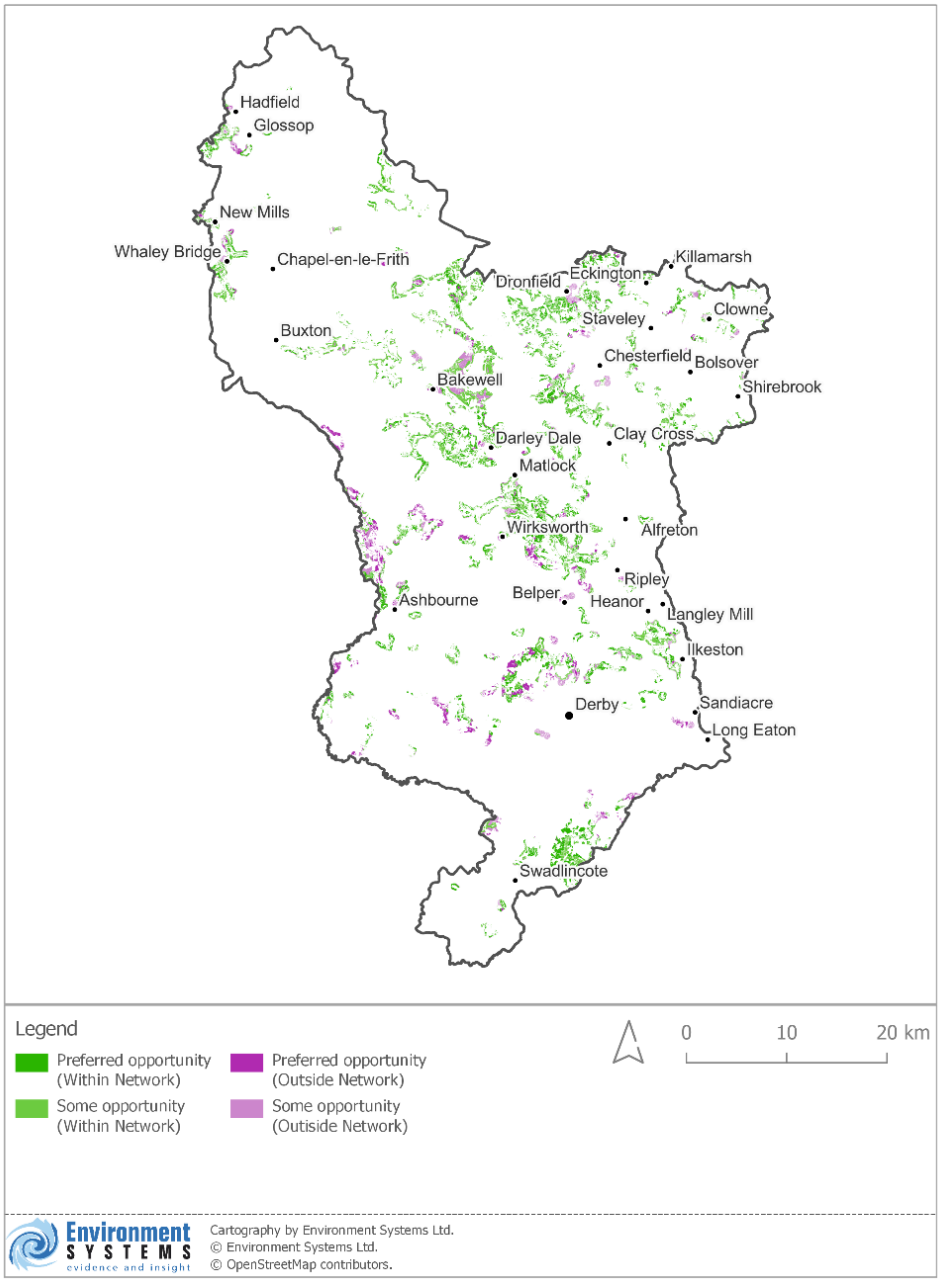
UKHAB_L2	UKHAB_LD	UKHABSEC	Opportunity type

Grassland	Bracken	No secondary code assigned	Preferred opportunity
Grassland	Grassland	Bare ground	Preferred opportunity
Grassland	Grassland	Ruderal/ ephemeral	Preferred opportunity
Grassland	Grassland	Scattered Scrub	Preferred opportunity
Grassland	Grassland	Seasonally wet, Wet, Waterlogged	Preferred opportunity
Grassland	Grassland	Tall herb	Preferred opportunity
Grassland	Neutral grassland	Pasture or meadow	Preferred opportunity
Grassland	Other neutral grassland	No secondary code assigned	Preferred opportunity
Grassland	Temporary grass and clover leys	Less intensively managed	Preferred opportunity
Heathland and shrub	Dense scrub	No secondary code assigned	Preferred opportunity
Heathland and shrub	Hawthorn scrub	No secondary code assigned	Preferred opportunity
Sparsely vegetated land	Sparsely vegetated land	Bare ground	Preferred opportunity
Woodland and forest	Broadleaved mixed and yew woodland	Felled	Preferred opportunity
Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted	Preferred opportunity
Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted, Young trees - self-set	Preferred opportunity
Woodland and forest	Coniferous woodland	Ancient woodland site, Plantation	Preferred opportunity
Woodland and forest	Coniferous woodland	Felled	Preferred opportunity
Woodland and forest	Woodland and forest	Felled	Preferred opportunity
Woodland and forest	Woodland and forest	Scattered scrub	Preferred opportunity
Woodland and forest	Woodland and forest	Scattered trees	Preferred opportunity
Woodland and forest	Woodland and forest	Young trees - planted	Preferred opportunity
Woodland and forest	Woodland and forest	Young trees - planted, Young trees - self-set	Preferred opportunity

Grassland	Grassland	Coastal and floodplain grazing marsh	Some opportunity
Grassland	Grassland	No secondary code assigned	Some opportunity
Grassland	Modified grassland	Frequently mown, Introduced shrub	Some opportunity
Grassland	Modified grassland	No secondary code assigned	Some opportunity
Sparsely vegetated land	Sparsely vegetated land	No secondary code assigned	Some opportunity
Urban	Urban	Natural and semi-natural open space	Some opportunity
Woodland and forest	Coniferous woodland	No secondary code assigned	Some opportunity
Woodland and forest	Coniferous woodland	Plantation	Some opportunity

Associated data file	**Value/Class name**
Biodiversity_Woodland_Opportunities.gpkg	2 - Preferred opportunity (Outside Network): hex colour: #b02ab0 11 - Preferred opportunity (Within Network): hex colour: #2ab500 210 - Some opportunity (Within Network): hex colour: #6ccb40 400 - Some opportunity (Outside Network): hex colour: #cc86cc

Woodland opportunities located within Natural England wetland NRNs



This map was created by intersecting the opportunities for establishing woodland that lie within the ecological network, with processed Natural England Nature Recovery Network (NRN) data.

The following processing was undertaken to the NRN data prior to intersecting with the biodiversity opportunities:

NRN data for the following habitats were merged to make a single NRN dataset for woodlands, clipped to the Derbyshire boundary:

- Ancient Semi Natural Woodland

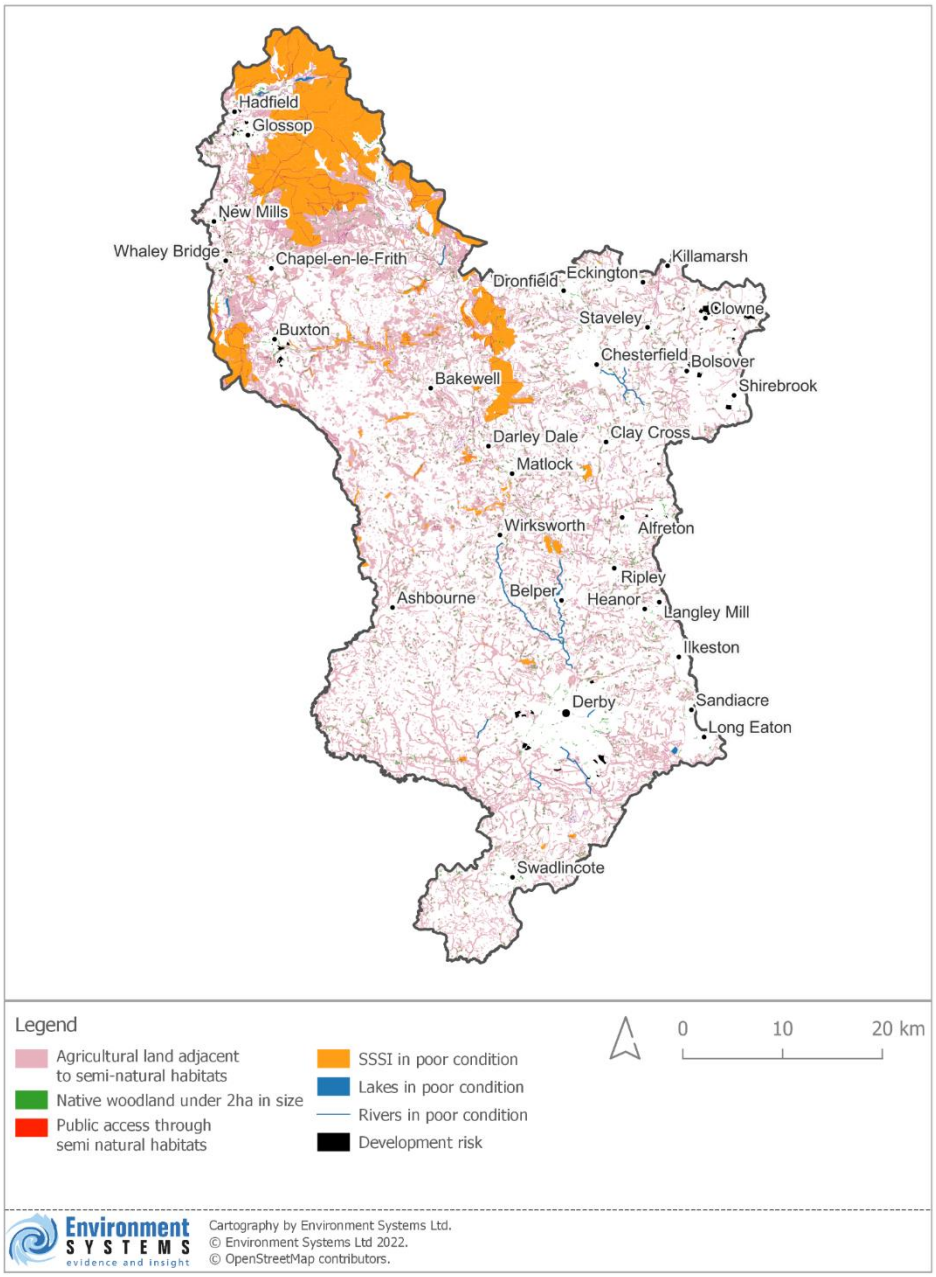
- Traditional Orchards
- Wood Pasture and Parkland

Within the merged NRN data any areas that contained areas of Primary Habitat or Associated Habitat (of any woodland habitat type) were removed, so that the remaining areas to be intersected with the biodiversity opportunity data consisted of areas that were part of the wider NRN network, comprising the following classes:

- Restorable Habitat
- Fragmentation Action Zone
- Network Enhancement Zone 1
- Network Enhancement Zone 2
- Network Expansion Zone

Associated data file	Value/Class name
Biodiversity_Woodland_Opportunities_in_NRN.gpkg	DN: 2 - Preferred opportunity: hex colour: #b02ab0 DN: 11 - Preferred opportunity: hex colour: #2ab500 DN: 210 - Some opportunity: hex colour: #6ccb40 DN: 400 - Some opportunity: hex colour: #cc86cc

Biodiversity risks



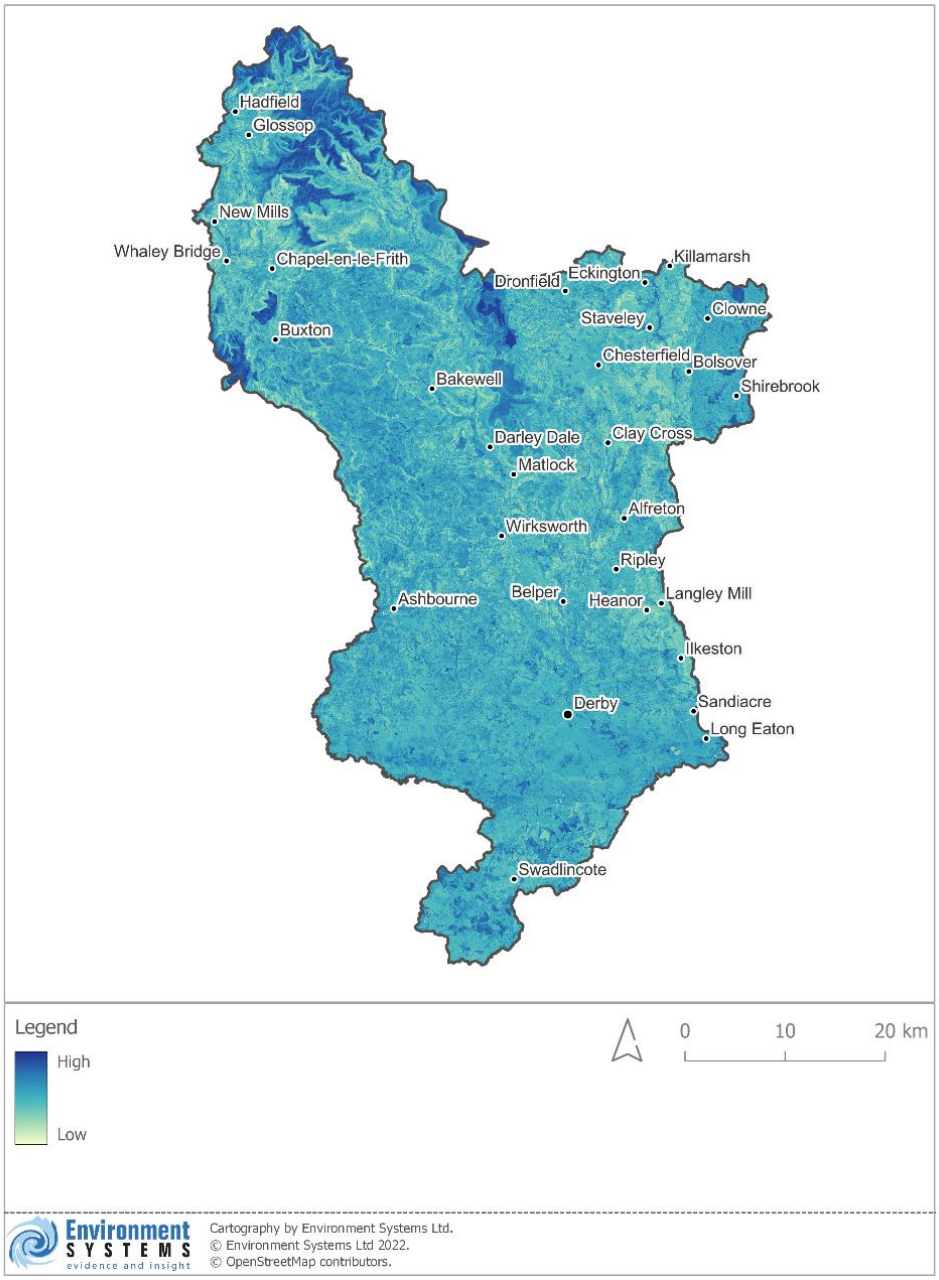
This map shows five different types of risk, as outlined in the table below.

Risk type	Definition of risk area
SSSI risk areas	SSSIs with the following condition assessments: • Not assessed • Unfavourable declining • Unfavourable recovering • Unfavourable no change • Part destroyed

	• Destroyed
Native woodland under 2ha in size	• Woodland ecological network 'stepping stone' areas
Waterbodies in poor condition	WFD condition assessment for rivers and lakes: • Poor • Fail • Moderate or less
Areas of public access through semi-natural habitat	Places where paths (buffered by 10m) cross areas of semi-natural habitat (identified from the HAR and ecological network core and stepping stone areas).
Agricultural land adjacent to semi-natural habitats	Agricultural areas (selected from the HAR) within 50m of a semi-improved habitat (identified from the HAR and ecological network core and stepping stone areas).
Development risk	Areas allocated for housing and employment development within Local Development Plans for the following areas: • Bolsover • Chesterfield • Derby City • High Peak

Associated data file	**Value/Class name**
Biodiversity_Risks_Rivers.gpkg	Whole dataset: hex: #1f78b4
Biodiversity_Risks_Public_Access.gpkg	Whole dataset: hex: #ff2301
Biodiversity_Risks_Lakes.gpkg	Whole dataset: hex: #1f78b4
Biodiversity_Risks_Native_Woodland.gpkg	Whole dataset: hex: #33a02c
Biodiversity_Risks_SSSI.gpkg	Whole dataset: hex: #ff9e17
Biodiversity_Risks_Agri_Semi_Natural.gpkg	Whole dataset: hex: #e8b1be

Natural Flood Management: current provision (stock)



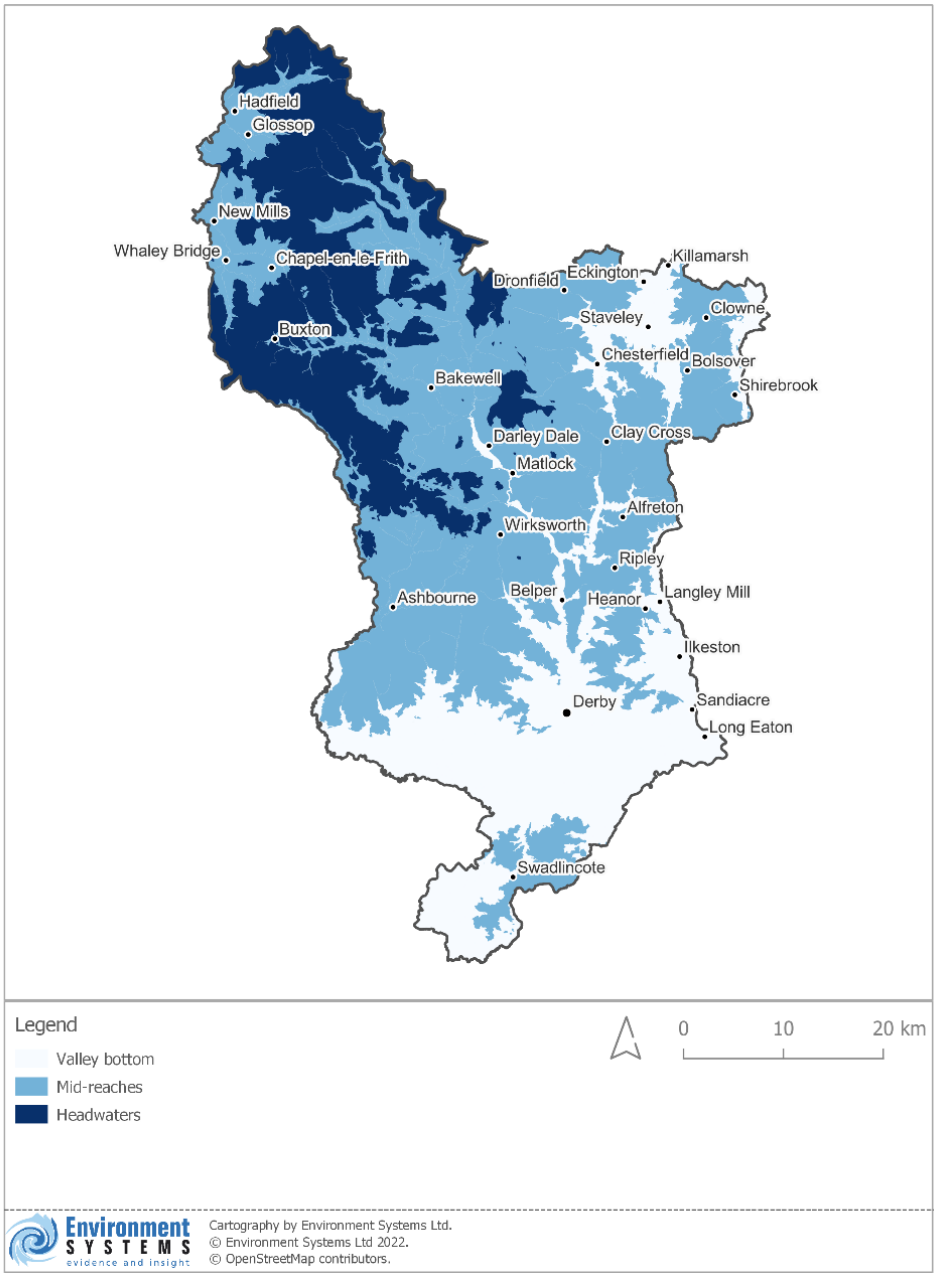
This map shows the existing NFM provision in Derbyshire. Darker areas show areas of higher provision, lighter areas show lower NFM provision.

Data input	Reason for usage	Indicative scoring
Slope: 5m resolution DEM	Steepness of slope has a strong effect on how quickly water is shed, and where it is stored	• Flat ground and gentle slopes (up to 3º): highest NFM • Moderate slopes (multiple categories): moderate NFM

		• Steep slopes (> 18º): No NFM benefit (water-shedding)
Natmap soil type (Cranfield data)	Soil texture, organic matter content and depth have a strong impact on water retention	• Peat soils, deep loamy and sandy soils: high NFM • Shallow soils, heavy clays: low NFM
Habitat Asset Register	Vegetation cover and rooting depth affect water interception, surface runoff, and infiltration.	• Woodland: high NFM • Tall or shrubby grassland: moderate NFM • Short grassland, bare ground: low NFM

Associated data file	**Value/Class name**
NFM_Current_Provision.gpkg	Range: 5 – Low: hex: #ffffcc 285 – High: hex: #253494

Hydrological catchment zones



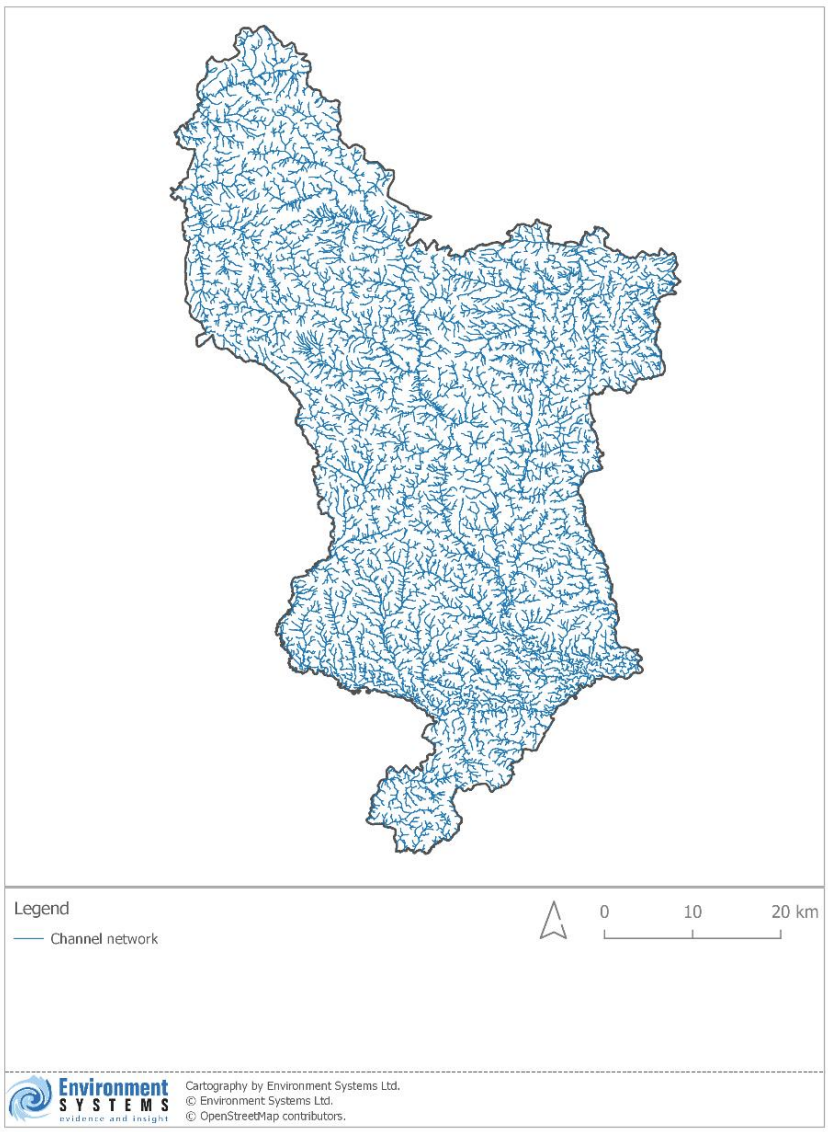
The catchment zones map shows the partition of the Derbyshire area into headwater, mind-reach, and valley bottom zones.

Data input	Reason for usage	Indicative scoring
5m resolution DEM	Elevation is one of the deciding factors for position within the catchment	• < 100m: valley bottom • 100 - 300m: Mid-reaches • > 300m: headwaters
Environment Agency Floodzone 3	Areas subjected to flooding are likely to be valley bottom	Area falls within Floodzone 3: floodplain catchment zone

Associated data file	Value/Class name
Hydrological_Catchment_Zones.gpkg	Catchment_: Candidate for valley bottom – Valley bottom: hex colour: #f7fbff Catchment_: Mid-reaches – Mid-reaches: hex: #73b2d8 Catchment_: Head Waters – Headwaters: hex: #08306b

Channel network

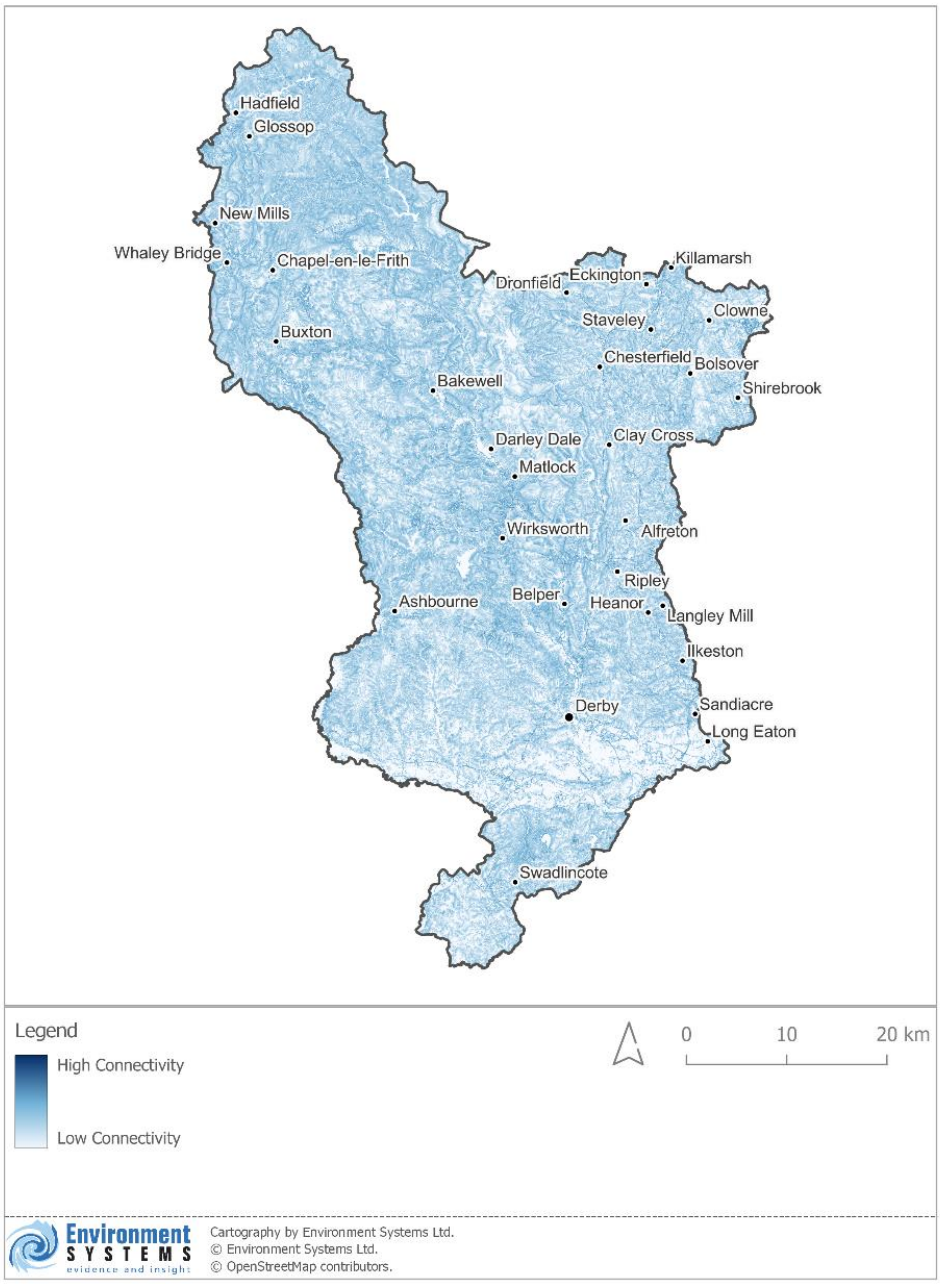
This map shows the fine-scale natural hydrological drainage channels, extracted through SCIMAP analysis of the 5m DEM



References:
SCIMAP: Diffuse Pollution and Flood Water Source Mapping. https://scimap.org.uk/ [accessed 2022-09-16]

Associated data file	Value/Class name
SCIMAP_Channel_Network.gpkg	Whole dataset: Channel Network hex colour: #1f78b4

Hydrological connectivity



This map shows how strongly areas are connected to the channel network; how important each location is for funnelling water towards the rivers and streams. Areas with high

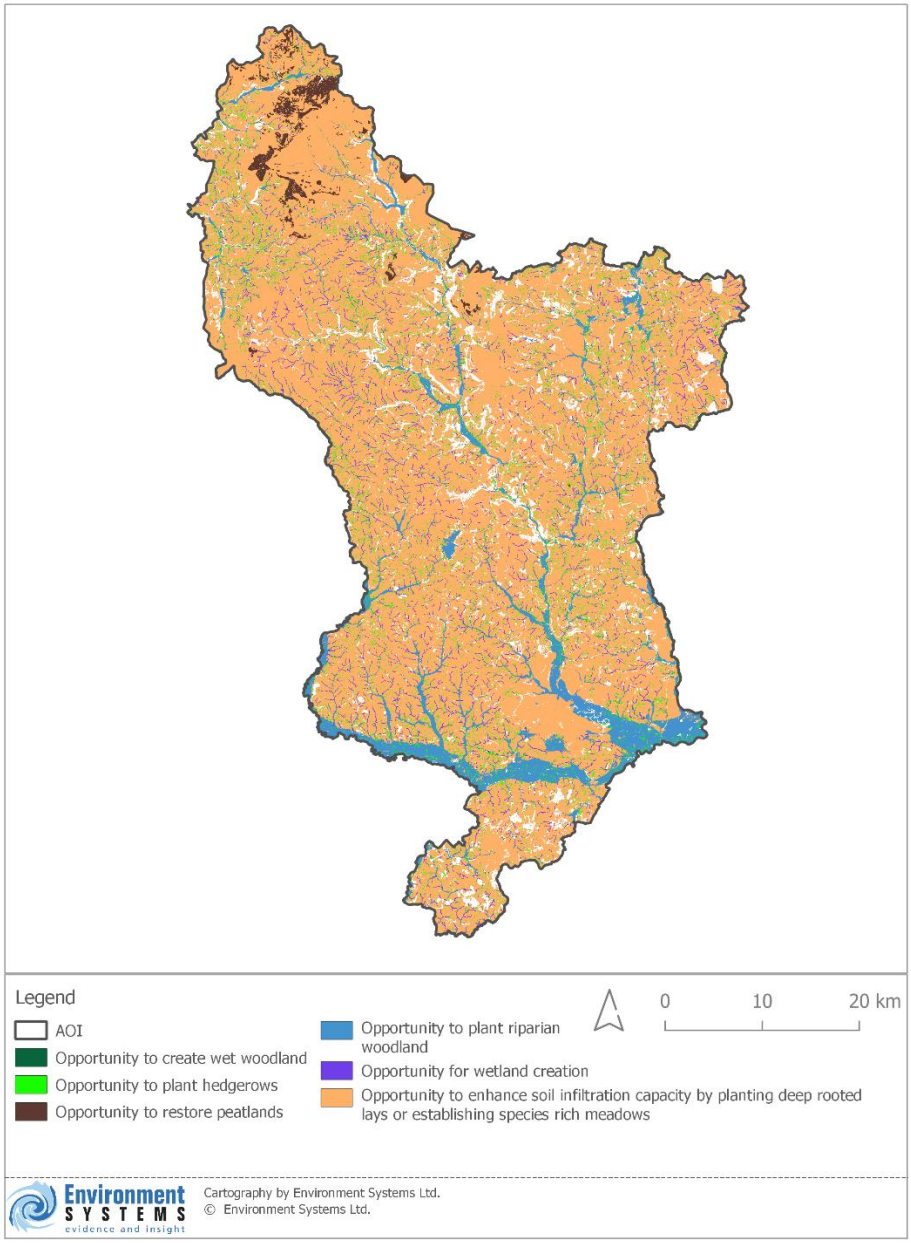
connectivity funnel more water. This dataset was generated by analysis of the Digital Elevation model with SCIMAP.

Associated data file	Figure heading	Value/Class name
NFM_Risk_Hydrological_Connectivity.gpkg	Figure 35: Hydrological connectivity	Range: 0 – High Connectivity: hex: #08306b 1 – Low Connectivity: hex: #f7fbff

References:

SCIMAP: Diffuse Pollution and Flood Water Source Mapping. https://scimap.org.uk/ [accessed 2022-09-16]

Natural Flood Management: all NFM opportunities



This map considered opportunities to change the habitat type or condition, or soil condition, to improve surface water regulation by increasing rainfall interception, surface roughness, or soil water-retention capacity (e.g. through increasing rooting depth or organic matter content, or alleviating compaction).

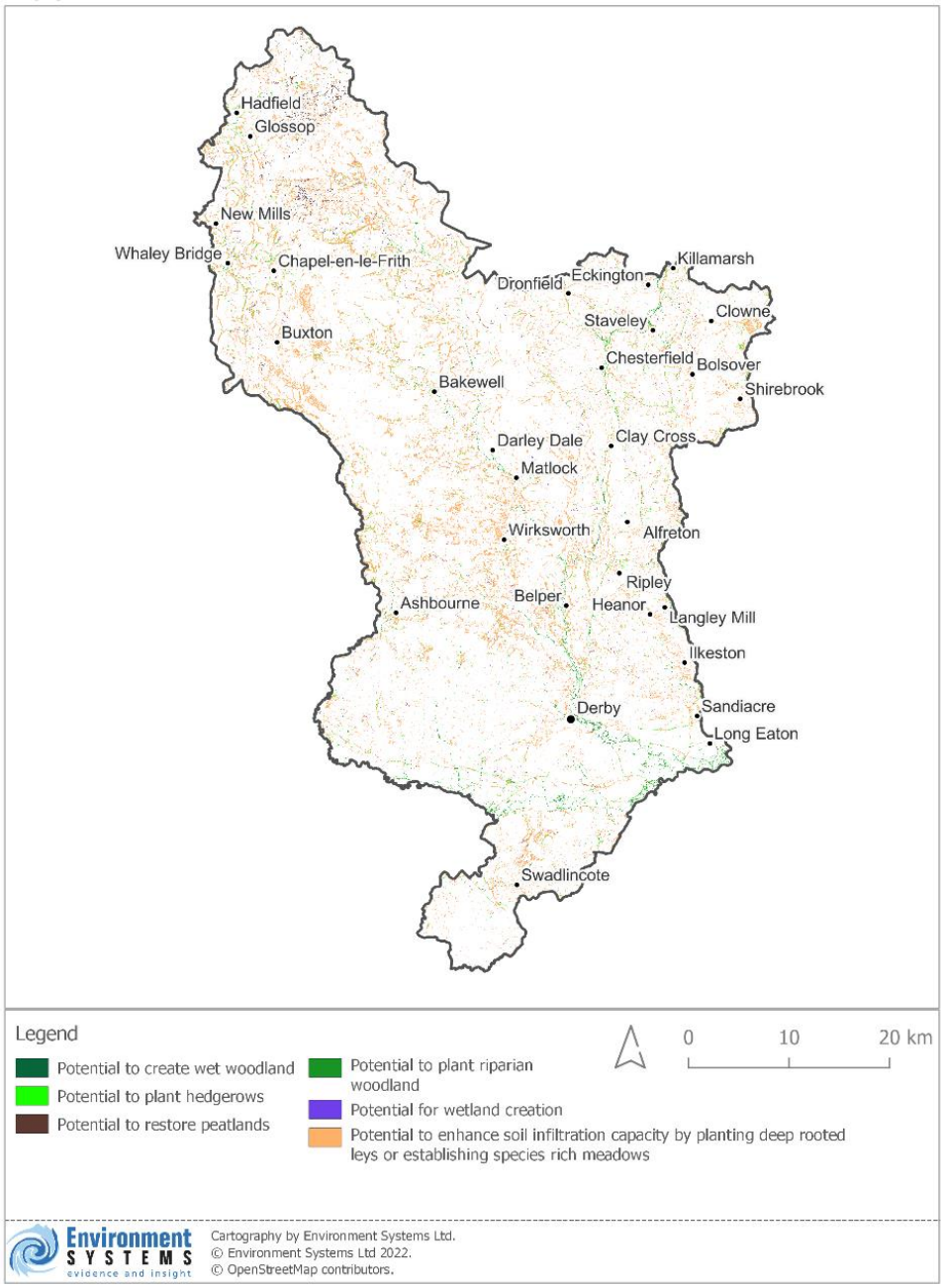
Data input	Reason for usage
Habitat Asset Register	Grassland and cropland selection to identify areas to enhance habitats by planting deep rooted lays. Degraded bogs are opportunities for peatland restoration.

	Rivers and streams without adjoining woodland cover are opportunities for riparian woodland creation. Existing hedgerows and stonewalls used as a basis to identify agricultural fields currently lacking hedgerows (or stonewalls), where hedgerows could be created
Landscape Character 2013	Used to identify areas where hedgerow creation would not be appropriate (areas currently characterised by the presence of stone walls), and ensure that hedgerow creation was not recommended in these areas.
Channel network (derived from 5m DEM using SCIMAP)	Used to identify riparian woodland opportunities
Environment Agency Floodzone 2	Floodplain areas used to identify areas suitable for wet woodland and wetland creation
Natmap soil type (Cranfield data)	Groundwater-affected soil types within the floodplain are opportunities for wetland creation
Woodland opportunities (output from Biodiversity theme mapping)	Used to identify areas suitable for wet woodland creation

Associated data file	Figure heading	Value/Class name
Natural_Flood_Management_Opportunities.gpkg	Figure 36: Natural Flood Management: all NFM opportunities	1- Potential to create wet woodland: hex colour: #ef64dd 2 - Potential to plant hedgerows: hex colour: #1aff00 3 - Potential to restore peatlands: hex colour: #5e3931 4 - Potential to plant riparian woodland: hex colour: #1a9426 5 - Potential for wetland creation: hex colour: #703fea 6 - Potential to enhance soil infiltration capacity by planting deep rooted lays or establishing species

		rich meadows: hex colour: #ffb168

Natural Flood Management: targeted opportunities



This map was made from the full map of NFM opportunities. It is a selection of areas that occur in the places that have a high hydrological conductivity, meaning the most significant locations for funnelling water towards the rivers and streams. Areas of high hydrological connectivity were identified by analysis of the Digital Elevation model with SCIMAP.

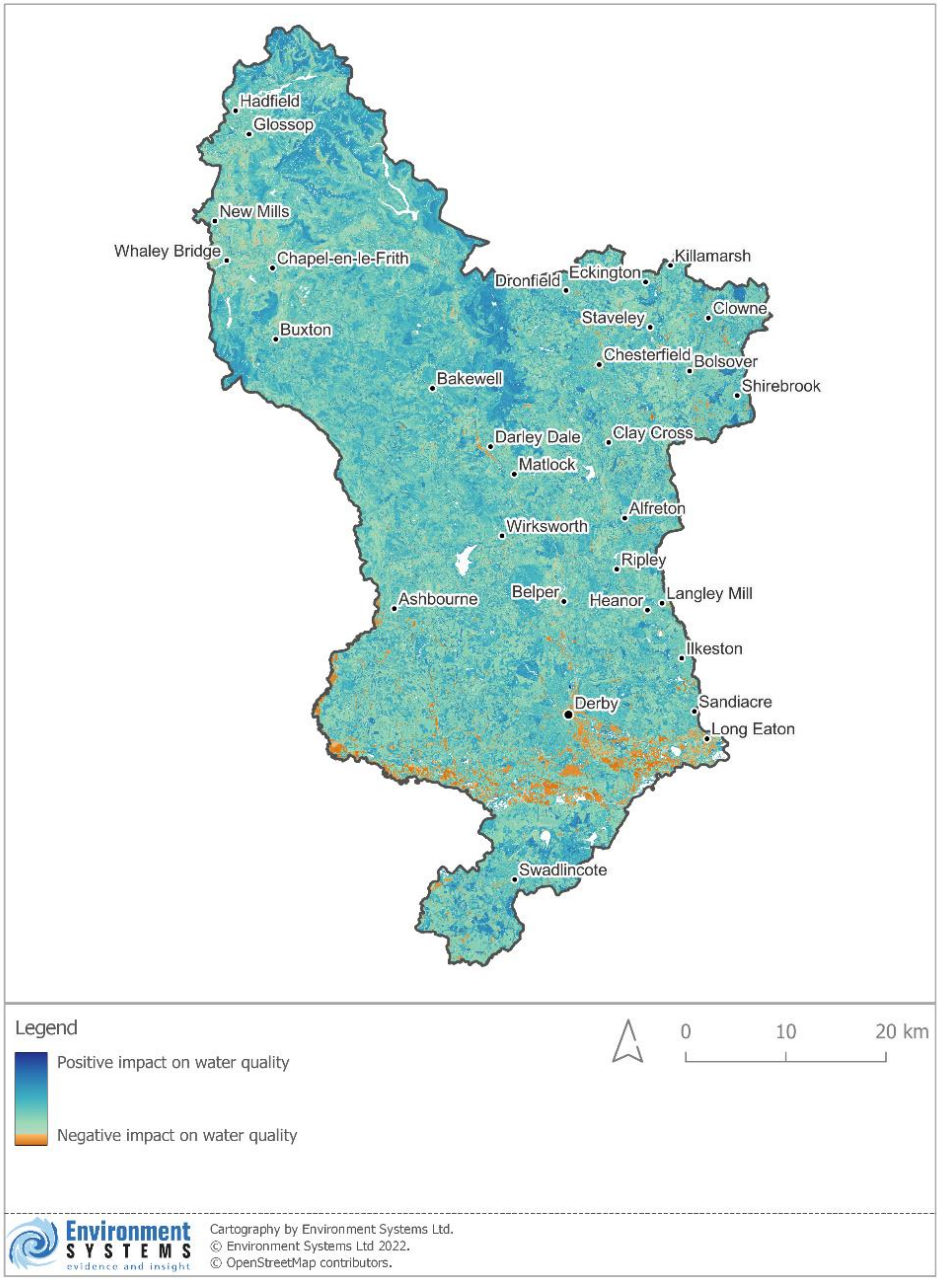
Associated data files	Value/Class name

NFM_Targeted_Opportunities.gpkg	1 - Potential to create wet woodland: hex colour: #09663c 2 - Potential to plant hedgerows: hex colour: #1aff00 3 - Potential to restore peatlands: hex colour: #5e3931 4 - Potential to plant riparian woodland: hex colour: #1a9426 5 - Potential for wetland creation: hex colour: #703fea 6 - Potential to enhance soil infiltration capacity by planting deep rooted lays or establishing species rich meadows: hex colour: #ffb168

References:

SCIMAP: Diffuse Pollution and Flood Water Source Mapping. https://scimap.org.uk/ [accessed 2022-09-16]

Water quality regulation: current provision (stock)



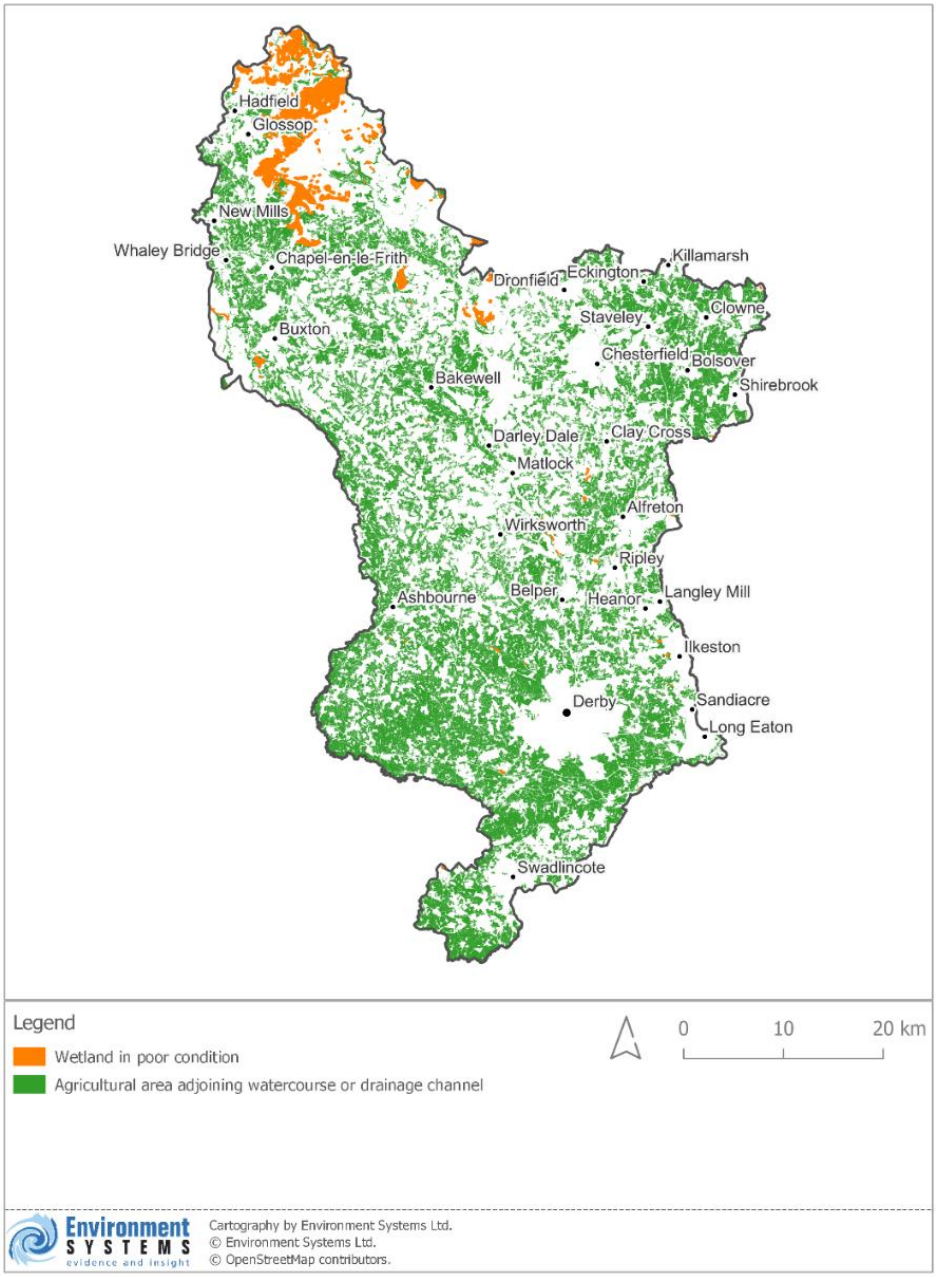
This map was created by combining datasets relating to slope, soil type and land use/land management, each assessed for their contribution to water quality regulation.

Data input	Reason for usage	Indicative scoring
Slope: 5m resolution DEM	Steepness of slope affects water pooling/shedding and filtration potential	• Flat ground and gentle slopes (up to 3º): high positive effect on water quality regulation • Moderate slopes (multiple categories): moderate positive impact on water quality regulation

		• Steep slopes (> 18º): No water quality regulation benefit
Natmap soil type (Cranfield data)	Soil texture, organic matter content, depth, and underlying geology have a strong impact on water filtration	• Peat soils, soils over limestone: high NFM • Shallow soils over hard rock types: low water quality regulation
Habitat Asset Register	Vegetation cover, rooting and nutrient uptake characteristics affect water filtration and movement of pollutants.	• Wet blanket bog: high positive effect on water quality regulation • Neutral grassland: moderate positive impact on water quality regulation • Arable land: negative impact on water quality regulation

Associated data source	**Value/Class name**
Water_Quality_Existing_Provision.gpkg	Whole dataset 0: hex #b8d9c5 to 315: hex: #253494 -0.1: hex: #fdbf6f to -50: hex: #d76800

Water quality regulation: risk areas



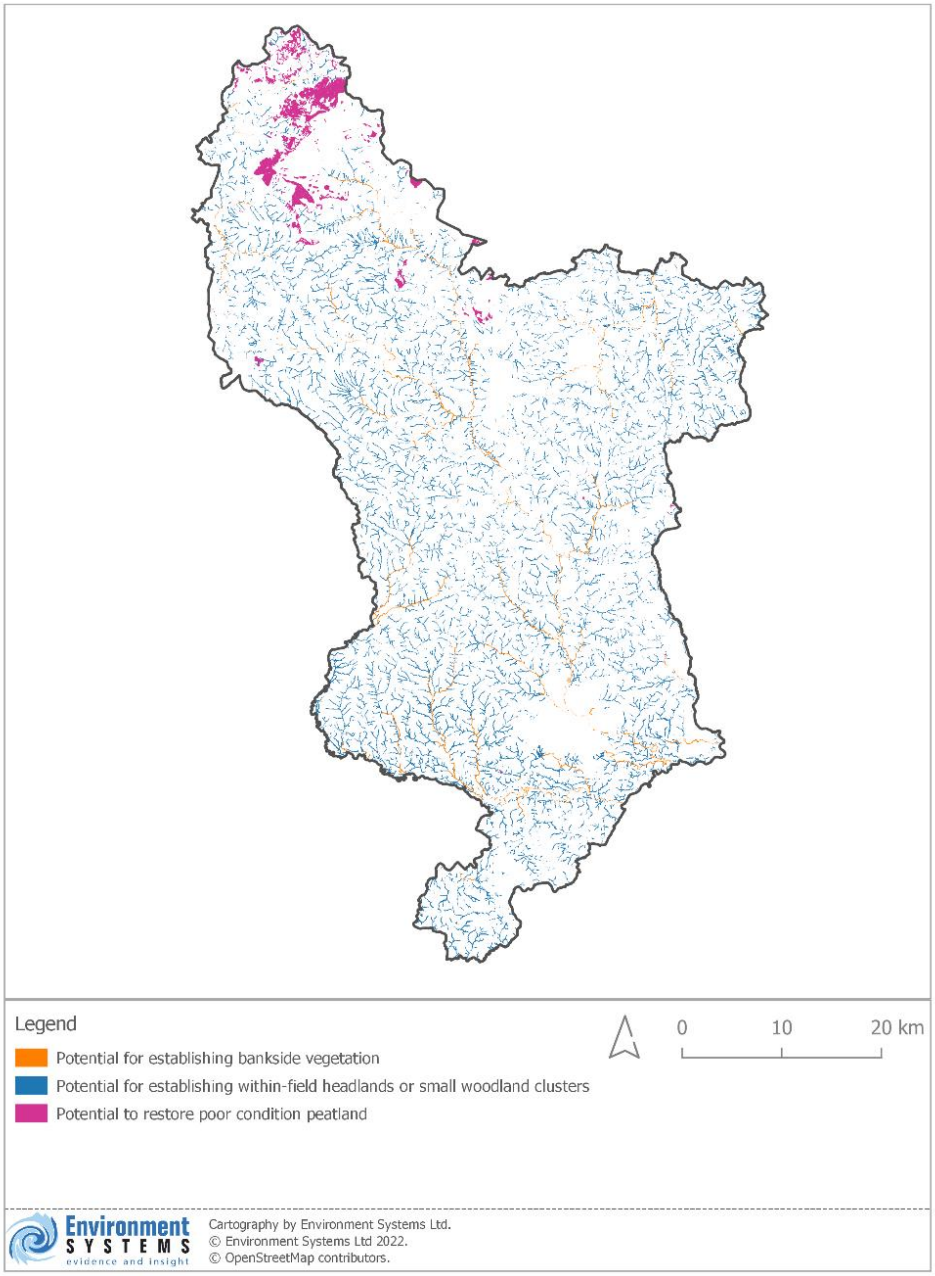
This map identifies the locations of two risk types; degraded peatlands, and agricultural areas adjoining drainage channels.

Risk type	Definition of risk area
Degraded peatlands	Areas of degraded blanket bog and bare peat, selected from the HAR
Agricultural areas adjoining drainage channels	Agricultural areas (selected from the HAR) within 30m of rivers and streams (selected from the HAR) and natural drainage channels (as identified by SCIMAP analysis of 5m DEM)

Associated data files	Value/Class name

Water_Quality_Risk.gpkg	Whole dataset: Agricultural area adjoining watercourse or drainage channel hex colour: #33a02c
Water_Quality_Risk_Opportunities.gpkg	DN: 3 - Wetland in poor condition hex colour: #ff7f00

Water quality regulation: potential enhancement areas



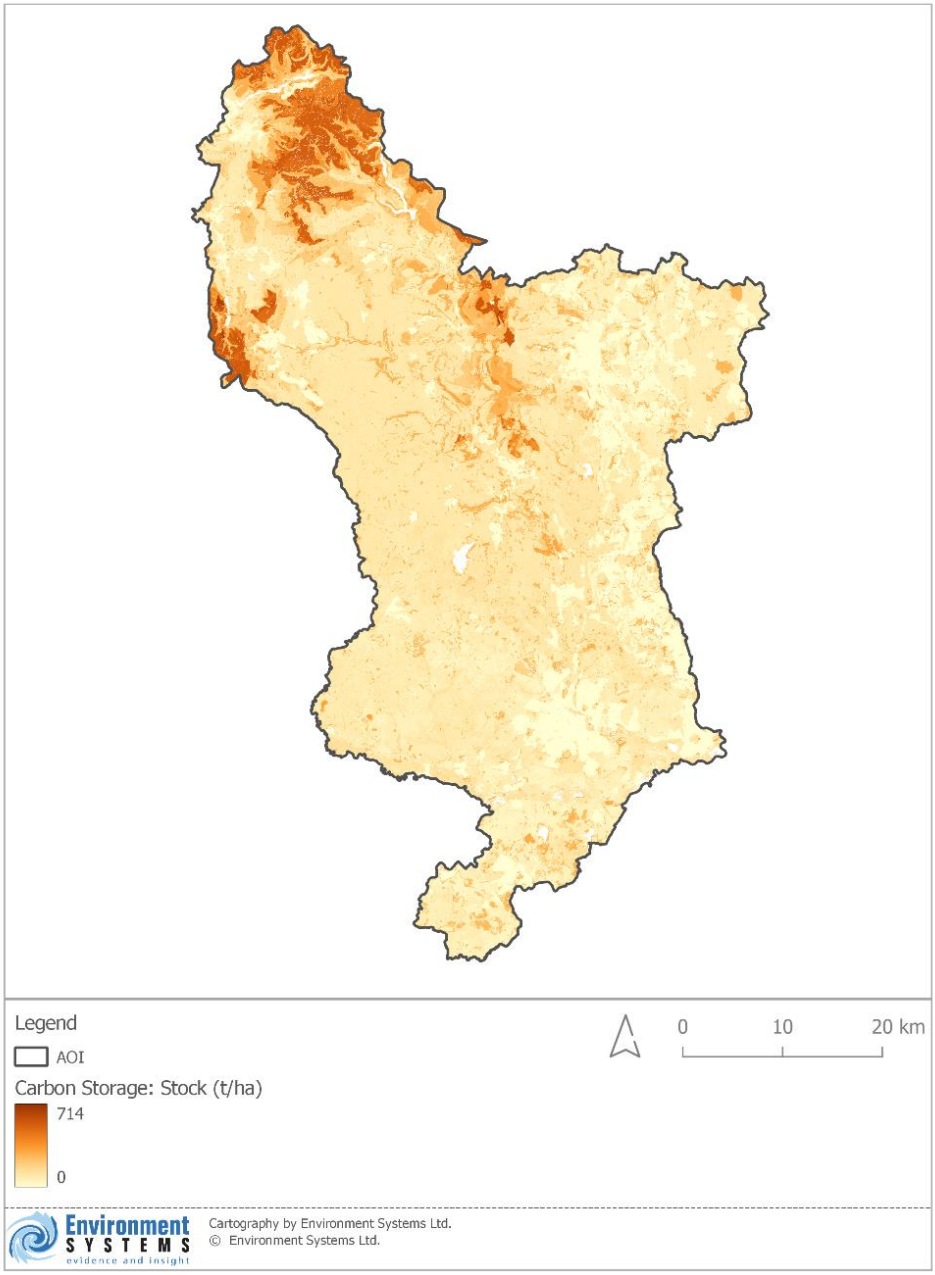
This map shows five different types of opportunity, as outlined in the table below.

Opportunity type	Definition of opportunity area

Opportunity for establishing bankside vegetation	Areas bordering the main rivers and streams (within 30m of the watercourse) that currently lack woodland or shrubby bankside vegetation (as mapped by the HAR)
Opportunity for establishing within-field headlands or small woodland clusters	Agricultural areas (selected from the HAR) within 30m of natural drainage channels (as identified by SCIMAP analysis of 5m DEM)
Opportunity to restore poor condition peatland	Areas of degraded blanket bog and bare peat, selected from the HAR

Filename	**Value/Class name**
Water_Quality_Opportunities.gpkg	1 - Potential for establishing bankside vegetation: hex colour: #ff7f00 2 - Potential for establishing within-field headlands or small woodland clusters: hex colour: #1f78b4 3 - Potential to restore poor condition peatland : hex colour: #d33494

Current carbon storage (stock)



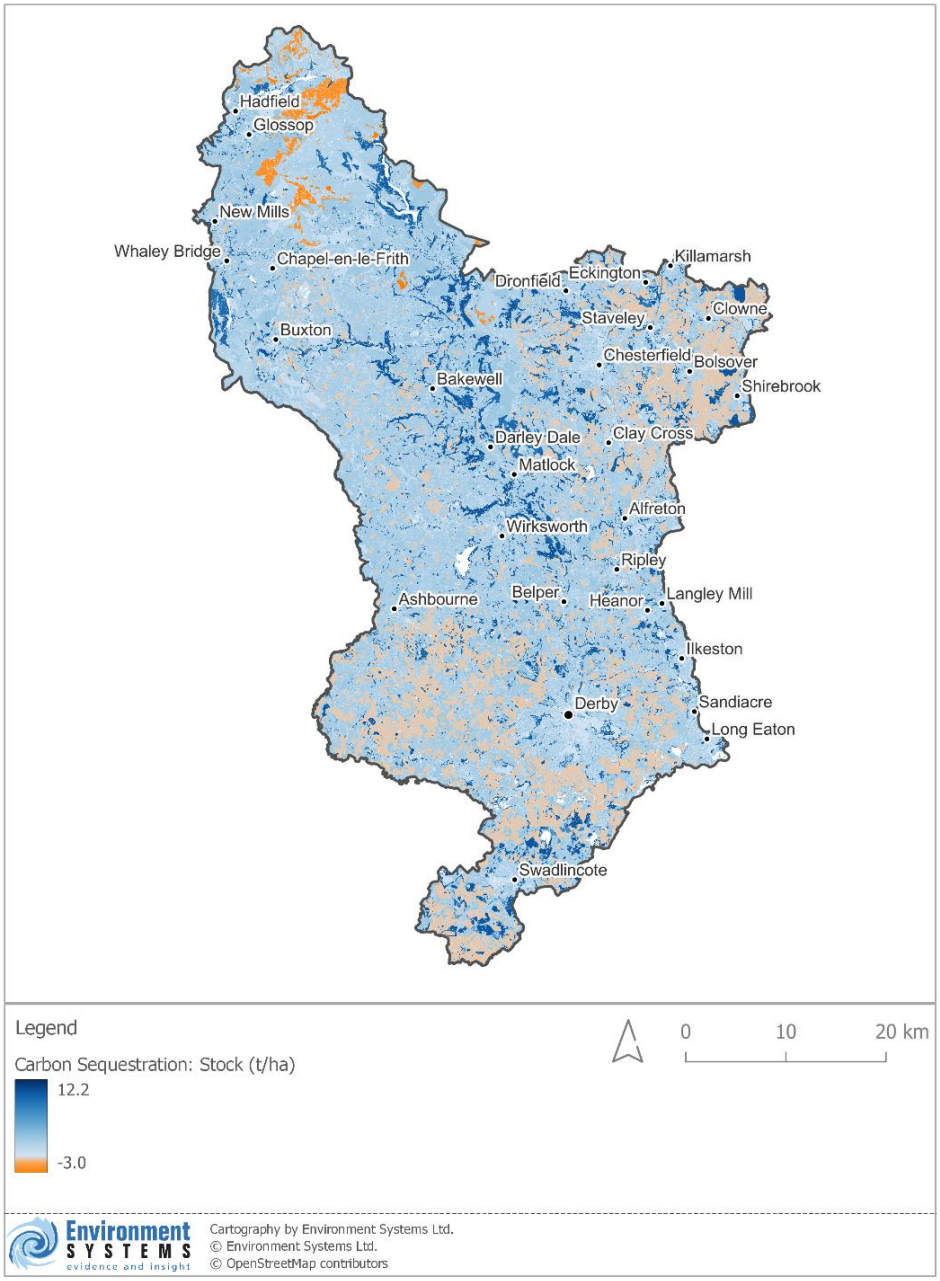
This is a quantitative map; carbon storage values are expressed in $t.ha^{-1}$. Carbon storage values were taken from Natmap Carbon data obtained under license from Cranfield, based on carbon storage in the 0-30cm depth fraction, with the addition of mean carbon storage values for the habitat present, as determined by the HAR. The Natmap Carbon dataset contains both maximum and minimum carbon values for the soil type. The assigned carbon value was assigned from within this range based on the HAR habitat class and steepness of slope in each location, and the influence of floodplains (e.g. good condition bog habitat would be assigned the maximum value in the Natmap Carbon data range, but bare ground on steep slopes would be assigned a value towards the minimum in the stated Natmap Carbon range), informed by the relative carbon values of different habitat types (Alonso *et. al.,* (2012); Gregg *et. al.,* (2021)). Examples of how the carbon values were determined from

the maximum and minimum values within the Natmap Carbon data are shown in the table below.

Habitat / dataset	Process for selecting carbon value using maximum and minimum values from Natmap Carbon
Ancient woodland	Use the maximum value in the Natmap Carbon dataset
Wet neutral grassland	Select the value that lies half way within the range in the Natmap Carbon dataset.
Areas within floodplains (Floodzone 2)	Increase habitat carbon storage value by 10% (or use Natmap Carbon maximum value, whichever is lower)
Moderate slopes (7-11°)	Decrease habitat carbon storage value by 10% (or use Natmap Carbon minimum value, whichever is higher)
Steep slopes (11-18°)	Decrease habitat carbon storage value by 25% (or use Natmap Carbon minimum value, whichever is higher)
Very steep slopes (>18°)	Decrease habitat carbon storage value by 40% (or use Natmap Carbon minimum value, whichever is higher)

Associated data file	Figure heading	Value/Class name
Carbon_storage_stock.gpkg	Figure 41: Current carbon storage (stock)	Range: 0: hex: #ffffd4 248.39: hex: #993404

Current carbon sequestration (stock)



This is a quantitative map; carbon sequestration values are expressed in $t.ha^{-1}$. Carbon sequestration values were taken from the Natural England report Gregg *et al* (2021). This review considered the scientific evidence for carbon sequestration by semi-natural habitats, in relation to their condition and/or management. This new report updates and expands previous work by Alonso et al (2012). Where evidence was lacking a gap analysis was included showing areas where research was needed. Where research projects were underway, new evidence was obtained under a current carbon mapping project being undertaken by Natural England (Medcalf *et al.*, in press), including gathering carbon storage evidence from northern Europe to fill any final knowledge gaps. The sequestration rates applied to each habitat type are shown in the table below.

UKHAB_L2	UKHAB_LD	UKHABSEC	C sequestration (t.ha^{-1})
Urban	Built-up areas and gardens	Road island/verge	0
Cropland	Cropland	No secondary code assigned	-0.5
Cropland	Arable and horticulture	No secondary code assigned	-0.5
Cropland	Cereal crops	No secondary code assigned	-0.5
Cropland	Non-cereal crops	No secondary code assigned	-0.5
Wetland	Wetland	No secondary code assigned	-0.5
Wetland	Wetland	Peat	-3
Wetland	Bog	No secondary code assigned	1.7
Wetland	Bog	Bare ground, Peat	1.7
Wetland	Bog	Dry	-2
Wetland	Bog	Wet	1.7
Wetland	Blanket bog	No secondary code assigned	1.7
Wetland	Blanket bog	Dry	-2
Wetland	Blanket bog	Wet	1.7
Wetland	Blanket bog (H7130)	No secondary code assigned	1.7
Wetland	Fen marsh and swamp	No secondary code assigned	1.8
Wetland	Fen marsh and swamp	Flush	0.4
Wetland	Fen marsh and swamp	Flush, Base-rich substrate	1.8
Wetland	Lowland fens	Tall herb	1.8
Wetland	Transition mires and quaking bogs; lowland (H7140)	No secondary code assigned	1.7
Wetland	Purple moor grass and rush pastures	No secondary code assigned	0.8
Wetland	Upland flushes, fens and swamps	No secondary code assigned	0.4
Wetland	Reedbeds	No secondary code assigned	6.5
Grassland	Grassland	No secondary code assigned	2.9
Grassland	Grassland	Seasonally wet, Wet, Waterlogged	2.5
Grassland	Grassland	Tall herb	2.5
Grassland	Grassland	Ruderal/ ephemeral	2.3
Grassland	Grassland	Calcareous - acidic mosaic, Sward type mosaic	0.8
Grassland	Grassland	Traditional orchards	1.4
Grassland	Grassland	Coastal and floodplain grazing marsh	2.8
Grassland	Acid grassland	No secondary code assigned	0.5
Grassland	Acid grassland	Scattered bracken	2
Grassland	Acid grassland	Scattered dwarf shrubs	2.3
Grassland	Acid grassland	Tall or tussocky sward	2.2

Grassland	Acid grassland	Calcareous - acidic mosaic, Sward type mosaic	2.7
Grassland	Acid grassland	Grazed	2.2
Grassland	Lowland dry acid grassland	No secondary code assigned	0.5
Grassland	Lowland dry acid grassland	Scattered dwarf shrubs	2
Grassland	Bracken	No secondary code assigned	2.3
Grassland	Calcareous grassland	No secondary code assigned	0.8
Grassland	Lowland calcareous grassland	No secondary code assigned	0.8
Grassland	Upland calcareous grassland	No secondary code assigned	0.8
Grassland	Neutral grassland	No secondary code assigned	3.1
Grassland	Neutral grassland	Pasture or meadow	3
Grassland	Neutral grassland	Wet	2.5
Grassland	Neutral grassland	Tall or tussocky sward	3
Grassland	Lowland meadows	No secondary code assigned	3.4
Grassland	Other neutral grassland	No secondary code assigned	2.8
Grassland	Modified grassland	No secondary code assigned	2.5
Grassland	Modified grassland	Frequently mown, Introduced shrub	2.5
Heathland and shrub	Dwarf shrub heath	No secondary code assigned	2.3
Heathland and shrub	Dwarf shrub heath	Wet	2.3
Heathland and shrub	Dwarf shrub heath	Scattered grass	2
Heathland and shrub	Lowland heathland	No secondary code assigned	2.8
Heathland and shrub	Upland heathland	No secondary code assigned	2.8
Heathland and shrub	Upland Heathland	Wet, Base-rich substrate	2.8
Heathland and shrub	Upland heathland	Base-rich substrate	2.8
Heathland and shrub	Upland heathland	Acidic substrate	2.8
Heathland and shrub	Upland heathland	Scattered grass	2.7
Heathland and shrub	Hedgerows	No secondary code assigned	0.5
Heathland and shrub	Dense scrub	No secondary code assigned	9.7
Heathland and shrub	Hawthorn scrub	No secondary code assigned	9.7
Rivers and lakes	Rivers and lakes	No secondary code assigned	Not mapped
Rivers and lakes	Standing open water and canals	No secondary code assigned	Not mapped

Rivers and lakes	Standing open water and canals	Reservoirs	Not mapped
Rivers and lakes	Standing open water and canals	Freshwater - man-made	Not mapped
Rivers and lakes	Oligotrophic and dystrophic lakes	No secondary code assigned	Not mapped
Rivers and lakes	Canals	No secondary code assigned	Not mapped
Rivers and lakes	Rivers and streams	No secondary code assigned	Not mapped
Sparsely vegetated land	Sparsely vegetated land	No secondary code assigned	0
Sparsely vegetated land	Inland rock	No secondary code assigned	0
Sparsely vegetated land	Limestone pavement	No secondary code assigned	0
Sparsely vegetated land	Calaminarian grasslands	No secondary code assigned	0
Urban	Urban	No secondary code assigned	0
Urban	Built-up areas and gardens	No secondary code assigned	0.5
Urban	Built-up areas and gardens	Introduced shrub	0.5
Urban	Built-up areas and gardens	Allotments	0.2
Urban	Open Mosaic Habitats on Previously Developed Land	No secondary code assigned	10
Woodland and forest	Woodland and forest	No secondary code assigned	9.7
Woodland and forest	Woodland and forest	Scattered scrub	5
Woodland and forest	Woodland and forest	Scattered trees	10.4
Woodland and forest	Woodland and forest	Ancient woodland site	10.4
Woodland and forest	Woodland and forest	Ancient woodland site, Plantation	10.4
Woodland and forest	Woodland and forest	Ancient woodland site, Semi-natural woodland	10.4
Woodland and forest	Woodland and forest	Ancient woodland site, Semi-natural woodland, Wet	10
Woodland and forest	Woodland and forest	Plantation	12.2
Woodland and forest	Woodland and forest	Coppice	0
Woodland and forest	Woodland and forest	Felled	7

Woodland and forest	Woodland and forest	Young trees - planted	7
Woodland and forest	Woodland and forest	Young trees - planted, Young trees - self-set	10.4
Woodland and forest	Broadleaved mixed and yew woodland	No secondary code assigned	10.5
Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site	10.4
Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site, Plantation	10.4
Woodland and forest	Broadleaved mixed and yew woodland	Ancient woodland site, Semi-natural woodland	10.3
Woodland and forest	Broadleaved mixed and yew woodland	Plantation	10.4
Woodland and forest	Broadleaved mixed and yew woodland	Semi-natural woodland	10
Woodland and forest	Broadleaved mixed and yew woodland	Secondary woodland	0
Woodland and forest	Broadleaved mixed and yew woodland	Felled	7
Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted	6
Woodland and forest	Broadleaved mixed and yew woodland	Young trees - planted, Young trees - self-set	10.4
Woodland and forest	(Upland oakwood)	No secondary code assigned	10.2
Woodland and forest	(Upland oakwood)	Plantation	10.4
Woodland and forest	(Upland oakwood)	Semi-natural woodland	10
Woodland and forest	Upland mixed ashwoods	No secondary code assigned	9.8
Woodland and forest	Upland mixed ashwoods	Plantation	10
Woodland and forest	Upland mixed ashwoods	Semi-natural woodland	8.5
Woodland and forest	Wet woodland	No secondary code assigned	8.5
Woodland and forest	Wet woodland	Semi-natural woodland	8.5
Woodland and forest	Wet woodland	Secondary woodland	10.4
Woodland and forest	Lowland mixed deciduous woodland	No secondary code assigned	10.4
Woodland and forest	Lowland mixed deciduous woodland	Ancient woodland site, Semi-natural woodland	10.4
Woodland and forest	Lowland mixed deciduous woodland	Semi-natural woodland	10
Woodland and forest	Other woodland; mixed	Plantation	9.2

Woodland and forest	Coniferous woodland	No secondary code assigned	9.2
Woodland and forest	Coniferous woodland	Ancient woodland site, Plantation	9.2
Woodland and forest	Coniferous woodland	Plantation	0
Woodland and forest	Coniferous woodland	Felled	0
Sparsely vegetated land	Inland rock outcrop and scree habitats	No secondary code assigned	0.5
Sparsely vegetated land	Sparsely vegetated land	Quarry - hard rock	2.8
Heathland and shrub	Heathland and shrub	Scattered scrub	2.5
Cropland	Temporary grass and clover leys	Intensively managed	2.5
Cropland	Temporary grass and clover leys	Less intensively managed	-3
Wetland	Degraded blanket bog	No secondary code assigned	6
Woodland and forest	Single line of trees	No secondary code assigned	0
Inland rock outcrop and scree habitats		No secondary code assigned	0
Urban	Urban	Golf course	0.5
Sparsely vegetated land	Sparsely vegetated land	Bare ground	2
Grassland	Grassland	Bare ground	0
Urban	Urban	Bare ground	3
Grassland	Grassland	Wood-pasture and parkland	1
Grassland	Grassland	Solar farm	0.5
Sparsely vegetated land	Sparsely vegetated land	Quarry - hard rock, Quarry - sand and gravel	8.4
Woodland and forest	Woodland and forest	Planted woodland	0
Wetland	Wetland	Exposed riverine sediments	2.7
Grassland	Grassland	Scattered Scrub	0
Rivers and lakes	Rivers and lakes	Ponds	2.9
Grassland	Lowland hay meadows (H6510)	No secondary code assigned	0
Urban	Artificial unvegetated, unsealed surface	No secondary code assigned	2.8
Grassland	Grassland	Cemeteries	2.8
Grassland	Grassland	Grassland/Childrens play areas	3

Urban	Urban	Parks and gardens	3
Urban	Urban	Natural and semi-natural open space	0.5
Urban	Urban	Sport pitches	0
Grassland	Grassland	Dry stone wall	0
Urban	Urban	Quarry - hard rock	2.9

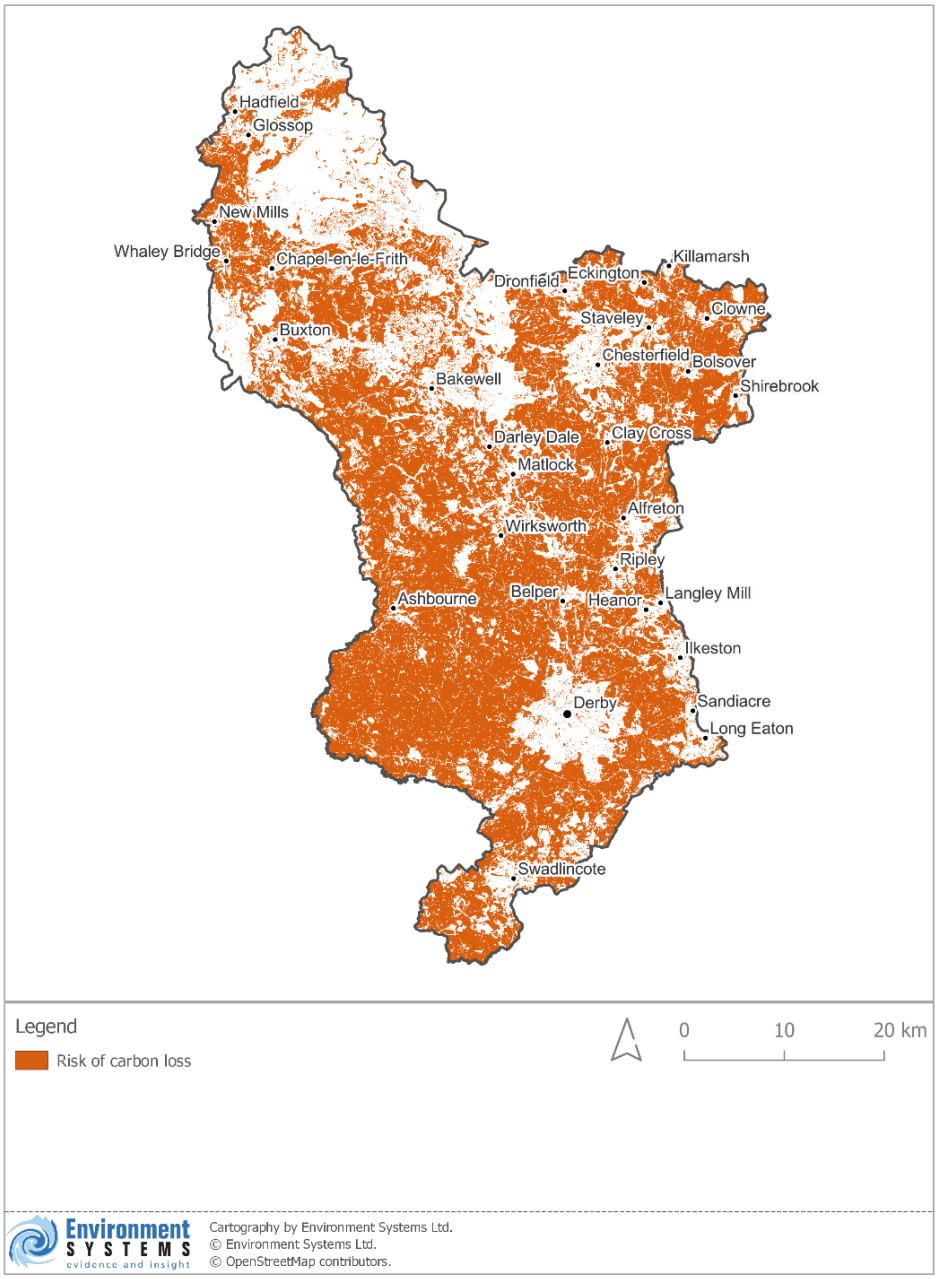
Associated data file	Value/Class name
Carbon_sequestration_stock.gpkg	Range: -3: hex: #ff7f00 to -1.3111: hex: #ff9f45 0: hex: #d2e3f3 to 12.2: hex: #08306b

References:
Alonso, I., Weston, K., Gregg, R. and Morecroft, M. 2012. Carbon storage by habitat - Review of the evidence of the impacts of management decisions and condition on carbon stores and sources. Natural England Research Report NERR043. Natural England, York.

Gregg, R., Elias, J. L., Alonso, I., Crosher, I.E. and Muto, P. and Morecroft, M.D. (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition) Natural England Research Report NERR094. Natural England, York.

Medcalf, K., Williams, J. and Selman, C. (in press) Spatial Prioritisation of Land Management for Carbon Dataset. Draft report for Natural England. Environment Systems Ltd.

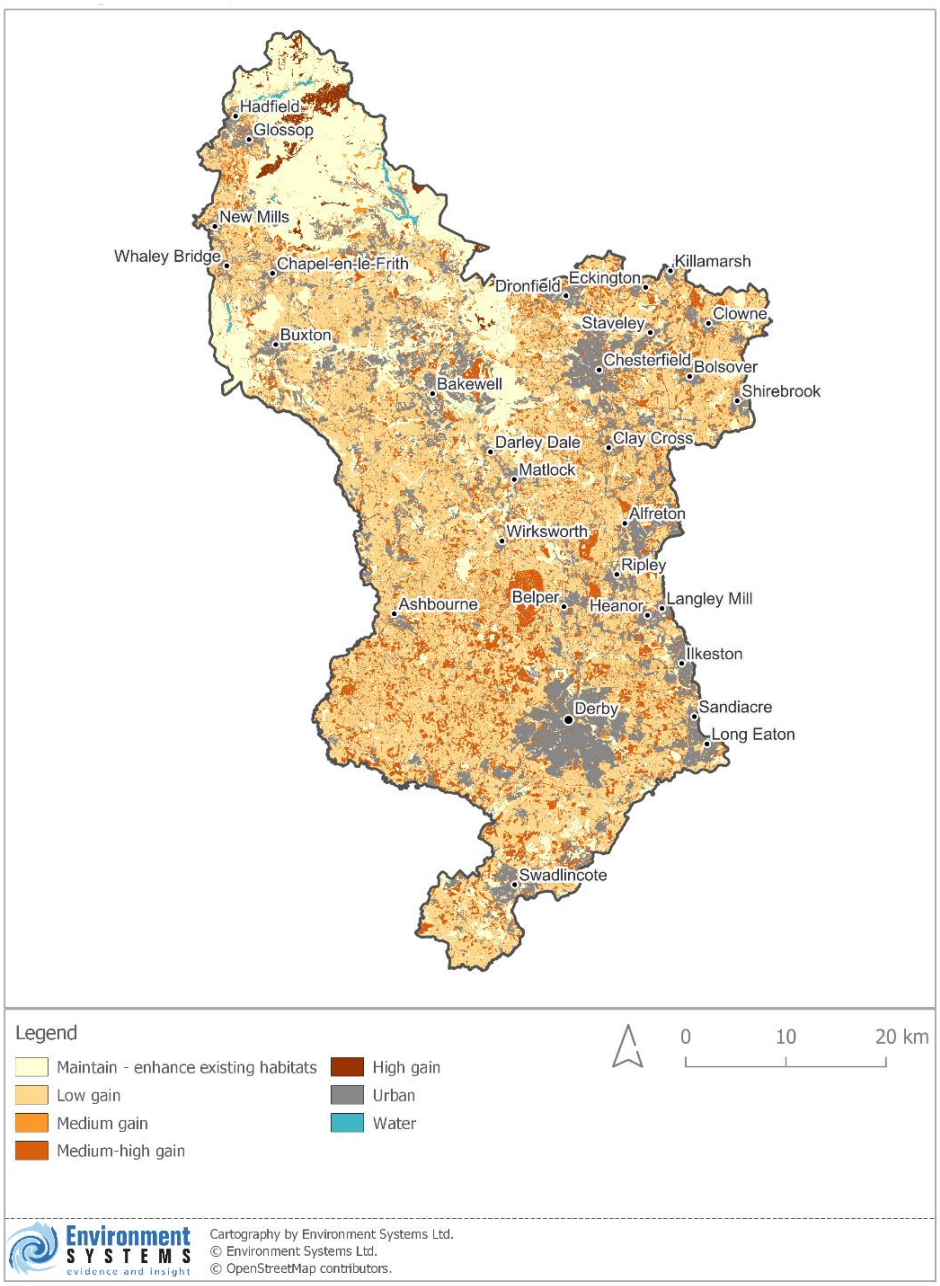
Carbon sequestration risks



This map shows risk areas for carbon sequestration, and is based on the level of carbon abatement that could be achieved by appropriate management, as an indicator of the fragility of the current carbon sequestration system. Areas of low gain, medium gain, medium-high gain and high gain (as defined in the carbon abatement opportunities map) have been highlighted as risk areas.

Associated data file	Value/Class name
Carbon_sequestration_risk.gpkg	Whole dataset: Risk of carbon loss hex colour: #d95f0e

Carbon abatement opportunities: relative gain in carbon storage/sequestration



This map shows opportunities for enhancing carbon storage/sequestration, based on the existing habitat type as mapped by the HAR.

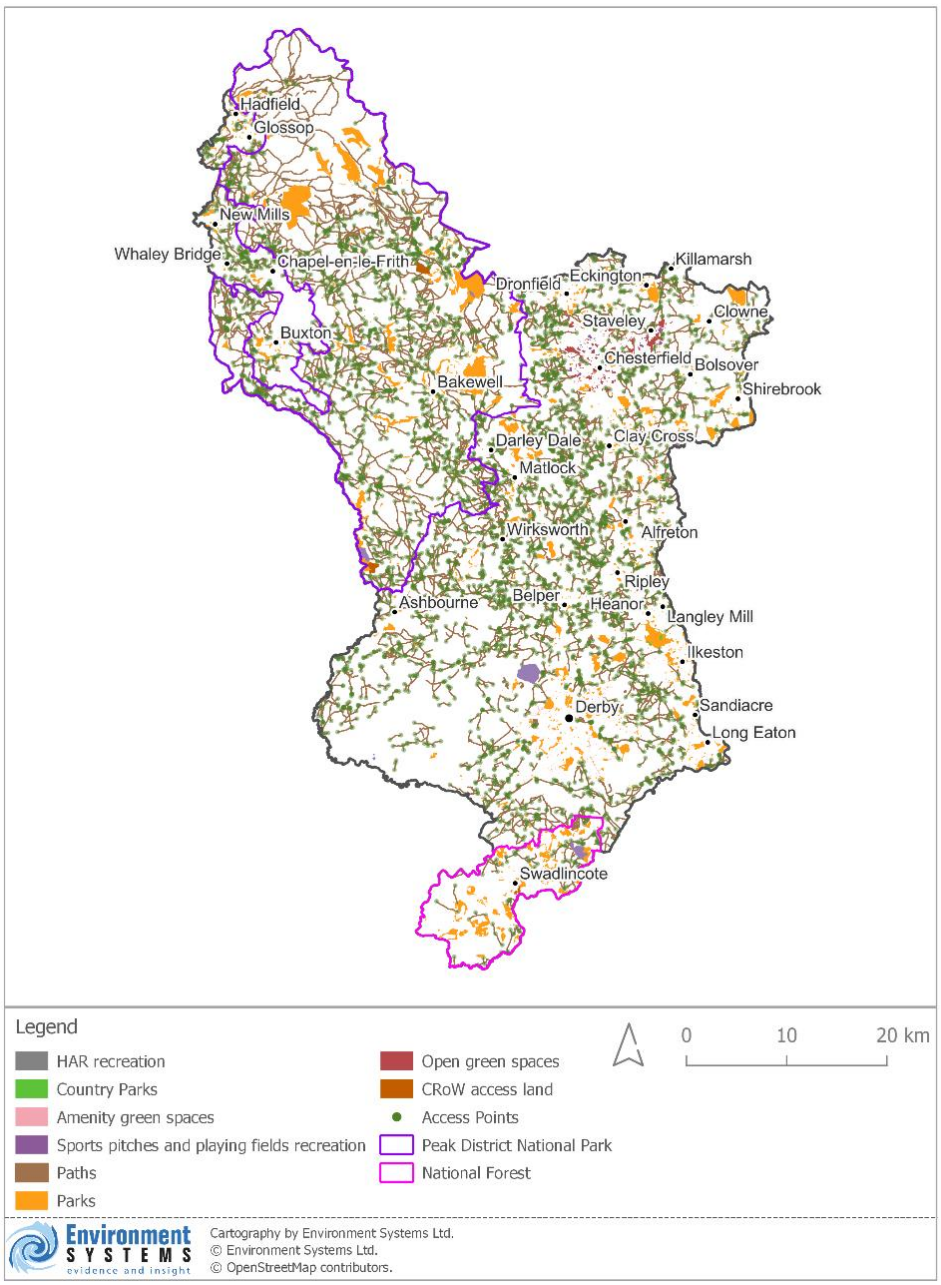
Opportunity type	Description
Maintain - enhance existing habitats	Some of our existing habitats, e.g. blanket bog on deep peat, are not in a degraded condition, and their existing carbon content is therefore likely to be close to their natural maximum. For this reason the opportunity type has been classified as maintain/enhance existing vegetation for these habitat types. To understand if the condition needs to be enhanced a more

	detailed analysis on this particular habitat/location, or a field visit is recommended.
Low gain	On productive agricultural land (intensive grassland and arable) there are possibilities to enhance carbon storage by changing land management practices, to incorporate more organic matter into the soil and to prevent oxidation of the topsoil layers. Changing management practices, even a small amount, can result in an increased carbon balance in the soil, benefiting not just climate mitigation but soil health and water regulation as well.
Low/medium gain	This was assigned where the existing habitat could be replaced with a more suitable (more natural, better condition, more carbon-rich) habitat, leading to low-medium gains in carbon storage/sequestration. For example; • If heathland is found on deep peat, restoration of any drainage channels dug in the peat would allow bog vegetation to re-establish, which is likely to sequester more carbon. • Where improved grassland is returned to a semi-natural grassland a M/L increase in soil carbon would be expected
Medium gain	This class is allocated where changing land use could result in a fairly good enhancement of carbon sequestration. Land was scored as medium where: • Coastal and flood plain grazing marsh: this habitat class has a higher level of uncertainty as it can encompass a variety of different grassland and wetland types. Returning these areas to wetland would produce good carbon storage benefits, therefore a medium score was awarded. • Marshy grasslands and fen, marsh and swamp can be enhanced to species rich marshy grassland or to wet woodlands (depending on local biodiversity objectives), giving a medium carbon abatement gain.
Medium-high gain	This was awarded where the likely carbon abatement would be good, for example: • all bare ground was awarded this class as re-establishing a natural vegetation cover would significantly enhance the carbon sequestration. • All low productivity grasslands (e.g. Acid, Calcareous, Neutral grassland') on soil suitable for native woodland may have the potential for planting native woodland and were therefore awarded this class.
High gain	The highest benefits to sequestration are restoring the fenlands which are currently under arable and intensive grazing.
Urban	It was not in scope for this project to look at carbon values in urban areas
Water	It was not in scope for this project to look at carbon values within water bodies

Associated data file	**Value/Class name**
Carbon_abatement_opps_for_storage.gpkg	1 - Maintain - enhance existing habitats: hex colour: #ffffd4

	2 - Low gain: hex colour: #fed98e 4 - Medium gain: hex colour: #fe9929 5 - Medium-high gain: hex colour: #d95f0e 6 - High gain: hex colour: #993404 7 - Urban: hex colour: #888888 8- Water: hex colour: #41b6c4

Areas of high importance for recreation: input datasets

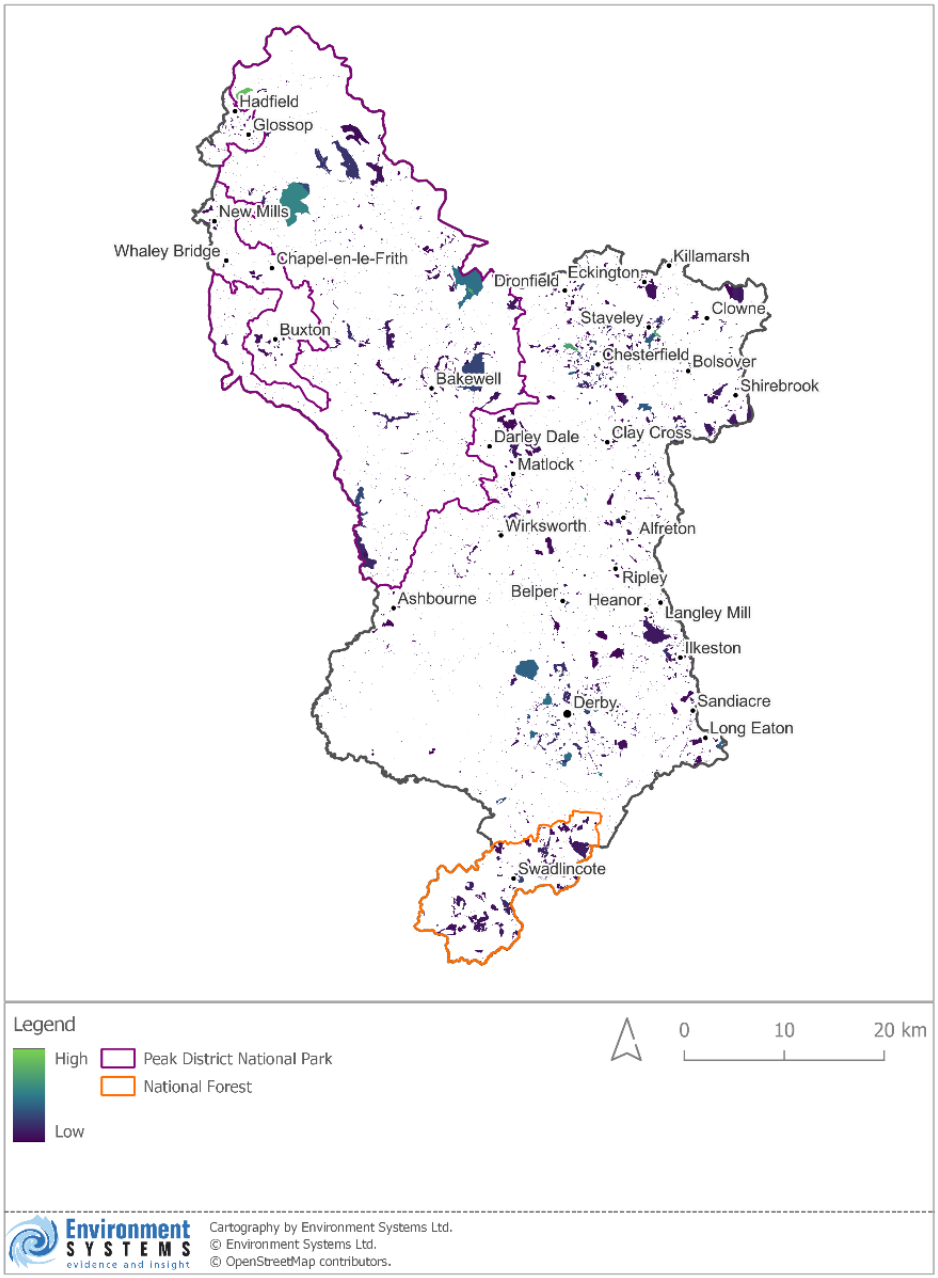


This map shows the type and distribution of input data used to produce the recreation maps, sourced from the following datasets:

- HAR habitat classes 105, 165, 180, 181, 182, 184
- Country Parks
- Amenity greenspaces
- Sports pitches and playing fields
- Paths and access points
- Parks
- Open green spaces
- CRoW access land

Associated data file	Value/Class name
Recreation_Inputs_HAR_Recreation	hex colour: #838383

Areas of high importance for recreation in terms of visitor numbers



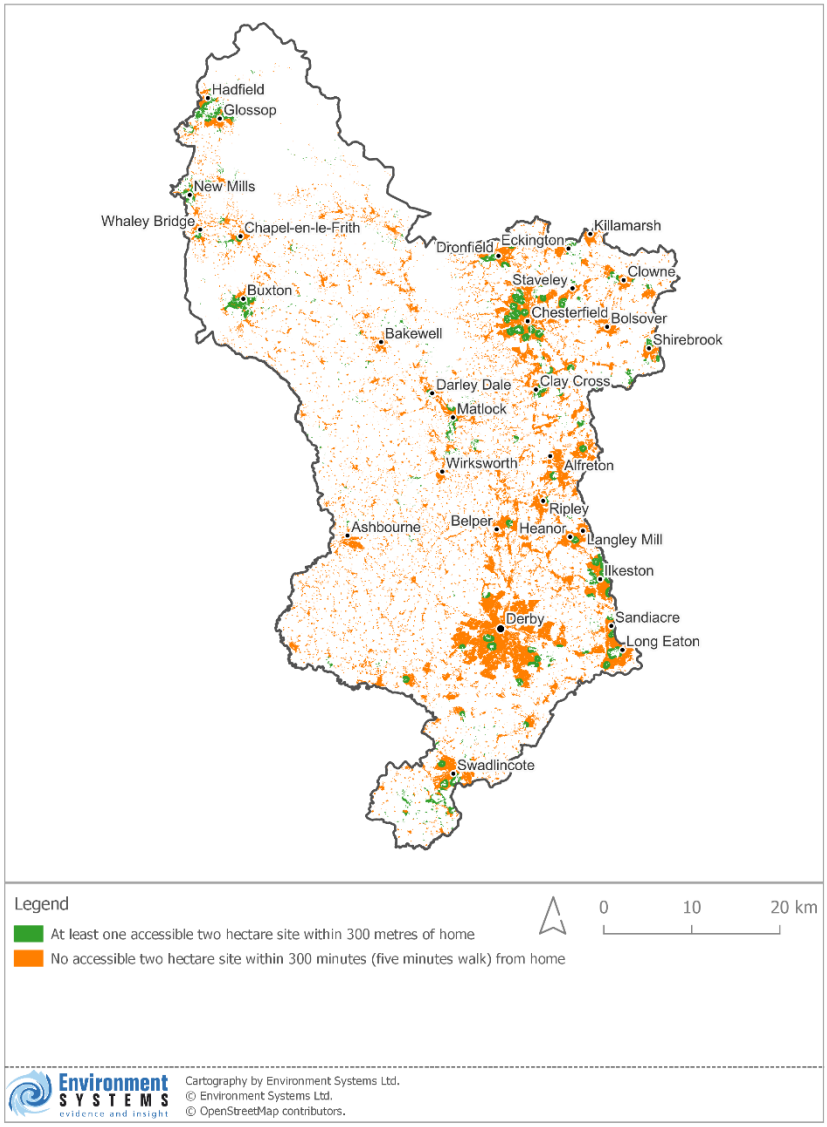
This map was created by compiling spatial datasets representing recreational assets and assessing the relative number of visitors to each feature using ORVal (Outdoor Recreation Valuation Tool Version 2.0). This was done by extracting the underlying HAR habitat classes for each polygon and assigning the corresponding ORVal classification to each habitat type, as shown in the table below. The attributed recreation features were then uploaded to ORVal, which assigned modelled visitor numbers to each feature.

ORVal class	Corresponding HAR Habitat IDs / feature parameters
Area in Hectares / Length in km	Polygon area / polyline length

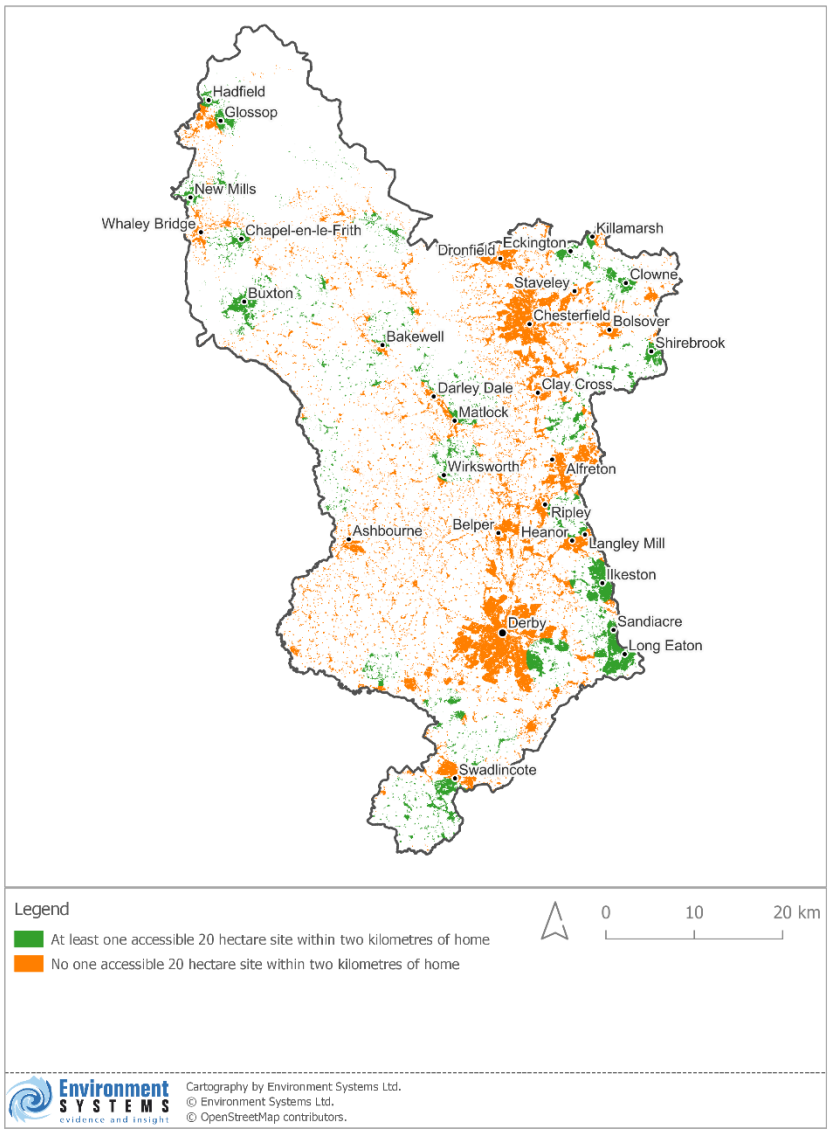
Landcover Managed Grass	1, 73, 75
Landcover Sports Pitch	184
Landcover Formal Garden	103, 104, 182
Landcover Agriculture	12, 13, 15, 16, 41, 43, 48, 69, 72, 87, 158, 159, 168, 171, 189
Landcover Allotment	105
Landcover Cemetery	180
Landcover Wood Coniferous	150, 151, 152
Landcover Wood Broadleaf	113, 114, 121, 123, 124, 125, 126, 127, 128, 130, 131, 133, 136, 137, 138, 141, 142, 143, 144, 145, 146, 147, 148
Landcover Wood Young/felled	118, 129, 154
Landcover Wood Unknown Type	107, 108, 109, 111, 112, 115, 117, 119, 120, 149, 162, 173
Landcover Wood Pasture	170
Landcover Natural Grass	44, 45, 46, 47, 49, 51, 52, 53,54, 55, 57, 58, 60, 61, 64, 65, 66, 69, 70, 71, 106, 168, 170, 171, 175, 178, 183, 195
Landcover Moors Heath	20, 21, 22, 24, 26, 27, 28, 29, 37, 77, 78, 79, 80, 81, 83, 84, 85, 86, 87, 88, 89, 99, 100, 157
Landcover Fen Marsh	17, 18, 19, 30, 31, 32, 34, 35, 36, 37, 38, 40, 161, 174
m of River/Canal margin	174
m of Lake/Reservoir margin	Perimeter of HAR reservoir polygons
River Water Quality	Assigned to WFD river segments based on quality status (1 = High Quality, 0 = Low Quality)
Playground	181

Associated data file	**Value/Class name**
Recreation_high_importance.gpkg	Range: 588 – Low: purple 350405 – High: green

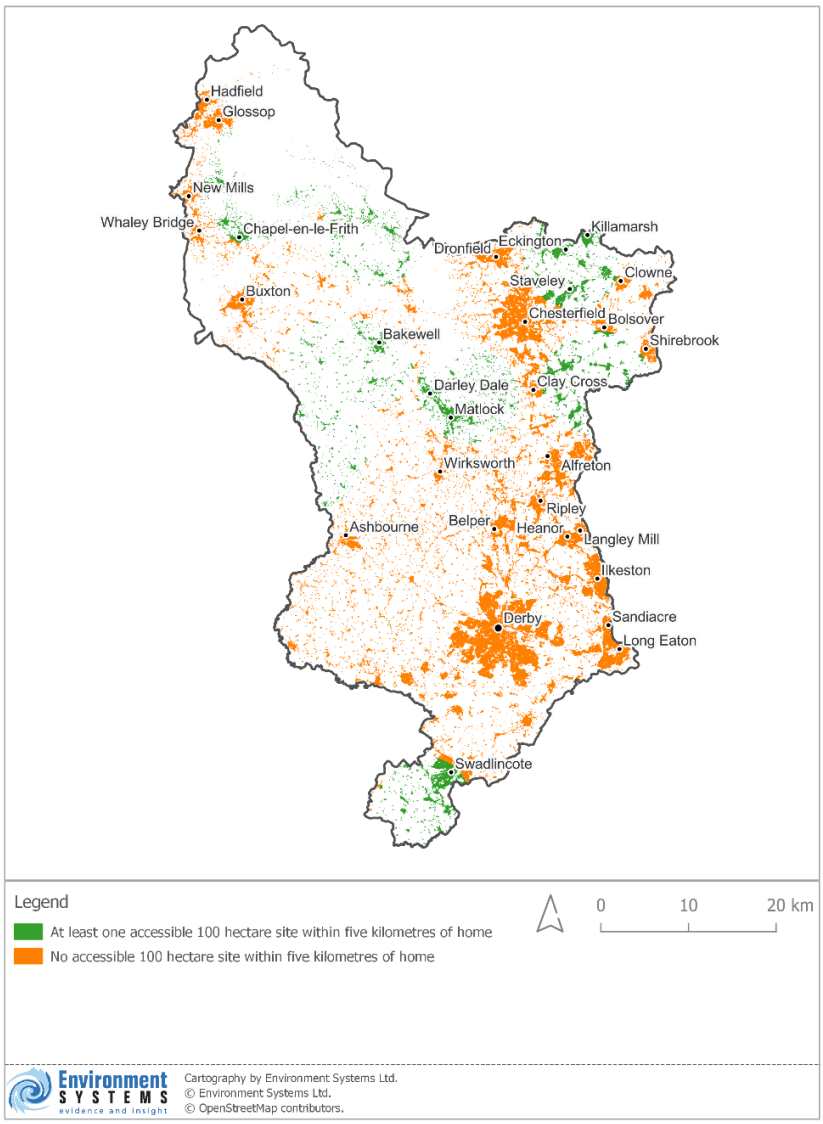
Recreation risks: urban areas with and without access to a 2ha site



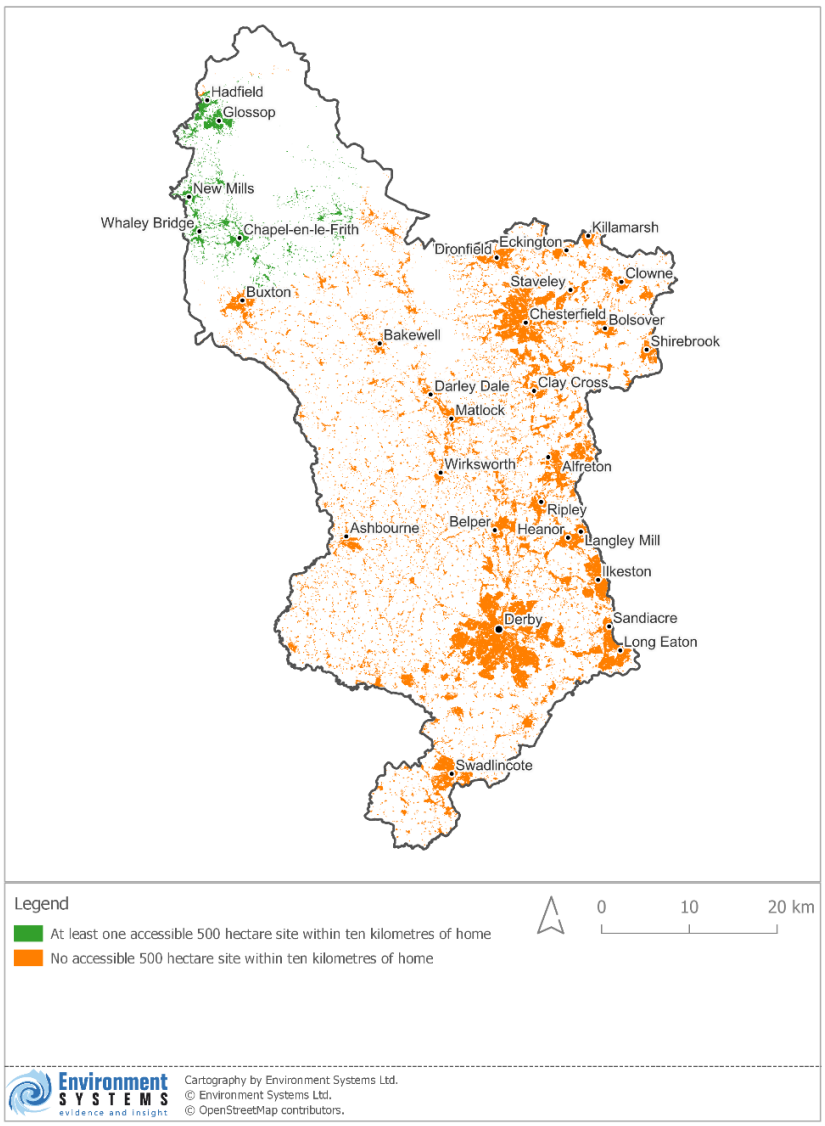
Recreation risks: urban areas with and without access to a 20ha recreational site



Recreation risks: urban areas with and without access to a 100ha recreational site



Recreation risks: urban areas with and without access to a 500ha recreational site



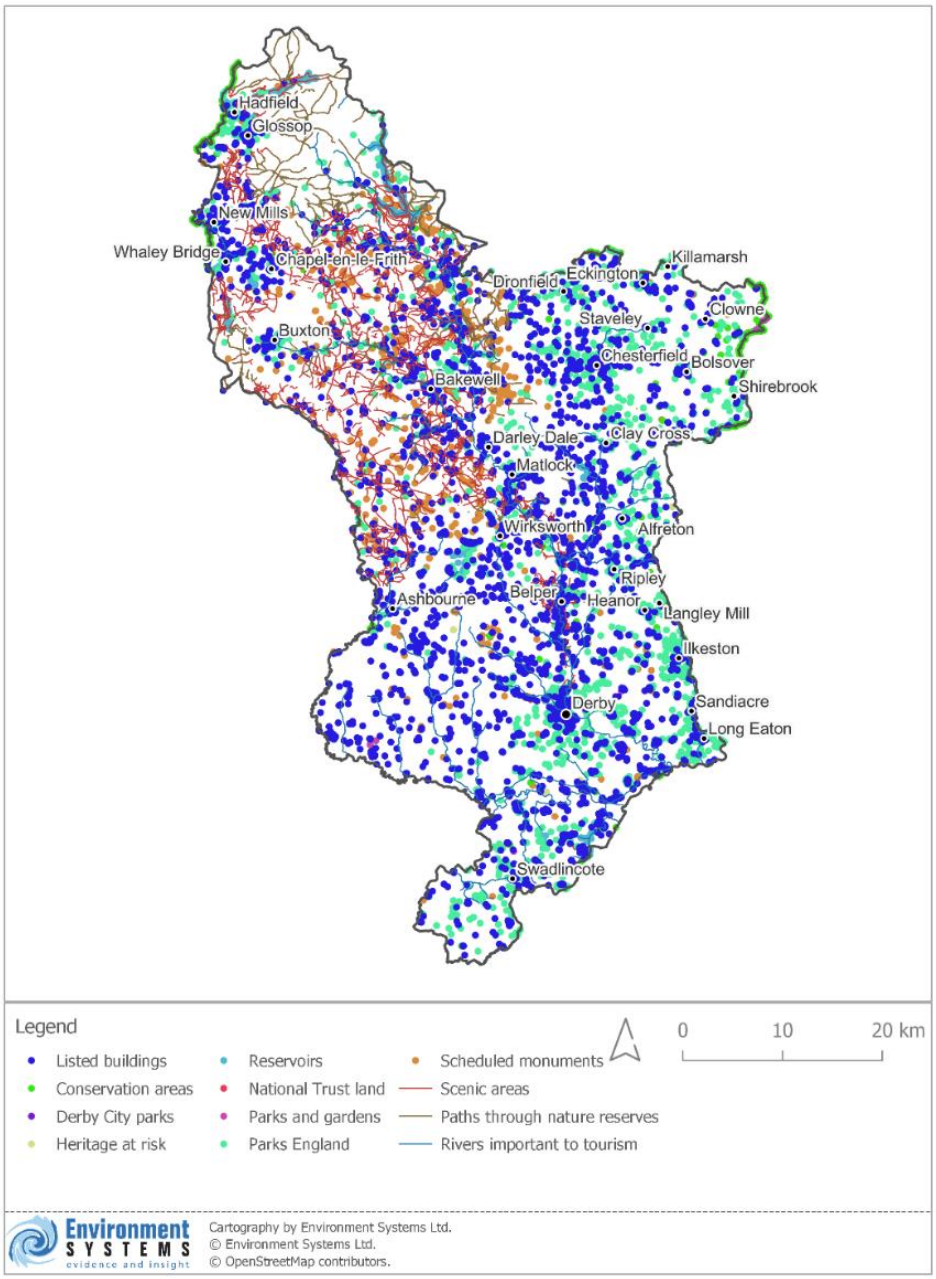
Recreation risk was assessed as residential areas that do not currently have sufficient access to greenspace according to the ANGst criteria. Settlement areas (OS Vectormap data) were buffered according to the ANGSt thresholds, and recreation features meeting the required size criteria were identified. This allowed the settlement areas to be divided into areas with and without greenspace access within the required distance. Analyses of the different greenspace criteria are shown on separate maps, as detailed below:

Map figure name	Angst criteria
Figure 44: Recreation risks: urban areas with and without access to a 2ha site	A site of at least 2ha in size within 300 m (5 minutes' walk) of home
Figure 45: Recreation risks: urban areas with and without access to a 20ha site	A site of at least 20 ha in size within 2km of home

Figure 46: Recreation risks: urban areas with and without access to a 100ha site	A site of at least 100 ha in size within 5km of home
Figure 47: Recreation risks: urban areas with and without access to a 500ha site	A site of at least 500 ha in size within 10km of home

Associated data file	Value/Class name
Recreation_Risk_300.gpkg	Buff_300: Of at least 2 hectares in size, no more than 300 metres (5 minutes walk) from home: hex colour: #33a02c Buff_300: Null - More than 300 metres (5 minutes walk) from home: hex colour: #ff7f00
Recreation_Risk_2k.gpkg	Buff_2k: At least one accessible 20 hectare site within two kilometres of home: hex colour: #33a02c Buff_2k: Null - No one accessible 20 hectare site within two kilometres of home: hex colour: #ff7f00
Recreation_Risk_5k.gpkg	Buff_5k: At least one accessible 100 hectare site within five kilometres: hex colour: #33a02c Buff_5k: Null - No accessible 100 hectare site within five kilometres: hex colour: #ff7f00
Recreation_Risk_10k.gpkg	Buff_10k: At least one accessible 500 hectare site within ten kilometres: hex colour: #33a02c Buff_10k: Null - No accessible 500 hectare site within ten kilometres: hex colour: #ff7f00

Areas of high importance for tourism: input datasets



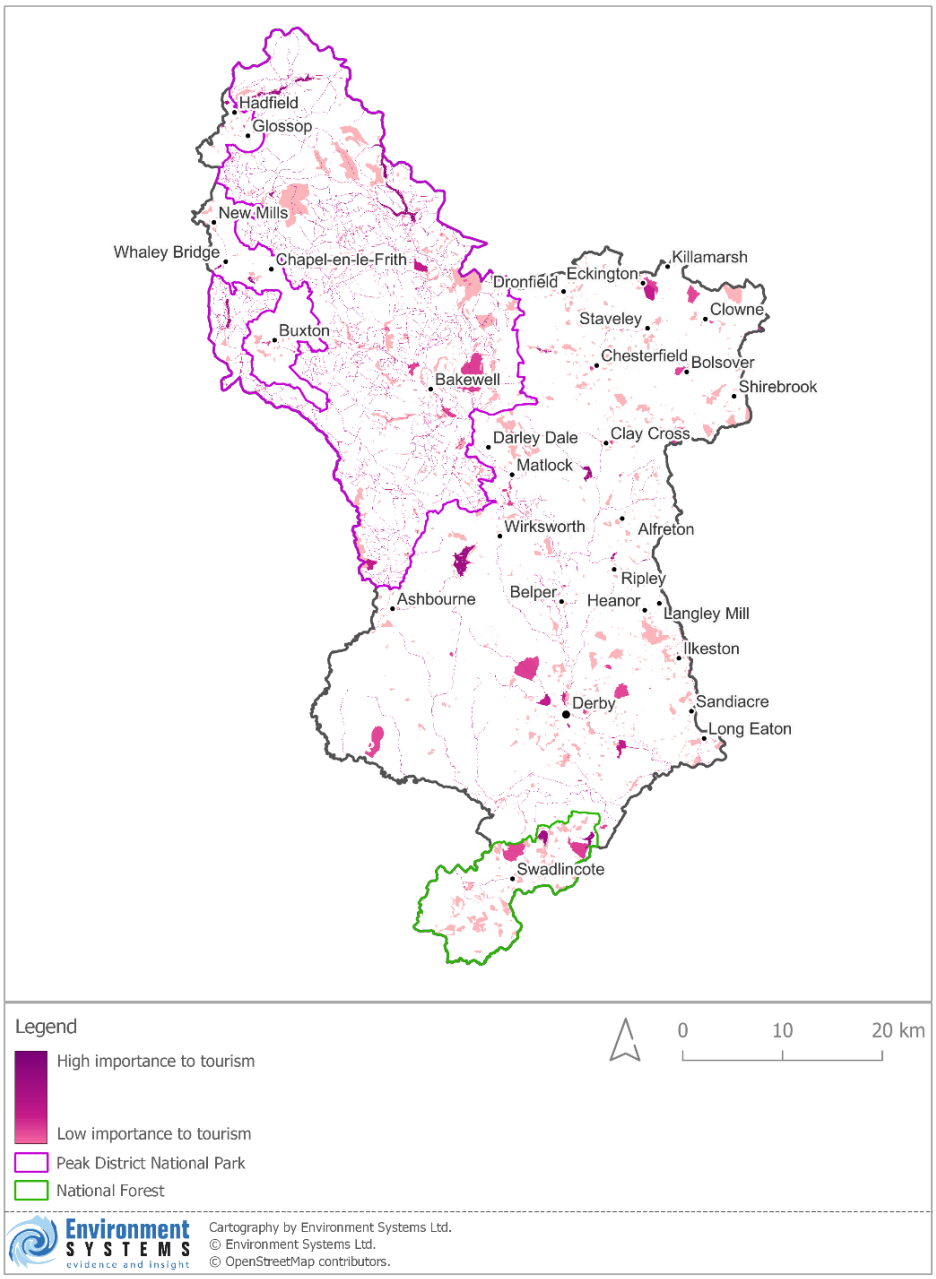
This map shows the type and distribution of input data used to produce the tourism maps, sourced from the following datasets:

- CRoW land lying within the Peak District National Park
- National Trust estates
- Registered parks and gardens
- Heritage at Risk
- Green spaces – parks
- Scheduled monuments
- Listed buildings
- Derby City parks; Darley Abbey park, Derby Arboretum, Markeaton Park only

- Reservoirs (selected from the HAR)
- Paths located within nature reserves (Ramsar sites, SACs, SPAs, NNRs, LNRs) and scenic areas (Peak District National Park, AONBs, World Heritage Sites)
- Canals
- Selected rivers: Derwent, Dove, Trent

Associated data file	Value/Class name
Tourism_Inputs_Places_of_Interest.gpkg	layer: Derby_City_parks – Derby City parks: hex colour: #791ad3 layer: HAR_Reservoirs – HAR Reservoirs: hex colour: #4ebad2

Areas of high importance to tourism: current stock



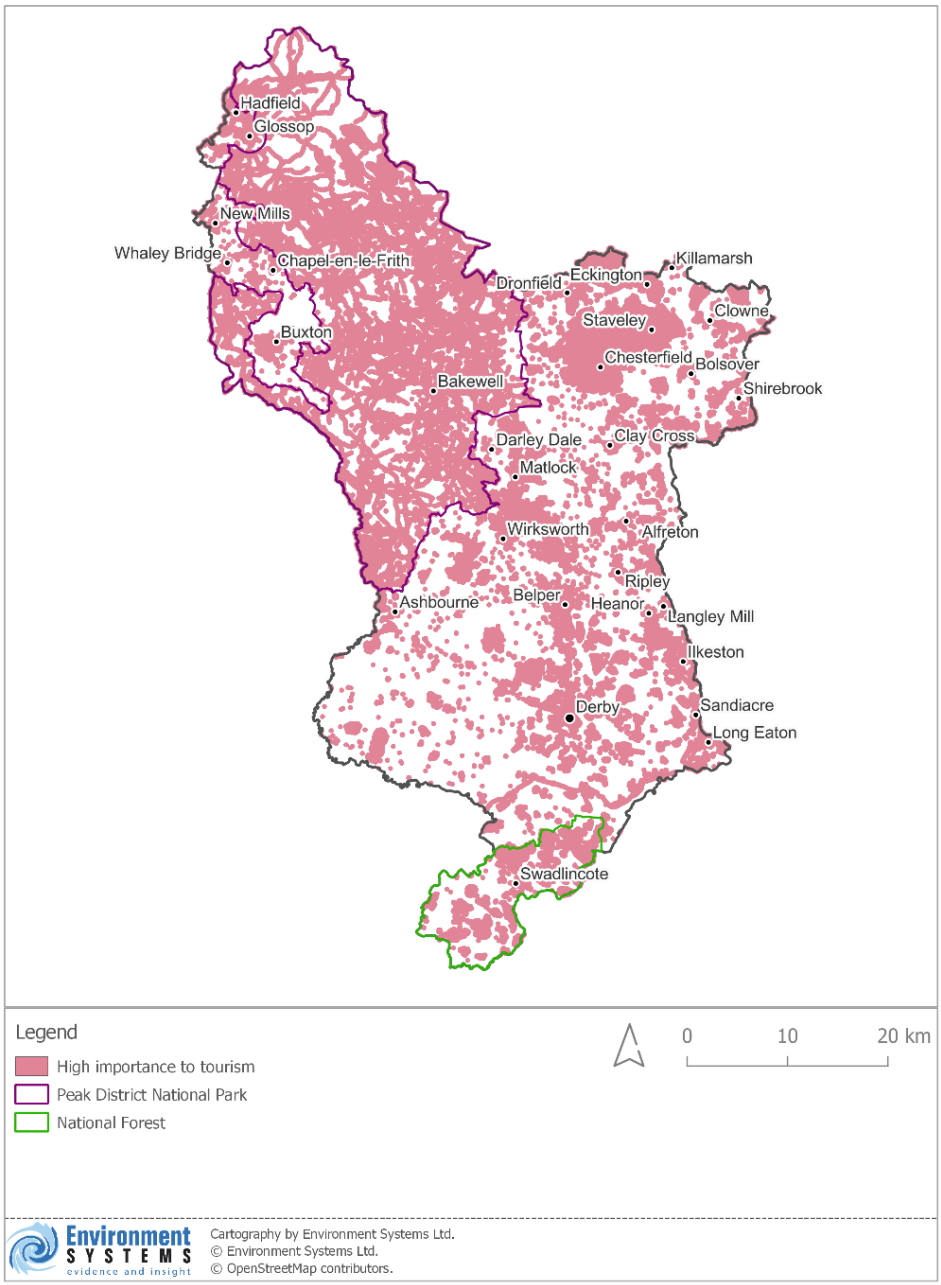
This map was created by compiling spatial datasets representing tourism assets and ranking them in terms of their relative value, as outlined in the table below.

Data input	Indicative scoring
CRoW land lying within the Peak District National Park	High
National Trust estates	High
Canals	High
Selected rivers: Derwent, Dove, Trent	High
Derby City parks; Darley Abbey park, Derby Arboretum, Markeaton Park only	High

Reservoirs (selected from the HAR)	High
Paths located within scenic areas (Peak District National Park, AONBs, World Heritage Sites)	High
Registered parks and gardens	Moderate
Heritage at Risk	Moderate
Paths located within nature reserves (Ramsar sites, SACs, SPAs, NNRs, LNRs)	Moderate
Green spaces – parks	Low
Scheduled monuments	Low
Listed buildings	Grade 1 - low Other grades - very low

Associated data file	**Value/Class name**
Tourism_High_Importance.gpkg	Range: 5 – Low: light pink 300 – High: dark pink

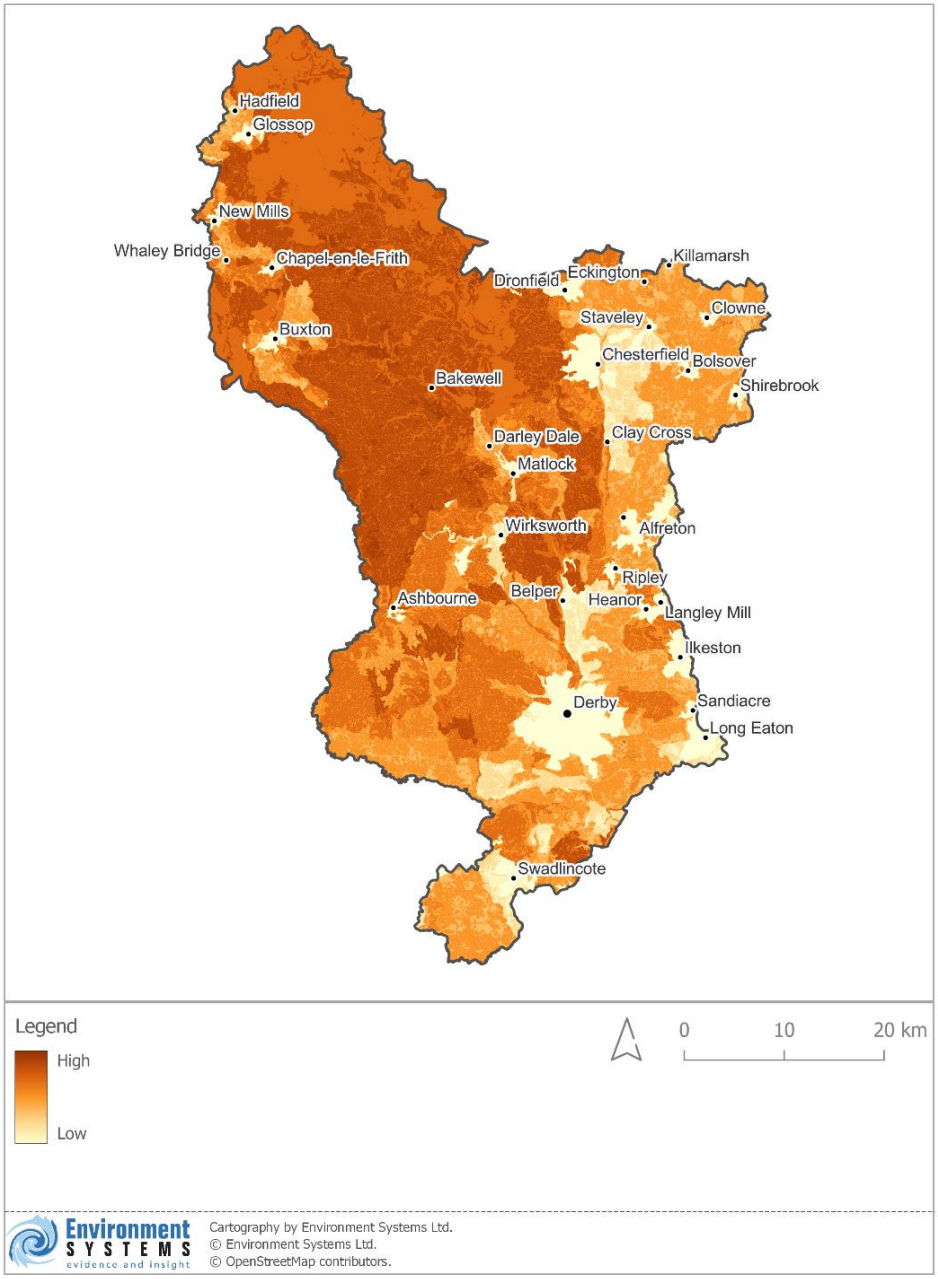
Clustered tourism sites; groupings of sites of high importance for tourism



This map was made by rasterising all of the input tourism datasets to 5m resolution, and buffering them to highlight clusters.

Associated data file	Value/Class name
Tourism_Clustering_Areas_of_High_Importance.gpkg	0: hex colour: #e28498 50: hex colour: #e28498

Relative contribution of agriculture to landscape character



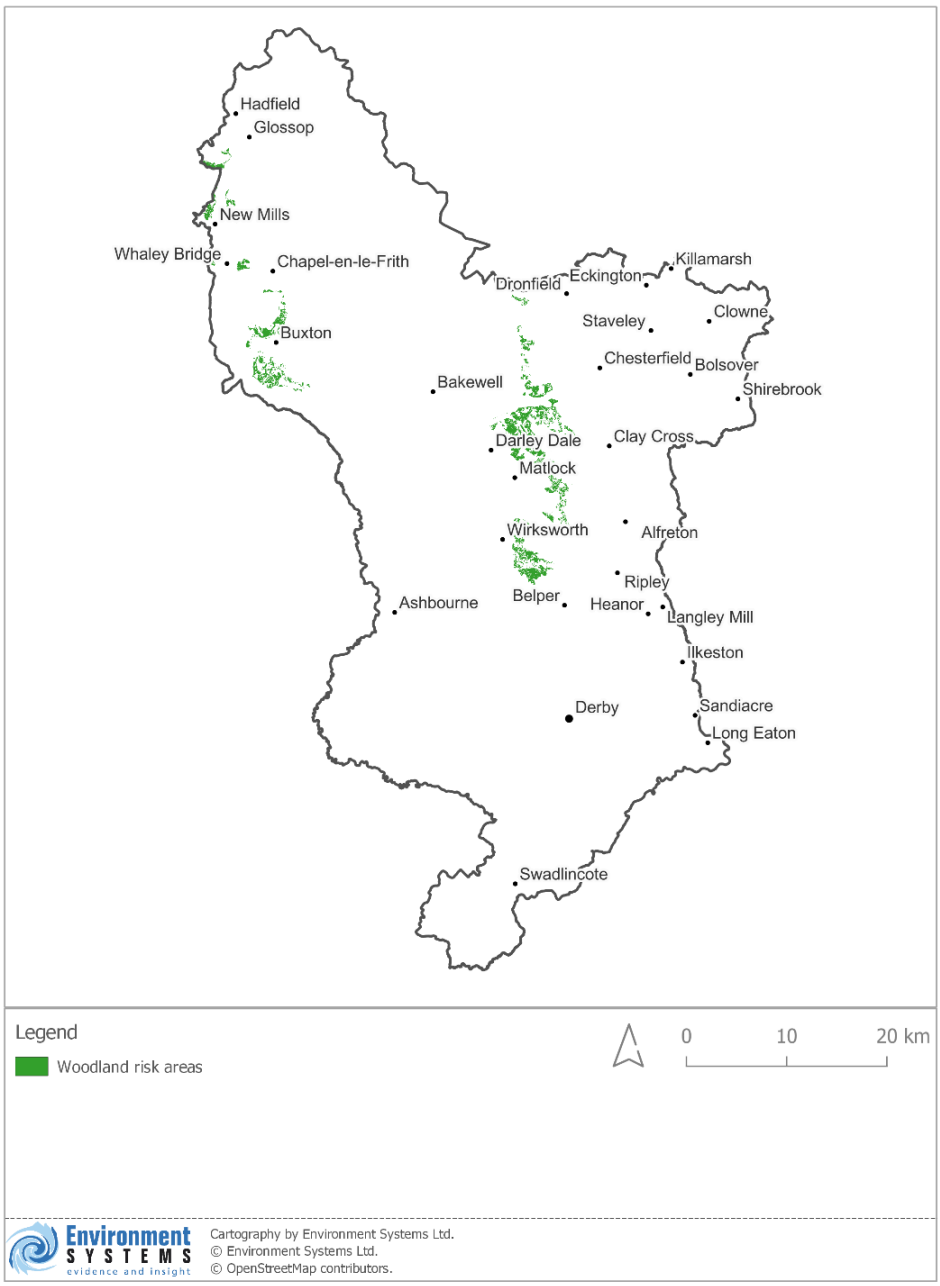
Agricultural areas were selected from the HAR and assigned a baseline score. This was then amended according to the level of visual intactness, and whether any important cultural sites are present. Input datasets were individually scored, then summed together to provide the final assessment of contribution of agriculture to landscape character.

Data input	Reason for usage	Indicative scoring
Visual intactness (October 2010 evaluation)	This dataset assesses the visual intactness of areas, using Landscape Character Types as a spatial framework. Within these areas (subdivided as necessary)	Unified: High contribution Coherent: Moderate-high contribution

	the agricultural environment forms an integral part of the assessment of intactness.	Interrupted: Moderate contribution Incoherent: Low contribution Urban: No contribution
Peak District National Park boundary	The visual intactness data does not cover the area within the national park. The national park area was therefore given an estimated visual intactness score, based on the level of land use regulation in force within the national park.	Area is within the national park: high contribution
Scheduled monuments	Cultural heritage assets add to the landscape character of an area	Low contribution
Country parks		Low contribution
Heritage at risk		Low contribution
HAR agriculture selection	The agricultural areas have an inherent value in terms of their contribution to landscape character, therefore all agricultural areas were assigned a baseline score.	Agriculture: Low-moderate contribution (baseline score)

Associated data file	**Value/Class name**
Contribution_Agri_Landscape_Character.gpkg	Range: 0 – Low: light orange 145 – High: dark orange

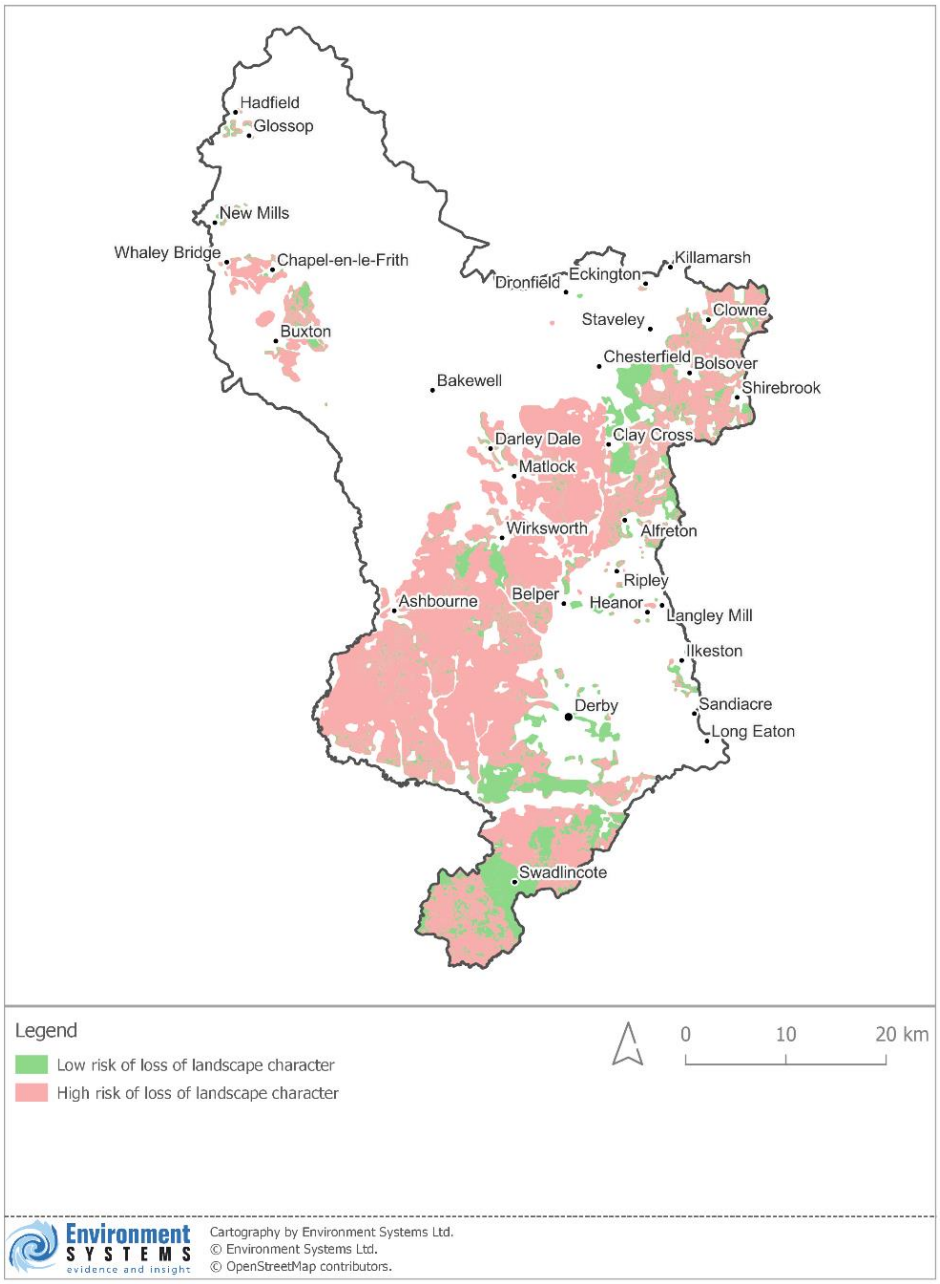
Potential risks to landscape character from woodland planting within the ecological network



This map shows areas identified as opportunity areas for woodland during the biodiversity opportunity mapping process, that occur in places where the woodland vision going forward is for the area to remain 'Open / Unwooded' according to the Landscape Character Type.

Associated data file	Value/Class name
Contribution_Agri_Landscape_Character_Woodland_Risk.gpkg	Whole dataset: Woodland risk areas hex colour: #33a02c

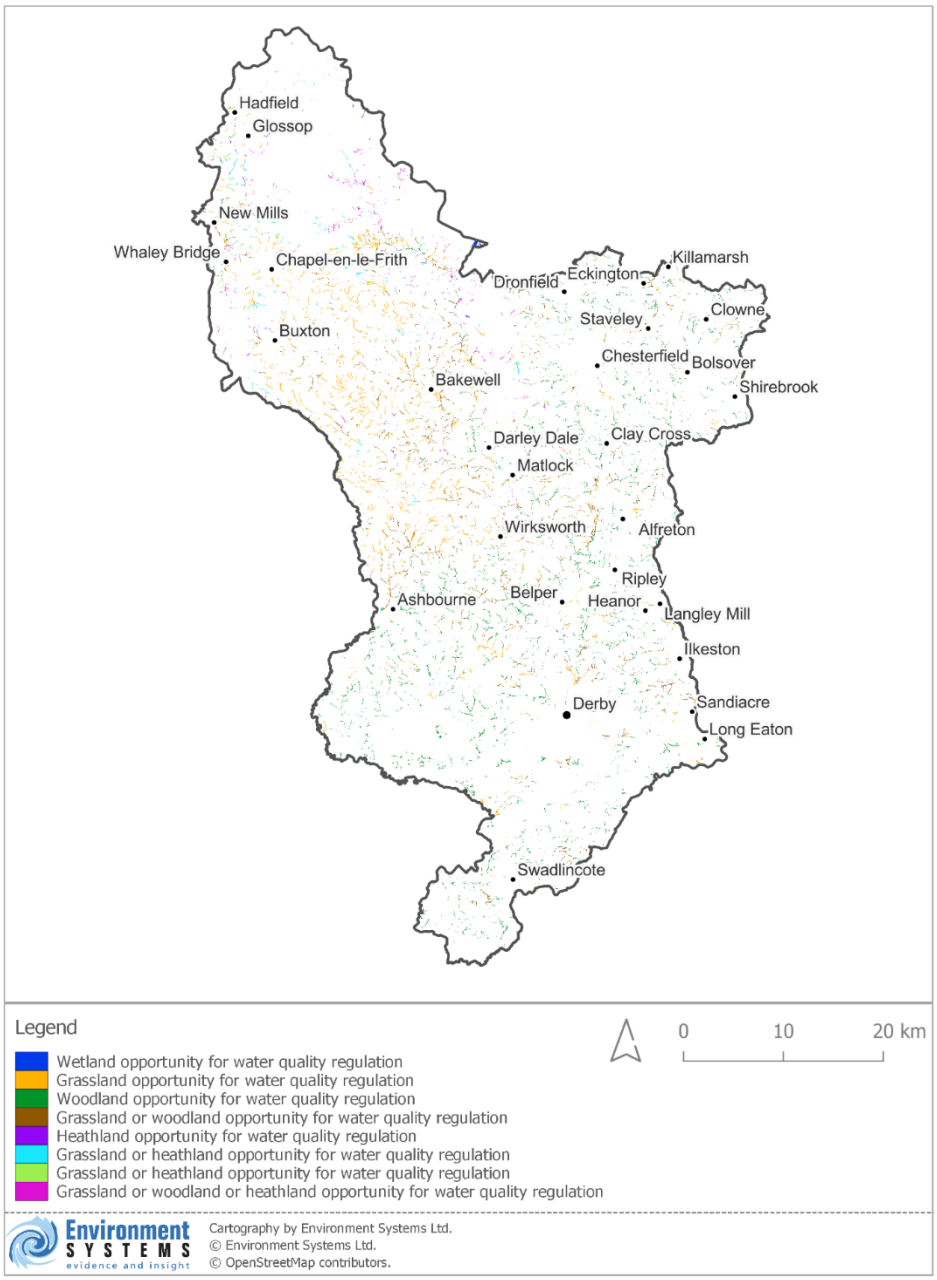
Potential risks to landscape character from solar and wind renewable energy projects



This map shows areas where the existing contribution of agriculture to landscape character has been assessed as high (in the stock map), and where there are opportunities for solar and wind renewable energy generation (as modelled under the agricultural production risks theme).

Associated data file	Value/Class name
Contribution_Agri_Landscape_Character_Renewable_Risk.gpkg	DN_1: 0 - Low risk of loss of landscape character: hex colour: #8ed88a DN_2: 1 - High risk of loss of landscape character: hex colour: #f9aead

Biodiversity and water quality regulation multi-benefits

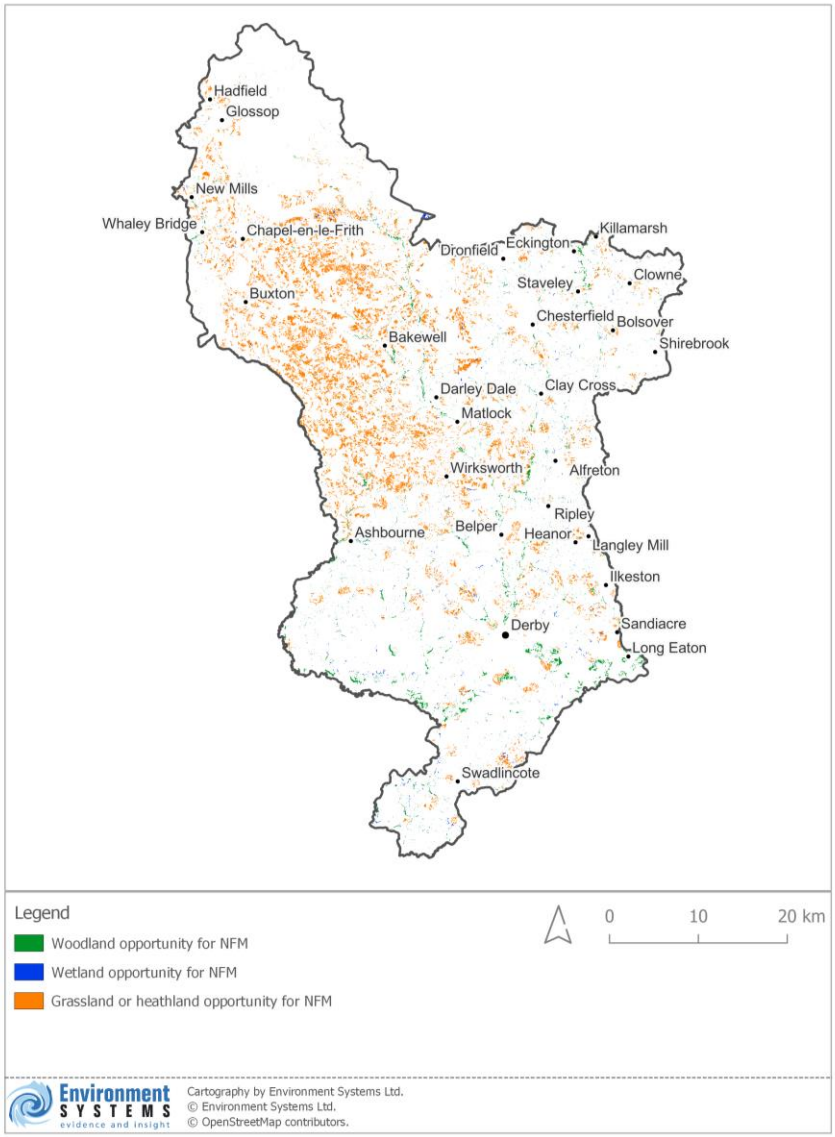


This map was created by identifying the areas of intersection between the biodiversity opportunities and the water quality regulation opportunities that were deemed compatible with each type of biodiversity opportunity. For example, wetland biodiversity opportunities would be compatible with the water quality opportunity type 'restore poor-condition peatland', but not 'create within-field headlands or small woodland clusters'.

Biodiversity opportunity type	Compatible water quality opportunity type/s
Grassland	Within-field headlands or small woodland clusters Bankside vegetation
Heathland	Within-field headlands or small woodland clusters
Wetland	Restore poor condition peatland
Woodland	Within-field headlands or small woodland clusters Bankside vegetation

Associated data file	Value/Class name
Multibenefits_Biodversity_NFM.gpkg	1 - Woodland opportunity for NFM: hex colour: #019529 10 - Wetland opportunity for NFM: hex colour: #003bea 100 - Grassland opportunity for NFM: hex colour: #ff7f00

Biodiversity and NFM multi-benefits

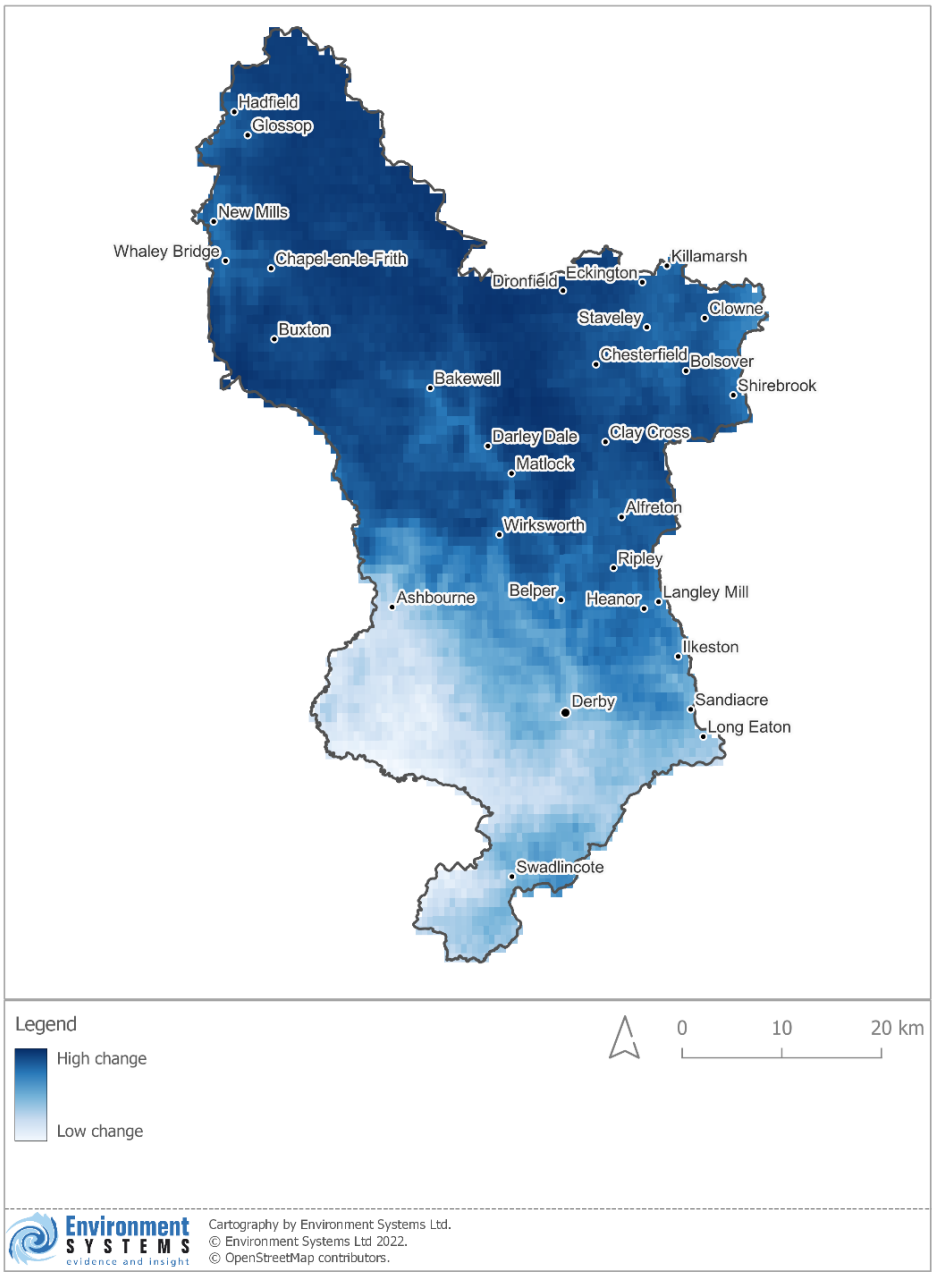


This map was created by identifying the areas of intersection between the biodiversity opportunities and the NFM opportunities that were deemed compatible with each type of biodiversity opportunity. For example, wetland biodiversity opportunities would be compatible with the NFM opportunity types 'restore peatlands' and 'create wetland', but not 'plant hedgerows'.

Biodiversity opportunity type	Compatible NFM opportunity type/s
Grassland	Deep rooted leys/species rich meadows
Wetland	Restore poor condition peatland Create wetland
Woodland	Plant hedgerows Create wet woodland

	Create riparian woodland

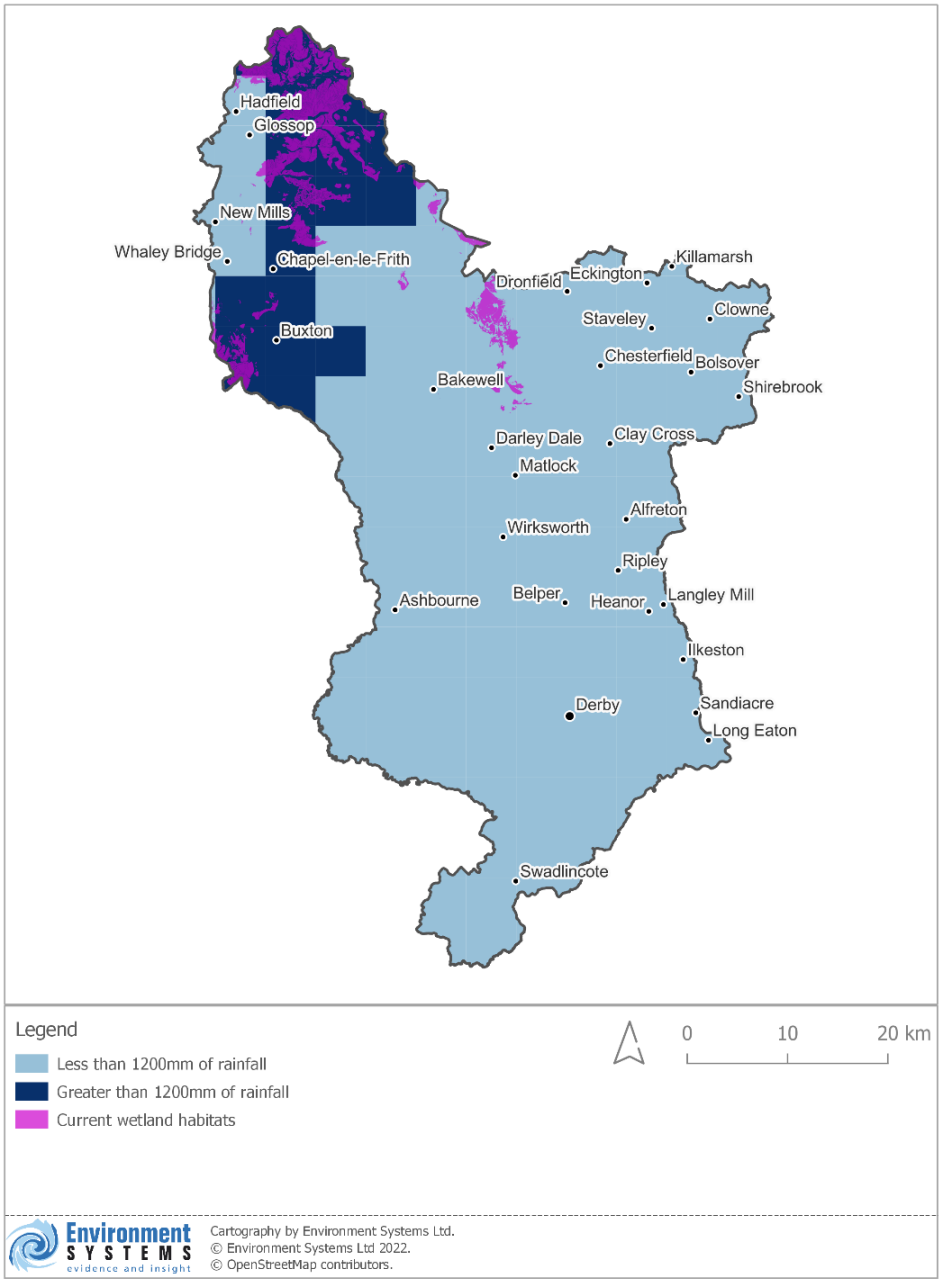
Change in seasonality of precipitation (right) between the present day and 2080 (WorldClim ssp370)



This map was generated by analysis of 30 arc second (approximately 1km) WorldClim historical and future climate data for Bioclimatic Variable 15; Precipitation Seasonality (Coefficient of Variation); SSP370. Values from the 2061-2080 data were subtracted from the historical data (representing an average of the period 1970-2000) in order to calculate the difference. The mean value across all available climate models was used. Higher values

indicate a larger increase in the seasonality of precipitation events; lower values indicate a smaller increase in the seasonality of precipitation events.

Comparison of areas receiving at least 1200mm Annual Average Rainfall in the present day



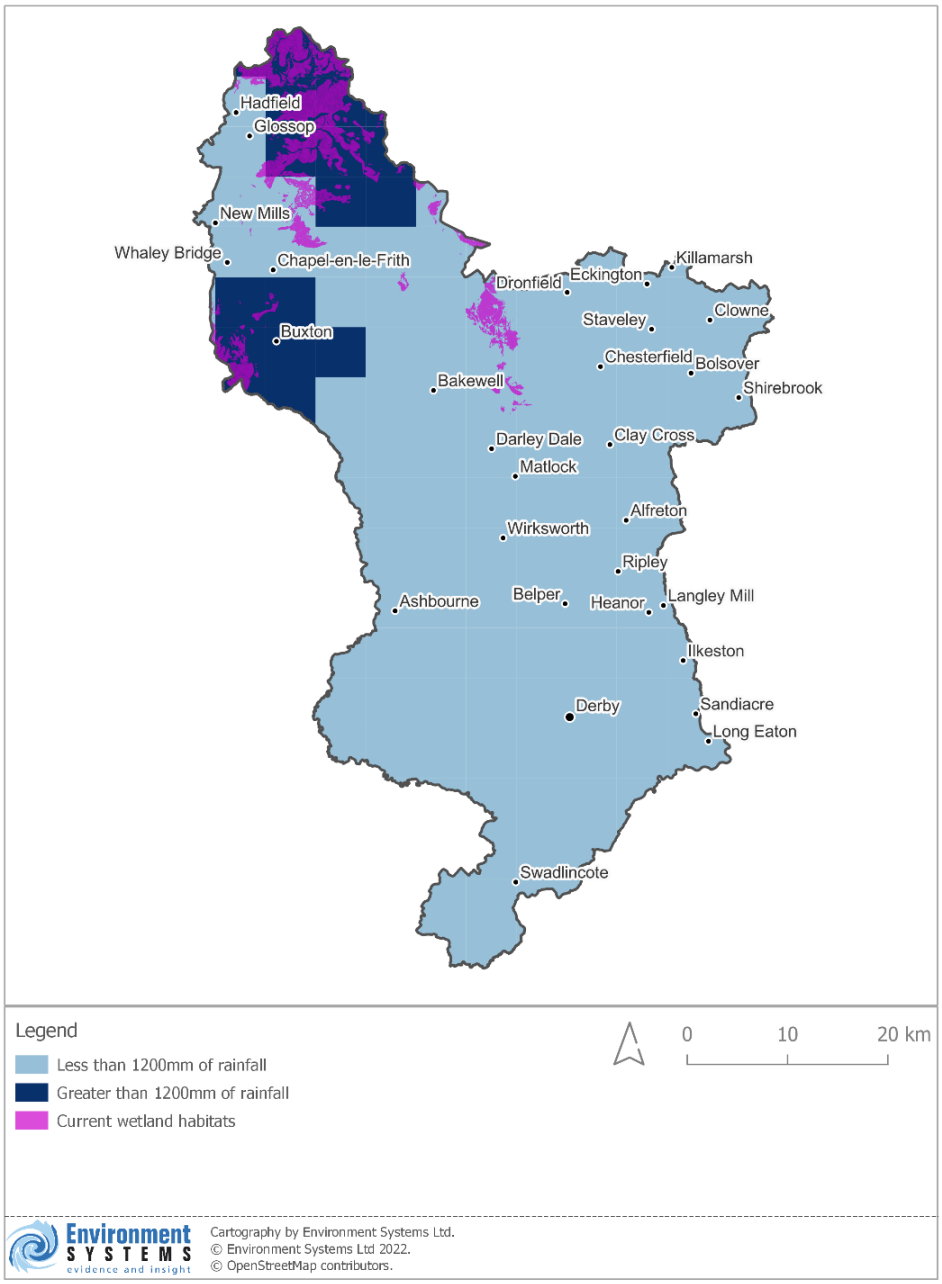
This map was generated by displaying 30 arc second (approximately 1km) historical WorldClim 2.1 data for Annual Average Rainfall, representing an average of the period 1970-2000. The rainfall data is overlain by a selection of wetland habitats from the Habitat Asset Register.

References:

WorldClim Historical climate data. https://www.worldclim.org/data/worldclim21.html [Accessed 2022-09-12]

Fick, S.E. and R.J. Hijmans, 2017. WorldClim 2: new 1km spatial resolution climate surfaces for global land areas. International Journal of Climatology 37 (12): 4302-4315

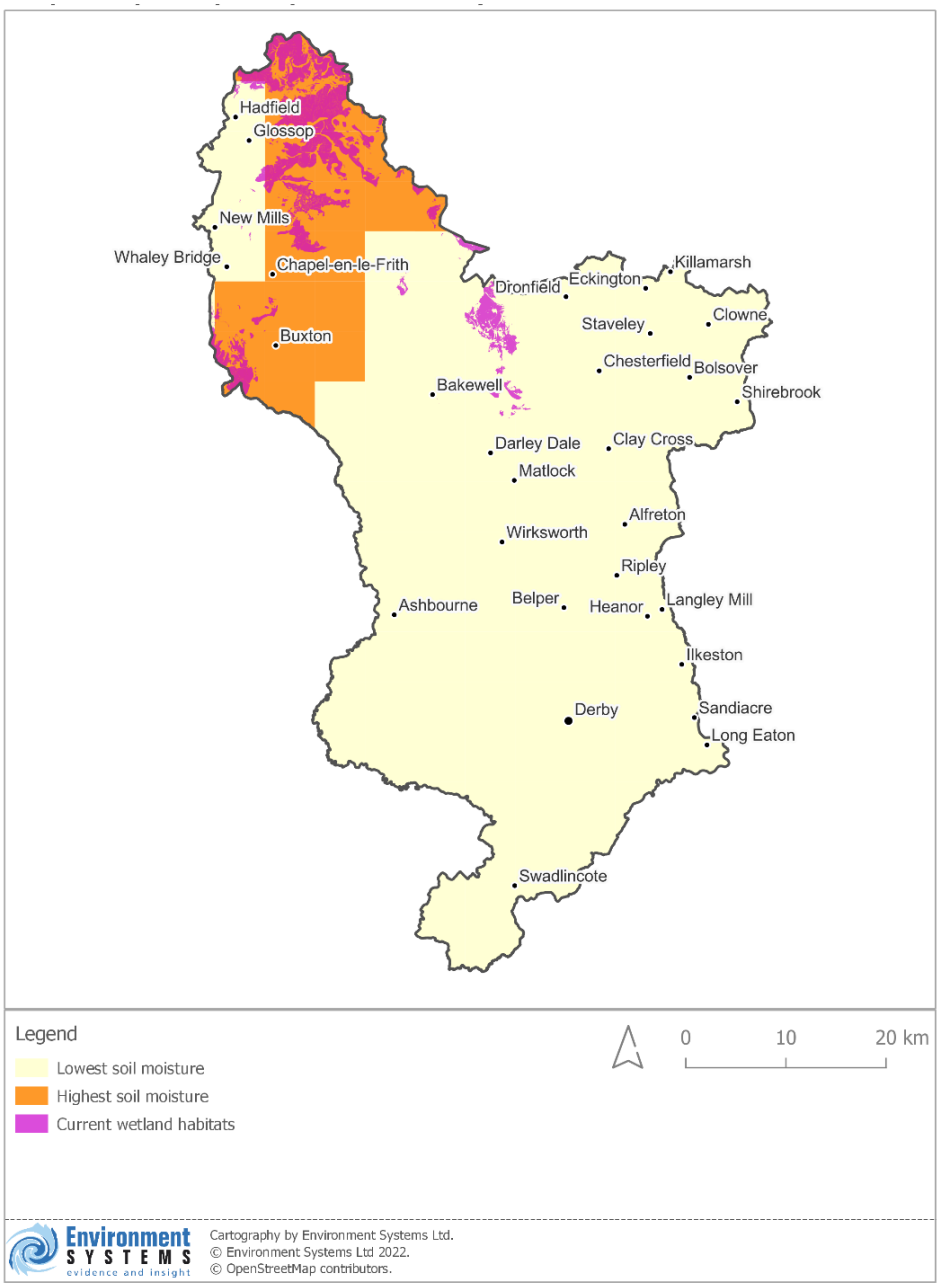
Comparison of areas receiving at least 1200mm Annual Average Rainfall in 2080 (UKCP18 RCP 6.0)



This map was generated by displaying 30 arc second (approximately 1km) WorldClim future climate data for Annual Average Rainfall, representing an average of the period 2061-2080 under Shared Socio-economic Pathway (SSP) 370. The mean value across all available

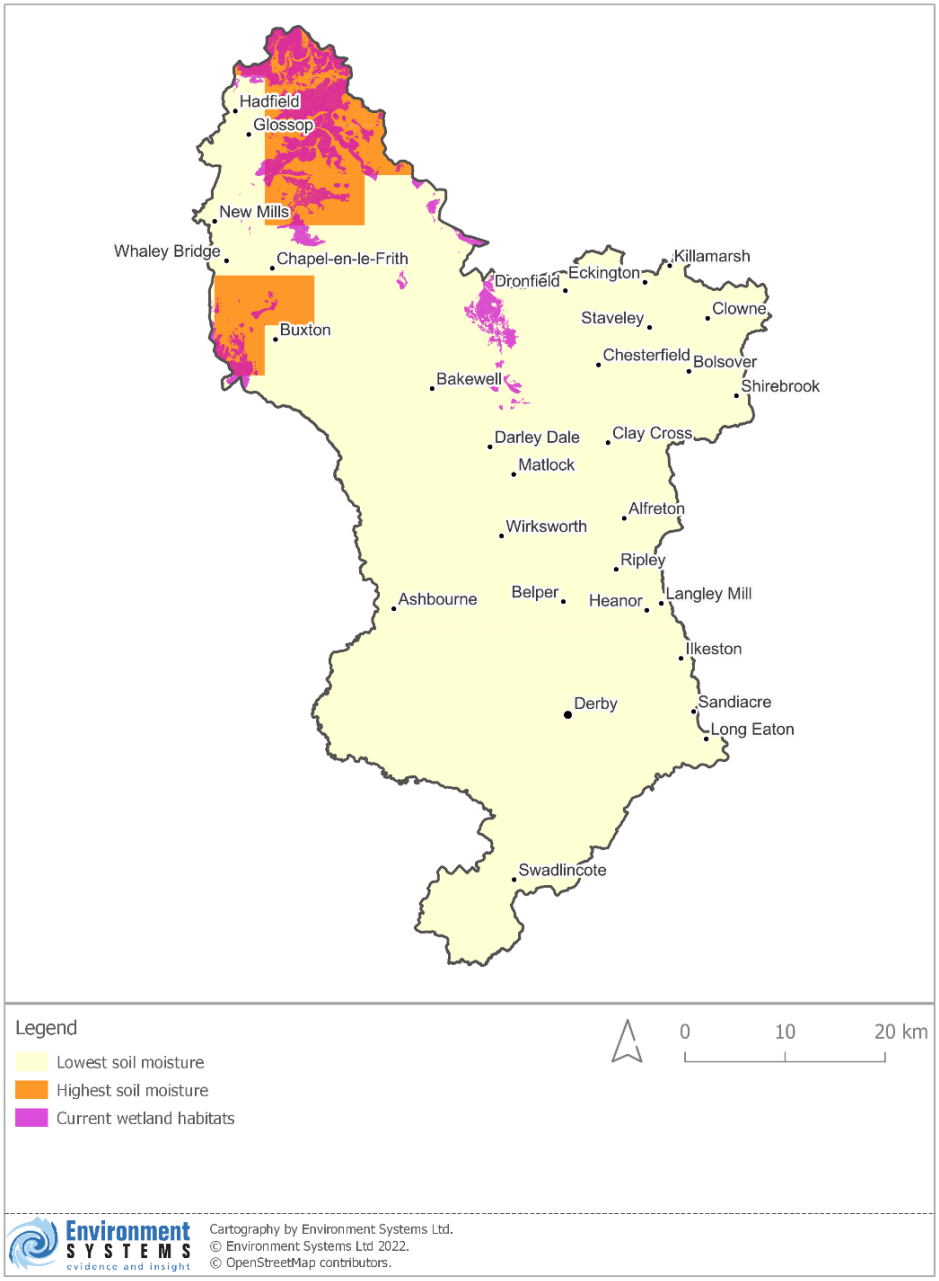
climate models was used. The rainfall data is overlain by a selection of wetland habitats from the Habitat Asset Register.

Comparison of areas where the soil experiences at least 270 Field Capacity Days in the present day (left)



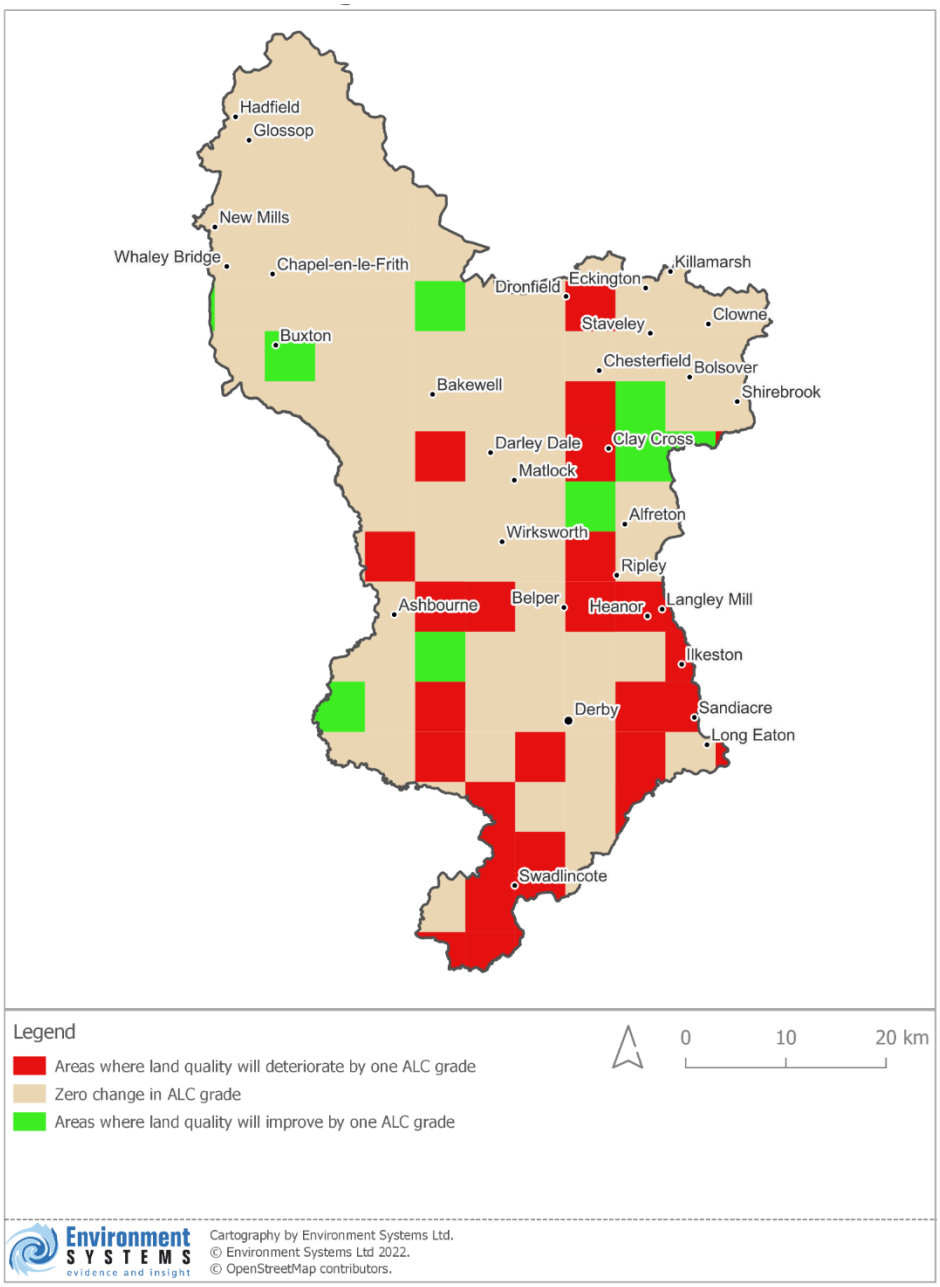
17 This map used modelled ALC data generated from UKCP18 climate change model data for 2020 under a medium GHG emissions scenario (RCP 6.0); Keay, 2020. The map shows areas predicted to receive greater than and less than 270 field capacity days (FCD) per year (FCD being the state of a soil holding as much water against gravity as physically possible, following saturation and free drainage).

Comparison of areas where the soil experiences at least 270 Field Capacity Days in 2080 (UKCP18 RCP 6.0)



This map used modelled ALC data generated from UKCP18 climate change model data for 2080 under a medium GHG emissions scenario (RCP 6.0); Keay, 2020. The map shows areas predicted to receive greater than and less than 270 field capacity days (FCD) per year.

Predicted changes in Agricultural Land Classification grade between the present day and 2080 (UKCP18 RCP 6.0)

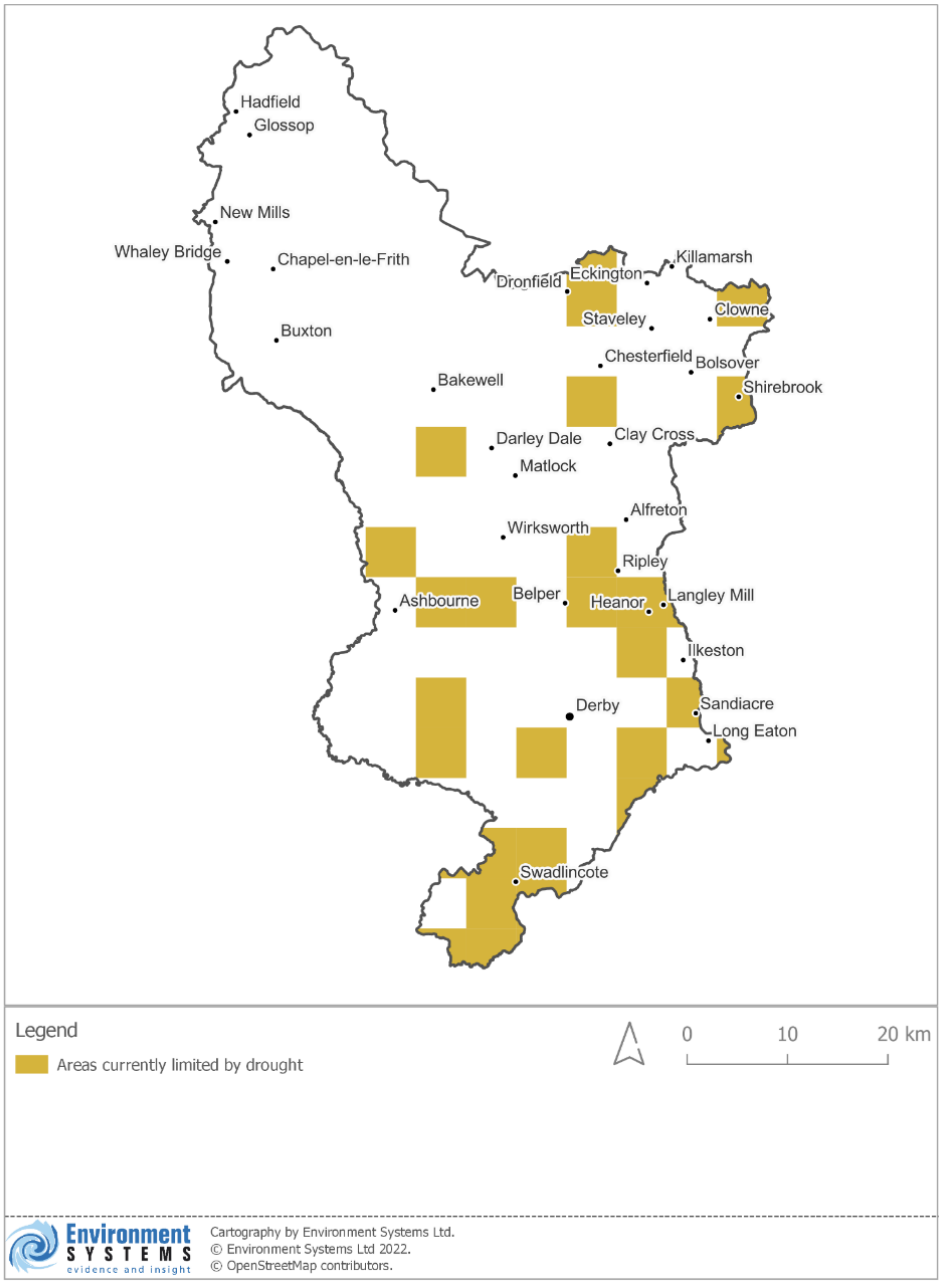


This map used modelled ALC data generated from UKCP18 climate change model data for 2020 and 2080. The UKCP18 scenarios predict conditions that will be experienced under a medium GHG emissions scenario (RCP 6.0); these models were used to generate forecasts of ALC grade, on a 5km grid; Keay, 2020. A comparison was undertaken between the 2020 grade and the 2080 grade, to identify locations where agricultural land quality improved, deteriorated, or remained static.

References:

Keay, C. 2020. Capability, Suitability & Climate Programme Rerun SP1104 with UKCP18 data. Available at: https://gov.wales/sites/default/files/publications/2021-04/capacity-suitability-climate-programme-2012-study-rerun.pdf [Accessed 2022-09-12]

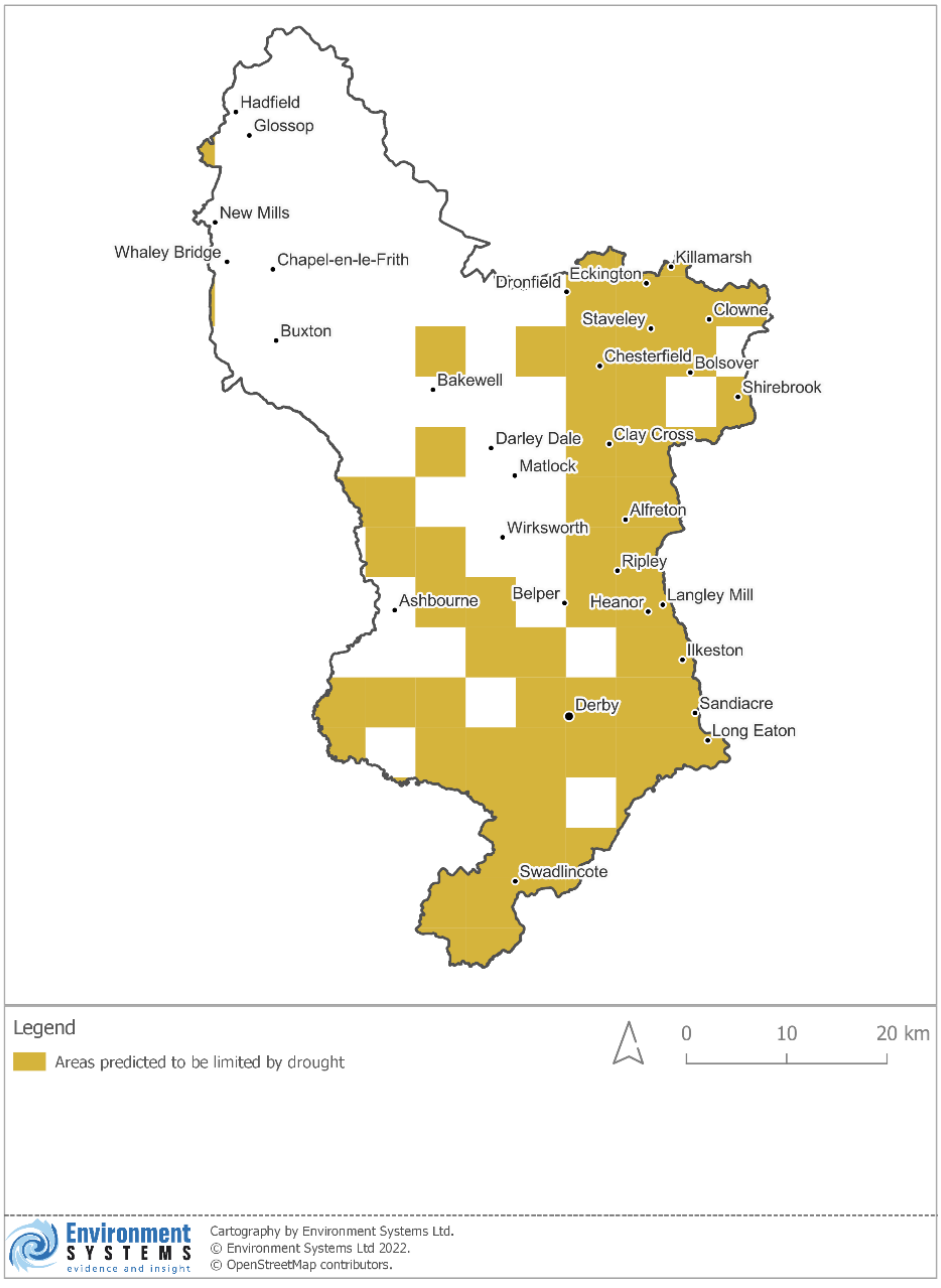
Areas where drought is a significant limiting factor for agriculture: present day UKCP18 RCP 6.0



This map used modelled ALC data generated from UKCP18 climate change model data for 2020 under a medium GHG emissions scenario (RCP 6.0); Keay, 2020. Areas where drought is listed as a limiting factor, either alone or in combination with other limiting factors, are highlighted on the map.

References:
Keay, C. 2020. Capability, Suitability & Climate Programme Rerun SP1104 with UKCP18 data. Available at: https://gov.wales/sites/default/files/publications/2021-04/capacity-suitability-climate-programme-2012-study-rerun.pdf [Accessed 2022-09-12]

Areas where drought is a significant limiting factor for agriculture: UKCP18 RCP 6.0



This map used modelled ALC data generated from UKCP18 climate change model data for 2080 under a medium GHG emissions scenario (RCP 6.0); Keay, 2020. Areas where drought is

listed as a limiting factor, either alone or in combination with other limiting factors, are highlighted on the map.

References:

Keay, C. 2020. Capability, Suitability & Climate Programme Rerun SP1104 with UKCP18 data. Available at: https://gov.wales/sites/default/files/publications/2021-04/capacity-suitability-climate-programme-2012-study-rerun.pdf [Accessed 2022-09-12]

Derbyshire Natural Capital Strategy – Appendix 6

Contents

Appendix 6 – Natural Capital sub regional accounts

Overview

The appendix presents the Natural Capital Asset Accounts for the sub boundaries within Derbyshire County listed below. The sub boundary accounts are a sub-division of the Derbyshire account, applying the same methods where possible. Refer to the main report for more information on the methodology and the overall Derbyshire Account.

- Administrative boundaries:
    - Amber Valley
    - Bolsover
    - Chesterfield
    - Derbyshire Dales
    - Erewash
    - High Peak
    - Northeast Derbyshire
    - South Derbyshire
    - Derby City
- Natural Character Areas:
    - Dark Peak
    - White Peak
    - Derbyshire Peak Fringe and Lower Derwent
    - Nottinghamshire, Derbyshire and Yorkshire Coalfield
    - Southern Magnesian Limestone
    - Needwood and South Derbyshire Claylands
    - Trent Valley Washlands
    - Melbourne Parklands
    - Leicestershire and South Derbyshire Coalfield
    - Mease/Sence Lowlands
- Peak District National Park

Method

The approach to developing the Derbyshire baseline account is based on the Corporate Natural Capital Account (CNCA) framework for the Natural Capital Committee in 2015 (eftec, RSPB and PWC, 2015). This framework is also the basis of BSI:8632 on Natural Capital Accounting for Organizations. The methods used to estimate physical and monetary flows of ecosystem service benefits within the account are consistent with

government guidance and Defra's 'Enabling a Natural Capital Approach' (ENCA) (Defra, 2020a).

Error! Reference source not found. summarises the coverage of ecosystem services across different services the natural capital asset accounts. Some services not quantified and valued at finer scales due to data limitations.

Key	●	◖	○	
Description	Material benefit; data received; analysis completed	Material benefit; Data received; analysis incomplete or not reflective of all benefits	Material benefit; data not received; analysis incomplete	Not assessed

Table 1: Scope of the accounts

		Derbyshire County	Administrative boundaries									Peak District National Park
ES Category	**Private & Public Benefits**	**Derbyshire County**	**Amber Valley**	**Bolsover**	**Chesterfield**	**Derbyshire Dales**	**Erewash**	**High Peak**	**Northeast Derbyshire**	**South Derbyshire**	**Derby City**	**Peak District National Park**
Provisioning services	Agricultural output	●	●	●	●	●	●	●	●	●	●	●
	Timber	●	●	●	●	●	●	●	●	●	●	●
	Water supply	●	●	●	●	●	●	●	●	●	●	
	Renewable energy	●	●	●	●	●	●	●	●	●	●	
	Minerals	●	●	●	●	●	●	●	●	●	●	●
Regulating services	Climate regulation	●	●	●	●	●	●	●	●	●	●	●
	Air quality regulation	●	●	●	●	●	●	●	●	●	●	●
Cultural services	Recreation	●	●	●	●	●	●	●	●	●	●	○
	Physical health	●	●	●	●	●	●	●	●	●	●	○
	Tourism	●	●	●	●	●	●	●	●	●	●	◖
	Education	◖	○	○	○	○	○	○	○	◖	○	◖
	Volunteering	◖	○	○	◖	○	○	○	○	◖	◖	◖
Bundled services	Water quality	●	●	●	●	●	●	●	●	●	●	○

		National Character Areas									
ES Category	**Private & Public Benefits**	**Dark Peak**	**White Peak**	**Derbyshire Peak Fringe and Lower Derwent**	**Nottinghamshire, Derbyshire and Yorkshire Coalfield**	**Southern Magesian Limestone**	**Needwood and South Derbyshire Claylands**	**Trent Valley Washlands**	**Melbourne Parklands**	**Leicestershire and South Derbyshire Coalfield**	**Mease/Sence Lowlands**
Provisioning services	Agricultural output	◖	◖	◖	◖	◖	◖	◖	◖	◖	◖
	Timber	●	●	●	●	●	●	●	●	●	●
	Water supply										
	Renewable energy										
	Minerals	●	●	●	●	●	●	●	●	●	●
Regulating services	Climate regulation	●	●	●	●	●	●	●	●	●	●
	Air quality regulation	●	●	●	●	●	●	●	●	●	●
Cultural services	Recreation	●	●	●	●	●	●	●	●	●	●
	Physical health	●	●	●	●	●	●	●	●	●	●
	Tourism										
	Education										
	Volunteering										
Bundled services	Water quality	○	○	○	○	○	○	○	○	○	○

Amber Valley Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Amber Valley.

Asset Register

Figure 1 and Table 1 summarise the asset extent account for Amber Valley by UK broad habitat.

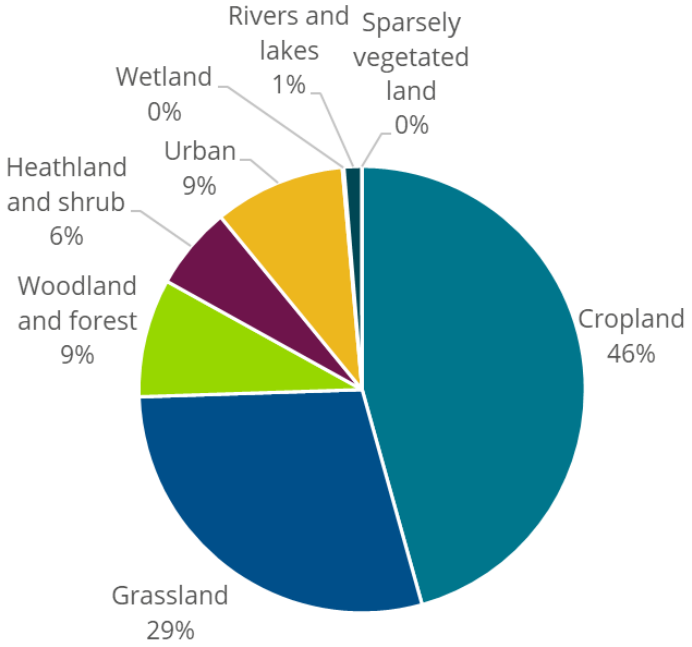


Figure 1: Amber Valley Extent

Table 1: Amber Valley extent (ha)

Habitat	Amber Valley area (ha)
Cropland	12,100
Grassland	7,700
Woodland and forest	2,300
Heathland and shrub	1,600
Urban	2,500
Wetland	30
Rivers and lakes	300
Sparsely vegetated land	4
Total	**26,500**

Table 2 presents the terrestrial designations and connectivity indicators within Amber Valley and the condition data on the water environment including Water Framework Directive status is presented in

Table 3.

Table 2: Condition indicators in Amber Valley

Indicator	Amber Valley		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	110	31%	16%
Unfavourable recovering condition	240	67%	81%
Unfavourable declining condition	3	1%	1%
Unfavourable no change	6	2%	2%
Part destroyed	0	0%	0.004%
Destroyed	1	0.2%	0.02%
Total	**360**	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	370	1%	1%
Local Nature Reserves	49	0.2%	0.3%
National Nature Reserves	0	0%	1%
Special Areas of Conservation	0	0%	10%
Special Protection Areas	0	0%	10%
Ancient Woodland	1,000	4%	3%
Green Belt	0	0%	0.1%
Parks and Gardens	410	2%	1%
Flood risk	**Areas (hectares)**		**Areas (hectares)**
Flood zone 2	1,600	6%	19,000
Flood zone 3	1,100	4%	15,000
Accessibility	**Areas (hectares)**		**Areas (hectares)**
Area of greenspace (ha)	1,300		14,000
Length of footpaths (km)	430,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total habitat area**	**% of total habitat area**
Grassland			
Core network	180	1%	5%
Stepping stone	4	0.01%	0.1%
Remaining network	6,700	25%	42%
Outside network	20,000	74%	54%
Heathland			
Core network	4	0.02%	5%
Stepping stone	-	0%	0.02%
Remaining network	660	2%	18%
Outside network	26,000	97%	77%
Wetland			
Core network	270	1%	6%
Stepping stone	140	1%	0.4%
Remaining network	7,800	29%	34%
Outside network	18,000	69%	60%
Woodland			
Core network	1,500	6%	5%
Stepping stone	600	2%	2%
Remaining network	15,000	58%	48%
Outside network	9,200	35%	45%

Table 3: Water Framework Directive waterbodies in Amber Valley

Water Framework Directive status	Amber Valley		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	14	29%	7%
Moderate	5	10%	12%
Good	24	50%	35%
High	5	10%	45%
Total	**48**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	87	100%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**87**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 4**.** The estimated annual physical and monetary values are summarised in Table 5**.**

Table 4: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Amber Valley. The total annual net value of ecosystem benefits and services produced within Amber Valley is £279 in 2021 prices (Table 5). Key benefit values include carbon sequestration by habitats (£213 million, 76% of total benefits), water supply (£42 million, 15% of total benefits) and recreation (£19 million, 7% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£6 million) and livestock (-£22 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 5: Amber Valley Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	20,947	H	Gross margin of arable crop production	2	H
	Livestock production (heads/yr)	43,953	H	Gross margin of livestock production	9	H
Timber	Volume of softwood removals (m3/yr)	1,197	M	Value of softwood removals	0.04	M
Water supply	Surface water abstraction for public water supply (m3/yr)	184,353,326	H	Resource rent value of surface water abstractions for public water supply	42	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	405,681	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	1	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	15,218	M	Resource rent value of renewable energy	0.3	M
Minerals	Volume of minerals extracted (tonnes/yr)	70,000	H	Ex-works value of mineral production	4	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	870,734	M	Value of CO2e sequestered in habitats	213	M
	CO2e emitted by habitats (tCO2e/yr)	(24,903)	M	Value of CO2e emitted by habitats	(6)	M
	CO2e emitted by livestock (tCO2e/yr)	(90,917)	M	Value of CO2e emitted by livestock	(22)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	15,037	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	5,522,855	M	Adult recreation welfare value (under 3 hours)	19	M
Physical health	Number of active visits (no. active visits/yr)	2,844,270	M	Avoided treatment medical costs	10	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	266,800	L	Domestic tourism expenditure attributed to natural capital	4	L
Water quality	Length of WFD rivers (km)	48	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	87	H	Welfare of avoiding deterioration in lakes	1	M
				Total value	**279**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	358	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 6 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism equating to around £8.1 billion in present value terms. A further £1.5 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, Amber Valley's natural capital assets have an asset value of £9.6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Amber Valley accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 6.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 6: Amber Valley Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	54	-	54
	Gross margin of livestock production	233	-	233
Timber	Value of softwood removals	1	-	1
Water supply	Resource rent value of Surface water abstractions for public water supply	1,112	-	1,112
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	24	-	24
Renewable energy	Resource rent value of renewable energy	7	-	7
Minerals	Ex-works value of mineral production	104	-	104
Carbon sequestration	Value of CO2e sequestered in habitats	-	7,816	7,816
	Value of CO2e emitted by habitats	-	(224)	(224)
	Value of CO2e emitted by livestock	-	(584)	(584)
Air quality regulation	Value of PM2.5 removal by woodland	-	48	48
Recreation	Adult recreation welfare value (under 3 hours)	-	516	516
Physical health	Avoided treatment medical costs	-	391	391
Tourism	Domestic tourism expenditure attributed to NC	-	96	96
Water quality	Welfare of avoiding deterioration in rivers	-	24	24
	Welfare of avoiding deterioration in lakes	-	18	18
Total gross asset value		**1,532**	**8,088**	**9,620**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 358 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Bolsover Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Bolsover.

Asset Register

Figure 2 and Table 7 summarise the asset extent account for Bolsover by UK broad habitat.

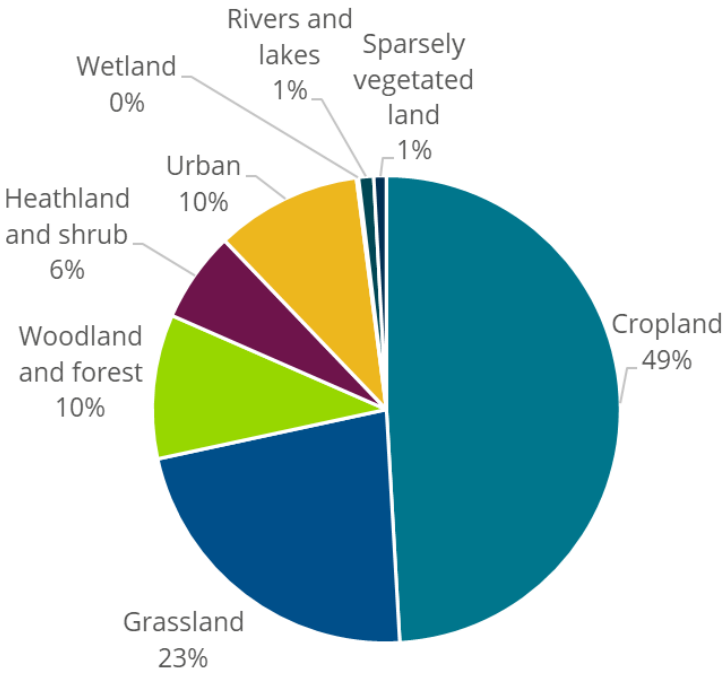


Figure 2: Bolsover Extent

Table 7: Bolsover extent (ha)

Habitat	Bolsover area (ha)
Cropland	7,900
Grassland	3,600
Woodland and forest	1,600
Heathland and shrub	1,000
Urban	1,600
Wetland	20
Rivers and lakes	200
Sparsely vegetated land	100
Total	**16,000**

Table 8 presents the terrestrial designations and connectivity indicators within Bolsover and the condition data on the water environment including Water Framework Directive status is presented in

Table 9.

Table 8: Condition indicators in Bolsover

Indicator	Bolsover		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	24	63%	16%
Unfavourable recovering condition	11	29%	81%
Unfavourable declining condition	3	8%	1%
Unfavourable no change	0	0%	2%
Part destroyed	0	0%	0.004%
Destroyed	0	0%	0.02%
Total	38	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	260	2%	1%
Local Nature Reserves	96	1%	0.3%
National Nature Reserves	0	0%	1%
Special Areas of Conservation	0	0%	10%
Special Protection Areas	0	0%	10%
Ancient Woodland	1,300	8%	3%
Green Belt	0	0%	0.1%
Parks and Gardens	430	3%	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	250	2%	19,000
Flood zone 3	180	1%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	1,300		14,000
Length of footpaths (km)	180,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	150	1%	5%
Stepping stone	6	0.04%	0.1%
Remaining network	3,800	24%	42%
Outside network	12,000	75%	54%
Heathland			
Core network	-		5%
Stepping stone	-		0.02%
Remaining network	-		18%
Outside network	-		77%
Wetland			
Core network	150	1%	6%
Stepping stone	51	0.3%	0.4%
Remaining network	4,100	26%	34%
Outside network	12,000	73%	60%
Woodland			
Core network	1,100	7%	5%
Stepping stone	260	2%	2%
Remaining network	9,500	59%	48%
Outside network	5,100	32%	45%

Table 9: Water Framework Directive waterbodies in Bolsover

Water Framework Directive status	Bolsover		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	0	0%	7%
Moderate	16	31%	12%
Good	15	29%	35%

High	20	39%	45%
Total	**51**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 10**.** The estimated annual physical and monetary values are summarised in Table 11**.**

Table 10: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Bolsover. The total annual net value of ecosystem benefits and services produced within Bolsover is £129 in 2021 prices (Table 11). Key benefit values include carbon sequestration by habitats (£98 million, 76% of total benefits), mineral production (£16 million, 12% of total benefits) and recreation (£10 million, 8% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£11 million) and livestock (-£3 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low

Table 11: Bolsover Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	35,048	H	Gross margin of arable crop production	3	H
	Livestock production (heads/yr)	4,196	H	Gross margin of livestock production	2	H
Timber	Volume of softwood removals (m3/yr)	795	M	Value of softwood removals	0.03	M
Water supply	Surface water abstraction for public water supply (m3/yr)	17,464	H	Resource rent value of surface water abstractions for public water supply	0.004	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	240,322	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	1	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	3,776	M	Resource rent value of renewable energy	0.1	M
Minerals	Volume of minerals extracted (tonnes/yr)	1,200,000	H	Ex-works value of mineral production	16	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	400,464	M	Value of CO2e sequestered in habitats	98	M
	CO2e emitted by habitats (tCO2e/yr)	(43,015)	M	Value of CO2e emitted by habitats	(11)	M
	CO2e emitted by livestock (tCO2e/yr)	(10,318)	M	Value of CO2e emitted by livestock	(3)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	10,400	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	3,248,064	M	Adult recreation welfare value (under 3 hours)	10	M
Physical health	Number of active visits (no. active visits/yr)	1,672,753	M	Avoided treatment medical costs	6	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	207,333	L	Domestic tourism expenditure attributed to natural capital	4	L
Water quality	Length of WFD rivers (km)	51	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	-	Welfare of avoiding deterioration in lakes	-	-
				Total value	**129**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	39	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 12 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £3.8 billion in present value terms. A further £0.5 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, Bolsover's natural capital assets have an asset value of £4.3 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Bolsover accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 12.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 12: Bolsover Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	90	-	90
	Gross margin of livestock production	44	-	44
Timber	Value of softwood removals	1	-	1
Water supply	Resource rent value of Surface water abstractions for public water supply	0.1	-	0.1
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	14	-	14
Renewable energy	Resource rent value of renewable energy	2	-	2
Minerals	Ex-works value of mineral production	408	-	408
Carbon sequestration	Value of CO2e sequestered in habitats	-	3,594	3,594
	Value of CO2e emitted by habitats	-	(386)	(386)
	Value of CO2e emitted by livestock	-	(66)	(66)
Air quality regulation	Value of PM2.5 removal by woodland	-	33	33
Recreation	Adult recreation welfare value (under 3 hours)	-	274	274
Physical health	Avoided treatment medical costs	-	230	230
Tourism	Domestic tourism expenditure attributed to NC	-	116	116
Water quality	Welfare of avoiding deterioration in rivers	-	18	18
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**559**	**3,808**	**4,366**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 39 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Chesterfield Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Chesterfield.

Asset Register

Figure 3 and Table 13 summarise the asset extent account for Chesterfield by UK broad habitat.

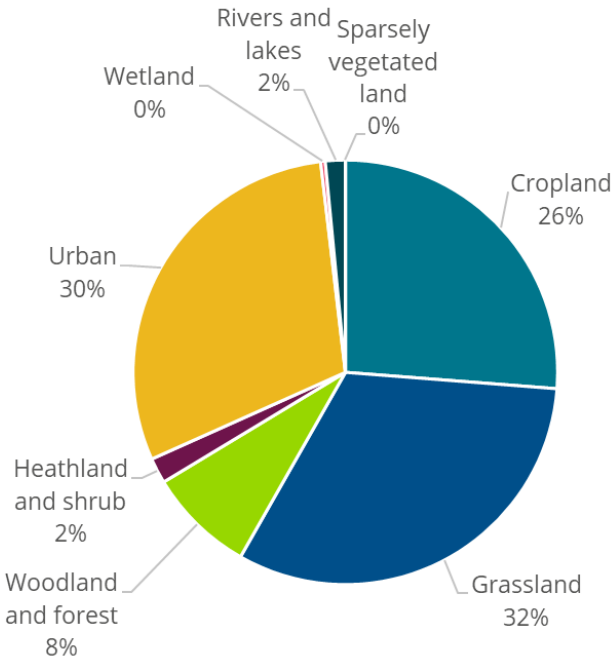


Figure 3: Chesterfield Extent

Table 13: Chesterfield extent (ha)

Habitat	Chesterfield area (ha)
Cropland	1,700
Grassland	2,100
Woodland and forest	500
Heathland and shrub	100
Urban	2,000
Wetland	20
Rivers and lakes	100
Sparsely vegetated land	-
Total	**6,500**

Table 14 presents the terrestrial designations and connectivity indicators within Chesterfield and the condition data on the water environment including Water Framework Directive status is presented in Table 15.

Table 14: Condition indicators in Chesterfield

Indicator	Chesterfield		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	-	-	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	130	2%	1%
Local Nature Reserves	56	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	140	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	9	0.1%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	680	10%	19,000
Flood zone 3	360	5%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	490		14,000
Length of footpaths (km)	55,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	100	2%	5%
Stepping stone	-	-	0.1%
Remaining network	1,500	22%	42%
Outside network	5,000	76%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	73	1%	18%
Outside network	6,500	99%	77%
Wetland			
Core network	88	1%	6%
Stepping stone	36	1%	0.4%
Remaining network	2,400	36%	34%
Outside network	4,100	62%	60%
Woodland			
Core network	290	4%	5%
Stepping stone	150	2%	2%
Remaining network	2,200	34%	48%
Outside network	4,000	60%	45%

Table 15: Water Framework Directive waterbodies in Chesterfield

Water Framework Directive status	Chesterfield		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	2	5%	7%
Moderate	22	55%	12%

Good	6	15%	35%
High	10	25%	45%
Total	**40**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 16**.** The estimated annual physical and monetary values are summarised in Table 17**.**

Table 16: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Chesterfield. The total annual net value of ecosystem benefits and services produced within Chesterfield is £72 in 2021 prices (Table 17). Key benefit values include carbon sequestration by habitats (£43 million, 60% of total benefits), recreation (£12 million, 17% of total benefits) and tourism (£10 million, 14% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£2 million) and livestock (-£0.5 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 17: Chesterfield Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	6,824	H	Gross margin of arable crop production	1	H
	Livestock production (heads/yr)	846	H	Gross margin of livestock production	0.2	H
Timber	Volume of softwood removals (m3/yr)	224	M	Value of softwood removals	0.01	M
Water supply	Surface water abstraction for public water supply (m3/yr)	-	-	Resource rent value of surface water abstractions for public water supply	-	-
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	-	-	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	-	-
Renewable energy	Electricity generated by renewable sources (MWh/yr)	1,358	M	Resource rent value of renewable energy	0.02	M
Minerals	Volume of minerals extracted (tonnes/yr)	-	-	Ex-works value of mineral production	-	-
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	176,757	M	Value of CO2e sequestered in habitats	43	M
	CO2e emitted by habitats (tCO2e/yr)	(7,999)	M	Value of CO2e emitted by habitats	(2)	M
	CO2e emitted by livestock (tCO2e/yr)	(1,870)	M	Value of CO2e emitted by livestock	(0.5)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	3,114	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	3,346,584	M	Adult recreation welfare value (under 3 hours)	12	M
Physical health	Number of active visits (no. active visits/yr)	1,723,491	M	Avoided treatment medical costs	6	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	535,920	L	Domestic tourism expenditure attributed to natural capital	10	L
Volunteering	Number of volunteering days (days/yr)	93	L	Value of volunteering visits	0.01	L
Water quality	Length of WFD rivers (km)	40	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	-	Welfare of avoiding deterioration in lakes	-	-
				Total value	**72**	**M**
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	-	●		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						

Natural Capital Asset Account

Table 18 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £2.4 billion in present value terms. A further £0.02 billion accrues to businesses through agriculture, timber and renewable energy. Overall, Chesterfield's natural capital assets have an asset value of £2.4 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Chesterfield accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 18.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 18: Chesterfield Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	17	-	17
	Gross margin of livestock production	6	-	6
Timber	Value of softwood removals	0.2	-	0.2
Water supply	Resource rent value of Surface water abstractions for public water supply	-	-	-
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	-	-	-
Renewable energy	Resource rent value of renewable energy	1	-	1
Minerals	Ex-works value of mineral production	-	-	-
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,587	1,587
	Value of CO2e emitted by habitats	-	(72)	(72)
	Value of CO2e emitted by livestock	-	(12)	(12)
Air quality regulation	Value of PM2.5 removal by woodland	-	55	55
Recreation	Adult recreation welfare value (under 3 hours)	-	306	306
Physical health	Avoided treatment medical costs	-	235	235
Tourism	Domestic tourism expenditure attributed to NC	-	274	274
Volunteering	Value of volunteer days		0.01	0.01
Water quality	Welfare of avoiding deterioration in rivers	-	16	16
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**24**	**2,387**	**2,411**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 0 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				

Derbyshire Dales Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Derbyshire Dales.

Asset Register

Figure 4 and Table 19 summarise the asset extent account for Derbyshire Dales by UK broad habitat.

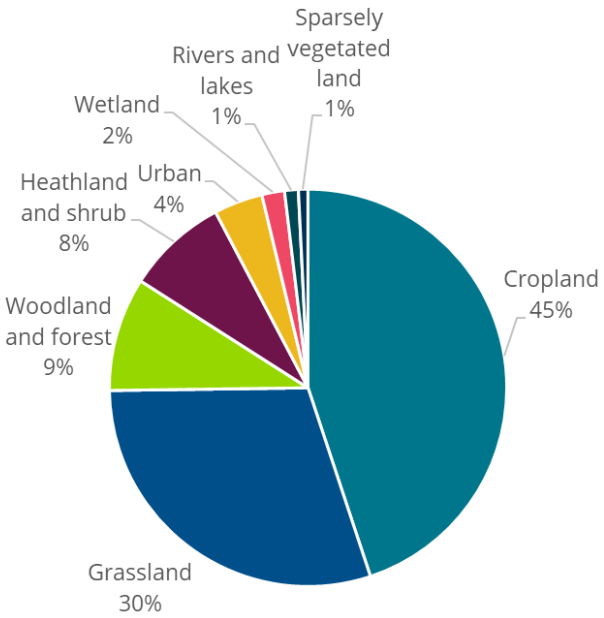


Figure 4: Derbyshire Dales Extent

Table 19: Derbyshire Dales extent (ha)

Habitat	Derbyshire Dales area (ha)
Cropland	35,700
Grassland	23,800
Woodland and forest	7,400
Heathland and shrub	6,600
Urban	3,200
Wetland	1,500
Rivers and lakes	900
Sparsely vegetated land	600
Total	**79,700**

Table 20 presents the terrestrial designations and connectivity indicators within Derbyshire Dales and the condition data on the water environment including Water Framework Directive status is presented in

Table 21.

Table 20: Condition indicators in Derbyshire Dales

Indicator	Derbyshire Dales		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	2,400	38%	16%
Unfavourable recovering condition	3,600	58%	81%
Unfavourable declining condition	130	2%	1%
Unfavourable no change	120	2%	2%
Part destroyed	1	0.02%	0.004%
Destroyed	-	-	0.02%
Total	**6,251**	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	660	1%	1%
Local Nature Reserves	32	0.04%	0.3%
National Nature Reserves	850	1%	1%
Special Areas of Conservation	4,800	6%	10%
Special Protection Areas	3,200	4%	10%
Ancient Woodland	3,300	4%	3%
Green Belt	-	-	0.1%
Parks and Gardens	1,300	2%	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	4,100	5%	19,000
Flood zone 3	3,300	4%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	3,800		14,000
Length of footpaths (km)	1,300,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	4,700	6%	5%
Stepping stone	110	0.1%	0.1%
Remaining network	45,000	57%	42%
Outside network	29,000	37%	54%
Heathland			
Core network	2,300	3%	5%
Stepping stone	11	0.01%	0.02%
Remaining network	10,000	13%	18%
Outside network	67,000	84%	77%
Wetland			
Core network	2,000	3%	6%
Stepping stone	260	0.3%	0.4%
Remaining network	20,000	25%	34%
Outside network	57,000	72%	60%
Woodland			
Core network	4,600	6%	5%
Stepping stone	1,200	2%	2%
Remaining network	41,000	52%	48%
Outside network	32,000	41%	45%

Table 21: Water Framework Directive waterbodies in Derbyshire Dales

Water Framework Directive status	Derbyshire Dales		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	13	8%	7%
Moderate	6	4%	12%
Good	56	35%	35%
High	84	53%	45%
Total	**159**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	2,853	100%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**2,853**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 22**.** The estimated annual physical and monetary values are summarised in Table 21**.**

Table 22: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derbyshire Dales. The total annual net value of ecosystem benefits and services produced within Derbyshire Dales is £726 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£656 million, 90% of total benefits), livestock production (£39 million, 5% of total benefits) and tourism (£27 million, 4% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£17 million) and livestock (-£122 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 23: Derbyshire Dales Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	53,879	H	Gross margin of arable crop production	5	H
	Livestock production (heads/yr)	251,128	H	Gross margin of livestock production	39	H
Timber	Volume of softwood removals (m3/yr)	9,564	M	Value of softwood removals	0.3	M
Water supply	Surface water abstraction for public water supply (m3/yr)	120,825,383	H	Resource rent value of surface water abstractions for public water supply	28	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	817,222	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	2	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	43,408	M	Resource rent value of renewable energy	1	M
Minerals	Volume of minerals extracted (tonnes/yr)	2,820,750	H	Ex-works value of mineral production	37	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	2,677,879	M	Value of CO2e sequestered in habitats	656	M
	CO2e emitted by habitats (tCO2e/yr)	(70,934)	M	Value of CO2e emitted by habitats	(17)	M
	CO2e emitted by livestock (tCO2e/yr)	(498,141)	M	Value of CO2e emitted by livestock	(122)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	47,896	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	7,926,396	M	Adult recreation welfare value (under 3 hours)	31	M
Physical health	Number of active visits (no. active visits/yr)	4,082,094	M	Avoided treatment medical costs	14	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	746,320	L	Domestic tourism expenditure attributed to natural capital	27	L
Water quality	Length of WFD rivers (km)	158	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	2,853	H	Welfare of avoiding deterioration in lakes	24	M
				Total value	**726**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	6,202	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 24 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £21.7 billion in present value terms. A further £2.9 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, Derbyshire Dales's natural capital assets have an asset value of £24.6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derbyshire Dales accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 24.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 24: Derbyshire Dales Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	138	-	138
	Gross margin of livestock production	1,046	-	1,046
Timber	Value of softwood removals	8	-	8
Water supply	Resource rent value of Surface water abstractions for public water supply	729	-	729
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	47	-	47
Renewable energy	Resource rent value of renewable energy	19	-	19
Minerals	Ex-works value of mineral production	960	-	960
Carbon sequestration	Value of CO2e sequestered in habitats	-	24,036	24,036
	Value of CO2e emitted by habitats	-	(637)	(637)
	Value of CO2e emitted by livestock	-	(4,471)	(4,471)
Air quality regulation	Value of PM2.5 removal by woodland	-	21	21
Recreation	Adult recreation welfare value (under 3 hours)	-	805	805
Physical health	Avoided treatment medical costs	-	555	555
Tourism	Domestic tourism expenditure attributed to NC	-	700	700
Water quality	Welfare of avoiding deterioration in rivers	-	44	44
	Welfare of avoiding deterioration in lakes	-	623	623
Total gross asset value		**2,936**	**21,676**	**24,612**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 6,202 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Erewash Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Erewash.

Asset Register

Figure 5 and Table 25 summarise the asset extent account for Erewash by UK broad habitat.

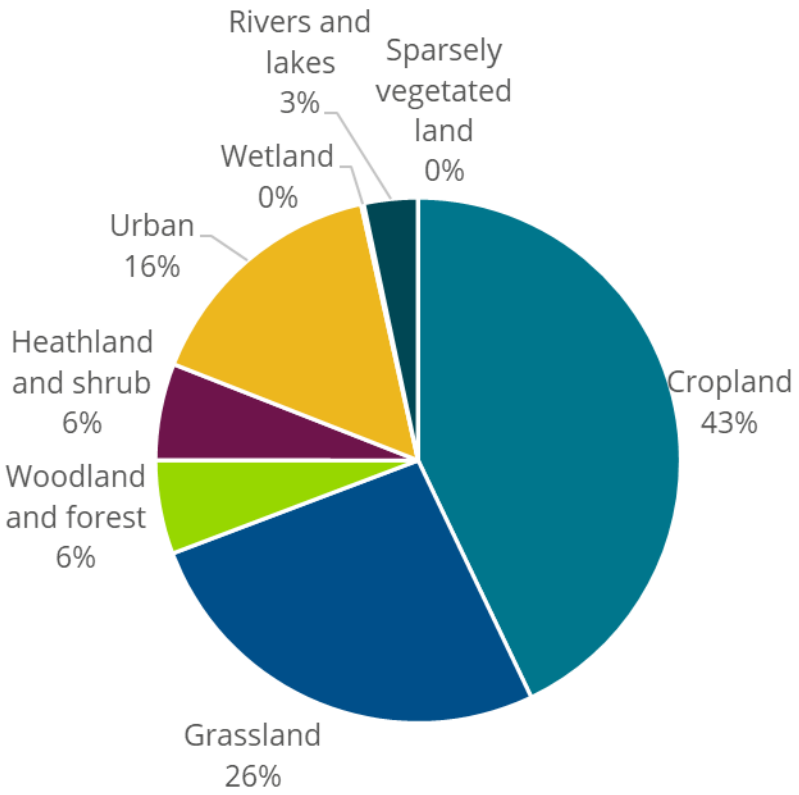


Figure 5: Erewash Extent

Table 25: Erewash extent (ha)

Habitat	Erewash area (ha)
Cropland	4,700
Grassland	2,900
Woodland and forest	600
Heathland and shrub	700
Urban	1,700
Wetland	20
Rivers and lakes	400
Sparsely vegetated land	-
Total	11,000

Table 26 presents the terrestrial designations and connectivity indicators within Erewash and the condition data on the water environment including Water Framework Directive status is presented in

Table 27.

Table 26: Condition indicators in Erewash

Indicator	Erewash		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	3	49%	16%
Unfavourable recovering condition	4	51%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	**7**	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	3	0.03%	1%
Local Nature Reserves	110	1%	0.3%
National Nature Reserves	880	8%	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	190	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	160	1%	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	2,500	23%	19,000
Flood zone 3	1,800	16%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	770		14,000
Length of footpaths (km)	150,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	89	1%	5%
Stepping stone	2	0.02%	0.1%
Remaining network	2,800	25%	42%
Outside network	8,100	74%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	-	-	77%
Wetland			
Core network	340	3%	6%
Stepping stone	56	1%	0.4%
Remaining network	3,300	30%	34%
Outside network	7,300	66%	60%
Woodland			
Core network	400	4%	5%
Stepping stone	180	2%	2%
Remaining network	5,700	52%	48%
Outside network	4,700	43%	45%

Table 27: Water Framework Directive waterbodies in Erewash

Water Framework Directive status	Erewash		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**

Poor	0	0%	7%
Moderate	1	5%	12%
Good	2	11%	35%
High	16	84%	45%
Total	**19**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	295	65%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	159	35%	18%
Total	**454**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 28**.** The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced within Erewash is £109 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£68 million, 62% of total benefits), recreation (£18 million, 17% of total benefits) and water supply (£11 million, 10% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£2 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 30**.**

Table 28: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Erewash. The total annual net value of ecosystem benefits and services produced within Erewash is £109 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£68 million, 62% of total benefits), recreation (£18 million, 17% of total benefits) and water supply (£11 million, 10% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£2 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 29: Erewash Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	13,090	H	Gross margin of arable crop production	1	H
	Livestock production (heads/yr)	4,270	H	Gross margin of livestock production	1	H
Timber	Volume of softwood removals (m3/yr)	252	M	Value of softwood removals	0.01	M
Water supply	Surface water abstraction for public water supply (m3/yr)	46,156,777	H	Resource rent value of surface water abstractions for public water supply	11	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	4,300	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	0.01	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	122	M	Resource rent value of renewable energy	1	M
Minerals	Volume of minerals extracted (tonnes/yr)	-	●	Ex-works value of mineral production	-	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	278,119	M	Value of CO2e sequestered in habitats	68	M
	CO2e emitted by habitats (tCO2e/yr)	(15,346)	M	Value of CO2e emitted by habitats	(4)	M
	CO2e emitted by livestock (tCO2e/yr)	(10,006)	M	Value of CO2e emitted by livestock	(2)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	4,186	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,886,017	M	Adult recreation welfare value (under 3 hours)	18	M
Physical health	Number of active visits (no. active visits/yr)	2,516,299	M	Avoided treatment medical costs	8	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	223,547	L	Domestic tourism expenditure attributed to natural capital	3	L
Water quality	Length of WFD rivers (km)	19	H	Welfare of avoiding deterioration in rivers	0.06	M
	Area of WFD lakes (km2)	455	H	Welfare of avoiding deterioration in lakes	2	M
				Total value	**109**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	7	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 30 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £3.3 billion in present value terms. A further £0.4 billion accrues to businesses through agriculture, timber, water supply and renewable energy. Overall, Erewash's natural capital assets have an asset value of £3.6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Erewash accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 30.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 30: Erewash Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	33	-	33
	Gross margin of livestock production	38	-	38
Timber	Value of softwood removals	0.2	-	0.2
Water supply	Resource rent value of Surface water abstractions for public water supply	278	-	278
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	0.2	-	0.2
Renewable energy	Resource rent value of renewable energy	33	-	33
Minerals	Ex-works value of mineral production	-	-	-
Carbon sequestration	Value of CO2e sequestered in habitats	-	2,496	2,496
	Value of CO2e emitted by habitats	-	(138)	(138)
	Value of CO2e emitted by livestock	-	(64)	(64)
Air quality regulation	Value of PM2.5 removal by woodland	-	50	50
Recreation	Adult recreation welfare value (under 3 hours)	-	463	463
Physical health	Avoided treatment medical costs	-	341	341
Tourism	Domestic tourism expenditure attributed to NC	-	91	91
Water quality	Welfare of avoiding deterioration in rivers	-	2	2
	Welfare of avoiding deterioration in lakes	-	54	54
Total gross asset value		**351**	**3,297**	**3,648**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 7 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

High Peak Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for High Peak.

Asset Register

Figure 6 and Table 31 summarise the asset extent account for High Peak by UK broad habitat.

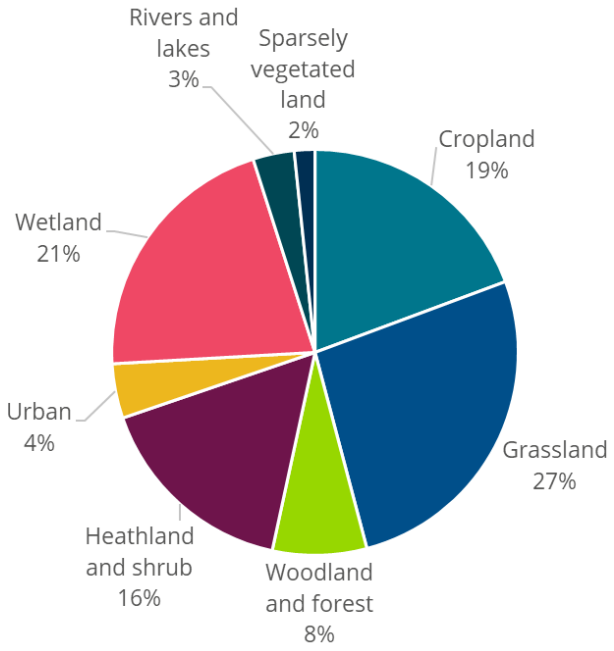


Figure 6: High Peak Extent

Table 31: High Peak extent (ha)

Habitat	High Peak area (ha)
Cropland	10,400
Grassland	14,400
Woodland and forest	4,100
Heathland and shrub	8,900
Urban	2,400
Wetland	11,300
Rivers and lakes	1,800
Sparsely vegetated land	900
Total	**52,200**

Table 32 presents the terrestrial designations and connectivity indicators within High Peak and the condition data on the water environment including Water Framework Directive status is presented in

Table 33.

Table 32: Condition indicators in High Peak

Indicator	High Peak		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	2,000	9%	16%
Unfavourable recovering condition	19,000	88%	81%
Unfavourable declining condition	130	1%	1%
Unfavourable no change	390	2%	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	**21,520**	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	41	0.1%	1%
Local Nature Reserves	32	0.1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	20,000	37%	10%
Special Protection Areas	20,000	37%	10%
Ancient Woodland	930	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	23	0.1%	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	1,500	3%	19,000
Flood zone 3	1,300	2%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	2,800		14,000
Length of footpaths (km)	970,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	6,400	12%	5%
Stepping stone	91	0.2%	0.1%
Remaining network	35,000	65%	42%
Outside network	13,000	23%	54%
Heathland			
Core network	8,100	15%	5%
Stepping stone	37	0.1%	0.02%
Remaining network	28,000	52%	18%
Outside network	18,000	33%	77%
Wetland			
Core network	10,000	19%	6%
Stepping stone	240	0.4%	0.4%
Remaining network	30,000	56%	34%
Outside network	13,000	25%	60%
Woodland			
Core network	1,500	3%	5%
Stepping stone	900	2%	2%
Remaining network	19,000	35%	48%
Outside network	33,000	61%	45%

Table 33: Water Framework Directive waterbodies in High Peak

Water Framework Directive status	High Peak		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	6	4%	7%
Moderate	12	8%	12%
Good	49	31%	35%
High	92	58%	45%
Total	**159**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	771	18%	44%
Good	2,167	50%	35%
High	1,377	32%	18%
Total	**4,315**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 34**.** The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced within High Peak is £671 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£406 million, 61% of total benefits) and minerals (£223 million, 33% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£24 million) and livestock (-£57 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 36.

Table 34: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within High Peak. The total annual net value of ecosystem benefits and services produced within High Peak is £671 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£406 million, 61% of total benefits) and minerals (£223 million, 33% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£24 million) and livestock (-£57 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 35: High Peak Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	7,166	H	Gross margin of arable crop production	1	H
	Livestock production (heads/yr)	125,660	H	Gross margin of livestock production	11	H
Timber	Volume of softwood removals (m3/yr)	10,260	M	Value of softwood removals	0.33	M
Water supply	Surface water abstraction for public water supply (m3/yr)	50,376,802	H	Resource rent value of surface water abstractions for public water supply	12	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	1,137,241	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	3	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	5,069	M	Resource rent value of renewable energy	0.08	M
Minerals	Volume of minerals extracted (tonnes/yr)	17,157,000	H	Ex-works value of mineral production	223	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,657,185	M	Value of CO2e sequestered in habitats	406	M
	CO2e emitted by habitats (tCO2e/yr)	(99,773)	M	Value of CO2e emitted by habitats	(24)	M
	CO2e emitted by livestock (tCO2e/yr)	(231,740)	M	Value of CO2e emitted by livestock	(57)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	29,581	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	8,643,162	M	Adult recreation welfare value (under 3 hours)	37	M
Physical health	Number of active visits (no. active visits/yr)	4,451,228	M	Avoided treatment medical costs	15	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	530,507	L	Domestic tourism expenditure attributed to natural capital	15	L
Water quality	Length of WFD rivers (km)	158	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	4,315	H	Welfare of avoiding deterioration in lakes	27	M
				Total value	**671**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	21,563	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 36 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £14.7 billion in present value terms. A further £6.5 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, High Peak's natural capital assets have an asset value of £21.1 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the High Peak accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 36.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 36: High Peak Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	18	-	18
	Gross margin of livestock production	289	-	289
Timber	Value of softwood removals	9	-	9
Water supply	Resource rent value of Surface water abstractions for public water supply	304	-	304
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	66	-	66
Renewable energy	Resource rent value of renewable energy	2	-	2
Minerals	Ex-works value of mineral production	5,840	-	5,840
Carbon sequestration	Value of CO2e sequestered in habitats	-	14,875	14,875
	Value of CO2e emitted by habitats	-	(896)	(896)
	Value of CO2e emitted by livestock	-	(2,080)	(2,080)
Air quality regulation	Value of PM2.5 removal by woodland	-	19	19
Recreation	Adult recreation welfare value (under 3 hours)	-	982	982
Physical health	Avoided treatment medical costs	-	606	606
Tourism	Domestic tourism expenditure attributed to NC	-	402	402
Water quality	Welfare of avoiding deterioration in rivers	-	40	40
	Welfare of avoiding deterioration in lakes	-	720	720
Total gross asset value		**6,522**	**14,665**	**21,186**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 21,563 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Northeast Derbyshire Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Northeast Derbyshire.

Asset Register

Figure 7 and Table 37 summarise the asset extent account for Northeast Derbyshire by UK broad habitat.

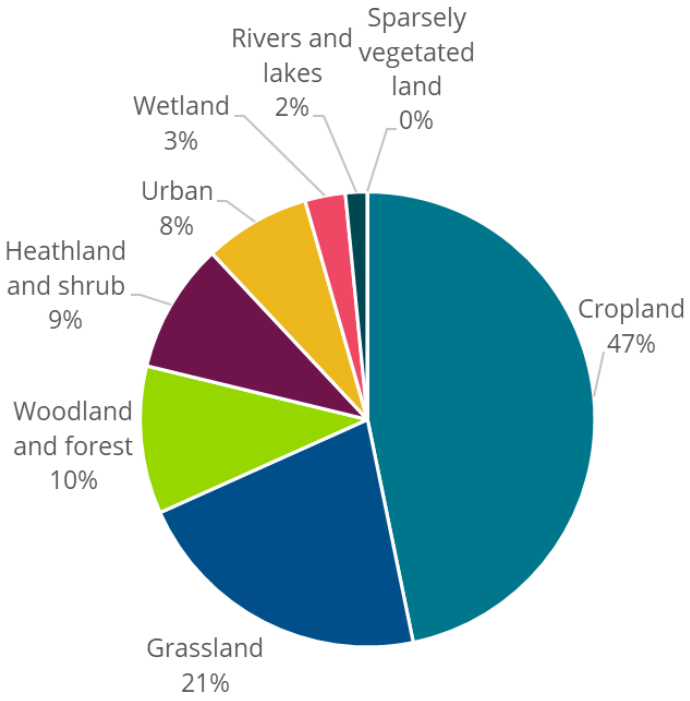


Figure 7: Northeast Derbyshire Extent

Table 37: Northeast Derbyshire extent (ha)

Habitat	Northeast Derbyshire area (ha)
Cropland	12,900
Grassland	5,900
Woodland and forest	2,900
Heathland and shrub	2,500
Urban	2,100
Wetland	800
Rivers and lakes	400
Sparsely vegetated land	-
Total	**27,500**

Table 38 presents the terrestrial designations and connectivity indicators within Northeast Derbyshire and the condition data on the water environment including Water Framework Directive status is presented in

Table 39.

Table 38: Condition indicators in Northeast Derbyshire

Indicator	Northeast Derbyshire		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	-	-	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	55	0.2%	1%
Local Nature Reserves	88	0.3%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	1,600	6%	10%
Special Protection Areas	1,600	6%	10%
Ancient Woodland	-	-	3%
Green Belt	-	-	0.1%
Parks and Gardens	-	-	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	-	-	19,000
Flood zone 3	-	-	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	1,300		14,000
Length of footpaths (km)	450,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	350	1%	5%
Stepping stone	12	0.04%	0.1%
Remaining network	9,000	33%	42%
Outside network	18,000	66%	54%
Heathland			
Core network	640	2%	5%
Stepping stone	4	0.01%	0.02%
Remaining network	2,600	9%	18%
Outside network	24,000	88%	77%
Wetland			
Core network	1,100	4%	6%
Stepping stone	140	0.5%	0.4%
Remaining network	10,000	38%	34%
Outside network	16,000	58%	60%
Woodland			
Core network	1,900	7%	5%
Stepping stone	610	2%	2%
Remaining network	18,000	64%	48%
Outside network	7,500	27%	45%

Table 39: Water Framework Directive waterbodies in Northeast Derbyshire

Water Framework Directive status	Northeast Derbyshire		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	7	8%	7%
Moderate	17	20%	12%
Good	34	39%	35%
High	29	33%	45%
Total	**87**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 40. The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced within Northeast Derbyshire is £234 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£210 million, 90% of total benefits) and recreation (£18 million, 8% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£10 million) and livestock (-£14 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 42.

Table 40: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Northeast Derbyshire. The total annual net value of ecosystem benefits and services produced within Northeast Derbyshire is £234 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£210 million, 90% of total benefits) and recreation (£18 million, 8% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£10 million) and livestock (-£14 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 41: Northeast Derbyshire Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	34,868	H	Gross margin of arable crop production	3	H
	Livestock production (heads/yr)	25,319	H	Gross margin of livestock production	7	H
Timber	Volume of softwood removals (m3/yr)	2,150	M	Value of softwood removals	0.07	M
Water supply	Surface water abstraction for public water supply (m3/yr)	16,418,492	H	Resource rent value of surface water abstractions for public water supply	4	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	-	●	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	-	●
Renewable energy	Electricity generated by renewable sources (MWh/yr)	-	●	Resource rent value of renewable energy	-	●
Minerals	Volume of minerals extracted (tonnes/yr)	10,000	H	Ex-works value of mineral production	0.1	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	858,441	M	Value of CO2e sequestered in habitats	210	M
	CO2e emitted by habitats (tCO2e/yr)	(42,165)	M	Value of CO2e emitted by habitats	(10)	M
	CO2e emitted by livestock (tCO2e/yr)	(55,395)	M	Value of CO2e emitted by livestock	(14)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	19,387	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	5,065,036	M	Adult recreation welfare value (under 3 hours)	18	M
Physical health	Number of active visits (no. active visits/yr)	2,608,494	M	Avoided treatment medical costs	9	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	320,693	L	Domestic tourism expenditure attributed to natural capital	4	L
Water quality	Length of WFD rivers (km)	88	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	**234**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	-	●		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 42 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £8 billion in present value terms. A further £0.4 billion accrues to businesses through agriculture, timber and minerals. Overall, Northeast Derbyshire's natural capital assets have an asset value of £8.3 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Northeast Derbyshire accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 42**.**
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 42: Northeast Derbyshire Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	89	-	89
	Gross margin of livestock production	175	-	175
Timber	Value of softwood removals	2	-	2
Water supply	Resource rent value of Surface water abstractions for public water supply	99	-	99
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	-	-	-
Renewable energy	Resource rent value of renewable energy	-	-	-
Minerals	Ex-works value of mineral production	3	-	3
Carbon sequestration	Value of CO2e sequestered in habitats	-	7,705	7,705
	Value of CO2e emitted by habitats	-	(378)	(378)
	Value of CO2e emitted by livestock	-	(356)	(356)
Air quality regulation	Value of PM2.5 removal by woodland	-	36	36
Recreation	Adult recreation welfare value (under 3 hours)	-	471	471
Physical health	Avoided treatment medical costs	-	352	352
Tourism	Domestic tourism expenditure attributed to NC	-	112	112
Water quality	Welfare of avoiding deterioration in rivers	-	33	33
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**368**	**7,981**	**8,349**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 30,000 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

South Derbyshire Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for South Derbyshire.

Asset Register

Figure 8 and Table 43 summarise the asset extent account for South Derbyshire by UK broad habitat.

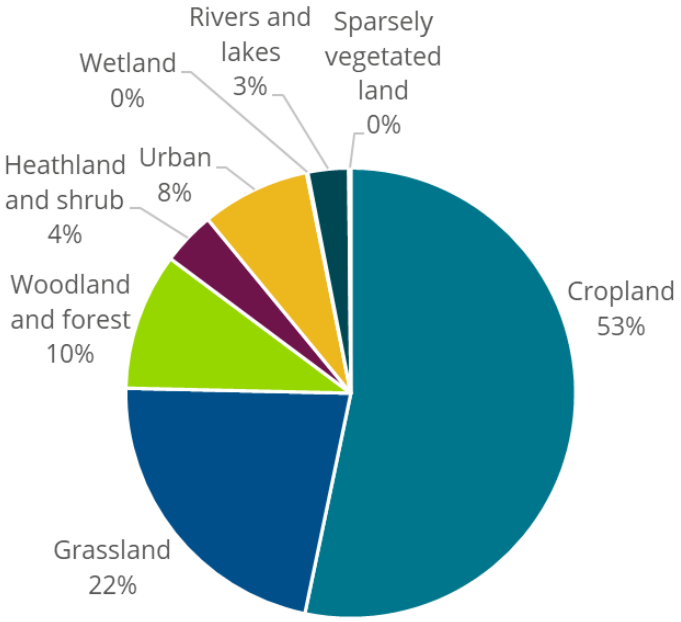


Figure 8: South Derbyshire Extent

Table 43: South Derbyshire extent (ha)

Habitat	South Derbyshire area (ha)
Cropland	18,000
Grassland	7,500
Woodland and forest	3,300
Heathland and shrub	1,300
Urban	2,600
Wetland	30
Rivers and lakes	1,000
Sparsely vegetated land	50
Total	**33,800**

Table 44 presents the terrestrial designations and connectivity indicators within South Derbyshire and the condition data on the water environment including Water Framework Directive status is presented in

Table 45.

Table 44: Condition indicators in South Derbyshire

Indicator	South Derbyshire		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	79	50%	16%
Unfavourable recovering condition	70	45%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	4	2%	2%
Part destroyed	-	-	0.004%
Destroyed	5	3%	0.02%
Total	**157**	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	73	0.2%	1%
Local Nature Reserves	23	0.1%	0.3%
National Nature Reserves	80	0.2%	1%
Special Areas of Conservation	4	0.01%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	740	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	620	2%	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	6,900	20%	19,000
Flood zone 3	5,900	17%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	1,800		14,000
Length of footpaths (km)	320,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	130	0%	5%
Stepping stone	3	0.01%	0.1%
Remaining network	3,300	10%	42%
Outside network	30,000	90%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	34,000	100%	77%
Wetland			
Core network	840	2%	6%
Stepping stone	180	1%	0.4%
Remaining network	10,000	30%	34%
Outside network	23,000	67%	60%
Woodland			
Core network	2,200	7%	5%
Stepping stone	550	2%	2%
Remaining network	13,000	39%	48%
Outside network	18,000	53%	45%

Table 45: Water Framework Directive waterbodies in South Derbyshire

Water Framework Directive status	South Derbyshire		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	5	4%	7%
Moderate	9	7%	12%
Good	59	48%	35%
High	49	40%	45%
Total	**122**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	7	1%	44%
Good	880	99%	35%
High	0	0%	18%
Total	**887**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 46**.** The estimated annual physical and monetary values are summarised in Table 47**.**

Table 46: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within South Derbyshire. The total annual net value of ecosystem benefits and services produced within South Derbyshire is £284 in 2021 prices (Table 47). Key benefit values include carbon sequestration by habitats (£222 million, 78% of total benefits) and water supply (£27 million, 10% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£20 million) and livestock (-£28 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 47: South Derbyshire Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	68,941	H	Gross margin of arable crop production	7	H
	Livestock production (heads/yr)	57,341	H	Gross margin of livestock production	10	H
Timber	Volume of softwood removals (m3/yr)	934	M	Value of softwood removals	0.03	M
Water supply	Surface water abstraction for public water supply (m3/yr)	116,819,003	H	Resource rent value of surface water abstractions for public water supply	27	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	1,448,945	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	3	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	424	M	Resource rent value of renewable energy	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	1,300,000	H	Ex-works value of mineral production	19	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	907,413	M	Value of CO2e sequestered in habitats	222	M
	CO2e emitted by habitats (tCO2e/yr)	(81,258)	M	Value of CO2e emitted by habitats	(20)	M
	CO2e emitted by livestock (tCO2e/yr)	(115,217)	M	Value of CO2e emitted by livestock	(28)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	24,634	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,826,029	M	Adult recreation welfare value (under 3 hours)	16	M
Physical health	Number of active visits (no. active visits/yr)	2,485,405	M	Avoided treatment medical costs	8	M
Volunteering	Number of volunteer days (days/yr)	149	L	Value of volunteer days	0.02	L
Education	Number of education visits (visits/yr)	5,110	L	Value of educational visits	0.02	L
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	199,893	L	Domestic tourism expenditure attributed to natural capital	8	L
Water quality	Length of WFD rivers (km)	122	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	888	H	Welfare of avoiding deterioration in lakes	8	M
				Total value	**284**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	157	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						

Natural Capital Asset Account

Table 48 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £1.4 billion in present value terms. A further £7.7 billion accrues to businesses through agriculture, timber, water supply and minerals. Overall, South Derbyshire's natural capital assets have an asset value of £9.1 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the South Derbyshire accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 48.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 48: South Derbyshire Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	176	-	176
	Gross margin of livestock production	259	-	259
Timber	Value of softwood removals	1	-	1
Water supply	Resource rent value of Surface water abstractions for public water supply	705	-	705
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	84	-	84
Renewable energy	Resource rent value of renewable energy	-	-	-
Minerals	Ex-works value of mineral production	165	-	165
Carbon sequestration	Value of CO2e sequestered in habitats	-	8,145	8,145
	Value of CO2e emitted by habitats	-	(729)	(729)
	Value of CO2e emitted by livestock	-	(1,034)	(1,034)
Air quality regulation	Value of PM2.5 removal by woodland	-	60	60
Recreation	Adult recreation welfare value (under 3 hours)	-	410	410
Physical health	Avoided treatment medical costs	-	338	338
Tourism	Domestic tourism expenditure attributed to NC	-	215	215
Volunteering	Value of volunteer days	-	0.4	0.4
Education	Value of educational visits	-	0.5	0.5
Water quality	Welfare of avoiding deterioration in rivers	-	43	43
	Welfare of avoiding deterioration in lakes	-	217	217
Total gross asset value		**1,387**	**7,666**	**9,053**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 157 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				

Derby City Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Derby City.

Asset Register

Figure 9 and Table 49 summarise the asset extent account for Derby City by UK broad habitat.

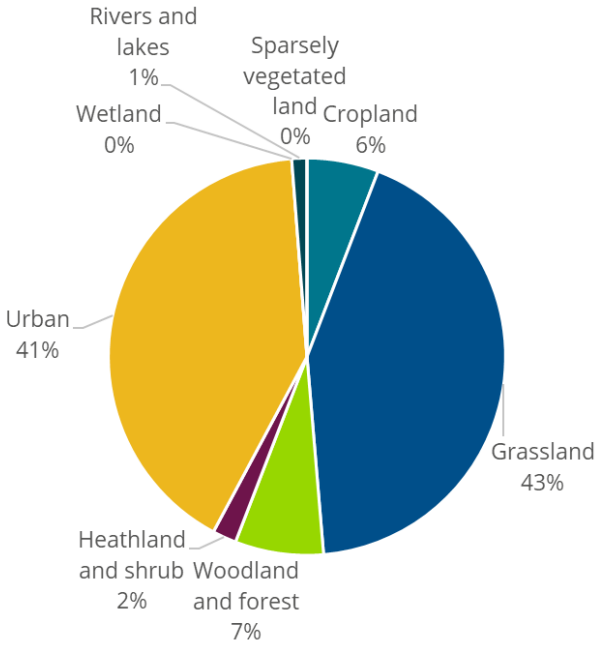


Figure 9: Derby City Extent

Table 49: Derby City extent (ha)

Habitat	Derby City area (ha)
Cropland	500
Grassland	3,300
Woodland and forest	600
Heathland and shrub	200
Urban	3,200
Wetland	-
Rivers and lakes	100
Sparsely vegetated land	-
Total	**7,900**

Table 50 presents the terrestrial designations and connectivity indicators within Derby City and the condition data on the water environment including Water Framework Directive status is presented in

Table 51.

Table 50: Condition indicators in Derby City

Indicator	Derby City		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	4	100%	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	**4**	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	-	-	1%
Local Nature Reserves	190	2%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	22	0.3%	3%
Green Belt	240	3%	0.1%
Parks and Gardens	29	0.4%	1%
Flood risk	**Areas (hectares)**	**% of total area**	**Areas (hectares)**
Flood zone 2	1,500	19%	19,000
Flood zone 3	1,100	14%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	850		14,000
Length of footpaths (km)	35,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total area**	**% of total habitat area**
Grassland			
Core network	110	1%	5%
Stepping stone	4	0.1%	0.1%
Remaining network	1,800	24%	42%
Outside network	5,900	75%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	-	-	77%
Wetland			
Core network	75	1%	6%
Stepping stone	21	0.3%	0.4%
Remaining network	1,200	16%	34%
Outside network	6,500	83%	60%
Woodland			
Core network	250	3%	5%
Stepping stone	140	2%	2%
Remaining network	2,400	31%	48%
Outside network	5,000	64%	45%

Table 51: Water Framework Directive waterbodies in Derby City

Water Framework Directive status	Derby City		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	4	20%	7%
Moderate	0	0%	12%
Good	4	20%	35%
High	12	60%	45%
Total	**20**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 52**.** The estimated annual physical and monetary values are summarised in Table 53**.**

Table 52: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derby City. The total annual net value of ecosystem benefits and services produced within Derby City is £116 in 2021 prices (Table 53). Key benefit values include carbon sequestration by habitats (£49 million, 42% of total benefits) and tourism (£28 million, 24% of total benefits). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.

Table 53: Derby City Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	1,217	H	Gross margin of arable crop production	0.1	H
	Livestock production (heads/yr)	2,233	H	Gross margin of livestock production	0.01	H
Timber	Volume of softwood removals (m3/yr)	26	M	Value of softwood removals	0.001	M
Water supply	Surface water abstraction for public water supply (m3/yr)	-	●	Resource rent value of surface water abstractions for public water supply	-	●
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	-	●	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	-	●
Renewable energy	Electricity generated by renewable sources (MWh/yr)	14,461	M	Resource rent value of renewable energy	0.2	M
Minerals	Volume of minerals extracted (tonnes/yr)	-	●	Ex-works value of mineral production	-	●
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	201,909	M	Value of CO2e sequestered in habitats	49	M
	CO2e emitted by habitats (tCO2e/yr)	(1,912)	M	Value of CO2e emitted by habitats	(0.5)	M
	CO2e emitted by livestock (tCO2e/yr)	(3,922)	M	Value of CO2e emitted by livestock	(1)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	3,990	H	Value of PM2.5 removal by woodland	8	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	6,242,193	M	Adult recreation welfare value (under 3 hours)	20	M
Physical health	Number of active visits (no. active visits/yr)	3,214,729	M	Avoided treatment medical costs	11	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	906,853	L	Domestic tourism expenditure attributed to natural capital	28	L
Volunteering	Number of volunteer days (days/yr)	3,467	L	Value of volunteer days	0.4	L
Water quality	Length of WFD rivers (km)	20	H	Welfare of avoiding deterioration in rivers	0.17	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	**116**	**M**
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	4	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						

Natural Capital Asset Account

Table 54 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £3.7 billion in present value terms. A further £0.01 billion accrues to businesses through agriculture, timber and renewable energy. Overall, Derby City's natural capital assets have an asset value of £3.7 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derby City accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 54**.**
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 54: Derby City Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	3	-	3
	Gross margin of livestock production	3	-	3
Timber	Value of softwood removals	0.02	-	0.02
Water supply	Resource rent value of Surface water abstractions for public water supply	-	-	-
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	-	-	-
Renewable energy	Resource rent value of renewable energy	6	-	6
Minerals	Ex-works value of mineral production	-	-	-
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,812	1,812
	Value of CO2e emitted by habitats	-	(17)	(17)
	Value of CO2e emitted by livestock	-	(35)	(35)
Air quality regulation	Value of PM2.5 removal by woodland	--	211	211
Recreation	Adult recreation welfare value (under 3 hours)	-	521	521
Physical health	Avoided treatment medical costs	-	437	437
Tourism	Domestic tourism expenditure attributed to NC	-	737	737
Volunteering	Value of volunteering		10	10
Water quality	Welfare of avoiding deterioration in rivers	-	4	4
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**12**	**3,681**	**3,693**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 4 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				

Dark Peak Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Dark Peak.

Asset Register

Figure 10 and Table 55 summarise the asset extent account for Dark Peak by UK broad habitat.

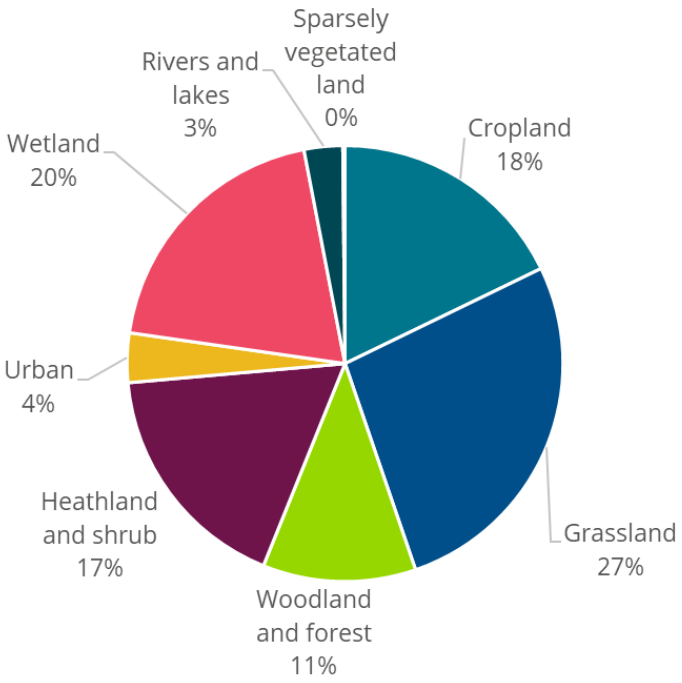


Figure 10: Dark Peak Extent

Table 55: Dark Peak extent (ha)

Habitat	Dark Peak area (ha)
Cropland	12,200
Grassland	18,400
Woodland and forest	7,800
Heathland and shrub	12,000
Urban	2,500
Wetland	13,500
Rivers and lakes	2,000
Sparsely vegetated land	100
Total	**68,500**

Table 56 presents the terrestrial designations and connectivity indicators within Dark Peak and the condition data on the water environment including Water Framework Directive status is presented in Table 57.

Table 56: Condition indicators in Dark Peak

Indicator	Dark Peak		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	2,500	10%	16%
Unfavourable recovering condition	23,000	88%	81%
Unfavourable declining condition	130	0%	1%
Unfavourable no change	400	2%	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	**26,030**	**100%**	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	617	1%	1%
Local Nature Reserves	28	0%	0.3%
National Nature Reserves	857	1%	1%
Special Areas of Conservation	24,904	36%	10%
Special Protection Areas	25,158	37%	10%
Ancient Woodland	2,252	3%	3%
Countryside and Rights of Way	105	0%	12%
Green Belt	-	-	0.1%
Parks and Gardens	1,012	1%	1%
Flood risk	**Areas (hectares)**		**Areas (hectares)**
Flood zone 2	2,723	4%	19,000
Flood zone 3	2,109	3%	15,000
Accessibility	**Areas (hectares)**		**Areas (hectares)**
Area of greenspace (ha)	5,200	-	14,000
Length of footpaths (km)	1,200,000	-	3,800,000
Connectivity	**Areas (hectares)**	**% of total habitat area**	**% of total habitat area**
Grassland			
Core network	7,100	10%	5%
Stepping stone	110	0%	0.1%
Remaining network	51,000	75%	42%
Outside network	9,900	15%	54%
Heathland			
Core network	11,000	16%	5%
Stepping stone	49	0%	0.02%
Remaining network	47,000	69%	18%
Outside network	10,000	15%	77%
Wetland			
Core network	12,000	18%	6%
Stepping stone	310	0%	0.4%
Remaining network	54,000	79%	34%
Outside network	2,200	3%	60%
Woodland			
Core network	3,700	5%	5%
Stepping stone	1,200	2%	2%
Remaining network	36,000	53%	48%
Outside network	27,000	40%	45%

Table 57: Water Framework Directive waterbodies in Dark Peak

Water Framework Directive status	Dark Peak		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	6	3%	7%
Moderate	12	5%	12%

Good	79	35%	35%
High	130	57%	45%
Total	**227**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	771	18%	44%
Good	2,167	50%	35%
High	1,377	32%	18%
Total	**4,315**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 58**.** The estimated annual physical and monetary values are summarised in Table 59**.**

Table 58: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Dark Peak. The total annual net value of ecosystem benefits and services produced within Dark Peak is £648 in 2021 prices (Table 59). Key benefit values include carbon sequestration by habitats (£610 million, 94% of total benefits), recreation (£48 million, 7% of total benefits) and water quality (£27 million, 4% of total benefits). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 59: Dark Peak Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	7,271	M	Gross margin of arable crop production	1	M
	Livestock production (heads/yr)	96,071	M	Gross margin of livestock production	7	M
Timber	Volume of softwood removals (m3/yr)	17,936	M	Value of softwood removals	0.1	M
Minerals	Volume of minerals extracted (tonnes/yr)	57,750	H	Ex-works value of mineral production	1	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	2,490,142	M	Value of CO2e sequestered in habitats	610	M
	CO2e emitted by habitats (tCO2e/yr)	(107,122)	M	Value of CO2e emitted by habitats	(26)	M
	CO2e emitted by livestock (tCO2e/yr)	(175,219)	M	Value of CO2e emitted by livestock	(43)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	53,541	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	11,434,123	M	Adult recreation welfare value (under 3 hours)	48	M
Physical health	Number of active visits (no. active visits/yr)	5,888,574	M	Avoided treatment medical costs	20	M
Water quality	Length of WFD rivers (km)	225	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	4,315	H	Welfare of avoiding deterioration in lakes	27	M
					648	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	26,030	H		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 60 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £23.1 billion in present value terms. A further £0.2 billion accrues to businesses through agriculture, timber and minerals. Overall, Dark Peak's natural capital assets have an asset value of £23.3 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Dark Peak accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 60.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 60: Dark Peak Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	19	-	19
	Gross margin of livestock production	195	-	195
Timber	Value of softwood removals	3	-	3
Minerals	Ex-works value of mineral production	20	-	20
Carbon sequestration	Value of CO2e sequestered in habitats	-	22,351	22,351
	Value of CO2e emitted by habitats	-	(962)	(962)
	Value of CO2e emitted by livestock	-	(1,125)	(1,125)
Air quality regulation	Value of PM2.5 removal by woodland	-	33	33
Recreation	Adult recreation welfare value (under 3 hours)	-	1,260	1,260
Physical health	Avoided treatment medical costs	-	801	801
Water quality	Welfare of avoiding deterioration in rivers	-	59	59
	Welfare of avoiding deterioration in lakes	-	720	720
Total gross asset value		**232**	**23,138**	**23,369**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 26,030			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

White Peak Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for White Peak.

Asset Register

Figure 11 and Table 61 summarise the asset extent account for White Peak by UK broad habitat.

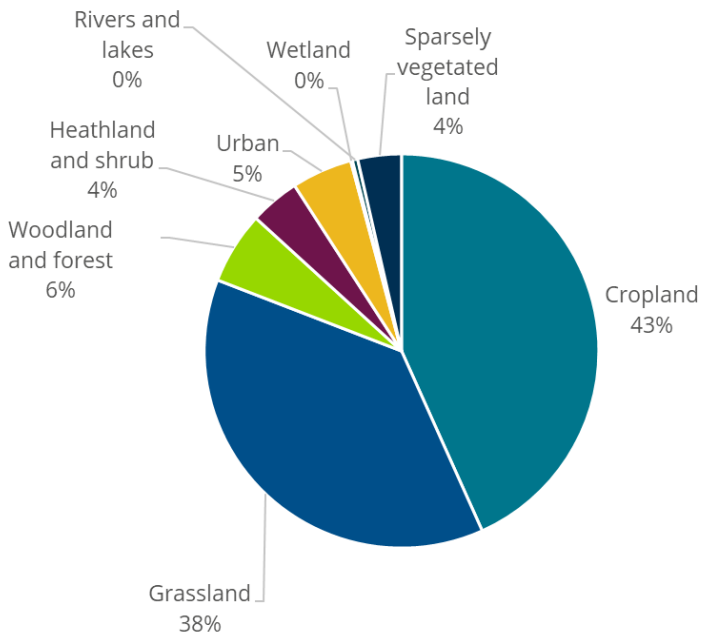


Figure 11: White Peak Extent

Table 61: White Peak extent (ha)

Habitat	White Peak area (ha)
Cropland	17,000
Grassland	14,700
Woodland and forest	2,300
Heathland and shrub	1,600
Urban	1,900
Wetland	100
Rivers and lakes	200
Sparsely vegetated land	1,400
Total	**39,200**

Table 62 presents the terrestrial designations and connectivity indicators within White Peak and the condition data on the water environment including Water Framework Directive status is presented in Table 63**.**

Table 62: Condition indicators in White Peak

Indicator	White Peak		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	2,500	70%	16%
Unfavourable recovering condition	830	23%	81%
Unfavourable declining condition	130	4%	1%
Unfavourable no change	110	3%	2%
Part destroyed	1	0%	0.004%
Destroyed	-	0%	0.02%
Total	**3,571**	**100%**	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	82	0.2%	1%
Local Nature Reserves	34	0.1%	0.3%
National Nature Reserves	860	2%	1%
Special Areas of Conservation	1,900	5%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	1,400	4%	3%
Countryside and Rights of Way	82	0.2%	12%
Green Belt	-	-	0.1%
Parks and Gardens	52	0.1%	1%
Flood risk	**Areas (hectares)**		**Areas (hectares)**
Flood zone 2	390	1%	19,000
Flood zone 3	289	1%	15,000
Accessibility	**Areas (hectares)**		**Areas (hectares)**
Area of greenspace (ha)	1,300	-	14,000
Length of footpaths (km)	700,000	-	3,800,000
Connectivity	**Areas (hectares)**	**% of total habitat area**	**% of total habitat area**
Grassland			
Core network			5%
Stepping stone			0.1%
Remaining network			42%
Outside network			54%
Heathland	-		
Core network	170	0.4%	5%
Stepping stone	3	0.01%	0.02%
Remaining network	4,100	10%	18%
Outside network	35,000	89%	77%
Wetland	-		
Core network	190	0.5%	6%
Stepping stone	44	0.1%	0.4%
Remaining network	5,200	13%	34%
Outside network	34,000	86%	60%
Woodland	-		
Core network	-	-	5%
Stepping stone	430	1%	2%
Remaining network	14,432	39%	48%
Outside network	22,600	60%	45%

Table 63: Water Framework Directive waterbodies in White Peak

Water Framework Directive status	White Peak		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	0	0%	7%
Moderate	0	0%	12%
Good	22	49%	35%
High	23	51%	45%
Total	**45**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%

Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 64**.** The estimated annual physical and monetary values are summarised in Table 65**.**

Table 64: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within White Peak. The total annual net value of ecosystem benefits and services produced within White Peak is £520 in 2021 prices (Table 65). Key benefit values include carbon sequestration by habitats (£287 million, 55% of total benefits) and minerals (£256 million, 49% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£5 million) and livestock (-£64 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 65: White Peak Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	16,347	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	135,269	M	Gross margin of livestock production	17	M
Timber	Volume of softwood removals (m3/yr)	740	M	Value of softwood removals	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	19,750,000	H	Ex-works value of mineral production	256	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,173,157	M	Value of CO2e sequestered in habitats	287	M
	CO2e emitted by habitats (tCO2e/yr)	(20,044)	M	Value of CO2e emitted by habitats	(5)	M
	CO2e emitted by livestock (tCO2e/yr)	(260,177)	M	Value of CO2e emitted by livestock	(64)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	15,374	H	Value of PM2.5 removal by woodland	0.3	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,387,241	M	Adult recreation welfare value (under 3 hours)	18	M
Physical health	Number of active visits (no. active visits/yr)	2,259,429	M	Avoided treatment medical costs	8	M
Water quality	Length of WFD rivers (km)	45	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	**520**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	3,571	H		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 66 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £9.5 billion in present value terms. A further £7.2 billion accrues to businesses through agriculture, timber and minerals. Overall, White Peak's natural capital assets have an asset value of £16.7 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the White Peak accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 66.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 66: White Peak Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	42	-	42
	Gross margin of livestock production	454	-	454
Timber	Value of softwood removals	0.1	-	0.1
Minerals	Ex-works value of mineral production	6,722	-	6722
Carbon sequestration	Value of CO2e sequestered in habitats	-	10,530	10,530
	Value of CO2e emitted by habitats	-	(180)	(180)
	Value of CO2e emitted by livestock	-	(1,671)	(1,671)
Air quality regulation	Value of PM2.5 removal by woodland	-	7	7
Recreation	Adult recreation welfare value (under 3 hours)	-	460	460
Physical health	Avoided treatment medical costs	-	307	307
Water quality	Welfare of avoiding deterioration in rivers	-	14	14
	Welfare of avoiding deterioration in lakes	-	-	-
		7,213	**9,468**	**16,681**
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 3,571			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Derbyshire Peak Fringe and Lower Derwent Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Derbyshire Peak Fringe and Lower Derwent.

Asset Register

Figure 12 and Table 67 summarise the asset extent account for Derbyshire Peak Fringe and Lower Derwent by UK broad habitat.

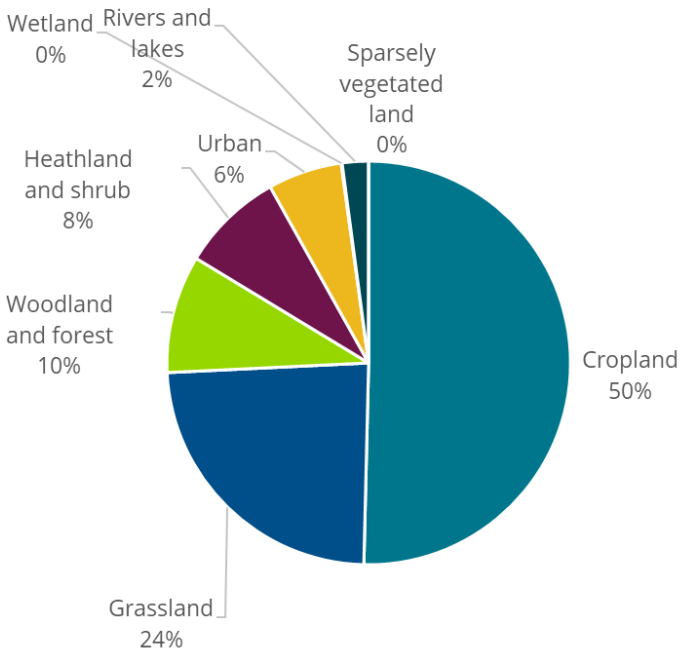


Figure 12: Derbyshire Peak Fringe and Lower Derwent Extent

Table 67: Derbyshire Peak Fringe and Lower Derwent extent (ha)

Habitat	Derbyshire Peak Fringe and Lower Derwent area (ha)
Cropland	18,700
Grassland	8,900
Woodland and forest	3,500
Heathland and shrub	3,100
Urban	2,200
Wetland	-
Rivers and lakes	800
Sparsely vegetated land	-
Total	**37,200**

Table 68 presents the terrestrial designations and connectivity indicators within Derbyshire Peak Fringe and Lower Derwent and the condition data on the water environment including Water Framework Directive status is presented in Table 69.

Table 68: Condition indicators in Derbyshire Peak Fringe and Lower Derwent

Indicator	Derbyshire Peak Fringe and Lower Derwent		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	94	25%	16%
Unfavourable recovering condition	280	73%	81%
Unfavourable declining condition	2	0.4%	1%
Unfavourable no change	6	2%	2%
Part destroyed	-	-	0.004%
Destroyed	1	0.2%	0.02%
Total	383	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	27	0.1%	1%
Local Nature Reserves	140	0.4%	0.3%
National Nature Reserves	10	0.03%	1%
Special Areas of Conservation	5	0.01%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	2,389	6%	3%
Countryside and Rights of Way	44	0.1%	12%
Green Belt	76	0.2%	0.1%
Parks and Gardens	14	0.04%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	2,352	6%	19,000
Flood zone 3	1,774	5%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	960		14,000
Length of footpaths (km)	690,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	500	1%	5%
Stepping stone	17	0.05%	0.1%
Remaining network	14,881	40%	42%
Outside network	21,806	59%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	1,687	5%	18%
Outside network	35,000	95%	77%
Wetland	-		
Core network	-	-	6%
Stepping stone	185	1%	0.4%
Remaining network	12,177	33%	34%
Outside network	24,200	66%	60%
Woodland	-		
Core network	-	-	5%
Stepping stone	830	2%	2%
Remaining network	27,720	80%	48%
Outside network	6,000	17%	45%

Table 69: Water Framework Directive waterbodies in Derbyshire Peak Fringe and Lower Derwent

Water Framework Directive status	Derbyshire Peak Fringe and Lower Derwent	Derbyshire

Rivers	Length (kilometres)	% of total length	% of total length
Poor	17	17%	7%
Moderate	8	8%	12%
Good	47	46%	35%
High	31	30%	45%
Total	**103**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 70**.** The estimated annual physical and monetary values are summarised in Table 71**.**

Table 70: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derbyshire Peak Fringe and Lower Derwent. The total annual net value of ecosystem benefits and services produced Derbyshire Peak Fringe and Lower Derwent is £351 in 2021 prices (Table 71). Key benefit values include carbon sequestration by habitats (£312 million, 89% of total benefits) and recreation (£19 million, 5% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£7 million) and livestock (-£23 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 71: Derbyshire Peak Fringe and Lower Derwent Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	23,691	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	48,061	M	Gross margin of livestock production	8	M
Timber	Volume of softwood removals (m3/yr)	2,538	M	Value of softwood removals	0.02	M
Minerals	Volume of minerals extracted (tonnes/yr)	190,000	H	Ex-works value of mineral production	2	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,274,362	M	Value of CO2e sequestered in habitats	312	M
	CO2e emitted by habitats (tCO2e/yr)	(28,164)	M	Value of CO2e emitted by habitats	(7)	M
	CO2e emitted by livestock (tCO2e/yr)	(95,740)	M	Value of CO2e emitted by livestock	(23)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	23,210	H	Value of PM2.5 removal by woodland	3	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	5,264,690	M	Adult recreation welfare value (under 3 hours)	19	M
Physical health	Number of active visits (no. active visits/yr)	2,711,315	M	Avoided treatment medical costs	9	M
Water quality	Length of WFD rivers (km)	103	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	2,853	H	Welfare of avoiding deterioration in lakes	24	M
					351	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	383	H		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 72 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £12.1 billion in present value terms. A further £0.3 billion accrues to businesses through agriculture, timber and minerals. Overall, Derbyshire Peak Fringe and Lower Derwent's natural capital assets have an asset value of £12.5 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derbyshire Peak Fringe and Lower Derwent accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 72.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 72: Derbyshire Peak Fringe and Lower Derwent Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	61	-	61
	Gross margin of livestock production	206	-	206
Timber	Value of softwood removals	0	-	0.5
Minerals	Ex-works value of mineral production	65	-	65
Carbon sequestration	Value of CO2e sequestered in habitats	-	11,438	11,438
	Value of CO2e emitted by habitats	-	(253)	(253)
	Value of CO2e emitted by livestock	-	(615)	(615)
Air quality regulation	Value of PM2.5 removal by woodland	-	88	88
Recreation	Adult recreation welfare value (under 3 hours)	-	497	497
Physical health	Avoided treatment medical costs	-	369	369
Water quality	Welfare of avoiding deterioration in rivers	-	42	42
	Welfare of avoiding deterioration in lakes	-	623	623
		329	**12,189**	**12,518**
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 383 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Nottinghamshire, Derbyshire and Yorkshire Coalfield Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Nottinghamshire, Derbyshire and Yorkshire Coalfield.

Asset Register

Figure 13 and Table 73 summarise the asset extent account for Nottinghamshire, Derbyshire and Yorkshire Coalfield by UK broad habitat.

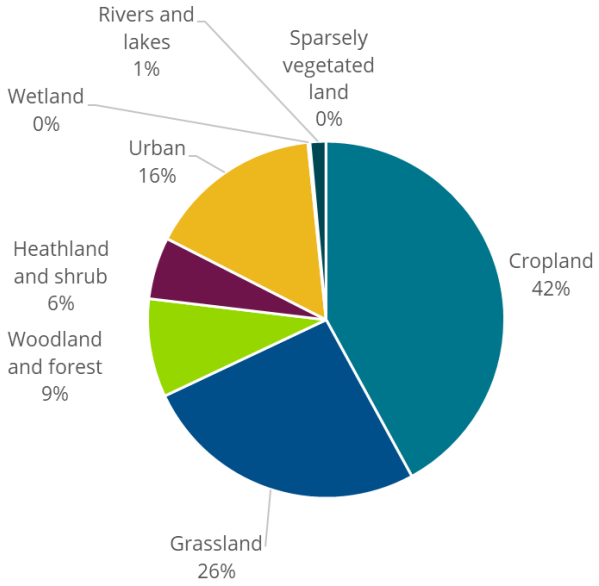


Figure 13: Nottinghamshire, Derbyshire and Yorkshire Coalfield Extent

Table 73: Nottinghamshire, Derbyshire and Yorkshire Coalfield extent (ha)

Habitat	Nottinghamshire, Derbyshire and Yorkshire Coalfield area (ha)
Cropland	17,200
Grassland	10,600
Woodland and forest	3,600
Heathland and shrub	2,300
Urban	6,500
Wetland	100
Rivers and lakes	600
Sparsely vegetated land	-
Total	40,900

Table 74 presents the terrestrial designations and connectivity indicators within Nottinghamshire, Derbyshire and Yorkshire Coalfield and the condition data on the water environment including Water Framework Directive status is presented in Table 75.

Table 74: Condition indicators in Nottinghamshire, Derbyshire and Yorkshire Coalfield

Indicator	Nottinghamshire, Derbyshire and Yorkshire Coalfield		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	27	43%	16%
Unfavourable recovering condition	28	44%	81%
Unfavourable declining condition	8	13%	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	63	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	630	2%	1%
Local Nature Reserves	240	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	1,500	4%	3%
Countryside and Rights of Way	1	0%	12%
Green Belt	10	0%	0.1%
Parks and Gardens	400	1%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	2,257	6%	19,000
Flood zone 3	1,332	3%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	2,700		14,000
Length of footpaths (km)	580,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	300	1%	5%
Stepping stone	10	0.02%	0.1%
Remaining network	8,730	21%	42%
Outside network	31,890	78%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	146	0.4%	18%
Outside network	40,800	100%	77%
Wetland	-		
Core network	-	-	6%
Stepping stone	216	1%	0.4%
Remaining network	-	-	34%
Outside network	25,570	99%	60%
Woodland	-		
Core network	-	-	5%
Stepping stone	990	3%	2%
Remaining network	26,780	69%	48%
Outside network	11,000	28%	45%

Table 75: Water Framework Directive waterbodies in Nottinghamshire, Derbyshire and Yorkshire Coalfield

Water Framework Directive status	Nottinghamshire, Derbyshire and Yorkshire Coalfield		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**

Poor	9	7%	7%
Moderate	50	36%	12%
Good	21	15%	35%
High	59	42%	45%
Total	**139**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 76**.** The estimated annual physical and monetary values are summarised in Table 77**.**

Table 76: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Nottinghamshire, Derbyshire and Yorkshire Coalfield. The total annual net value of ecosystem benefits and services produced is £343 in 2021 prices (Table 77). Key benefit values include carbon sequestration by habitats (£286 million, 83% of total benefits) and recreation (£45 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£15 million) and livestock (-£22 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 77: Nottinghamshire, Derbyshire and Yorkshire Coalfield Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	50,429	M	Gross margin of arable crop production	5	M
	Livestock production (heads/yr)	41,915	M	Gross margin of livestock production	11	M
Timber	Volume of softwood removals (m3/yr)	1,163	M	Value of softwood removals	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	60,000	H	Ex-works value of mineral production	4	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,167,948	M	Value of CO2e sequestered in habitats	286	M
	CO2e emitted by habitats (tCO2e/yr)	(60,769)	M	Value of CO2e emitted by habitats	(15)	M
	CO2e emitted by livestock (tCO2e/yr)	(91,502)	M	Value of CO2e emitted by livestock	(22)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	23,780	H	Value of PM2.5 removal by woodland	5	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	13,019,154	M	Adult recreation welfare value (under 3 hours)	45	M
Physical health	Number of active visits (no. active visits/yr)	6,704,864	M	Avoided treatment medical costs	23	M
Water quality	Length of WFD rivers (km)	139	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	**343**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	63			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 78 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £11.4 billion in present value terms. A further £0.5 billion accrues to businesses through agriculture, timber and minerals. Overall, Nottinghamshire, Derbyshire and Yorkshire Coalfield's natural capital assets have an asset value of £11.9 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Nottinghamshire, Derbyshire and Yorkshire Coalfield accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 78.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 78: Nottinghamshire, Derbyshire and Yorkshire Coalfield Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	129	-	129
	Gross margin of livestock production	286	-	286
Timber	Value of softwood removals	0.2	-	0.2
Minerals	Ex-works value of mineral production	101	-	101
Carbon sequestration	Value of CO2e sequestered in habitats	-	10,483	10,483
	Value of CO2e emitted by habitats	-	(545)	(545)
	Value of CO2e emitted by livestock	-	(821)	(821)
Air quality regulation	Value of PM2.5 removal by woodland	-	135	135
Recreation	Adult recreation welfare value (under 3 hours)	-	1,177	1,177
Physical health	Avoided treatment medical costs	-	912	912
Water quality	Welfare of avoiding deterioration in rivers	-	45	45
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**515**	**11,385**	**11,900**
Asset values (non-monetised)				
Biodiversity	**Total area of SSSI: 63 ha**			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Southern Magnesian Limestone Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Southern Magnesian Limestone.

Asset Register

Figure 14 and Table 79 summarise the asset extent account for Southern Magnesian Limestone by UK broad habitat.

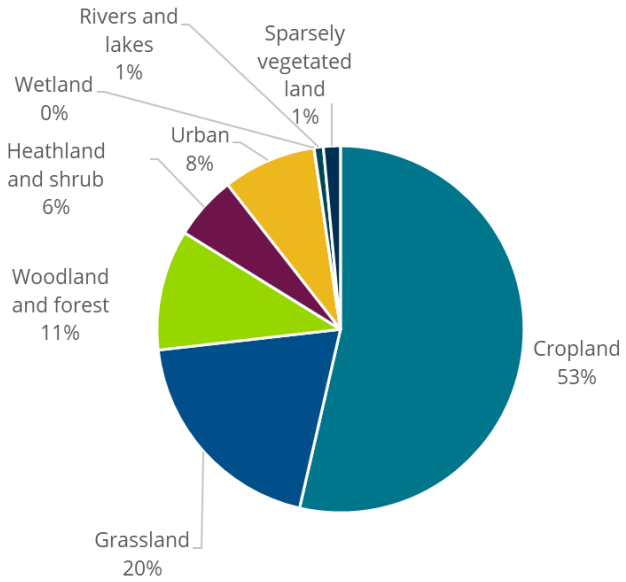


Figure 14: Southern Magnesian Limestone Extent

Table 79: Southern Magnesian Limestone extent (ha)

Habitat	Southern Magnesian Limestone area (ha)
Cropland	5,000
Grassland	1,800
Woodland and forest	1,000
Heathland and shrub	500
Urban	800
Wetland	-
Rivers and lakes	100
Sparsely vegetated land	100
Total	9,300

Table 80 presents the terrestrial designations and connectivity indicators within Southern Magnesian Limestone and the condition data on the water environment including Water Framework Directive status is presented in Table 81**.**

Table 80: Condition indicators in Southern Magnesian Limestone

Indicator	Southern Magnesian Limestone		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	24	66%	16%
Unfavourable recovering condition	9	24%	81%
Unfavourable declining condition	4	10%	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	36	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	160	2%	1%
Local Nature Reserves	88	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	1,000	11%	3%
Countryside and Rights of Way	-	-	12%
Green Belt	-	-	0.1%
Parks and Gardens	320	3%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	85	1%	19,000
Flood zone 3	63	1%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	930		14,000
Length of footpaths (km)	69,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	110	1%	5%
Stepping stone	3	0%	0.1%
Remaining network	2,200	24%	42%
Outside network	7,000	75%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	9,300	100%	77%
Wetland	-		
Core network	63	1%	6%
Stepping stone	19	0%	0.4%
Remaining network	1,500	16%	34%
Outside network	7,800	83%	60%
Woodland	-		
Core network	760	8%	5%
Stepping stone	97	1%	2%
Remaining network	6,000	64%	48%
Outside network	2,500	27%	45%

Table 81: Water Framework Directive waterbodies in Southern Magnesian Limestone

Water Framework Directive status	Southern Magnesian Limestone		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	0	0%	7%
Moderate	3	17%	12%

Good	14	83%	35%
High	0	0%	45%
Total	**17**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 82**.** The estimated annual physical and monetary values are summarised in Table 83**.**

Table 82: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Southern Magnesian Limestone. The total annual net value of ecosystem benefits and services produced in Southern Magnesian Limestone is £55 in 2021 prices (Table 83**)**. Key benefit values include carbon sequestration by habitats (£52 million, 95% of total benefits) and minerals (£16 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£7 million) and livestock (-£25 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 83: Southern Magnesian Limestone Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	**2021**	**Confidence**	**Valuation metric**	**2021**	**Confidence**
Agricultural output	Arable crop production (tonnes/yr)	25,400	**M**	Gross margin of arable crop production	2	**M**
	Livestock production (heads/yr)	51,080	**M**	Gross margin of livestock production	9	**M**
Timber	Volume of softwood removals (m3/yr)	740	**M**	Value of softwood removals	0.01	**M**
Minerals	Volume of minerals extracted (tonnes/yr)	1,200,000	**H**	Ex-works value of mineral production	16	**M**
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	214,388	**M**	Value of CO2e sequestered in habitats	52	**M**
	CO2e emitted by habitats (tCO2e/yr)	(30,472)	**M**	Value of CO2e emitted by habitats	(7)	**M**
	CO2e emitted by livestock (tCO2e/yr)	(102,682)	**M**	Value of CO2e emitted by livestock	(25)	**M**
Air quality regulation	PM2.5 removal by woodland (kg/yr)	6,443	**H**	Value of PM2.5 removal by woodland	1	**H**
Recreation	Adult recreation visits (under 3 hours) (visits/year)	1,534,688	**M**	Adult recreation welfare value (under 3 hours)	5	**M**
Physical health	Number of active visits (no. active visits/yr)	790,365	**M**	Avoided treatment medical costs	3	**M**
Water quality	Length of WFD rivers (km)	17	**H**	Welfare of avoiding deterioration in rivers	0.4	**M**
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	**55**	**M**
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	36			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 84 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £1.3 billion in present value terms. A further £0.7 billion accrues to businesses through agriculture, timber and minerals. Overall, Southern Magnesian Limestone's natural capital assets have an asset value of £2 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Southern Magnesian Limestone accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 84.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 84: Southern Magnesian Limestone Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	65	-	65
	Gross margin of livestock production	231	-	231
Timber	Value of softwood removals	0.1	-	0.1
Minerals	Ex-works value of mineral production	408	-	408
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,924	1,924
	Value of CO2e emitted by habitats	-	(274)	(274)
	Value of CO2e emitted by livestock	-	(659)	(659)
Air quality regulation	Value of PM2.5 removal by woodland	-	20	20
Recreation	Adult recreation welfare value (under 3 hours)	-	128	128
Physical health	Avoided treatment medical costs	-	107	107
Water quality	Welfare of avoiding deterioration in rivers	-	10	10
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**702**	**1,257**	**1,960**
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 36 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Needwood and South Derbyshire Claylands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Needwood and South Derbyshire Claylands.

Asset Register

Figure 15 and Table 85 summarise the asset extent account for Needwood and South Derbyshire Claylands by UK broad habitat.

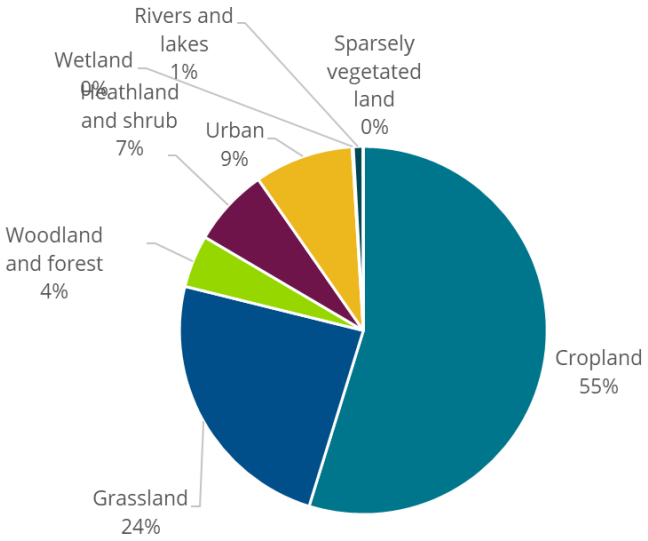


Figure 15: Needwood and South Derbyshire Claylands Extent

Table 85: Needwood and South Derbyshire Claylands extent (ha)

Habitat	Needwood and South Derbyshire Claylands area (ha)
Cropland	18,200
Grassland	8,000
Woodland and forest	1,500
Heathland and shrub	2,300
Urban	2,900
Wetland	-
Rivers and lakes	300
Sparsely vegetated land	-
Total	33,200

Table 86 presents the terrestrial designations and connectivity indicators within Needwood and South Derbyshire Claylands and the condition data on the water environment including Water Framework Directive status is presented in Table 87.

Table 86: Condition indicators in Needwood and South Derbyshire Claylands

Indicator	Needwood and South Derbyshire Claylands		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	43	38%	16%
Unfavourable recovering condition	65	58%	81%
Unfavourable declining condition	4	3%	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	112	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	-	-	1%
Local Nature Reserves	37	0.1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	470	1%	3%
Countryside and Rights of Way	4	0.01%	12%
Green Belt	2	0%	0.1%
Parks and Gardens	660	2%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	1,882	6%	19,000
Flood zone 3	1,504	5%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	870		14,000
Length of footpaths (km)	280,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	97	0.3%	5%
Stepping stone	3	0.01%	0.1%
Remaining network	4,200	13%	42%
Outside network	29,000	87%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	33,000	100%	77%
Wetland	-		
Core network	200	1%	6%
Stepping stone	140	0.4%	0.4%
Remaining network	5,700	17%	34%
Outside network	27,000	82%	60%
Woodland	-		
Core network	720	2%	5%
Stepping stone	460	1%	2%
Remaining network	18,000	54%	48%
Outside network	14,000	42%	45%

Table 87: Water Framework Directive waterbodies in Needwood and South Derbyshire Claylands

Water Framework Directive status	Needwood and South Derbyshire Claylands		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	12	42%	7%
Moderate	9	33%	12%

Good	3	11%	35%
High	4	14%	45%
Total	**28**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	87	100%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**87**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 88**.** The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced is £176 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£186 million, over 100% of total benefits), livestock production (£18 million, 10% of total benefits) and recreation (£16 million, 9% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£17 million) and livestock (-£46 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 90.

Table 88: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Needwood and South Derbyshire Claylands. The total annual net value of ecosystem benefits and services produced is £176 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£186 million, over 100% of total benefits), livestock production (£18 million, 10% of total benefits) and recreation (£16 million, 9% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£17 million) and livestock (-£46 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 89: Needwood and South Derbyshire Claylands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	58,703	M	Gross margin of arable crop production	6	M
	Livestock production (heads/yr)	91,109	M	Gross margin of livestock production	18	M
Timber	Volume of softwood removals (m3/yr)	1,331	M	Value of softwood removals	0.01	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	758,413	M	Value of CO2e sequestered in habitats	186	M
	CO2e emitted by habitats (tCO2e/yr)	(69,400)	M	Value of CO2e emitted by habitats	(17)	M
	CO2e emitted by livestock (tCO2e/yr)	(188,477)	M	Value of CO2e emitted by livestock	(46)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	10,281	H	Value of PM2.5 removal by woodland	4	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,862,548	M	Adult recreation welfare value (under 3 hours)	16	M
Physical health	Number of active visits (no. active visits/yr)	2,504,212	M	Avoided treatment medical costs	8	M
Water quality	Length of WFD rivers (km)	29	H	Welfare of avoiding deterioration in rivers	0.5	M
	Area of WFD lakes (km2)	87	H	Welfare of avoiding deterioration in lakes	1	M
				Total value	**176**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	112			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 90 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £5.4 billion in present value terms. A further £0.6 billion accrues to businesses through agriculture and timber. Overall, Needwood and South Derbyshire Claylands's natural capital assets have an asset value of £6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Needwood and South Derbyshire Claylands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 90.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 90: Needwood and South Derbyshire Claylands Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	150	-	150
	Gross margin of livestock production	483	-	483
Timber	Value of softwood removals	0.3	-	0.3
Carbon sequestration	Value of CO2e sequestered in habitats	-	6,807	6,807
	Value of CO2e emitted by habitats	-	(623)	(623)
	Value of CO2e emitted by livestock	-	(1,692)	(1,692)
Air quality regulation	Value of PM2.5 removal by woodland	-	106	106
Recreation	Adult recreation welfare value (under 3 hours)	-	417	417
Physical health	Avoided treatment medical costs	-	341	341
Water quality	Welfare of avoiding deterioration in rivers	-	13	13
	Welfare of avoiding deterioration in lakes	-	19	19
Total gross asset value		**630**	**5,389**	**6,019**
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 112 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Trent Valley Washlands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Trent Valley Washlands.

Asset Register

Figure 16 and Table 91 summarise the asset extent account for Trent Valley Washlands by UK broad habitat.

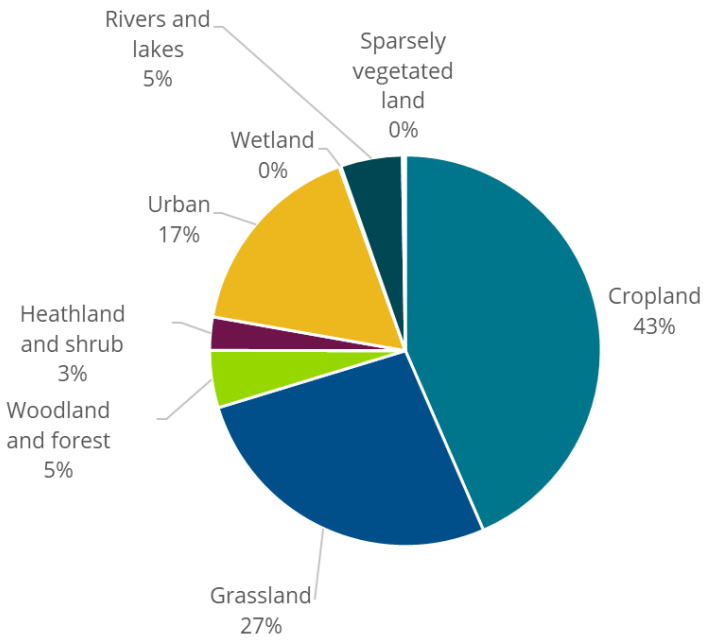


Figure 16: Trent Valley Washlands Extent

Table 91: Trent Valley Washlands extent (ha)

Habitat	Trent Valley Washlands area (ha)
Cropland	8,100
Grassland	5,000
Woodland and forest	900
Heathland and shrub	500
Urban	3,100
Wetland	-
Rivers and lakes	1,000
Sparsely vegetated land	-
Total	18,600

Table 92 presents the terrestrial designations and connectivity indicators within Trent Valley Washlands and the condition data on the water environment including Water Framework Directive status is presented in Table 93**.**

Table 92: Condition indicators in Trent Valley Washlands

Indicator	Trent Valley Washlands		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	4	12%	16%
Unfavourable recovering condition	30	88%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	34	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	73	0.4%	1%
Local Nature Reserves	97	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	2	0%	3%
Countryside and Rights of Way	1	0%	12%
Green Belt	160	1%	0.1%
Parks and Gardens	160	1%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	9,717	52%	19,000
Flood zone 3	8,151	44%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	750		14,000
Length of footpaths (km)	190,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	110	1%	5%
Stepping stone	3	0.02%	0.1%
Remaining network	2,300	12%	42%
Outside network	16,000	87%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	19,000	100%	77%
Wetland	-		
Core network	860	5%	6%
Stepping stone	150	1%	0.4%
Remaining network	8,100	44%	34%
Outside network	9,500	51%	60%
Woodland	-		
Core network	490	3%	5%
Stepping stone	280	1%	2%
Remaining network	5,200	27%	48%
Outside network	13,000	69%	45%

Table 93: Water Framework Directive waterbodies in Trent Valley Washlands

Water Framework Directive status	Trent Valley Washlands		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	6	6%	7%
Moderate	3	3%	12%
Good	31	32%	35%
High	56	58%	45%
Total	96	100%	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%

High	160	100%	18%
Total	160	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 94**.** The estimated annual physical and monetary values are summarised in Table 95**.**

Table 94: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Trent Valley Washlands. The total annual net value of ecosystem benefits and services produced is £152 in 2021 prices (Table 95). Key benefit values include carbon sequestration by habitats (£102 million, 67% of total benefits), recreation (£22 million, 14% of total benefits) and minerals (£19 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£8 million) and livestock (-£5 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 95: Trent Valley Washlands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	**2021**	**Confidence**	**Valuation metric**	**2021**	**Confidence**
Agricultural output	Arable crop production (tonnes/yr)	27,335	**M**	Gross margin of arable crop production	3	**M**
	Livestock production (heads/yr)	10,014	**M**	Gross margin of livestock production	2	**M**
Timber	Volume of softwood removals (m3/yr)	178	**M**	Value of softwood removals	0.001	**M**
Minerals	Volume of minerals extracted (tonnes/yr)	1,300,000	**H**	Ex-works value of mineral production	19	**M**
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	414,982	**M**	Value of CO2e sequestered in habitats	102	**M**
	CO2e emitted by habitats (tCO2e/yr)	(32,747)	**M**	Value of CO2e emitted by habitats	(8)	**M**
	CO2e emitted by livestock (tCO2e/yr)	(20,762)	**M**	Value of CO2e emitted by livestock	(5)	**M**
Air quality regulation	PM2.5 removal by woodland (kg/yr)	6,356	**H**	Value of PM2.5 removal by woodland	4	**H**
Recreation	Adult recreation visits (under 3 hours) (visits/year)	6,564,559	**M**	Adult recreation welfare value (under 3 hours)	22	**M**
Physical health	Number of active visits (no. active visits/yr)	3,380,748	**M**	Avoided treatment medical costs	11	**M**
Water quality	Length of WFD rivers (km)	97	**H**	Welfare of avoiding deterioration in rivers	1	**M**
	Area of WFD lakes (km2)	455	**H**	Welfare of avoiding deterioration in lakes	2	**M**
				Total value	**152**	**M**
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	34			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 96 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £4.5 billion in present value terms. A further £0.3 billion accrues to businesses through agriculture, timber and minerals. Overall, Trent Valley Washlands's natural capital assets have an asset value of £4.8 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Trent Valley Washlands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 96.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 96: Trent Valley Washlands Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	70	-	70
	Gross margin of livestock production	54	-	54
Timber	Value of softwood removals	0.03	-	0.03
Minerals	Ex-works value of mineral production	165	-	165
Carbon sequestration	Value of CO2e sequestered in habitats	-	3,725	3,725
	Value of CO2e emitted by habitats	-	(294)	(294)
	Value of CO2e emitted by livestock	-	(133)	(133)
Air quality regulation	Value of PM2.5 removal by woodland	-	96	96
Recreation	Adult recreation welfare value (under 3 hours)	-	577	577
Physical health	Avoided treatment medical costs	-	460	460
Water quality	Welfare of avoiding deterioration in rivers	-	24	24
	Welfare of avoiding deterioration in lakes	-	56	56
Total gross asset value		**288**	**4,510**	**4,798**
Asset values (non-monetised)				
Biodiversity	**Total area of SSSI: 34 ha**			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Melbourne Parklands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Melbourne Parklands.

Asset Register

Figure 17 and Table 97 summarise the asset extent account for Melbourne Parklands by UK broad habitat.

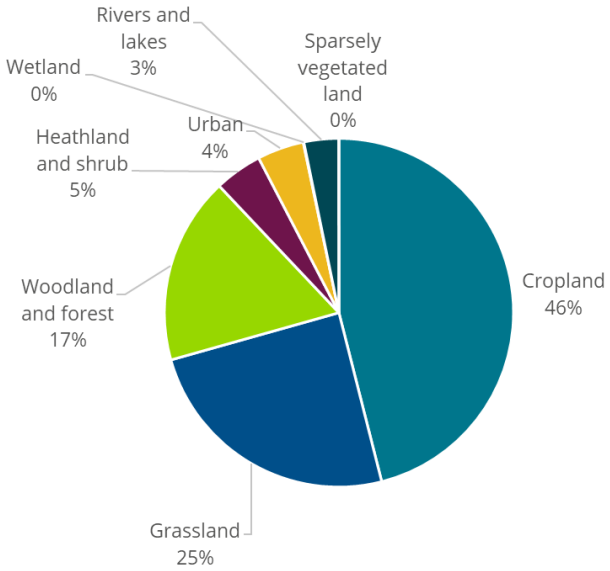


Figure 17: Melbourne Parklands Extent

Table 97: Melbourne Parklands extent (ha)

Habitat	Melbourne Parklands area (ha)
Cropland	3,500
Grassland	1,900
Woodland and forest	1,300
Heathland and shrub	300
Urban	300
Wetland	-
Rivers and lakes	200
Sparsely vegetated land	-
Total	7,500

Table 98 presents the terrestrial designations and connectivity indicators within Melbourne Parklands and the condition data on the water environment including Water Framework Directive status is presented in Table 99**.**

Table 98: Condition indicators in Melbourne Parklands

Indicator	Melbourne Parklands		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	79	64%	16%
Unfavourable recovering condition	39	32%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	5	4%	0.02%
Total	123	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	-	-	1%
Local Nature Reserves	-	-	0.3%
National Nature Reserves	80	1%	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	540	7%	3%
Countryside and Rights of Way	-	-	12%
Green Belt	-	-	0.1%
Parks and Gardens	520	7%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	225	3%	19,000
Flood zone 3	152	2%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	770		14,000
Length of footpaths (km)	120,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	43	1%	5%
Stepping stone	1	0%	0.1%
Remaining network	1,600	21%	42%
Outside network	6,000	78%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	7,600	100%	77%
Wetland	-		
Core network	230	3%	6%
Stepping stone	28	0%	0.4%
Remaining network	2,700	36%	34%
Outside network	4,600	61%	60%
Woodland	-		
Core network	890	12%	5%
Stepping stone	150	2%	2%
Remaining network	4,900	65%	48%
Outside network	1,600	21%	45%

Table 99: Water Framework Directive waterbodies in Melbourne Parklands

Water Framework Directive status	Melbourne Parklands		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**

Poor	0	0%	7%
Moderate	2	11%	12%
Good	9	43%	35%
High	9	46%	45%
Total	**20**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	7	1%	44%
Good	880	99%	35%
High	0	0%	18%
Total	**887**	**100%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 100**.** The estimated annual physical and monetary values are summarised in Table 101**.**

Table 100: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Melbourne Parklands. The total annual net value of ecosystem benefits and services produced in Melbourne Parklands is £71 in 2021 prices (Table 101). Key benefit values include carbon sequestration by habitats (£64 million, 90% of total benefits) and water quality (£9 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£8 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 101: Melbourne Parklands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	15,492	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	16,606	M	Gross margin of livestock production	2	M
Timber	Volume of softwood removals (m3/yr)	208	M	Value of softwood removals	0.001	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	260,189	M	Value of CO2e sequestered in habitats	64	M
	CO2e emitted by habitats (tCO2e/yr)	(18,373)	M	Value of CO2e emitted by habitats	(4)	M
	CO2e emitted by livestock (tCO2e/yr)	(31,859)	M	Value of CO2e emitted by livestock	(8)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	9,710	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	1,347,774	M	Adult recreation welfare value (under 3 hours)	4	M
Physical health	Number of active visits (no. active visits/yr)	694,104	M	Avoided treatment medical costs	2	M
Water quality	Length of WFD rivers (km)	20	H	Welfare of avoiding deterioration in rivers	0.3	M
	Area of WFD lakes (km2)	888	H	Welfare of avoiding deterioration in lakes	9	M
				Total value	**71**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	123			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 102 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £2.3 billion in present value terms. A further £.09 billion accrues to businesses through agriculture and timber. Melbourne Parklands's natural capital assets have an asset value of £2.4 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Melbourne Parklands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 102.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 102: Melbourne Parklands Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	40	-	40
	Gross margin of livestock production	55	-	55
Timber	Value of softwood removals	0.04	-	0.04
Carbon sequestration	Value of CO2e sequestered in habitats	-	2,335	2,335
	Value of CO2e emitted by habitats	-	(165)	(165)
	Value of CO2e emitted by livestock	-	(286)	(286)
Air quality regulation	Value of PM2.5 removal by woodland	-	24	24
Recreation	Adult recreation welfare value (under 3 hours)	-	113	113
Physical health	Avoided treatment medical costs	-	94	94
Water quality	Welfare of avoiding deterioration in rivers	-	7	7
	Welfare of avoiding deterioration in lakes	-	226	226
Total gross asset value		**94**	**2,348**	**2,442**
Asset values (non-monetised)				
Biodiversity	**Total area of SSSI: 123 ha**			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Leicestershire and South Derbyshire Coalfield Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Leicestershire and South Derbyshire Coalfield.

Asset Register

Figure 18 and Table 103 summarise the asset extent account for Leicestershire and South Derbyshire Coalfield by UK broad habitat.

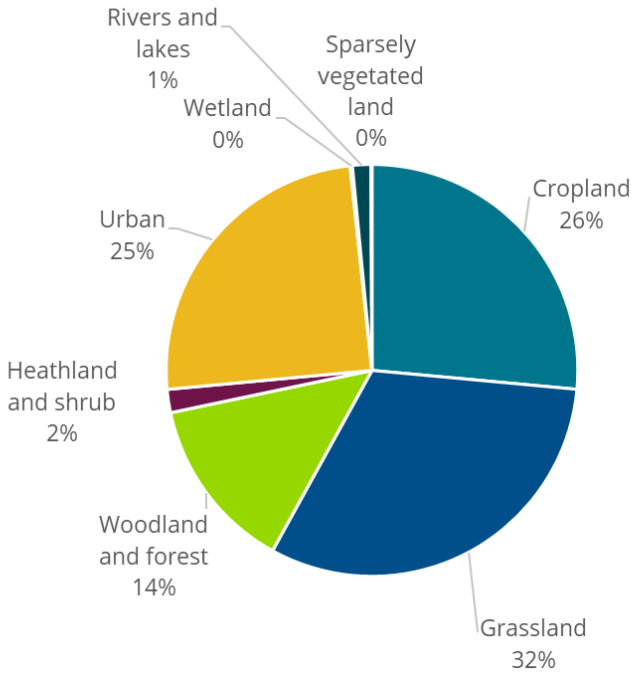


Figure 18: Leicestershire and South Derbyshire Coalfield Extent

Table 103: Leicestershire and South Derbyshire Coalfield extent (ha)

Habitat	Leicestershire and South Derbyshire Coalfield area (ha)
Cropland	700
Grassland	900
Woodland and forest	400
Heathland and shrub	100
Urban	700
Wetland	-
Rivers and lakes	-
Sparsely vegetated land	-
Total	2,800

Table 104 presents the terrestrial designations and connectivity indicators within Leicestershire and South Derbyshire Coalfield and the condition data on the water environment including Water Framework Directive status is presented in

Table 105.

Table 104: Condition indicators in Leicestershire and South Derbyshire Coalfield

Indicator	Leicestershire and South Derbyshire Coalfield		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	-	-	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	-	-	1%
Local Nature Reserves	-	-	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	23	1%	3%
Green Belt	27	1%	
Parks and Gardens	-	-	
Flood risk	**Areas (hectares)**		**Areas (hectares)**
Flood zone 2	47	2%	19,000
Flood zone 3	39	1%	15,000
Accessibility	**Areas (hectares)**		**Areas (hectares)**
Area of greenspace (ha)	290		14,000
Length of footpaths (km)	17,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total habitat area**	**% of total habitat area**
Grassland			
Core network	2	0%	5%
Stepping stone	-	-	0.1%
Remaining network	420	15%	42%
Outside network	2,400	85%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	2,800	100%	77%
Wetland	-		
Core network	29	1%	6%
Stepping stone	17	1%	0.4%
Remaining network	1,000	36%	34%
Outside network	1,700	62%	60%
Woodland	-		
Core network	220	8%	5%
Stepping stone	65	2%	2%
Remaining network	1,400	50%	48%
Outside network	1,100	39%	45%

Table 105: Water Framework Directive waterbodies in Leicestershire and South Derbyshire Coalfield

Water Framework Directive status	Leicestershire and South Derbyshire Coalfield		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	0	0%	7%
Moderate	0	0%	12%
Good	3	33%	35%
High	5	67%	45%
Total	8	100%	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 106**.** The estimated annual physical and monetary values are summarised in Table 107**.**

Table 106: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Leicestershire and South Derbyshire Coalfield. The total annual net value of ecosystem benefits and services produced is £24 in 2021 prices (Table 107). Key benefit values include carbon sequestration by habitats (£23 million, 96% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£1 million) and livestock (-£4 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 107: Leicestershire and South Derbyshire Coalfield Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	**2021**	**Confidence**	**Valuation metric**	**2021**	**Confidence**
Agricultural output	Arable crop production (tonnes/yr)	1,960	**M**	Gross margin of arable crop production	0.2	**M**
	Livestock production (heads/yr)	7,955	**M**	Gross margin of livestock production	2	**M**
Timber	Volume of softwood removals (m3/yr)	56	**M**	Value of softwood removals	<0.01	**M**
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	94,285	**M**	Value of CO2e sequestered in habitats	23	**M**
	CO2e emitted by habitats (tCO2e/yr)	(2,326)	**M**	Value of CO2e emitted by habitats	(1)	**M**
	CO2e emitted by livestock (tCO2e/yr)	(16,497)	**M**	Value of CO2e emitted by livestock	(4)	**M**
Air quality regulation	PM2.5 removal by woodland (kg/yr)	2,857	**H**	Value of PM2.5 removal by woodland	0.26	**H**
Recreation	Adult recreation visits (under 3 hours) (visits/year)	756,840	**M**	Adult recreation welfare value (under 3 hours)	2	**M**
Physical health	Number of active visits (no. active visits/yr)	389,773	**M**	Avoided treatment medical costs	1	**M**
Water quality	Length of WFD rivers (km)	8	**H**	Welfare of avoiding deterioration in rivers	0.07	**M**
	Area of WFD lakes (km2)	-	**H**	Welfare of avoiding deterioration in lakes	-	**M**
				Total value	**24**	**M**
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	0			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 108 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £0.8 billion in present value terms. A further £0.05 billion accrues to businesses through agriculture and timber. Overall, Leicestershire and South Derbyshire Coalfield's natural capital assets have an asset value of £0.8 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Leicestershire and South Derbyshire Coalfield accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 108.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 108: Leicestershire and South Derbyshire Coalfield Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	5	-	5
	Gross margin of livestock production	43	-	43
Timber	Value of softwood removals	0.01	-	0.01
Carbon sequestration	Value of CO2e sequestered in habitats	-	846	846
	Value of CO2e emitted by habitats	-	(21)	(21)
	Value of CO2e emitted by livestock	-	(148)	(148)
Air quality regulation	Value of PM2.5 removal by woodland	-	7	7
Recreation	Adult recreation welfare value (under 3 hours)	-	59	59
Physical health	Avoided treatment medical costs	-	53	53
Water quality	Welfare of avoiding deterioration in rivers	-	2	2
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**47**	**798**	**846**
Asset values (non-monetised)				
Biodiversity				
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Mease/Sence Lowlands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Mease/Sence Lowlands.

Asset Register

Figure 19 and Table 109 summarise the asset extent account for Mease/Sence Lowlands by UK broad habitat.

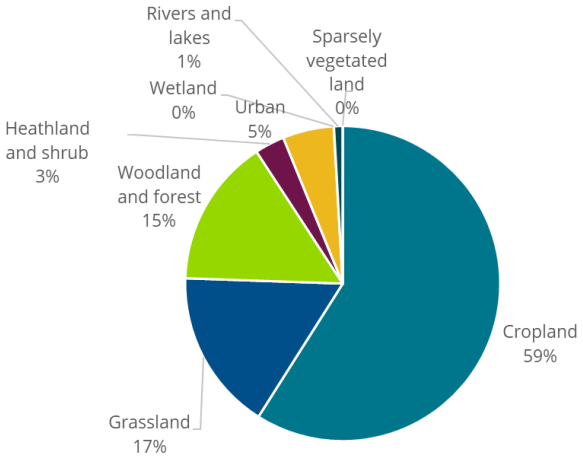


Figure 19: Mease/Sence Lowlands Extent

Table 109: Mease/Sence Lowlands extent (ha)

Habitat	Mease/Sence Lowlands area (ha)
Cropland	3,500
Grassland	1,000
Woodland and forest	900
Heathland and shrub	200
Urban	300
Wetland	-
Rivers and lakes	100
Sparsely vegetated land	-
Total	6,000

Table 110 presents the terrestrial designations and connectivity indicators within Mease/Sence Lowlands and the condition data on the water environment including Water Framework Directive status is presented in

Table 111.

Table 110: Condition indicators in Mease/Sence Lowlands

Indicator	Mease/Sence Lowlands		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	4	100%	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	4	100%	100%
Other designated areas	**Areas (hectares)**	**% of total area**	**% of total area**
Country Parks	-	-	1%
Local Nature Reserves	10	0.2%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	4	0.1%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	120	2%	3%
Countryside and Rights of Way	-	-	12%
Green Belt	-	-	0.1%
Parks and Gardens	-	-	1%
Flood risk	**Areas (hectares)**		**Areas (hectares)**
Flood zone 2	302	5%	19,000
Flood zone 3	257	4%	15,000
Accessibility	**Areas (hectares)**		**Areas (hectares)**
Area of greenspace (ha)	590		14,000
Length of footpaths (km)	19,000		3,800,000
Connectivity	**Areas (hectares)**	**% of total habitat area**	**% of total habitat area**
Grassland			
Core network	6	0.1%	5%
Stepping stone	-	-	0.1%
Remaining network	380	6%	42%
Outside network	5,500	93%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	5,900	100%	77%
Wetland	-		
Core network	24	0.4%	6%
Stepping stone	32	1%	0.4%
Remaining network	1,400	24%	34%
Outside network	4,500	76%	60%
Woodland	-		
Core network	680	11%	5%
Stepping stone	82	1%	2%
Remaining network	3,500	59%	48%
Outside network	1,700	29%	45%

Table 111: Water Framework Directive waterbodies in Mease/Sence Lowlands

Water Framework Directive status	Mease/Sence Lowlands		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	0	0%	7%
Moderate	0	0%	12%

Good	19	95%	35%
High	1	5%	45%
Total	**20**	**100%**	100%
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	**0**	**0%**	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 112**.** The estimated annual physical and monetary values are summarised in Table 113**.**

Table 112: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Mease/Sence Lowlands. The total annual net value of ecosystem benefits and services produced in Mease/Sence Lowlands is £40 in 2021 prices (Table 113). Key benefit value is carbon sequestration by habitats (£45 million, over 100% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£8 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.

Table 113: Mease/Sence Lowlands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	15,533	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	16,866	M	Gross margin of livestock production	3	M
Timber	Volume of softwood removals (m3/yr)	512	M	Value of softwood removals	0.004	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	182,474	M	Value of CO2e sequestered in habitats	45	M
	CO2e emitted by habitats (tCO2e/yr)	(18,098)	M	Value of CO2e emitted by habitats	(4)	M
	CO2e emitted by livestock (tCO2e/yr)	(34,612)	M	Value of CO2e emitted by livestock	(8)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	6,678	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	534,717	M	Adult recreation welfare value (under 3 hours)	2	M
Physical health	Number of active visits (no. active visits/yr)	275,379	M	Avoided treatment medical costs	1	M
Water quality	Length of WFD rivers (km)	20	H	Welfare of avoiding deterioration in rivers	0.46	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	**40**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	4			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						

Natural Capital Asset Account

Table 114 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £1.3 billion in present value terms. A further £0.1 billion accrues to businesses through agriculture and timber. Overall, Mease/Sence Lowlands's natural capital assets have an asset value of £1.4 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Mease/Sence Lowlands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 114.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 114: Mease/Sence Lowlands Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	40	-	40
	Gross margin of livestock production	86	-	86
Timber	Value of softwood removals	0.1	-	0.1
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,638	1,638
	Value of CO2e emitted by habitats	-	(162)	(162)
	Value of CO2e emitted by livestock	-	(311)	(311)
Air quality regulation	Value of PM2.5 removal by woodland	-	16	16
Recreation	Adult recreation welfare value (under 3 hours)	-	48	48
Physical health	Avoided treatment medical costs	-	37	37
Water quality	Welfare of avoiding deterioration in rivers	-	12	12
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		**125**	**1,279**	**1,404**
Asset values (non-monetised)				
Biodiversity	**Total area of SSSI: 4 ha**			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Peak District National Park Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for the Peak District National Park.

Asset Register

Figure 19 and Table 109 summarise the asset extent account for the Peak District National Park by UK broad habitat.

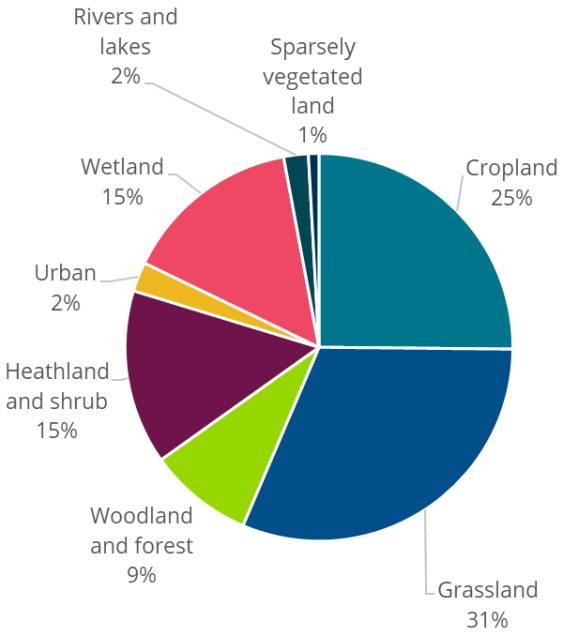


Figure 20: Peak District National Park Extent

Table 115: Peak District National Park extent (ha)

Habitat	Peak District National Park area (ha)
Cropland	22,500
Grassland	28,000
Woodland and forest	7,800
Heathland and shrub	13,100
Urban	2,200
Wetland	13,400
Rivers and lakes	1,800
Sparsely vegetated land	800
Total	89,600

Table 110 presents the terrestrial designations and connectivity indicators within Peak District National Park and the condition data on the water environment including Water Framework Directive status is presented in

Table 111.

Table 116: Condition indicators in Peak District National Park

Indicator	Peak District National Park		Derbyshire
Designated SSSIs	**Area (hectares)**	**% of total SSSI area**	**% of total SSSI area**
Favourable condition	4,700	17%	16%
Unfavourable recovering condition	23,000	81%	81%
Unfavourable declining condition	220	1%	1%
Unfavourable no change	470	2%	2%
Part destroyed	0	0%	0.004%
Destroyed	0	0%	0.02%
Total	28,390	100%	100%
Other designated areas	Areas (hectares)	% of total area	**% of total area**
Country Parks	610	1%	1%
Local Nature Reserves	0	0%	0.3%
National Nature Reserves	1,700	2%	1%
Special Areas of Conservation	26,000	29%	10%
Special Protection Areas	25,000	28%	10%
Ancient Woodland	2,956	3%	3%
Countryside and Rights of Way	31,514	35%	12%
Green Belt	-	-	0.1%
Parks and Gardens	901	1%	1%
Flood risk	Areas (hectares)	% of total area	**Areas (hectares)**
Flood zone 2	2,459	3%	19,000
Flood zone 3	1,931	2%	15,000
Accessibility			**Areas (hectares)**
Area of greenspace (ha)	5,400		14,000
Length of footpaths (km)	1,600,000		3,800,000
Connectivity	Areas (hectares)	% of total area	**% of total habitat area**
Grassland			
Core network	10,000	11%	5%
Stepping stone	180	0%	0.1%
Remaining network	66,000	73%	42%
Outside network	14,000	15%	54%
Heathland			
Core network	11,000	12%	5%
Stepping stone	50	0%	0.02%
Remaining network	37,000	41%	18%
Outside network	42,000	47%	77%
Wetland			
Core network	12,000	14%	6%
Stepping stone	270	0%	0.4%
Remaining network	38,000	43%	34%
Outside network	39,000	43%	60%
Woodland			
Core network	4,300	5%	5%
Stepping stone	1,200	1%	2%
Remaining network	38,000	42%	48%
Outside network	46,000	51%	45%

Table 117: Water Framework Directive waterbodies in Peak District National Park

Water Framework Directive status	Peak District National Park		Derbyshire
Rivers	**Length (kilometres)**	**% of total length**	**% of total length**
Poor	1	0%	**7%**
Moderate	9	4%	**12%**

Good	66	31%	**35%**
High	135	64%	**45%**
Total	**211**	**100%**	**100%**
Lakes	**Area (hectares)**	**% of total area**	**% of total area**
Poor	0	0%	**4%**
Moderate	771	19%	**44%**
Good	2,002	48%	**35%**
High	1,377	33%	**18%**
Total	**4,150**	**100%**	**100%**

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 112**.** The estimated annual physical and monetary values are summarised in Table 113**.**

Table 118: Assessing data quality

Level of confidence	Symbol	Description
Low	**L**	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	**M**	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	**H**	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Peak District National Park. The total annual net value of ecosystem benefits and services produced in the Peak District National Park is £782 in 2021 prices (Table 113). Key benefit values include carbon sequestration by habitats (£737 million, 94% of total benefits), minerals (£104 million, 13% total benefits) and recreation (£51 million, 7% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£29 million) and livestock (-£201 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure attributed to nature which is low.

Table 119: Peak District National Park Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	18,140	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	413,439	M	Gross margin of livestock production	35	M
Timber	Volume of softwood removals (m3/yr)	15,087	M	Value of softwood removals	0.5	M
Minerals	Volume of minerals extracted (tonnes/yr)	8,020,367	H	Ex-works value of mineral production	104	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	3,008,556	M	Value of CO2e sequestered in habitats	737	M
	CO2e emitted by habitats (tCO2e/yr)	(120,399)	M	Value of CO2e emitted by habitats	(29)	M
	CO2e emitted by livestock (tCO2e/yr)	(819,868)	M	Value of CO2e emitted by livestock	(201)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	53,850	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	12,118,332	M	Adult recreation welfare value (under 3 hours)	51	M
Physical health	Number of active visits (no. active visits/yr)	6,240,941	M	Avoided treatment medical costs	21	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	141,920	L	Domestic tourism expenditure attributed to natural capital	34	L
Volunteering	Number of volunteer days (days/yr)	400	M	Value of volunteer days	0.04	M
Education	Number of education visits (visits/yr)	5,800	M	Value of educational visits	0.02	M
Water quality	Length of WFD rivers (km)	211	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	4,150	H	Welfare of avoiding deterioration in lakes	26	M
				Total value	**782**	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	28,608			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						

Natural Capital Asset Account

Table 114 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £22.4 billion in present value terms. A further £3.7 billion accrues to businesses through agriculture, timber and minerals. Overall, Peak District National Park's natural capital assets have an asset value of £26.1 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Peak District National Park accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 114.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 120: Peak District National Park Natural Capital Asset Account, £m PV60

Produced at: September 2022	**Valuation metric**	**Value to businesses**	**Value to the rest of society**	**Total**
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	46	-	46
	Gross margin of livestock production	944	-	944
Timber	Value of softwood removals	13	-	13
Minerals	Ex-works value of mineral production	2,730	-	2,730
Carbon sequestration	Value of CO2e sequestered in habitats	-	27,004	27,004
	Value of CO2e emitted by habitats	-	(1,081)	(1,081)
	Value of CO2e emitted by livestock	-	(7,359)	(7,359)
Air quality regulation	Value of PM2.5 removal by woodland	-	29	29
Recreation	Adult recreation welfare value (under 3 hours)	-	1,331	1,331
Physical health	Avoided treatment medical costs	-	849	849
Tourism	Domestic tourism expenditure attributed to natural capital		890	890
Volunteering	Value of volunteer days		1	1
Education	Value of educational visits		0.6	0.6
Water quality	Welfare of avoiding deterioration in rivers		47	47
	Welfare of avoiding deterioration in lakes		678	678
Total gross asset value		**3,713**	**22,391**	**26,104**
Asset values (non-monetised)				
Biodiversity	**Total area of SSSI: 28,608 hectares**			
Other material unquantified benefits				
Flood risk management				
Mental health				

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Derbyshire Natural Capital Strategy – Appendix 7

Contents

Appendix 7 – Natural Capital accounting methodology

Benefit methodologies

This appendix describes the approach to quantifying and valuing the benefits provided by the natural capital assets in the Derbyshire accounting boundary. The analysis covers the physical and monetary flows of the benefits in the account. The section starts by giving an overview of the Physical and Monetary Flow Account and the Natural Capital Asset Account. This section should be read in conjunction with the Excel™ natural capital account workbook developed by eftec (Derbyshire_NCA_041122.xlsx).

Physical and Monetary Flow Account

The Physical Flow Account shows the level of benefits provided by natural capital in physical terms, while the Monetary Flow Account shows the value of benefits provided by natural capital in monetary terms. An overview of the physical flow and monetary valuation metrics used for each benefit in scope is provided in Table 1.

Table 1: Overview of benefits that are quantified and monetised in the accounts

Ecosystem service	Benefit	Physical flow measure	Monetary valuation metric
Agricultural output	Arable crops produced for human consumption; Meat (cows, sheep) and dairy (cows) produced for human consumption	Tonnes of arable crops produced for food (tonnes/yr); Number of livestock heads (heads/yr)	Gross margins or producer price by crop type (£/tonne); Gross margins by livestock type (£/head)
Timber	Timber removed for further processing	Softwood removals (m^3/yr)	Conifer/softwood stumpage price (£/m^3)
Water supply	Industrial, agricultural and public water supply uses	Surface and groundwater abstraction (m^3/yr)	Resource rent value; ecosystem provision value (£/m^3)
Renewable energy	Energy services	Electricity generation from onshore wind (MWh/yr); Electricity generation from hydropower (MWh/yr)	UK unit resource rent (£/MWh)
Minerals	Minerals for various industrial uses and energy services	Volume of sand and gravel extracted (tonnes/yr)	UK unit ex-works sales value of sand and gravel (£/tonne)
Carbon sequestration	Mitigating climate change	Carbon sequestered in each habitat type (tCO_2e/yr)	Marginal abatement cost (£/tCO_2e)
Air quality regulation	Reduced health impacts and associated cost of treatment and productivity and welfare loss	PM2.5 removed by woodland (kg/yr)	Avoided cost (treatment and productivity) plus welfare value (£/ha)
Flood regulation	Reduced flood damage to properties	Number of properties at risk of flooding (properties/yr)	Avoided property damage cost (£/property)
Recreation	Welfare to individuals visiting outdoor recreational sites	Number of recreational visits (visits/yr)	Total welfare value generated by recreation (£/visit)
Physical health (through recreation)	Reduced health impacts and associated cost of treatment and productivity and welfare loss	Total active visits (which result in Quality-adjusted Life years QALYs[2] saved) (active visits/yr)	Avoided treatment costs per visit (based on costs saved per QALY) (£/active visit)

Ecosystem service	Benefit	Physical flow measure	Monetary valuation metric
Education	Cost of educational visit	Educational visits (days/yr)	Resource cost (£/pupil visit) as proxy for value
Volunteering	Labour savings	Volunteering effort (days/yr)	Resource cost (£/day) of unskilled and skilled labour
Tourism	Expenditure attributable to nature	Total overnight stays (visits/yr)	Expenditure by domestic overnight stays attributed to nature (£/trip)
Water quality	Welfare gain from maintaining the Water Framework Directive (WFD) quality status of waterbodies	Length (km) and area (km^2) of WFD waterbodies by status	WTP for avoided deterioration from NWEBS (£/km)

Natural Capital Asset Account

The asset values estimated are reported in the Natural Capital Asset Account, separated into benefits to businesses and benefits to the rest of society. Asset values are calculated by summing the expected future annual flow of benefits over 60 years, discounted according to HM Treasury Green Book Guidance (2022a) to express in present value terms. Where possible, future values take into account expected trends in the quantity and/or value of the benefit. Where this information is not available, benefits are assumed to be constant over time.

Private Benefits

Agricultural output

Agricultural output comprises both arable and livestock outputs and is a significant sector in the region. The benefit is measured based on the marketed production from the sector at the market prices. The account's Asset Register provides the area of crops and Defra (2022) indicates the number of livestock (cattle and sheep) within commercial landholdings for local authorities in 2016. Records from 2021 are assumed to be representative of current and future years.

To estimate arable production, average yield (tonnes/ha) is estimated based on a selection of representative cereal crops. It is assumed that spring milling wheat, spring malting barley and spring oats are representative cereal crops across all of Derbyshire. Yield for these crop types is sourced from Redman (2018; 2019; 2020) and estimated as a three-year average to smooth out any volatility in output. The area of cereal crops makes up approximately 95% of the total cropland area in Derbyshire, therefore other types of crops were not included in the account. Total arable output, in tonnes, is calculated by multiplying the estimated arable area by the estimated average arable yield. Livestock production within each reporting area is set equal to the number of cattle and sheep recorded in Defra (2022) for the administrative boundaries and PDNP. For the national character areas, the number of livestock is from Defra (2022), and is scaled down based on the ratio of livestock numbers between Derbyshire county and the total for the national character areas that fall within Derbyshire. An assumption of the number of beef and dairy cattle within each reporting area is made based on livestock data for the Derby & South and West Derbyshire and East Derbyshire areas

reported in Defra (2022).

For the monetary values of agricultural produce, the John Nix gross margins for each crop and livestock output has been collated to produce a three-year average estimate based on 2019, 2020 and 2021 figures (Redman, 2018; 2019; 2020). A rolling average figure is used to adjust for any potential volatility in agriculture markets. To estimate the arable and livestock farm income, the average gross margin unit value (£/tonne or £/head) is multiplied by the estimated arable and livestock production figures (e.g., tonnes of wheat; number of beef cows) in each reporting area. For arable crops, the average gross margin of spring milling wheat, spring malting barley and spring oats is applied to the estimated arable output. For livestock, gross margins for upland spring lamb, spring calving upland sucklers are applied to the number of breeding ewes and beef cattle respectively, whilst all-year-round calving Holstein gross margin is used for dairy cattle. The average unit gross margin figures are assumed to be constant over time.

Timber

This benefit has been estimated using the data from the Forestry Research (2021a; 2021b) for the volume of timber at the market value. The account uses the average figures and does not differentiate between species. Data used to estimate the area of commercial woodland within each reporting area is taken from the account Asset Register.

In 2021, the volume of softwood removals in England was estimated as 2 million cubic meters based on estimates of removals from the Forestry Commission Timber statistics (Forest Research, 2021a)[1]. Dividing this by the Forestry Research (2021a) estimated area of coniferous woodland in England (roughly 342 thousand hectares), gives an estimate for the volume of softwood timber removals per hectare in England of 7.2 m^3/ha/year. This is multiplied by the area of commercial woodland within each reporting area. It is assumed that over time timber yields are harvested sustainably, with the volume of removals per hectare remaining constant.

The value of softwood timber production is based on the Forestry Commission coniferous standing sales price index (Forest Research, 2021b). The stumpage price used in the account is estimated as the average of prices recorded in September 2020, March 2021 and September 2021, roughly £33/m^3 overbark. This monetary unit value is then applied to the estimated volume of softwood removals. It is also assumed that the unit value remains constant over time.

Water supply

The benefit of water supply from the natural environment is estimated by the quantity of water (abstracted in each reporting area). Monetary values are calculated using estimates of the value of providing water supply from alternative sources.

[1] Forestry Commission removal statistics provide volume estimates in green tonnes. This has been converted to cubic metres using a conversion factor of 1.222 as recommended by Forest Research (2019b) and is consistent with the approach used in the ONS (2020) woodland natural capital account.

The volume of water abstracted within the Derbyshire region is based on Environment Agency internal records of supply over the last five-years. Five-year average abstraction volumes have been estimated for each sub-area. Only consumption abstractions (i.e., supply in each sub-area) are monetised as this reflects the benefit of water use. Average abstraction volumes for production (i.e., from sub-area source) are included as a physical quantity (2017 to 2021).

To value water abstraction in each region, the volume of water abstracted needs to be disaggregated by water source (i.e., groundwater, surface or tidal) and by purpose. To disaggregate by water source, data requested from the Environment Agency on water returns by source has been used to estimate proportions of total actual abstractions by each water type. The EA data represents actual abstractions, rather than licensed abstractions which is recorded in Defra (2019) for the Midlands EA regional charge area. Table 2 shows how these proportions may vary depending on the dataset used, which could lead to substantially different estimates of abstraction in the Derbyshire area. The proportions based on actual abstractions are multiplied by the five-year average abstraction volume provided by the client. It is assumed that these proportions do not vary across sub-areas.

Table 2: Comparison of % of total water abstractions by water source

Water source	Defra (2019) licensed abstractions	Actual abstractions in Derbyshire (Environment Agency)
Surface water	70%	98%
Tidal water	13%	0%
Groundwater	16%	2%

Defra (2019) present the quantity of water abstraction per year in England for the period between 2000 and 2017. This covers the number of licenses held, and the estimated average abstraction in million cubic metres for non-tidal (surface waters and groundwater) and tidal waters estimated for eight purposes in each Environment Agency regional charge area. Across all types of water use in the Midlands area, 43% of all water abstracted is for public water supply, 0.8% is for spray irrigation, 34% is for electricity supply, 21% is for other industry, 0.6% is for fish farming, cress growing, and amenity ponds and 0.5% is for 'other' abstraction purposes. Other uses, such as agriculture and private water supply, are estimated compose approximately 0% of total water abstraction in the Midlands charge area. For this account boundary, estimates from the Midlands region can be selected, however further disaggregation (i.e., catchment level or local authority) is not possible using this dataset[2]. Using this dataset, the proportion of total licensed abstractions can be estimated by source and purpose. These proportions are assumed to be representative of current and future years. They are used to divide the estimated water abstractions by each water source, by purpose (e.g., agricultural irrigation vs public water supply).

Data is not available for the PDNP or national character areas.

Value of surface waters for public water supply

Using ONS (2019) figures, cited in ENCA (Defra, 2020a), an indicative five-year average unit resource rent value has been estimated as £0.56 per cubic metre in 2021 prices. In the ONS accounts (2019), private water sources, supply to industry and water abstracted from groundwater sources are not valued. Therefore, in the Derbyshire account, this unit value is

[2] Further details on the methodology behind these statistics is available upon request from Defra.

applied to the total water abstracted for public water supply from surface waters in each reporting area in Derbyshire. In theory, this reflects the return to the ecosystem, not to water treatment and supply infrastructure, and is treated as a private value to businesses (i.e., water companies[3]). The monetary unit value is assumed to remain constant over time.

Water supply value of groundwater

Stantec (2019), based on values from the EA's groundwater appraisal guidance, provide monetary unit values for abstraction from all water sources across a variety of sectors. Low, central, and high unit values are provided for three ecosystem service sub-categories: drinking, agriculture, and energy/industry, and further sub-divided by final ecosystem service benefit. The value of groundwater for hydropower generation is excluded from this assessment as it would double-count with the estimated resource rent value of renewable energy generation.

[3] Note that a different, internally calculated, resource rent was used in UU's Corporate Natural Capital Account in 2017 – see Section **Error! Reference source not found.**.

Table 3**Error! Reference source not found.** shows which unit values from Stantec (2019) have been applied to which purpose/sector.

Table 3: Groundwater unit values inflated to 2021 prices (Stantec, 2019)

Applied purpose (based on Defra, 2019)	Low	Central	High	Unit
Public water supply	0.44	0.53	0.61	£/m^3
Private water supply	0.44	0.53	0.61	£/m^3
Spray irrigation	0.00	1.27	0.00	£/m^3
Agriculture (excl. spray irrigation)	0.21	0.26	0.45	£/m^3
Agriculture (excl. spray irrigation)	0.21	0.26	0.45	£/m^3
Fish farming, cress growing, amenity ponds	0.00	0.00	0.00	£/m^3

For this assessment, the low (and lower bound[4]) values are applied to the estimated abstraction of water for each purpose from groundwater sources. This produces an estimate of ecosystem provision of groundwater abstracted and is treated as a value to businesses. The monetary unit values are assumed to remain constant over time.

Renewable energy

The renewable energy benefit is estimated by the amount of energy generated (in megawatt hours MWh) from hydroelectricity and onshore wind valued using the national average resource rent[5].

BEIS (2021a) provides an estimate for the volume of renewable electricity generation in MWh by energy type for each administrative boundary within Derbyshire. Renewable energy statistics are available from the Department of Business, Energy & Industrial Strategy (BEIS, 2021a), and reflect the generation, of electricity by renewable energy source in the UK in 2019. It is assumed that 2019 is representative of the baseline year of 2020, and that electricity generation is constant over time.

The monetary value of electricity produced from renewable energy sources is estimated following the approach used by ONS (2021) that estimates the annual resource rent of renewable energy provisioning equal to £1.36 billion in 2020 prices, with associated generation of 82.2 million MWh in 2019. Dividing these figures and adjusting for inflation produces an average unit resource rent value of £16.5/MWh/year, in 2021 prices. This is then applied to the estimates of renewable energy generated by hydro power and onshore wind within each administrative boundary and is attributed to businesses. It is assumed that the monetary unit value remains constant over time.

The quantity and value of renewable energy has not been disaggregated to PDNP or national character areas.

[4] Lower bound estimates of unit values are used as the areas included in the accounting boundary are not under serious water stress.
[5] Calculated as gross value minus costs of production.

Minerals

The benefits associated with minerals extraction include sand and gravel, coal measures, limestone, sandstone, and millstone grit. The quantity extracted (tonnes) is valued using the UK average ex-works sales value of sand and gravel, and an average of the 2019 production value (£/tonne). UK mineral production and value estimates are reported on a national basis (British Geological Society, 2021). Note that Derby City has a separate mineral planning authority from Derbyshire for which extraction data could not be accessed.

The quantity of extracted minerals within each administrative boundary has been provided by the Derbyshire County Council. The volume of mineral outputs in tonnes is set equal to the estimated average annual extraction tonnage for all active extraction licenses in the Derbyshire area.

Minerals are a non-renewable resource, and therefore mineral extractions are not assumed to remain constant across the accounting period (i.e., 60-years). As land-bank years[6] are reported at the county level, this is assumed to be representative for all quarry sites within Derbyshire. Derbyshire County Council (2021) reports that remaining land-bank years for sand and gravel and crushed rock are approximately 10 and 60+ years, respectively. The production of sand and gravel is assumed to last 10 years, while coal measures, and all other mineral (Sandstone, Permian limestone, Carboniferous limestone, Sherwood sandstone, Millstone grit) are assumed to last 60 years.

The monetary value of mineral production is estimated using the UK Minerals Yearbook to produce an average unit production value for sand and gravel and coal measures. Due to the aggregation for production and sales figures for limestone and dolomite, igneous rock, sandstone, and chalk in the UK Minerals Yearbook, this aggregate value is applied to all minerals extracted in the Derbyshire area except sand and gravel and coal measures (Sandstone, Permian limestone, Carboniferous limestone, Sherwood sandstone, Millstone grit) (British Geological Survey, 2021). This is then applied to the estimates the volume of sand and gravel, coal, and all other minerals produced within each reporting area and is treated as a value to businesses. It is assumed that the monetary unit value remains constant over time.

The quantity and value of minerals has not been disaggregated national character areas.

Public Benefits

Carbon sequestration

Carbon sequestered in habitats and emitted by habitats

Carbon sequestration rates have been estimated for two different natural capital assets within the accounting boundary - woodland and hedgerows. This benefit is estimated using the sequestration rates for each habitat (tonnes CO_2 equivalent per hectare) and the non-traded price of carbon.

[6] Land-bank years represent the remaining stock of sand and gravel or crushed rock within a county and is assumed to be representative for all quarries in the county.

Carbon sequestration and emission rates were taken from the Natural England report Gregg et al (2021) NERR094 entitled Carbon storage and sequestration by habitat: a review of the evidence (second edition). This review considered the scientific evidence for carbon sequestration by semi-natural habitats, in relation to their condition and/or management. This new report updates and expands previous work by Natural England on 'Carbon storage by habitat' published in 2012 NERR043. Where evidence was lacking a gap analysis was included showing areas where research was needed. Where research projects were underway, new evidence was obtained under the Natural England 'Spatial Prioritisation of Land Management for Carbon, (in press), where this was lacking evidence from northern Europe was utilised to fill any final gaps in data.

The total amount of CO_2 equivalent sequestered and emitted is estimated by multiplying these per hectare rates with the total hectares of the respective habitat type, as recorded in the Asset Register. The amount of CO_2e sequestered is then valued following the BEIS (2021b) for the non-traded central price, £245 per tonne of CO_2e in 2021. This is multiplied by the estimated tonnes of CO_2e sequestered. Future flows of carbon are valued using the BEIS (2021b) carbon values series until 2050. Following BEIS (2021b) advice, a real annual growth rate of 1.5% is then applied starting at the most recently published value for 2050 and into the future.

Carbon emitted by livestock

The account estimates the volume and value of carbon emissions from livestock. Note that this calculation does not account for emissions from all farm operations (e.g., electricity, fuel from vehicles, fertiliser and pesticide use) and is therefore an underestimate of the carbon emitted from farming activities.

Table 4 shows the per head carbon emission rates for cattle and sheep that are used within this account. The emission rate for cattle is derived by summing the total volume of emissions produced by both beef and dairy cattle in England as reported in Jones et al. (2019) and dividing this value by the estimated total number of livestock in England (Defra, 2020b). Emission rates are assumed to remain constant over time.

Table 4: Livestock emission rates

Livestock type	Emission rate
Cattle (all types)	1.76 tCO_2e/head/yr
Sheep	0.2 tCO_2e/head/yr

Source: Defra (2020b) and Jones et al. (2019)

The total amount of CO_2 equivalent emitted is estimated by multiplying the per head rate for a given livestock type by the corresponding number of heads in a reporting area. The number of cattle and sheep has been estimated using Defra agricultural statistics for each district and borough council within the Derbyshire region (including PDNP) (Defra, 2021). The amount of tCO_2e emitted is then valued following the same approach as for tCO_2e sequestered in habitats and in accordance with the BEIS (2021b) guidance.

Air quality regulation

Air quality benefit arises from the ability of different types of vegetation to remove pollutants from the air. This benefit is estimated for the amount of PM2.5 removed by woodland (which

makes up more than 70% of this benefit in the UK (Jones et al., 2017) and the human health benefits of this removal.

Jones et al. (2017) modelled this benefit for the UK national accounts reflecting the variety of different levels of PM2.5 concentration, types and extent of vegetation and density of human population across the country. An update to this study has produced estimates of PM2.5 removal per hectare of woodland by local authority. The kilograms PM2.5 removed by hectare of woodland (eftec and CEH, 2019) is multiplied by the total woodland area in a given local authority in each reporting area. For the national character areas and the PDNP, the total woodland area is broken down by local authority to allow the local authority specific PM2.5 removal rate to be applied. The PM2.5 removal per ha of mature (i.e., existing) woodland is falling over 2015-2030 based on the assumption about emissions and concentrations falling over time.

The economic value of this service is estimated through the resulting avoided healthcare cost at local authority level (eftec and CEH, 2019). The account shows the benefits as the result of: £ per ha of woodland (in terms of avoided health care cost due to PM2.5 removed, in 2021 prices) for a given local authority area (eftec and CEH, 2019), which is multiplied by the total woodland area in that area (as produced by further GIS analysis). This produces the annual value of PM2.5 removal by woodland. For the national character areas and the PDNP, the total woodland area is broken down by local authority to allow the local authority specific value of PM2.5 removal rate to be applied.

Future benefits decline in line with lower emission / concentration assumption mentioned above but are discounted at lower levels using the lower health discount rates (HM Treasury, 2022b).

Recreation

Recreational benefit is measured in terms of number of visits to accessible greenspaces, and the average welfare value associated with these visits.

The ORVal[7] tool is used to estimate the number and welfare value of visits to the accessible open spaces in the account boundary. ORVal also breaks down the estimated number of visits and associated welfare value by socio-economic group. Estimates can be produced for various spatial breakdowns including local authorities and Middle Layer Super Output Area (MSOA). The number of visits and value for each national character area and the PDNP are derived by summing the visits/value in each MSOA within the national character area.

It should be noted that the data from ORVal takes into account the location of the recreation asset, surrounding population, habitat type(s) and local alternatives, but makes the assumption that accessible green space is in average condition for its type. Where this is not the case, green space with better/ worse condition than average will likely have higher/lower values for number and welfare value of visits. Similarly, as the model underlying ORVal is based

[7] ORVal is a spatial model that shows the recreational sites, number of visits and the benefit to visitors using data from mapping tools, Monitor of Engagement in Natural Environment (MENE) survey and economic valuation literature. University of Exeter (2018) ORVal v2.0 - The Outdoor Recreational. https://www.leep.exeter.ac.uk/orval/

on MENE data[8], it does not take into account visits by children or overseas visitors to the UK.

Therefore, as ORVal captures all domestic visits by adults, there is a risk of double counting with domestic tourism visits, in particular day visits[9]. To adjust the visit numbers to reflect recreation visits under three hours, the MENE cross-tabulation viewer was used to determine the number of visits across England that were over and under 3 hours (Natural England, n.d.)[10]. 78% of visits across England were under three hours, this percentage is applied to the estimated total annual visits in each reporting area. The annual visits under three hours are multiplied by the estimated average welfare value per visit for that reporting area (ranges between £3.2-£4.3 per visit in 2021 prices). The unit monetary value (i.e., £ welfare value per visit) is assumed to remain constant over time.

ORVal does not distinguish on-water recreation. This is estimated through the values for maintaining WFD status from the National Water Environment Benefits Survey (NWEBS)[11]. ORVal is based on the MENE survey which asks respondents about the types of activities they undertake during their recreational visits, including fishing and water sports as broad categories (Natural England, 2018a). Therefore, there is a risk of double-counting if both ORVal and separate on-water recreation valuation are used. Consequently, the estimated value of on-water recreation within the NWEBS data, estimated as part of the method described in Section A.1.3.8, is not included in the account to avoid double-counting.

Physical health

In addition to improving the general welfare of visitors, if people are active during their visits, recreation can also have measurable physical health benefits. White et al. (2016) estimate that 51.5% of recreation visits[12] are 'active', where an 'active visit' is defined as those who met recommended daily physical activity guidelines either fully, or partially, during visits.

The White et al. (2016) proportion of active visits is applied to the annual visits to greenspaces within the account boundary[13], producing the number of annual active visits which is assumed to remain constant over time.

The benefit is valued as the health benefits of active recreation (in terms of improvements in Quality Adjusted Life years – QALYs[14]) and the economic value of health improvement (in terms of the avoided health cost due to improvement in QALY). Beale et al. (2007) analysed Health Survey for England data, estimating that 30 minutes a week of moderate-intense physical exercise, if undertaken 52 weeks a year, would be associated with 0.0106768 QALYs per individual per year. Beale et al. (2007) assume this relationship between physical activity and QALYs is both cumulative and linear. Claxton et al. (2015) estimate a cost-effectiveness threshold of a QALY to be roughly £12,900/QALY in 2008 prices. This figure is used as a proxy

[8] See: https://www.gov.uk/government/collections/monitor-of-engagement-with-the-natural-environment-survey-purpose-and-results
[9] A day visits is any leisure visit that is at least 3-hours (round-trip).
[10] This is based on the Year 7 (2015/16) MENE survey weighted base results for "Question 3: How long did this visit last altogether."
[11] See Section A.14 for water quality methodology.
[12] Refers to recreation visits that are under three hours, as reflected in the recreation method.
[13] As described in the recreation method.
[14] QALY is a health measurement used widely in health and health economics research. QALY of zero denotes death, and 1 denotes full health.

for health costs, reflecting the avoided health costs when QALY is improved by one unit. Based on this information, the avoided health cost is estimated as £3.41 in 2021 prices. The monetary unit value is assumed to remain constant over time.

Tourism

Domestic tourism is measured in terms of the number of day visits (i.e., visits that are more than three hours but do not include an overnight stay) and the number of domestic overnight trips and the associated expenditure of these visits and trips that are attributable to natural capital. The Great Britain Day Visitor Survey (Kantar, 2019a) and the Great Britain Tourist Survey (Kantar, 2019b) produce annual figures for Great Britain, but also three-year average visit and trip numbers and associated expenditure by local authority and national parks. The latter has been used in this assessment to allow for subdivision across the administrative boundary. The day visits (i.e., over three hours) and overnight trips are treated as additional to the recreation visits (i.e., those under three hours). Note that some district and borough councils within the Derbyshire area provided data on tourism activities, but they could not be used due to difficulties reconciling differences in the several datasets received. Reporting for different time periods (before, during and after the Covid-19 pandemic), as well as differences in the tourism visit estimation methodology used, indicated that a single, consistent, data source would be preferable and yield more reliable estimates.

Total domestic tourism visits for a reporting area are the sum of the estimated annual day visits and domestic overnight trips. For each visitor group, the average expenditure per visit is estimated at the local authority and national park level. The average expenditure (£/visit) for a given reporting area is then multiplied by the estimated number of day-visits and overnight trips to that area within a set reporting area. The sum of day-visits and overnight trip expenditure provides an estimate of the total expenditure that supports the local economy.

The proportion of visits and trips and their associated expenditure that are attributable to natural capital are estimated using ONS (2021) tourism and leisure natural capital account for the UK. Based on this work, it is estimated that nature's average contribution to total expenditure on tourism and outdoor leisure related activities within GB is approximately 8%. This proportion is applied to both the number of total visits (day and overnight) and their associated total expenditure, to produce an estimate of the natural capital attributable visits and expenditure within each reporting area. Both visits and expenditure are assumed to remain constant over time.

The quantity and value of tourism has not been disaggregated to the national character areas.

Volunteering

The benefits to an individual of volunteering are many and varied, including for example physical and mental health benefits, as well as a sense of contribution to wider society. The number of days should relate to nature-based volunteering only. The number of volunteer days are valued based on the value of employing volunteers by various skill levels used by the Heritage Lottery Fund (HLF, 2017). Note that data on volunteer effort (i.e., days) are high-level estimates provided by Derbyshire County Council for Lowland Derbyshire, therefore the

estimates produced are partial and do not represent the total across the County.

An estimated 36,900 hours of volunteering were undertaken in Lowland Derbyshire between 2004 and 2011 (Lowland Derbyshire Biodiversity Partnership 2011, 2011), which is estimated to be 6,150 hours per year. This value has been converted to days by assuming one day equates to 7.5 hours. It is assumed that all volunteer effort is nature related. The number of volunteer days is assumed to remain constant over time.

The value of volunteer effort is calculated using the value of skilled and unskilled labour per day, from the Heritage Lottery Fund (HLF, 2017). The value of the volunteer input ranges between £55 to £165 per day, in 2021 prices. It is assumed that volunteer effort is evenly divided between unskilled and skilled volunteer inputs. Then the number of volunteer days is multiplied by the appropriate input value. The monetary unit value is assumed to remain constant over the accounting period.

The quantity and value of volunteer is only provided for the entirely of Derbyshire; it has not been disaggregated to the administrative boundaries, national character areas or Peak District National Park.

Education

The natural environment can be an important resource in education in terms of improving health and wellbeing and learning attainment of students. The number of education visits are valued using the average value per educational visits from Natural England's CNCA for National Nature Reserves (Clark, 2017). Only South Derbyshire provided an estimate of the number of educational visits within their reporting area. This value is likely only partial and is not reflective of the total number of educational visits attributable to natural capital within the Derbyshire area. The number of educational visits is assumed to remain constant over time.

The educational visits are valued using evidence from the National Nature Reserve CNCA (Clark, 2017) which used the price charged by other providers (e.g., RSPB, Wildlife Trusts)[15]. The values range between £2.08 and £6.90 per visit and vary based on user type (e.g., public, half school day or higher education) and the level of involvement from Natural England staff and volunteers. However, an average value of £3.31 per visit[16] is used in the Derbyshire account. After accounting for inflation, the average value per educational visit is £3.66, which is applied to the number of education visits reported by the protected landscapes. It is assumed that the monetary unit value remains constant over time.

The quantity and value of education is only provided for the entirely of Derbyshire; it has not been disaggregated to the administrative boundaries, national character areas or Peak District National Park.

[15] A summary of the values is available in Clark (2017).
[16] It is assumed this average value is in 2017 prices, which is the same price year as the NNR account.

Water quality

Maintaining the quality of water in the environment could have financial benefits for businesses (e.g., avoided water treatment costs) and welfare benefits to the public as proxy for many ecosystem services provided. The approach taken here is the latter and the welfare benefits are linked to maintaining the Water Framework Directive (WFD) quality status of the of waterbodies as reported in the natural capital Asset Register.

The physical change is estimated by a given status (i.e., change in the WFD status from Good to Moderate). The economic value is based on the National Water Environment Benefits Survey (NWEBS) values (NERA Economic Consulting 2007; Metcalfe, 2012). The NWEBS values provide low, central and high estimates of values for coastal and transitional water bodies, in 2012 prices. NWEBs values have been inflated to 2021 prices using the HM Treasury (2022b) GDP deflator.

The NWEBS values represent survey respondents' willingness to pay (WTP) for six equally weighted ecosystem components (Defra, 2015, p.69):

- Fish;
- Other animals such as invertebrates;
- Plant communities;
- The clarity of water;
- The condition of the river channel and flow of water; and
- The safety of water for recreational contact.

Therefore, to avoid potential double-counting with recreation estimates, one sixth of the estimated total value is deducted from the account values. It should be interpreted with caution as it has not been possible to disaggregate the impact of water quality on other benefits valued in the account.

This assessment uses the central value estimates for avoiding the deterioration of lakes and water bodies and for rivers in the Humber and North West River Basin Districts. Estimates are produced for lakes (i.e., annual £ value per km^2) and for river water bodies (i.e., annual £ value per km). Using the central estimates, the total annual value of avoiding the deterioration of the current water quality across all identified water bodies in Derbyshire is estimated using the relevant river basin district values for each reporting area. Where sub boundaries fall within Humber and North West River Basin District, the average value of these Districts are applied.

Derbyshire Natural Capital Strategy – Appendix 8

Contents

Appendix 8 - Baseline landscape character

1.0 Natural Capital Baseline Assessment

1.1 Introduction

This appendix comprises the full Natural Capital Baseline Assessment (of which an extract is included in the main report), which includes comment on baseline landscape character and has been prepared by SLR Consulting Limited ('SLR') in collaboration with Environment Systems Limited and eftec Limited on behalf of Derbyshire County Council (DCC), the client. The baseline provides crucial evidence to inform part the Natural Capital Strategy.

This document provides an objective account and high-level review of possible management actions from a landscape and heritage perspective with all information contained within this document extracted from existing written published data and publicly available spatial datasets.

1.1.1 Baseline Landscape Character

The baseline landscape character starts at the National level and includes consideration of existing published assessments such as the National Character Area (NCA) profiles prepared by Natural England. The NCA's identify Ecosystem Services within each broad character area; this information is summarised within this appendix. The National Character Areas (NCA's) included within the scope of this document are:

- NCA 30: Southern Magnesian Limestone;
- NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield;
- NCA 50: Derbyshire Peak Fringe & Lower Derwent;
- NCA 51: Dark Peak;
- NCA 52: White Peak;
- NCA 68: Needwood and South Derbyshire Claylands;
- NCA 69: Trent Valley Washlands;
- NCA 70: Melbourne Parklands;
- NCA 71: Leicestershire & South Derbyshire Coalfield; and
- NCA 72: Mease/ Sence Lowlands.

The findings of the NCA mapping have been compared with existing local character assessments prepared by both DCC (The Landscape Character of Derbyshire, 2014) and the Peak District National Park (PDNP) (The Landscape Strategy and Action Plan for the Peak District National Park, 2009). Each LCT within the 10 NCA's has also been reviewed to give a finer grain of detail to this document.

The purpose of this document is to identify distinctive elements and features and set out appropriate management actions for future habitat conservation, enhancement, or creation within each LCT.

The proposed management actions have been reviewed by an expert panel with local knowledge to provide additional input on appropriate land use actions for each LCT which forms the baseline of the landscape character risks and opportunities. Identified landscape elements and features have

been mapped to create a spatial database incorporating the content produced within the main body of this report.

2.0 NCA 30: Southern Magnesian Limestone

2.1 Key Characteristics

- Underlying limestone creates an elevated ridge with smoothly rolling landform; river valleys cut through the ridge, in places following dramatic gorges. There are also some dry valleys;
- Fertile, intensively farmed arable land, with large fields bounded by clipped hawthorn hedges, creating a generally large-scale, open landscape;
- Semi-natural habitats, strongly associated with underlying limestone geology, include lowland calcareous grassland and limestone scrub on the free draining upland and gorges with wetland habitats associated with localised springs and watercourses, but all tend to be small and fragmented;
- Large number of abbeys, country houses and estates with designed gardens and parklands, woodlands, plantations and game coverts;
- Long views over lowlands to the east and west, and most prominent in the south;
- Woodlands combining with open arable land to create a wooded farmland landscape in places, where traditionally coppiced woodlands support dormouse populations;
- Unifying influence of creamy white Magnesian Limestone used as a building material and often combined with red pantile roofing;
- Localised industrial influences, especially in the Aire and Don valleys, and in the south and along the fringe of the Coal Measures to the west, with former mines and spoil heaps (many now restored), power lines, settlements, industry and transport routes. Bramham Park is one of a number of large country houses that have designed gardens and parklands;
- Influenced by the transport corridor of the A1 which is apparent in an otherwise undisturbed rural countryside; and
- Archaeological evidence, with some notable prehistoric sites, reflects the longstanding importance of the area for occupation and transport.

2.2 Landscape Character Types within NCA 30: Southern Magnesian Limestone within DCC

2.2.1. Limestone Farmlands

A gently rolling, agricultural landscape, characterised by large scale open farmland, estate woodlands and limestone villages.

Key Characteristics:

- Gently rolling limestone plateau;
- Fertile soils supporting productive arable farmland;
- Large and medium estate woodlands;
- Amenity trees around small rural villages and isolated
- farmsteads;
- Large regular fields bounded by hedgerows;
- Straight roads with uniform width verges;

- Nucleated settlement pattern;
- Historic buildings constructed of limestone with red clay pantile roofs;
- Panoramic views across lowland to the west; and
- Long distance views over plateau often ending in a wooded skyline.

Table 1: Limestone Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Farmlands	Long distance views are characteristic, due to the gentle relief, lack of hedgerow trees and large arable fields; Large and medium estate woodlands including areas of ancient woodland; and Hardwick Hall and Bolsover Castle.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 2: Limestone Farmlands - Landscape character attributes

Limestone Farmlands	Current Landscape Character Attributes
Land Use	Arable
Main Habitat Type	Farmland
Other Habitat Type	Woodland
Woodland Character	Occasional large plantations
Woodland Vision	Occasional large plantations
Woodland Type	Ash, oak, elm with hazel
Hedgerow Trees	Insignificant
Watercourse	None
Amenity Trees	Localised around settlement
Boundary Type	Thorn hedgerows
Settlement Character	Villages and sparsely scattered farmsteads
Traditional Materials	Limestone with red clay pantile roof
Cultural Interests	Hardwick Hall, Bolsover Castle, Green Lanes

Table 3: Limestone Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Protect and manage existing semi-natural habitats, including grasslands, wetlands and woodlands; and increase the area of semi- natural habitats, restore and create new areas, and create networks and links between habitats, to make their ecology more resilient and to afford increased movement of species. Pockets of unimproved magnesian limestone grassland survive in this landscape character type. The rich grassland habitats of the magnesian limestone support many locally rare species. However, these sites occur only in isolated places, particularly on marginal land such as along road verges, on railway cuttings or in old quarries.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect and manage existing semi-natural habitats, including grasslands, wetlands and woodlands; and increase the area of semi- natural habitats, restore and create new areas, and create networks and links between habitats, to make their ecology more resilient and to afford increased movement of species. The major landscape features are the large woodlands, including Whitwell Wood, Scarcliffe Park and Pleasley Park. The woods of the gorges are remnants of ancient woodland and consist of a rich mixture of broadleaved trees, some of which are protected for their rarity. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Large scale woodland planting; Conserve and restore all ancient woodland sites by natural regeneration or use of locally occurring native species; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads; and

Management Action	Code	Potential for Change (Yes/No)	Comments
			Tree cover is a key characteristic of this LCT. Woodlands form small to medium plantation blocks, tree belts and small coverts. Woodland vision is to create occasional large plantations. Woodland is a secondary habitat type within this LCT.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	No	Broadly in accordance with SEO 2: Protect and manage existing semi-natural habitats, including grasslands, wetlands and woodlands; and increase the area of semi- natural habitats, restore and create new areas, and create networks and links between habitats, to make their ecology more resilient and to afford increased movement of species. Wetland habitats associated with localised springs and watercourses, but all tend to be small and fragmented. Not a dominant land cover within this LCT.
Cropland	c	Yes	Broadly in accordance with SEO 3: Protect the overall rural landscape and maintain its highly tranquil quality, managing the arable landscape to ensure the continued production of quality crops while also enhancing landscape features such as field boundaries and improving biodiversity, soil quality, reduction of soil erosion, water quality and flood risk management. Limestone Farmlands are dominated by intensive cereal cropping. Arable farming has become the dominant land-use due to the fertile, free-draining qualities of the limestone soil allied with the gentle topography.
Urban	u	Yes	The traditional pattern of settlement is strongly nucleated and characterised by small villages such as Scarcliffe, Elmton and Whaley. Superimposed upon this rural landscape are the impacts of modern development, deep-coal mining and the urbanisation of many small villages.
Sparsely Vegetated Land	s	No	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
			The road verges are more irregular in width with occasional exposed rocky outcrops.
Rivers and Lakes	r	No	Rivers and Lakes are present within this LCT, however are not specifically mentioned within The Landscape Character of Derbyshire Descriptions. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

2.2.2 Limestone Gorges

Incised river corridors, characterised by steep rocky cliffs, overhanging woodland and grazed meadows.

Key Characteristics:

- Narrow gorges with steep, rocky cliffs and flat bases;
- Wet meadows with permanent pasture;
- Thin belts of woodland along rock faces, with scattered trees associated with watercourses;
- Medium sized regular fields bounded by hedgerows and some dry-stone walls;
- Restricted transport routes due to inaccessibility;
- Settlement is absent or sparse;
- Textile mills and relict industrial buildings made from the local limestone; and
- Strong sense of visual containment.

Table 4: Limestone Gorges - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Gorges	Narrow gorges with steep, rocky cliffs and flat bases, The Landscape Character of Derbyshire states the major landscape features are the gorges themselves; and Linear remnants of broadleaved ancient woodland dominate the steep gorge sides.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 5: Limestone Gorges - Landscape character attributes

Limestone Gorges	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Woodland
Other Habitat Type	Wetland
Woodland Character	Widespread small woodlands
Woodland Vision	Widespread small woodlands
Woodland Type	Ash, oak, elm with hazel
Hedgerow Trees	None
Watercourse	Scattered
Amenity Trees	None
Boundary Type	Occasional hedge or dry stone wall
Settlement Character	Unsettled
Traditional Materials	Not applicable (Stone mills)
Cultural Interests	Prehistoric caves, historic mills

Table 6: Limestone Gorges - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Protect and manage existing semi-natural habitats, including grasslands, wetlands and woodlands; and increase the area of semi- natural habitats, restore and create new areas, and create networks and links between habitats, to make their ecology more resilient and to afford increased movement of species. Unimproved pasture is the dominant land-use in this landscape. Unimproved magnesian limestone grassland is nationally scarce. In the Limestone Gorges, this type of grassland occurs extensively on the steep slope.

Management Action	Code	Potential for Change (Yes/No)	Comments
			The waterlogged soils, play a key role in forming some important grassland habitats. Hollinhill, Markland Grips and Pleasley Vale have both been designated as Sites of Special Scientific Interest (SSSI).
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect and manage existing semi-natural habitats, including grasslands, wetlands and woodlands; and increase the area of semi- natural habitats, restore and create new areas, and create networks and links between habitats, to make their ecology more resilient and to afford increased movement of species. Linear remnants of broadleaved ancient woodland dominate the steep gorge sides. Scrub is apparent throughout the landscape, colonising poorly maintained fields and steeper slopes. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Conserve and restore all ancient woodland sites by natural regeneration or use of locally occurring native species; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland creation and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Ensure new woodland does not conflict with features (e.g. ridge and furrow) that help to define landscape character. Woodland vision is to create widespread small woodlands. Woodland is a main habitat type within this LCT.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 2: Protect and manage existing semi-natural habitats, including grasslands,

Management Action	Code	Potential for Change (Yes/No)	Comments
			wetlands and woodlands; and increase the area of semi- natural habitats, restore and create new areas, and create networks and links between habitats, to make their ecology more resilient and to afford increased movement of species. Water, though present within the Limestone Gorges, is not a major ecological feature. Wetland is a secondary habitat type within this LCT.
Cropland	c	Yes	Broadly in accordance with SEO 3: P Protect the overall rural landscape and maintain its highly tranquil quality, managing the arable landscape to ensure the continued production of quality crops while also enhancing landscape features such as field boundaries and improving biodiversity, soil quality, reduction of soil erosion, water quality and flood risk management. In a region dominated by intensive cereal cropping, the limestone gorges provide a striking contrast in scenery.
Urban	u	No	The inaccessibility of the Limestone Gorges is a characteristic feature. Large mills, relics of the textile industry, are still imposing features within some gorges.
Sparsely Vegetated Land	s	Yes	Unimproved magnesian limestone grassland is nationally scarce. In the Limestone Gorges, this type of grassland occurs extensively on the steep slope.
Rivers and Lakes	r	Yes	Milwood Brook and River Meden run through this LCT. Water, though present within the Limestone Gorges, is not a major ecological feature. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees, as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.0 NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield

3.1 Key Characteristics

- A low-lying landscape of rolling ridges with rounded sandstone escarpments and large rivers running through broad valleys, underlain by Pennine Coal Measures;
- Local variations in landscape character reflecting variations in underlying geology;
- Several major rivers flow through the rural and urban areas of the NCA, generally from west to east in broad valleys;
- A mixed pattern of built-up areas, industrial land, pockets of dereliction and farmed open country;
- Small, fragmented remnants of pre-industrial landscapes and more recent creation of semi-natural vegetation, including woodlands, river valley habitats and subsidence flashes, with field boundaries of clipped hedges or fences;
- Many areas affected by urban fringe pressures creating fragmented landscapes, some with a dilapidated character, separated by substantial stretches of intact agricultural land in both arable and pastoral use;
- Many large country houses and estates established by wealthy industrialists in the 18th and 19th centuries and ancient monuments create focal points and important recreational opportunities within the landscape, such as Bretton Hall, Wentworth, Woodhouse, Temple Newsam, Nostell Priory, Bolsover Castle and the ruins of Codnor Castle;
- Extensive urbanisation, such as in the major cities of Leeds and Sheffield, with terraced and back-to-back housing and grand 19th-century municipal buildings and churches at their centres, now surrounded by extensive housing and industrial development;
- Widespread influence of transport routes, including canals, roads and railways, with ribbon developments emphasising the urban influence in the landscape;
- An extensive network of multi-user trails on former railway lines and canal towpaths, such as the Trans Pennine Trail and the Ebor Way; and
- Continuing development pressure including land renewal and regeneration projects, especially along river corridors and around towns.

3.2 Landscape Character Types within NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield within DCC

3.2.1 Coalfield Estatelands

A heavily industrialised and urbanised landscape characterised by settlements, parkland, woodland and dairy farming.

Key Characteristics:

- Gentle undulating landform;
- Dairy farming dominated by pasture; Plantation woodlands, tree belts and coverts;
- Fields of medium size defined by hedgerows;
- Extensive areas of existing and relict parkland;

- Occasional country houses with associated parkland trees; and
- Villages and towns with red brick former mining terraces and ribbon development.

Table 7: Coalfield Estatelands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Coalfield Estatelands	LCT contains extensive areas of existing and relict parkland (not registered); and Majority of the southern portion of LCT areas contained within Green Belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 8: Coalfield Estatelands - Landscape character attributes

Coalfield Estatelands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Woodland
Woodland Character	Thinly scattered small plantations
Woodland Vision	Widespread small-medium plantations
Woodland Type	Oak-birch with ash, downy birch and hazel
Hedgerow Trees	Thinly scattered
Watercourse	Densely scattered
Amenity Trees	Localised around settlement
Boundary Type	Thorn hedgerows
Settlement Character	Villages and scattered farmsteads
Traditional Materials	Sandstone with Welsh slate roof
Cultural Interests	Parkland

Table 9: Coalfield Estatelands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Unimproved pasture which supports dairy farming is the dominant and secondary habitat type for this LCT with occasional arable cropping confined to better draining soils. There are also extensive areas of amenity parkland at Shipley and Alfreton, and relict parkland east of Codnor. Unimproved pasture is a main habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Medium to large scale woodland planting;

Management Action	Code	Potential for Change (Yes/No)	Comments
			Re-establish and enhance physical links between existing isolated woodland and hedgerows; and Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads. Tree cover is a key characteristic of this LCT. Woodlands form small to medium plantation blocks, tree belts and small coverts. Patches of ancient semi-natural woodland still persist, most notably around Shipley Park. Woodland is a secondary habitat type within this LCT. Woodland vision is to create widespread small-medium plantations.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	No	Not in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Not a dominant land cover within this LCT.
Cropland	c	Yes	Unimproved pasture which supports dairy farming is the dominant land use type for this LCT with occasional arable cropping confined to better draining soils.
Urban	u	Yes	Many traditional villages have been subsumed by modern urbanisation, more recent building development, associated with modern housing and industrial estates, is widespread, overwhelming many areas and creating a new urban edge to the countryside.
Sparsely Vegetated Land	s	Yes	Many habitats within the coalfield are small fragmented remnants of the pre-industrial landscape. A few have come about through recent changes created by coal mining and dereliction. There is evidence of previous extraction, as identified through Historic Landscape Characterisation data produced by Historic England, relating to this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	No	Not in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.2.2 Coalfield Village Farmlands

A broad industrial landscape characterised by villages, dairy farming and small woodlands.

Key Characteristics:

- Gentle undulating landform;
- Dairy farming with pasture and localised arable cropping;
- Relict ancient semi-natural woodland, copses and linear tree-belts;
- Dense Watercourse and scattered hedgerow trees;
- Towns and villages on ridge lines surrounded by remnant medieval strip fields;
- Network of small irregular lanes between larger urban roads; and
- Small villages with sandstone buildings expanded by red brick terrace housing and ribbon development.

Table 10: Coalfield Village Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Coalfield Village Farmlands	LCT contains dense Watercourse and scattered hedgerow trees; and The majority of the southern portion of LCT is contained within Green Belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 11: Coalfield Village Farmlands - Landscape character attributes

Coalfield Village Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Acid grassland/heath
Woodland Character	Thinly scattered small woodland
Woodland Vision	Densely scattered small woodland
Woodland Type	Oak-birch with ash, downy birch and hazel
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows
Settlement Character	Villages and scattered farmsteads
Traditional Materials	Sandstone with Welsh slate roof
Cultural Interests	Strip fields around villages, Industrial heritage

Table 12: Coalfield Village Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Unimproved pasture is a primary habitat type within this LCT. Acid grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the

Management Action	Code	Potential for Change (Yes/No)	Comments
			inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Encourage the management of scrub and secondary woodland to link with existing habitats and woodland; Re-establish and enhance physical links between existing isolated woodland and hedgerows; and Ensure the conservation and management of mature/veteran trees within hedgerows. Woodland vision is to create areas of densely scattered small woodland.
Heathland and Shrub	h	Yes	Encourage the management of scrub and secondary woodland to link with existing habitats and woodland as identified within The Landscape Character of Derbyshire planting and management guidelines. Heathland is secondary habitat type within this LCT, although not specifically mentioned within The Landscape Character of Derbyshire assessment.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these

Management Action	Code	Potential for Change (Yes/No)	Comments
			habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.
Cropland	c	Yes	Not a dominant land cover within this LCT, however, there are localised instances of arable cropland and therefore the creation of additional cropland may be appropriate. This should be verified on a case-by-case basis.
Urban	u	Yes	Widespread industrial and housing development has subsumed many of the villages, and new development continues to impact upon their distinctive character.
Sparsely Vegetated Lands	s	Yes	The restoration of former colliery sites has resulted in the creation of new woodlands at Williamthorpe and Grassmoor. Large in size, this woodland planting contrasts with the small-scale landscape that surrounds it. There is evidence of previous extraction within this LCT as identified through Historic Landscape Characterisation data produced by Historic England.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.2.3 Estate Farmlands

A broad, gently undulating landscape characterised by mixed farming and sparse tree cover.

Key Characteristics:

- Broad, gently undulating landform;
- Mixed farming dominated by arable cropping;
- Localised woodland blocks and occasional trees;
- Hedgerows enclose medium size, semi-regular fields;
- Small villages, hamlets and scattered farmsteads constructed from local Coal Measures Sandstone, some expanded with red brick former mining terraces; and
- Open landscape with long distance views.

Table 13: Estate Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Estate Farmlands	Open landscape with long distance views only interrupted by gently undulating landform; Intensively managed landscape with little ecological value; and A portion of the LCT north of Stavely contained within Green Belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 14: Estate Farmlands - Landscape character attributes

Estate Farmlands	Current Landscape Character Attributes
Land Use	Mixed arable
Main Habitat Type	Farmland
Other Habitat Type	Acid grassland/heath
Woodland Character	Thinly scattered small plantations and occasional remnant ancient woodlands
Woodland Vision	Occasional medium-large plantations
Woodland Type	Oak-birch with ash, downy birch and hazel
Hedgerow Trees	None

Estate Farmlands	Current Landscape Character Attributes
Watercourse	Scattered
Amenity Trees	Localised around settlement
Boundary Type	Thorn hedgerows
Settlement Character	Villages and scattered farmsteads
Traditional Materials	Sandstone with Welsh slate or red clay pantile roof
Cultural Interests	Renishaw Park

Table 15: Estate Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Acid grassland is a secondary land use within this LCT, Pastoral land is a local occurrence reflected by greater undulations in landform within the southern portion of the LCT, overall LCT supports a mixed farming system.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and

Management Action	Code	Potential for Change (Yes/No)	Comments
			sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Medium to large scale woodland planting; Re-establish and enhance physical links between existing isolated woodland and hedgerows; and Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads. Woodland vision is to create occasional medium-large plantations.
Heathland and Shrub	h	Yes	LCT already contains extensive areas of heathland, although not specifically mentioned within The Landscape Character of Derbyshire.
Wetland	f	No	Not in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Not a dominant land cover within this LCT.
Cropland	c	Yes	Due to the gently undulating landform arable cropland has dominated this LCT. Pastoral land is a local occurrence reflected by greater undulations in landform within the southern portion of the LCT, overall LCT supports a mixed farming system.
Urban	u	Yes	Since the decline of the coal industry, the LCT is still under pressure from new development which is likely to continue to impact on the rural character of the landscape through urban expansion.
Sparsely Vegetated Land	s	No	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	No	Not in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.2.4 Plateau Estate Farmlands

A gently undulating plateau of mixed farming characterised by dispersed settlement, small estate plantations and parkland.

Key Characteristics:

- Upstanding, gently undulating plateau;
- Mixed farming;
- Scattered hedgerow trees, predominantly oak;
- Small plantations;
- Parkland and ornamental tree belts associated with country houses;
- Medium to large fields;
- Relict parkland and former commons now enclosed and farmed;
- Dispersed estate farmsteads and cottages, built of red brick with clay tiles and Welsh slate roofs; and
- Sense of elevation with long distance views.

Table 16: Plateau Estate Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Plateau Estate Farmlands	Sense of elevation with long distance views; Whole LCT contained within Green Belt; and A small portion of LCT comprises Locko Park Registered Park and Garden.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 17: Plateau Estate Farmlands - Landscape character attributes

Plateau Estate Farmlands	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture
Woodland Character	Thinly scattered small plantations
Woodland Vision	Thinly scattered small plantations
Woodland Type	Ash-oak with field maple, holly and hazel
Hedgerow Trees	Thinly scattered
Watercourse	Scattered
Amenity Trees	Localised around settlement
Boundary Type	Thorn hedgerows
Settlement Character	Sparsely scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile or Welsh slate roof
Cultural Interests	Locko Park

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 18: Plateau Estate Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Due to the gently undulating landform arable cropland has dominated this LCT. The nature of modern-day

Management Action	Code	Potential for Change (Yes/No)	Comments
			agriculture and the increased shift towards arable farming is slowly altering the mixed farming practices of this landscape and beginning to impact on trees, field boundaries and wildlife habitats. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small scale woodland planting; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads; Conserve and renew ornamental plantations and individual parkland trees; and Ensure the conservation and management of mature/veteran trees within hedgerows

Management Action	Code	Potential for Change (Yes/No)	Comments
			Woodland vision is to create thinly scattered small plantations.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	No	Not in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Not a dominant land cover within this LCT.
Cropland	c	Yes	Due to the gently undulating landform arable cropland has dominated this LCT. The nature of modern-day agriculture and the increased shift towards arable farming is slowly altering the mixed farming practices of this landscape and beginning to impact on trees, field boundaries and wildlife habitats.
Urban	u	No	LCT is located adjacent the urban fringes of Derby and its satellite village, the landscape is under intense pressure from housing development, although this is somewhat deterred due to the LCT being sited wholly within Green Belt.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	No	Not in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.2.5 Riverside Meadows

A flat, riverside landscape characterised by dairy farming, wetland, watercourse trees and a legacy of industrial heritage.

Key Characteristics:

- Narrow rivers meander along flood plains of variable width;
- Remnant riverside vegetation, wetland and unimproved grassland;
- Dairy farming dominated by pasture;
- Dense tree cover along river channels;
- Scattered tree cover along boundaries; and
- Strong association with transport routes due to the presence of canals, railway lines and roads.

Table 19: Riverside meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside meadows	Strong association with canals and railways linked with industrial heritage; Large portions of the LCT contained within Green Belt; and LCT sits wholly within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 20: Riverside meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional small wet woodland
Woodland Type	Alder-crack willow with downy birch
Hedgerow Trees	N/A
Watercourse	Dense
Amenity Trees	N/A
Boundary Type	Thorn hedgerows
Settlement Character	Unsettled

Riverside Meadows	Current Landscape Character Attributes
Traditional Materials	N/A (Sandstone and brick structures)
Cultural Interests	Canals, railways, industrial heritage

Table 21: Riverside meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species; and

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure a balance is maintained between new woodland planting and areas of nature conservation value The dense riverside trees create a sense of visual and ecological continuity along the length of the river. Woodland vision is to create occasional small wet woodlands.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines. Wetland is a main habitat type within this LCT. The dense riverside trees create a sense of visual and ecological continuity along the length of the river, further emphasised by flood plain grazing marsh, and lowland meadows. Mining activities have created important wetland habitats, including subsidence flashes and reed-beds, of particular value along the River Rother and its tributaries.
Cropland	c	No	Heavy, seasonally waterlogged soils have prohibited arable cropping and traditionally supported low intensity permanent pasture, grazed by cattle.
Urban	u	No	Due to the risk of flooding, this landscape historically would have been sparsely settled. In recent times, development has disregarded these earlier practices and encroached onto the river meadows.
Sparsely Vegetated Land	s	No	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines. The dense riverside trees create a sense of visual and ecological continuity along the length of the river, further emphasised by flood plain grazing marsh, and lowland meadows. Mining activities have created important wetland habitats, including subsidence flashes and reed-beds, of particular value along the River Rother and its tributaries.

action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.2.6 Wooded Farmlands

A small-scale undulating landscape rising to the magnesian limestone plateau. Characteristically well-wooded, sparsely settled and dominated by mixed farming.

Key Characteristics:

- Gently undulating landform on land rising to the magnesian limestone plateau;
- Mixed farming with pasture and occasional arable cropping;
- 'Heathy' vegetation associated with steeper slopes;
- Prominent tree cover with dense watercourse trees and scattered hedgerow trees;
- Species-rich hedgerows and trees associated with older boundaries;
- Ancient enclosure and remnant medieval strip fields; and
- Sparsely scattered farmsteads and wayside cottages.

Table 22: Wooded Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Wooded Farmlands	Species-rich hedgerows and trees associated with older boundaries; Large portions of the LCT contained within CRoW access land; Small portions of the LCT contained within Green Belt to the northeast within close proximity to Barlborough; Lower areas of the LCT sit within EA flood risk zones 2 + 3; and Hardwick Park Registered Park and Garden.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 23: Wooded Farmlands - Landscape character attributes

Wooded Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Woodland
Woodland Character	Thinly scattered small woodlands
Woodland Vision	Widespread small irregular woodlands
Woodland Type	Oak-birch with ash, downy birch and hazel
Hedgerow Trees	Thinly scattered
Watercourse	Densely scattered
Amenity Trees	N/A
Boundary Type	Mixed species hedgerows
Settlement Character	Scattered farmsteads
Traditional Materials	Sandstone with Welsh slate or red clay pantile roof
Cultural Interests	Hardwick Park

Table 24: Wooded Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Unimproved pasture is a main habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting; Conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancientwoodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species;

Management Action	Code	Potential for Change (Yes/No)	Comments
			Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; and Encourage the management of scrub and secondary woodland to link with existing habitats and woodland and ensure the conservation and management of mature/veteran trees within hedgerows. Woodland is a secondary habitat type within this LCT. Woodland vision is to create widespread small irregular woodlands.
Heathland and Shrub	h	Yes	There is localised heathy vegetation on steep slopes. Now only relict, this vegetation suggests a former, more extensive habitat.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.
Cropland	c	No	Heavy soils, together with steep slopes, have minimised agricultural improvements, retaining the inherent pastoral land-use.
Urban	u	No	This LCT is traditionally sparsely settled with only scattered farmsteads, however, the post war development of Bolsover and Glapwell has led to the expansion of these villages. Bolsover Castle, located at the top of the scarp slope to the magnesian limestone plateau, is an imposing landmark overlooking this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Sparsely Vegetated Lands	s	No	For the most part, the slope is gently undulating, reflecting the underlying Middle Coal Measure Series. However, in the south and around Bolsover, the scarp slope is distinctly steeper. There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

3.2.7 Wooded Hills and Valleys

A broadly undulating upland with a strongly wooded character, defined by woodland, mixed farming and sparsely scattered settlement.

Key Characteristics:

- Upland area with broadly undulating topography;
- Moderately steep slopes, becoming steeper along stream valleys;
- Mixed farming, predominantly pasture;
- 'Heathy' vegetation visually prominent in many road verges;
- Densely scattered patches of ancient, semi-natural woodland;
- Woodland bands along stream valleys and on steep slopes;
- Dense riverside trees and scattered mature hedgerow trees;
- Medium to large fields, enclosed by hedgerows;
- Late enclosure on hill summits;
- Network of small irregular lanes; and

- Sparsely scattered settlement of farmsteads and hamlets.

Table 25: Wooded Hills and Valleys - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Wooded Hills and Valleys	LCT contains extensive areas of woodland including numerous patches of ancient, semi-natural woodland. Mature hedgerows and watercourse trees further emphasise the strong wooded character; and Majority of the eastern portion of LCT encompassing Dronfield is contained within Green Belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 26: Wooded Hills and Valleys - Landscape character attributes

Wooded Hills and Valleys	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Woodland
Other Habitat Type	Acid grassland/heath
Woodland Character	Densely scattered small-medium woodlands
Woodland Vision	Widespread small-medium woodlands
Woodland Type	Oak-birch with ash, downy birch and hazel
Hedgerow Trees	Densely scattered
Watercourse	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows
Settlement Character	Hamlets and scattered farmsteads
Traditional Materials	Sandstone with Welsh or stone slate roof
Cultural Interests	Ancient woodland

Table 27: Wooded Hills and Valleys - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. Acid grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people. Broadly in accordance with SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting, conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancient woodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species; Re-establish physical links between existing isolated woodland and hedgerows;

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Encourage the management of scrub and secondary woodland to link with existing habitats and woodland; Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads; Where opportunities arise, the removal of coniferous woodland should be encouraged; and Ensure the conservation and management of mature/veteran trees within hedgerows. Woodland is a main habitat type within this LCT. Woodland vision is to create widespread small-medium woodlands.
Heathland and Shrub	h	No	'Heathy' vegetation defined within the key characteristics for this LCT with the majority of heathland vegetation situated along road verges, on steeper slopes and hill summits, it is unlikely for this management action to have Potential for Change due to the localised nature of the implementation of this management action. Heathland is a secondary habitat type within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian as identified by The Landscape Character of Derbyshire planting and management guidelines.
Cropland	c	Yes	This LCT contains a mixed farming landscape, variations in landform have led to pasture is dominant in the steeper, more undulating land to the north and west, and arable cropping is more widespread in the gentler, low lying land in the south and east.

Management Action	Code	Potential for Change (Yes/No)	Comments
Urban	u		Settlement character is sparsely scattered with farmsteads, hamlets and villages. Despite the immense pressures of development within Sheffield abutting to the north, as a result of planning constraints, the landscape has remained essentially rural and intact.
Sparsely Vegetated Land	s	Yes	The undulating topography and steep valley slopes provide considerable ecological diversity.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage, enhance and extend wetland habitats associated with the rivers Aire, Calder, Dearne, Don, Rother and Erewash and their tributaries to increase the landscape's ability to naturally and sustainably manage flooding, improve water quality, and increase the resilience of these habitats, the riverine landscape and associated species to climate change. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

4.0 NCA 50: Derbyshire Peak Fringe and Lower Derwent

4.1 Key Characteristics

- Transitional zone between the Peak District National Park (in which a small part of the NCA lies at its northern end) and the heavily settled Derbyshire Coal Measures, lying at an elevation of between 100 m and 300 m. It includes numerous outlying ridges, separated by impressive river valleys;
- The bedrock geology is chiefly of Carboniferous sediments – Coal Measures in the east and Millstone Grit in the west. Mainly historical quarrying activity – largely for dimension stone – forms large scars on the landscape. There are small inliers of limestone around Ashover and Crich;
- The variable soil types reflect the underlying geology: shallow, free-draining, coarse and loamy soils are found on steeper slopes over the gritstone; slowly permeable and seasonally waterlogged gley soils are found on the lower-lying slopes. On the Coal Measures, seasonally wet loams to clays predominate;
- The main rivers are the Derwent and its tributaries, the Amber and the Ecclesbourne, which drain to the River Trent and then out to sea via the Humber. Minor rivers and brooks in the north of the area flow eastwards towards large urban areas, and are dammed to create reservoirs (including Carsington Water and Ogston Reservoir). The underlying aquifers and reservoirs at Linacre, near Chesterfield, also contribute to potable water supplies – both within and outside the NCA;
- Extensive deciduous woodland along valley slopes, isolated copses on higher ground, hedgerow trees, and some large blocks of conifer plantation all contribute to the overall wooded character. The Derwent Valley holds one of the largest networks of ancient semi-natural woodland in England;
- There is stock rearing on permanent grassland and rough grazing on characteristically poor-quality agricultural land; improved grassland with arable is concentrated on the valley sides and lower valley slopes, towards the south of the area;
- Field patterns are irregular and of varying size, depending on local topography. Hedgerows are predominantly mixed species – including hawthorn, holly and hazel, with oak and ash hedgerow trees at lower altitudes – and remain largely intact; above 200 m they are replaced by a more regular field pattern, enclosed by stone walls;
- Priority habitats include lowland mixed deciduous woodland, wet woodland, grazing marsh, upland heath, and lowland meadows;
- Derwent Valley Mills World Heritage Site, stretching from Matlock to Derby, celebrates the industrial heritage of the 18th- and 19th-century cotton mills. It includes stone- and brick-built mill buildings and weirs along the River Derwent valley, as well as structures and buildings related to the Cromford Canal, together with the historic association with Sir Richard Arkwright;
- Historic mill towns are located along the course of the Derwent. Small market towns and villages tend to be nestled in valley bottoms, and are characterised by sturdy stone cottages and fine church buildings, with dispersed farmsteads in outlying enclosed land;

- The main transport corridors through the Derwent Valley are the local and mainline railways, and also the A6. The A38 trunk road runs through the east of the NCA, and a number of A roads cut the grain of the landscape east to west, providing access to the area and Peak District National Park from the surrounding coalfield towns; and
- The Derwent Valley Heritage Way, the Cromford Canal and former railway tracks all provide extensive recreational routes, and the latter also provide off-road cycling trails. Carsington Water is a key recreational asset. Outdoor recreational pursuits are popular in this area: walking, cycling, climbing, bouldering, fishing, sailing and kayaking.

4.2 Landscape Character Types within NCA 50: Derbyshire Peak Fringe and Lower Derwent within DCC

4.2.1 Enclosed Moors and Heaths

An open, farming landscape on broad rolling hill summits with patches of remnant moorland. Dry-stone walls enclose regular fields and straight roads join occasional sandstone farmsteads.

Key Characteristics:

- Rolling upland summits;
- Thin soils over hard sandstone bedrock; Pastoral farming, sheep and dairy cattle;
- Widespread bracken, localised gorse and patches of remnant moorland habitat; Sparsely scattered trees beside farmsteads and along some field boundaries; Regular pattern of fields, bounded by dry-stone walls;
- Regular lanes with uniform width verges; and
- Sparsely scattered sandstone farmsteads with stone slate roofs.

Table 28: Enclosed Moors and Heaths - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Moors and Heaths	Sparsely wooded landscape; Widespread bracken, localised gorse and patches of remnant moorland habitat; Reversion to acid grassland and moorland where landscapes are not maintained; and Small portion of the LCT contained within Green Belt to the north.

More information on individual LCT's can be found here: Landscape character – Derbyshire County Council

Table 29: Enclosed Moors and Heaths – Landscape character attributes

Enclosed Moors and Heaths	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Moorland
Woodland Character	Open/Unwooded
Woodland Vision	Open/Unwooded
Woodland Type	N/A
Hedgerow Trees	None
Watercourse Trees	None
Amenity Trees	Localised around settlement
Boundary Type	Dry stone walls
Settlement Character	Sparsely scattered farmsteads
Traditional Materials	Gritstone/sandstone with Staffordshire blue clay tile or stone slate roof
Cultural Interests	Late parliamentary enclosures

Table 30: Enclosed Moors and Heaths – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	No	Much of the remnant and reverted grassland within this LCT comprises acid grassland and requires frequent liming. Unimproved pasture is a main habitat type within this LCT.
Woodland and Forest	w	No	Not in accordance with SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat

Management Action	Code	Potential for Change (Yes/No)	Comments
			networks, while protecting intrinsic landscape character. Maintain the open character of the landscape as identified by The Landscape Character of Derbyshire planting and management guidelines. Not a dominant land cover within this LCT. Woodland vision is to remain open/unwooded.
Heathland and Shrub	h	Yes	Historically, much of this LCT would have been considered heathland, however, due to extensive cropland this has declined, although areas of heathland and gorse still exist along roadside verges particularlyin the north. Moorland is a secondary habitat type within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	Yes	Pasture is the dominant land-use in this LCT. Most of the fields have been ploughed and reseeded and are grazed by cattle and sheep.
Urban	u	No	LCT is characterised by scattered farmsteads. Occasional small field barns are a feature within this LCT. Not a dominant land cover within this LCT.
Sparsely Vegetated Land	s	Yes	Occasional outcrops of Carboniferous Limestone also occur within the Wooded Slopes and Valleys at Ashover and Crich, and add some local diversity. There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

4.2.2.Gritstone Heaths and Commons

Gritstone hilltops and slopes characterised by geometric and regular field patterns with dry-stone walls or thorn hedges. Sandstone farmsteads are scattered through the landscape, with clustered cottages and roadside dwellings found on enclosed commons.

Key Characteristics:

- Hill summits and steep slopes over sandstone;
- Thin, well-drained soils over mudstones and glacial drift;
- Predominantly pastoral farming, with some arable;
- Widespread bracken and localised patches of heathy acid grassland with gorse;
- Some plantation woodland and amenity trees around farmsteads;
- Sparsely scattered trees along boundaries;
- Geometric and regular pattern of fields, bounded by dry-stone walls and some thorn hedges;
- Few straight roads with uniform width verges;
- Scattered sandstone farmsteads with Staffordshire blue clay title or Welsh slate roofs; and
- Localised clusters of roadside cottages, situated on historic commons.

Table 31: Gritstone Heaths and Commons - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Gritstone Heaths and Commons	Hill summits and steep slopes over sandstone; Sparsely wooded landscape; Small and medium size regular and geometric fields, associated with late parliamentary enclosure; and Majority of the LCT contained with Green Belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 32: Gritstone Heaths and Commons - Landscape character attributes

Gritstone Heaths and Commons	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Acid grassland/heath
Woodland Character	Occasional small plantations
Woodland Vision	Occasional small plantations
Woodland Type	N/A

Gritstone Heaths and Commons	Current Landscape Character Attributes
Hedgerow Trees	None
Watercourse Trees	None
Amenity Trees	Localised around settlement
Boundary Type	Thorn hedgerows and walls
Settlement Character	Localised clusters of cottages and farms
Traditional Materials	Sandstone with blue tile or Welsh slate roof
Cultural Interests	Late parliamentary enclosures, historic commons

Table 33: Gritstone Heaths and Commons - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Unimproved pasture is a main habitat type within this LCT. Acid grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads;

Management Action	Code	Potential for Change (Yes/No)	Comments
			Where opportunities arise, the removal of coniferous plantation woodland should be encouraged; and Maintain open character of landscape. Woodland vision is to retain areas of occasional small plantations.
Heathland and Shrub	h	Yes	Ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species as identified by The Landscape Character of Derbyshire planting and management guidelines. Historic connotations relating to heathland through former common land. Patches of heathy grassland occur on slopes over thin acid soils. Bracken is a common sight along roadside verges. Acid grassland/Heathland is a secondary habitat type within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	Yes	Land use is predominantly pastoral with occasional arable farming due to clayey loam soils which are poorly draining and can become waterlogged.
Urban	u	No	Localised clusters of dwellings and small farmsteads, situated close to roads. Not a dominant land cover within this LCT.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

4.2.3 Riverside Meadows

Broad, flat flood plains hold meandering rivers, with scattered trees along the river bank. Scattered boundary trees and transport routes punctuate the pastoral landscape.

Key Characteristics:

- Flat, broad flood plains containing meandering rivers;
- Seasonally waterlogged soils over alluvium;
- Low intensity permanent pasture;

- Localised patches of rushes in damp hollows;
- Scattered, locally dense trees along watercourses, widespread alder and localised willow;
- Scattered trees along field boundaries;
- Regular shaped fields, bounded by hawthorn hedges;
- Lanes along edges or crossing flood plains with gritstone bridges over the rivers;
- Railway lines with secondary woodland along embankments; and
- Historic textile mills.

Table 34: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	Flat, broad flood plains containing meandering rivers; Low intensity permanent pasture; LCT is largely flood plain with very little built development; and LCT is contained within flood zones 2 + 3.

More information on individual LCT's can be found here: [Landscape character - Derbyshire County Council]

Table 35:Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional small wet woodlands
Woodland Type	Alder-crack willow with downy birch and goat willow
Hedgerow Trees	Thinly scattered
Watercourse Trees	Dense
Amenity Trees	None
Boundary Type	Thorn hedgerows

Riverside Meadows	Current Landscape Character Attributes
Settlement Character	Unsettled
Traditional Materials	N/A (Sandstone and red brick mills)
Cultural Interests	Historic mills, canals and railways

Table 36: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Heavy soils and risk of flooding make the flood plain difficult to work for arable cropping, leaving permanent grassland as the dominant land use. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species; and Ensure the balance is maintained between new woodland planting and areas of nature conservation value. Although this LCT is relatively unwooded the woodland vision is to create areas of occasional small wet woodland.
Heathland and Shrub	h	Yes	Heathland is not a dominant feature within this LCT although The Landscape Character of Derbyshire planting and management guidelines state that management actions should ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species.

Management Action	Code	Potential for Change (Yes/No)	Comments
Wetland	f	Yes	Broadly in accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains). The River Derwent and River Ecclesbourne flow through broad flood plains. The wet meadows contained within this LCT, remain partially flooded for much of the year. They support marsh vegetation with rushes . Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian as identified by The Landscape Character of Derbyshire planting and management guidelines. Wetland is a main habitat type within this LCT.
Cropland	c	No	Heavy soils and risk of flooding make the flood plain difficult to work for arable cropping, leaving permanent grassland as the dominant land use. Not a dominant land cover within this LCT.
Urban	u	Yes	Due to the risk of flooding, this LCT would have been unsettled although some modern housing estates now extend into the flood plain. There are potential opportunities for further urban expansion, however, this should be reviewed on a case by case basis.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	In accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains). The River Derwent and River Ecclesbourne flow through broad flood plains. The wet meadows contained within this LCT, remain partially flooded for much of the year. They support marsh vegetation with rushes. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

4.2.4 Settled Farmlands

A gently undulating to rolling pastoral landscape over mixed geology, characterised by density scattered hedgerow trees and along watercourses. Villages and sparsely scattered farmsteads give the impression of a well-settled landscape.

Key Characteristics:

- Gently undulating to rolling upland landscape;
- Seasonally waterlogged soils over mixed Carboniferous and Permo-Triassic geology and glacial till;
- Dairy farming on permanent pasture and grass leys;
- Scattered hedgerow trees, predominantly ash, that provide filtered views;
- Dense lines of trees along watercourses;
- Small to medium sized semi-regular and strip fields enclosed by hedgerows and occasional dry-stone walls;
- Widespread ridge and furrow;
- Dense network of winding lanes with irregular width verges; and
- Discrete villages with buildings of limestone and Staffordshire blue tiles or Welsh slate roofs and scattered outlying farmsteads all creating the sense of a well-settled landscape.

Table 37: Settled Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Settled Farmlands	A well-settled landscape with important cultural and historic settlement patterns dating back from prehistoric, to roman and even medieval in origin; Heavy emphasis on pasture land with dairy and stock rearing; and Widespread ridge and furrow.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 38: Settled Farmlands - Landscape character attributes

Settled Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Neutral and calcareous grassland
Woodland Character	Unwooded

Settled Farmlands	Current Landscape Character Attributes
Woodland Vision	Localised small woodlands
Woodland Type	Oak-birch with hazel
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows
Settlement Character	Villages and scattered farms and cottages
Traditional Materials	Limestone with Welsh slate or red brick with blue clay tile roof
Cultural Interests	Strip fields, ridge and furrow

Table 39: Settled Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The land use is predominantly pasture with dairying and stock rearing. Some pasture is improved with grass leys. Much of this agricultural landscape is of little ecological value due to the intensification of farming, however, there are isolated patches of unimproved grassland and hay meadow associated with steeper slopes. Where there are limestone outcrops around Hognaston Winn, there is localised calcareous grassland. Unimproved pasture is a main habitat type within this LCT. Neutral and calcareous grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Due to the gently rolling nature of the landform within this LCT, landscapes are heavily farmed which ensures woodland is not a typical characteristic associated with this landscape. Exceptions to this are the small broadleaved estate woodlands associated with the parkland landscape around and including the settlement at Tissington. There are also localised parkland trees. Despite the lack of woodland, tree cover is well represented throughout the LCT due to the densely scattered hedgerow and watercourse trees. Trees also help to define the small and medium scale by filtering views through the landscape. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting; Conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancient woodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long-lived species; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Encourage the management of scrub and secondary woodland to link with exiting habitats and woodland; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Ensure the conservation and management of mature/veteran trees within hedgerows. Woodland vision is to create areas of localised small woodlands.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	In accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains).

Management Action	Code	Potential for Change (Yes/No)	Comments
			Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Primarily, this is a cultural landscape shaped by its settlement pattern and land-use. A key feature is it's settled character. The area demonstrates human activity from the prehistoric period with evidence of settlement since the roman period and many of the villages areearly medieval in origin.
Sparsely Vegetated Land	s	Yes	There are isolated patches of unimproved grassland and hay meadow associated with steeper slopes, which provide local floristic interest. Where the limestone outcrops, around Hognaston Winn, there is localised calcareous grassland.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains). Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

4.2.5 Woodland Farmlands

A small-scale undulating landscape rising to the magnesian limestone plateau. Characteristically well-wooded, sparsely settled and dominated by mixed farming.

Characteristics:

- Gently undulating landform on land rising to the magnesian limestone plateau;
- Mixed farming with pasture and occasional arable cropping;
- 'Heathy' vegetation associated with steeper slopes;
- Prominent tree cover with dense watercourse trees and scattered hedgerow trees;
- Species-rich hedgerows and trees associated with older boundaries;
- Ancient enclosure and remnant medieval strip fields; and

- Sparsely scattered farmsteads and wayside cottages.

Table 40: Wooded Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Wooded Farmlands	Well-wooded landscape dominated by mixed farming practices; 'Heathy' vegetation associated with steeper slopes; and Portions of the LCT contained within green belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 41: Wooded Farmlands - Landscape character attributes

Wooded Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Woodland
Other Habitat Type	Unimproved pasture
Woodland Character	Densely scattered small-medium woodlands
Woodland Vision	Widespread small-medium woodlands
Woodland Type	Oak-birch with hazel
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	None
Boundary Type	Mixed species hedgerows
Settlement Character	Hamlets and scattered farmsteads
Traditional Materials	Sandstone with Welsh or stone slate roof
Cultural Interests	Green lanes

Table 42: Wooded Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Seasonally waterlogged soils are found over the mudstone bands, these heavy soils are difficult to work and would traditionally have been supported permanent grassland for grazing and hay. Arable cropping would have been largely confined to lighter soils. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting; Conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancient woodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Encourage the management of scrub and secondary woodland to link with exiting habitats and woodland; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure the conservation and management of mature/veteran trees within hedgerows. Woodland and hedgerows trees are prevalent, creating a well wooded landscape. Woodland vision is to create areas of widespread small- medium woodlands.
Heathland and Shrub	h	Yes	On thin, well-drained soils over sandstone, there are patches of heathy acid grassland with bracken, gorse and occasional heather. Bracken also occurs along field boundaries and on road verges.
Wetland	f	Yes	Broadly in accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains). Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines.
Cropland	c	Yes	Arable cropping is largely confined to lighter soils within this LCT.
Urban	u	No	Farmsteads and cottages are dispersed throughout the landscape. The presence of coal in the area and the expansion of Chesterfield have contributed to widespread development of red brick housing. Of special interest is the development at Wingerworth, on the site of a former country house park, reflecting its former boundaries.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains). Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management Action	Code	Potential for Change (Yes/No)	Comments
			A network of watercourses, often linked with woodland bands, provides the key wildlife habitat in this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

4.2.6 Slopes and Valleys

A broadly undulating upland with a strongly wooded character, defined by woodland, mixed farming and sparsely scattered settlement.

Key Characteristics:

- Upland area with broadly undulating topography;
- Moderately steep slopes, becoming steeper along stream valleys;
- Mixed farming, predominantly pasture;
- 'Heathy' vegetation visually prominent in many roads verges;
- Densely scattered patches of ancient, semi-natural woodland;
- Woodland bands along stream valleys and on steep slopes;
- Dense riverside trees and scattered mature hedgerow trees;
- Medium to large fields, enclosed by hedgerows;
- Late enclosure on hill summits;
- Network of small irregular lanes; and
- Sparsely scattered settlement of farmsteads and hamlets.

Table 43: Wooded Slopes and Valleys - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Wooded Slopes and Valleys	Well-wooded landscape dominated by mixed farming practices; Moderately steep slopes, becoming steeper along stream valleys; Contains scattered patches of ancient, semi-natural woodland; and Northern portion of LCT west of Chesterfield and Dronfield contained within green belt.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 44: Wooded Slopes and Valleys - Landscape character attributes

Wooded Slopes and Valleys	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Woodland
Other Habitat Type	Unimproved pasture
Woodland Character	Densely scattered small-medium woodlands
Woodland Vision	Widespread small-medium irregular woodlands
Woodland Type	Oak-birch with hazel
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	None
Boundary Type	Mixed species hedgerows
Settlement Character	Hamlets and scattered farmsteads
Traditional Materials	Sandstone with stone slate roof
Cultural Interests	Green lanes, Ancient woodland

Table 45: Wooded Slopes and Valleys - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Soils in this LCT are agriculturally poor and consequently, the dominant land use is permanent grassland for pasture or hay. There are occasional arable fields on the better drained soils over sandstone. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to

Management Action	Code	Potential for Change (Yes/No)	Comments
			coherent habitat networks, while protecting intrinsic landscape character. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting; Conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancient woodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Encourage the management of scrub and secondary woodland to link with exiting habitats and woodland; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Ensure the conservation and management of mature/veteran trees within hedgerows. Small areas of wet woodland occur on the waterlogged soils of flushed slopes and low lying ground. Woodland is a main habitat type within this LCT. Woodland vision is to create areas of widespread small-medium irregular woodlands.
Heathland and Shrub	h	Yes	On the thin, well drained soils over sandstone there are patches of heathy acid grassland with bracken, gorse and occasionally heather. Bracken is widespread along field boundaries and on road verges.
Wetland	f	Yes	Broadly in accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains).

Management Action	Code	Potential for Change (Yes/No)	Comments
			Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines. Small areas of wet woodland occur on the waterlogged soils of flushed slopes and low lying ground.
Cropland	c	Yes	Soils in this LCT are agriculturally poor and consequently, the dominant land use is permanent grassland for pasture or hay. There are occasional arable fields on the better drained soils over sandstone. Creation of cropland may be appropriate, however, this should be verified on a case by case basis.
Urban	u	No	Farmsteads are dispersed throughout the landscape, though there are occasional clusters of farmsteads and cottages.
Sparsely Vegetated Land	s	Yes	There are localised seams of coal, which have been exploited by mining. There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains). Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines. A network of watercourses, often linked with woodland bands, provides the key wildlife habitat in this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

5.0 NCA 51: Dark Peak

5.1 Key Characteristics

- Sharply defined, elevated and vast plateau with gritstone ridges and edges and long, uninterrupted views;
- Wild and remote semi-natural character created by blanket bog, dwarf shrub heath and heather moorland which support internationally important habitats and assemblages of upland birds and breeding waders;
- Contrasting valley heads created by a combination of sheltered, deeply-incised cloughs with fast-flowing streams around the plateau margins, with their greater diversity of vegetation, including semi-natural broadleaved woodland;
- Pastoral character of margins created by in-bye land with dispersed farmsteads, gritstone wall boundaries (hedgerows in valley bottoms) and the small scale of enclosure;
- Major valleys, some of which are dominated by coniferous woodland and reservoirs; these supply drinking water to distant urban conurbations including Derby and Nottingham. The wider valleys also provide habitats for wintering and breeding birds and other important species such as fungi, as well as high- quality recreational experiences for visitors;
- Durable and stocky architectural style to dispersed buildings and settlements constructed from local gritstone with typical blackened appearance;
- Extensive prehistoric field systems and settlement behind the gritstone edges, with early post-glacial occupation beneath the higher, deeper peats; and
- Historic routes traverse the moorland as well as more modern trails such as the Pennine Bridleway and Pennine Way. More recent road and rail routes are located along valley bottoms.

5.2 Landscape Character Types within NCA 51: Dark Peak within DCC

5.2.1 Enclosed Moorland

An open, upland-farming landscape on broad rolling hill summits with patches of remnant moorland. Dry-stone walls enclose regular fields and straight roads join occasional isolated farmsteads.

Key Characteristics:

- Moderate to steeply sloping gritstone hills;
- Gritstone outcrops on hill summits and steeper slopes;
- Peaty, acidic soils;
- Rough grazing and areas of damp pasture with patches of rushes;
- Patches of heather, gorse and bilberry, especially where fields are reverting back to moorland;
- Medium to large regular fields bounded by dry-stone walls;
- Unwooded landscape other than occasional amenity trees around farmsteads and settlements;
- Sparsely scattered gritstone farmsteads some with stone slate roofs; and
- Open landscape with expansive views.

Table 46: Enclosed Moorland - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Moorland	Peaty, acidic soils; Open landscape with expansive views; Distinct lack of woodland within this LCT; Patches of heather, gorse and bilberry, especially where fields are reverting back to moorland; and Large areas of CRoW access land contained within LCT.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 47: Enclosed Moorland - Landscape character attributes

Enclosed Moorland	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Moorland
Woodland Character	Open/unwooded
Woodland Vision	Open/unwooded
Woodland Type	N/A
Hedgerow Trees	None
Watercourse Trees	None
Amenity Trees	Localised around settlement
Boundary Type	Dry stone walls
Settlement Character	Sparsely scattered farmsteads
Traditional Materials	Gritstone with stone slate or Staffordshire blue clay roof tile
Cultural Interests	Late parliamentary enclosures

Table 48: Enclosed Moorland - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. The resultant land use is low quality pasture for stock rearing on wet moorland. Where pasture has been improved, or on free draining soils, some dairy farming occurs. Unimproved pasture is a main habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads as identified by The Landscape Character of Derbyshire planting and management guidelines. Woodland vision is to remain open/unwooded however existing woodland is to be managed and enhanced.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the

Management Action	Code	Potential for Change (Yes/No)	Comments
			qualities of the landscape and its valuable historic, geological and wildlife features. Moorland character exists within this LCT with sporadic occurrences of gorse and bracken. Where marginal fields have been abandoned, these have quickly reverted back to moor and heath with birch scrub. Moorland is a secondary habitat type within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	The settlement pattern is dispersed with farmsteads sparsely scattered through the landscape.
Sparsely Vegetated Land	s	Yes	At higher elevations and associated with steeper slopes, bare rock is common, providing another valuable habitat. This is an important landscape for ground nesting birds. There is evidence of previous extraction within this LCT as identified through Historic Landscape Characterisation data produced by Historic England.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

5.2.2 Moorland Fringe

A semi-natural moorland landscape of rough grazing fringing the high moor plateaux with exposed rocky outcrops and open, expansive views.

Key Characteristics:

- Moderate to steep upland sloped fringing the open moors;
- Exposed rock and scree sloped associated with gritstone edges;
- Shallow peaty soils;
- Moorland slopes grazed by sheep;
- Extensive semi-natural habitat of heather with rushes in damp hollows;
- Distinct absence of trees; and
- Open, exposed landscape with expansive views.

Table 49: Moorland Fringe - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Moorland Fringe	Extensive semi-natural habitatof heather with rushes in damp hollows; Moorland slopes grazed by sheep; Distinct absence of trees; and Open, exposed landscape with expansive views.

More information on individual LCT's can be found here; Landscape character - Derbyshire County Council

Table 50: Moorland Fringe - Landscape character attributes

Moorland Fringe	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Unimproved pasture
Other Habitat Type	Moorland
Woodland Character	Open/unwooded
Woodland Vision	Open/unwooded
Woodland Type	N/A
Hedgerow Trees	Treeless
Watercourse Trees	Treeless
Amenity Trees	Treeless
Boundary Type	Dry stone walls
Settlement Character	Unsettled (very occasional farm)
Traditional Materials	Gritstone with stone slate roof
Cultural Interests	None

Table 51: Moorland Fringe - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Owing to its elevation and poor quality soils, this is a very marginal agricultural landscape, used primarily as rough grazing for sheep rearing. Much improved pasture has now been abandoned and is now reverting back to semi-natural vegetation associated with moorland. Unimproved pasture is a main habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Where opportunities arise, the removal of coniferous plantation woodland should be encouraged as identified by The Landscape Character of Derbyshire planting and management guidelines. Woodland vision is to remain open/unwooded, although there may be opportunities for the removal of coniferous woodland.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and

Management Action	Code	Potential for Change (Yes/No)	Comments
			SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. A landscape with widespread patches of semi-natural vegetation either as heather moorland or acid grassland. In abandoned pastures there are extensive patches of bracken and gorse. Moorland is a secondary habitat type within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Large areas of this LCT are unsettled although there is the occasional isolated farmstead.
Sparsely Vegetated Land	s	Yes	Where the upper slopes form edges to the moorland, there are extensive amounts of bare rock and scree, which also act as valuable habitats.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

5.2.3 Open Moors

An upland landscape of rolling highland plateaux and heather moorland with a distinct sense of remoteness and 'wildness'.

Key Characteristics:

- Gently to moderately rolling highland plateau;
- Raw peat soils and blanket bog over gritstone;
- Unenclosed heather moorland extensively grazed by sheep;
- Distinct absence of trees;
- Many important archaeological (prehistoric) features; and
- Open and exposed landscape with expansive views.

Table 52: Open Moors - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Open Moors	Unenclosed heather moorland extensively grazed by sheep; Distinct absence of trees; Open and exposed landscape with expansive views; and Majority of LCT contained within CRoW Access land.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 53: Open Moors - Landscape character attributes

Open Moors	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Moorland
Other Habitat Type	Acid grassland
Woodland Character	Open/unwooded
Woodland Vision	Open/unwooded
Woodland Type	N/A
Hedgerow Trees	Treeless
Watercourse Trees	Treeless
Amenity Trees	Treeless
Boundary Type	None
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	Prehistoric earthworks, standing stones

Table 54: Open Moors - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Not in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This landscape has low agricultural value being used predominantly for sheep grazing or grouse in an extensive farming system. Acid grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	No	Not in accordance with SEO 4: Objectives of SEO 4 include to increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. This is not considered appropriate within his LCT. This is a treeless landscape owing to the elevation, the wetness of the underlying soils and the generally harsh climate that makes tree growth difficult. Woodland vision is to remain open/unwooded. There are no management actions as set out by The Landscape Character of Derbyshire planting and management guidelines.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration

Management Action	Code	Potential for Change (Yes/No)	Comments
			offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. This LCT is a landscape characterised by extensive semi- natural vegetation in the form of heather moorland. Moorland is a main habitat type within this LCT.
Wetland	f	Yes	The soils within this LCT are classed as raw peat and blanket bog.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This LCT is an unsettled landscape owing to the hostile climate and low agricultural value of the land.
Sparsely Vegetated Land	s	Yes	The hard bedrock is difficult to erode, creating broad tracts of upstanding highland, rising to over 600 metres at Kinder Scout. The LCT is characterised by moorland plateaux and hill summits, there may be potential to enhance sparsely vegetated land on the moorland slopes, although this should be reviewed on a case by case basis.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

5.2.4 Riverside Meadows

Gentle valley floors contain upland rivers, lined with dense trees. Hedgerows enclose small, sub-regular fields in a pastoral landscape, interrupted by the occasional historic mill.

Key Characteristics:

- Gentle valley floors, with narrow flood plains containing meandering rivers;
- Seasonally waterlogged soils over alluvium;
- Low intensity permanent pasture;
- Localised patches of rushes in damp hollows;
- Dense trees along watercourse, comprising of alder and willow;
- Scattered boundary trees;
- Small, sub-regular fields enclosed by hedgerows and dry-stone walls;
- Lanes along edges or crossing floor plains with gritstone bridges over the rivers;
- Industrial heritage associated with gritstone mills powered by water; and

- Strong sense of enclosure from adjacent slopes.

Table 55: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	Low intensity permanent pasture; Dense trees along watercourse; Industrial heritage associated with gritstone mills powered by water; Strong sense of enclosure from adjacent slopes; and LCT is contained within flood zones 2 + 3.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 56: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional small wet woodlands
Woodland Type	Alder-crack willow with downy birch and goat willow
Hedgerow Trees	None
Watercourse Trees	Dense
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Unsettled
Traditional Materials	N/A (Gritstone mills)
Cultural Interests	Historic mills, canals and railways

Table 57: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Some areas are permanently waterlogged and some wet hollows retain flood water long after the majority of the floods have subsided. The traditional land-use is permanent grassland due to the heavy waterlogged nature of the soils and harsh climate. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; and Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees Woodland vision is to create areas of occasional small wet woodlands
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources;

Management Action	Code	Potential for Change (Yes/No)	Comments
			SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Further habitat diversity is provided by bands of scrub and secondary woodland that are colonising abandoned pasture.
Wetland	f	Yes	Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines. The wet meadows, found in hollows in the flood plain, remain partly flooded for much of the year. They support a marshy vegetation with rushes and are important remnants of a diminishing habitat type. Wetland is a main habitat type within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Due to the risk of flooding, this landscape would have been unsettled, with farmsteads being located on the valley sides. The valleys were transformed during the industrial revolution when industrialists built large mills to harness the power of the water. Some mills with associated weirs and pools remain today, converted to new uses.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

5.2.5 Settled Valley Pastures

A settled, pastoral farming landscape on gently sloping lower valley sides, dissected by stream valleys. Dense watercourse trees, scattered boundary trees and tree groups around settlement contribute to a strongly wooded character.

Key Characteristics:

- Moderate to steep lower valley sloped dissected by stream valleys;
- Poorly draining soils over Carboniferous shale and sandstone;
- Pastoral farming with extensive improved pasture;
- Bracken in some road verges and rushes associated with damp hollows;
- Wooded character associated with tree belts along streams and cloughs, settlement and farmsteads;
- Small irregular fields enclosed by mixed species hedgerows and occasional dry-stone walls;
- Network of winding lanes with irregular verges, sometimes sunken on steeper slopes;
- Settled landscape of small nucleated settlements and scattered stone farmsteads with stone late roofs;
- Stone terraced housing on lower slopes associated with historic mills; and
- Enclosed landscape with views filtered by trees.

Table 58: Settled Valley Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Settled Valley Pastures	Pastoral farming with extensive improved pasture; Strong wooded character comprised of dense watercourse trees, scattered boundary trees and tree groups around settlements; LCT contained within Green Belt on the western side of the Peak District National Park; and Areas of Ancient Woodland located within eastern portion of LCT.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 59: Settled Valley Pastures - Landscape character attributes

Settled Valley Pastures	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Woodland
Other Habitat Type	Unimproved pasture
Woodland Character	Densely scatter small woodlands
Woodland Vision	Widespread small-medium woodlands
Woodland Type	Oak-birch with hazel
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows (Occasional wall)
Settlement Character	Villages and scattered farms and cottages
Traditional Materials	Gritstone with Welsh slate or stone slate roof
Cultural Interests	Industrial terraces, mills

Table 60: Settled Valley Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Much of this landscape is intensively farmed as permanent pasture and improved grassland and on the upper slopes over gritstone, there may be localised patches of acid grassland. The traditional land-use on these soils is stock rearing and dairying with much of the land down to permanent pasture. Unimproved pasture is a secondary habitat type within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting; Where opportunities arise, the removal of coniferous plantation woodland should be encouraged; Conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancient woodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Encourage the management of scrub and secondary woodland to link with existing habitats and woodland; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Ensure the conservation and management of mature/veteran trees within hedgerows. Woodland vision is to create areas of widespread small- medium woodlands. Woodland is a main habitat type within this LCT.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources;

Management Action	Code	Potential for Change (Yes/No)	Comments
			SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Where the soils are thinner and free draining, particularly associated with steep slopes and road verges, heathy plants like bracken, heather and bilberry are locally common.
Wetland	f	Yes	The nature of the underlying geology ensures there is variation in the soils. On the lower, less steep slopes, over shale, the soils are slowly permeable, seasonally waterlogged and loamy, over clay.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	Yes	A well settled landscape containing towns, villages, small groups of cottages, and scattered farmsteads.
Sparsely Vegetated Land	s	Yes	Where the soils are thinner and free draining, particularly associated with steep slopes and road verges, heathy plants like bracken, heather and bilberry are locally common. There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

5.3 Landscape Character Types within NCA 51: Dark Peak within Peak District National Park

5.3.1 Enclosed Gritstone Upland

An enclosed upland pastoral landscape associated with high uplands, ridge tops and sloped. This is a landscape of isolated stone farmsteads, straight roads and regular fields enclosed by drystone walls, largely reclaimed from moorland during Parliamentary Enclosure. Localised boulder fields and rocky outcrops are a feature in places, often associated with patched of remnant moorland vegetation.

Key Characteristics:

- High uplands and ridge tops with some steeper slopes;
- Thin soils over gritstone bedrock with localised pockets of peat;
- Permanent pasture and rough grazing enclosed by gritstone walls;
- Remnant patches of rough land with bracken and gorse, some heather and bilberry;
- Regular pattern of medium to large fields;
- Straight roads with wide verges of grass and, in some places, heather;
- Isolated gritstone farmsteads with stone slate roofs; and
- Tree groups around farmsteads providing shelter.

Table 61: Enclosed Gritstone Upland - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Gritstone Upland	Permanent pasture and rough grazing enclosed by gritstone walls; and Remnant patches of rough land with bracken and gorse, some heather and bilberry.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 62: Enclosed Gritstone Upland - Landscape character attributes

Enclosed Gritstone Upland	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Unimproved pasture/semi-improved pasture
Other Habitat Type	Moorland
Woodland Character	Open/unwooded
Woodland Vision	N/A

Enclosed Gritstone Upland	Current Landscape Character Attributes
Woodland Type	Oak, Ash & Sycamore
Hedgerow Trees	Occasional hedgerows
Watercourse Trees	None
Amenity Trees	Localised around settlement
Boundary Type	Dry stone walls
Settlement Character	Hamlets & scattered farmsteads
Traditional Materials	Gritstone with stone slate roof
Cultural Interests	-

Table 63: Enclosed Gritstone Upland - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is a landscape of mostly improved or semi-improved permanent pasture with sheep and cattle grazing and some rough grazing. There are some reseeded grass leys and very occasional arable fields. Soils are mostly of poor quality and some fields are dominated by rushes or are reverting to moorland, providing habitat diversity. Unimproved pasture / semi-improved pasture are primary habitat types within this LCT. Overall strategy is to enhance ecological value and connectivity of wet pasture in a mixed farming regime.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Largely a treeless landscape although there are occasional tree groups, normally associated with farmsteads. There

Management Action	Code	Potential for Change (Yes/No)	Comments
			are also some shelterbelts and occasional blocks of 19th or 20th century coniferous woodland.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features There are opportunities within the Enclosed Gritstone Uplands of the Dark Peak to diversify the existing grassland-based landscapes. This can be achieved by creating new moorland/heath and extending and linking existing patches of moor/heath. Heath associated species are a common feature within this LCT. Moorland is a secondary habitat type within this LCT. Management strategy is to diversify the existing grassland-based landscapes through the creation / extension / linking of moorland / heath.
Wetland	f	Yes	Overall strategy is to enhance ecological value and connectivity of wet pasture in a mixed farming regime. Management strategy is to manage and enhance areasof wetland due to the overall reduction of wetland areas within this LCT.
Cropland	c	Yes	Very occasional arable fields where appropriate although limited due to poor quality soils. Overall strategy is to enhance ecological value and connectivity of wet pasture in a mixed farming regime.

Management Action	Code	Potential for Change (Yes/No)	Comments
Urban	u	No	This LCT is largely unsettled, although there are areas that include isolated farmsteads. There are small groups of settlement, such as Moorfield, adjacent to Glossop. Overall strategy is to retain historic pattern of sparse settlement and enclosure.
Sparsely Vegetated Land	s	No	There are no active quarries within the Dark Peak but there are remains of old quarries, which form an important part of the character of the area. They are a valued cultural heritage, biodiversity, educational and, particularly, recreational resource, with many old quarries being used for rock climbing and bouldering.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is a sparsely settled pastoral upland landscape. Priorities for the landscape include maintaining the historic pattern of sparse settlement and enclosure, and protecting and managing the enclosed character of the landscape, whilst enhancing the ecological value and connectivity of wet pasture in a mixed farming regime.

5.3.2 Moorland Slopes and Cloughs

Steep slopes and cloughs rising to open moorland on the high plateaux above, with widespread rough grassland and heather moor, grazed by sheep. This is a wild unsettled landscape with exposed views over lower ground.

Key Characteristics:

- Steep slopes and cloughs rising to the moorland plateaux above;
- Prominent gritstone outcrops, boulders and scree slopes;
- Thin soils over gritstone bedrock;
- Rough acid grassland, bracken and heather moorland grazed by sheep;
- Exposed views over lower ground, sometime limited by clough sides;
- Numerous springs and flushes arising on slopes and clough sides; and
- Relict areas of oak-birch woodland in cloughs.

Table 64: Moorland Slopes and Cloughs - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Moorland Slopes and Cloughs	Steep slopes and cloughs rising to the moorland plateaux above; Prominent gritstone outcrops, boulders and scree slopes; and Rough acid grassland, bracken and heather moorland grazed by sheep.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 65: Moorland Slopes and Cloughs - Landscape character attributes

Moorland Slopes and Cloughs	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Unimproved pasture
Other Habitat Type	Moorland
Woodland Character	Occasional small plantation woodland
Woodland Vision	N/A
Woodland Type	Sessile oak and pedunculate oak, with birch and holly
Hedgerow Trees	None
Watercourse Trees	Densely scattered
Amenity Trees	None
Boundary Type	Dry stone walls
Settlement Character	Sparsely scattered farmsteads
Traditional Materials	Gritstone with stone slate roof
Cultural Interests	-

Table 66: Moorland Slopes and Cloughs - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Owing to its elevation and poor-quality soils, this is a very marginal agricultural landscape, used primarily as rough grazing for sheep. This LCT contains areas of acid grassland. Unimproved pasture is a primary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Largely a treeless landscape, however, scattered trees and patches of scrub often occur within cloughs, while occasional small plantation woodlands can sometimes be found on moorland slopes. Management strategy is to manage and enhance woodlands as well as create / restore clough woods.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also

Management Action	Code	Potential for Change (Yes/No)	Comments
			conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Owing to the poor-quality soils, this is a landscape with widespread patches of semi-natural vegetation, usually comprising a mixture of heather and bilberry moorland, with areas of acid grassland. Patches of bracken are regularly extensive. Moorland is a secondary habitat type within this LCT. Management strategy is to diversify the existing grassland-based landscapes through the creation / extension / linking of moorland / heath.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is a very sparsely settled landscape with occasional isolated gritstone farmsteads and cottages. There are also occasional field barns and stock pens within the landscape, associated with sheep farming.
Sparsely Vegetated Land	s	Yes	There are no active quarries within the Dark Peak but there are remains of old quarries, which form an important part of the character of the area. They are a valued cultural heritage, biodiversity, educational and, particularly, recreational resource, with many old quarries being used for rock climbing and bouldering. This LCT is defined by its steep upper slopes and edges. Cloughs are a common feature within this landscape. Where the upper slopes form edges to the moorland and on the sides of steep cloughs, there are frequent extensive amounts of bare rock and scree, which can provide for a range of valuable habitats. Evidence of relict gritstone quarrying and a limited amount of coal mining carried out on the moorland slopes in the north-east of the area on Meltham Moor.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is a steeply sloping landscape with dramatic geology such as scree slopes and gritstone outcrops, as well as a diversity of other features including flushes, springs, rush pastures and clough woodlands. Priorities for this landscape character type should be to enhance landscape integrity and connectivity, particularly of the clough woods. This should be achieved through woodland expansion and conservation, whilst maintaining the valued recreational and cultural heritage resources and controlling associated localised impacts such as footpath erosion, within a sustainable land management system.

5.3.3.Open Moors

An open undulating high gritstone plateau with extensive blanket peat covered by cottongrass bog and heather moorland. This is wild, unsettled landscape with wide views to distant surrounding hills.

Key Characteristics:

- Undulating high gritstone plateau;
- Localised rock outcrops and boulders, in the form of rocky edges and tors;
- Thick deposits of peat with incised groughs (drainage channels);
- Unenclosed heather and grass moorland and extensive areas of blanket bog;
- Rough grazing land; and
- Wild, unsettled landscape with vast panoramas over surrounding hills and lower ground.

Table 67: Open Moors - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Open Moors	Thick deposits of peat with incised groughs (drainage channels); Unenclosed heather and grass moorland and extensive areas of blanket bog; Wild, unsettled landscape with vast panoramas over surrounding hills and lower ground; and Majority of the LCT contained within CRoW access land.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 68: Open Moors - Landscape character attributes

Open Moors	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Unimproved pasture
Other Habitat Type	Moorland
Woodland Character	Open/unwooded
Woodland Vision	N/A
Woodland Type	N/A
Hedgerow Trees	Treeless
Watercourse Trees	Treeless
Amenity Trees	Treeless
Boundary Type	Dry stone walls
Settlement Character	Unsettled (very occasional farm)
Traditional Materials	Gritstone
Cultural Interests	-

Table 69: Open Moors - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)		Comments
Grassland	g	Yes		Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This landscape generally has a low agricultural value being used predominantly for sheep grazing, or grouse rearing. Unimproved pasture is a primary habitat type within this LCT.
Woodland and Forest	w	No		Not in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits

				including helping to assimilate new infrastructure, restore lost

Management Action	Code	Potential for Change (Yes/No)	Comments
			habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The high moors are generally an open, treeless landscape with expansive views. The elevation,wetness of the soils and harsh climate make tree growth difficult. Not a dominant land cover within this LCT.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species thatthey support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Moorland is a secondary habitat type within this LCT. Much of this landscape is covered by blanket bog dominated by cottongrass or a mixture of cottongrass and dwarf shrubs such as heather. Management strategy is to enhance and restore moorland landscapes / encourage diverse approaches in moorland management / and to create, extend and link areas of heath/moor.
Wetland	f	Yes	Past peat cutting has resulted in areas of moorland where much of the peat has been stripped away. There are some small reservoirs in this landscape character type, they tend to be associated with the edges of the Open Moors. Management strategy is to create and link patches of wetland farmland habitats.

Management Action	Code	Potential for Change (Yes/No)	Comments
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is an unsettled landscape with built features existing only locally. There are occasional grouse butts and shooting cabins, and isolated farm buildings.
Sparsely Vegetated Land	s	No	There are no active quarries within the Dark Peak but there are remains of old quarries, which form an important part of the character of the area. They are a valued cultural heritage, biodiversity, educational and, particularly, recreational resource, with many old quarries being used for rock climbing and bouldering. Not a dominant land cover within this LCT.
Rivers and Lakes	r	No	Past peat cutting has resulted in areas of moorland where much of the peat has been stripped away. There are some small reservoirs in this landscape character type, they tend to be associated with the edges of the Open Moors.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is the most open and unsettled landscape in the Peak District, characterised by expansive open views with blanket bog and upland heath. Priorities are to protect or enhance the integrity of moorlands, which are currently in poor condition; to manage obvious linear features such as fencing to enhance the open character; and to maintain the character of the landscape and its component parts within a sustainable upland management system, integrating land uses such as livestock farming, water supply and grouse shooting with carbon sequestration, recreation and amenity.

5.3.4 Reservoir Valleys with Woodland

Steep sided valleys dominated by large reservoirs. Some of the steep valley slopes have been planted with interlocking blocks of coniferous and mixed plantation woodland while others support acid grassland and clough woodlands. Views along the valleys are framed by woodland and the slopes rising to moorland.

Key Characteristics:

- Interlocking coniferous and mixed plantation woodland with some limited semi-natural woodland;
- Large reservoirs providing water supplies to adjoining urban areas;
- Steep valley slopes, dissected by cloughs;

- Land was largely cleared of settlement during reservoir construction leaving occasional isolated gritstone farmsteads; and
- Pastoral fields bounded by gritstone walls with many relict boundaries.

Table 70: Reservoir Valleys with Woodland - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Reservoir Valleys with Woodland	Large reservoirs providing water supplies to adjoining urban areas; Large portions of the LCT contains Ancient Woodland; Large portions of the LCT is contained within flood zones 2 + 3; and Small portions of the LCT contained within CRoW access land.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 71: Reservoir Valleys with Woodland – Landscape character attributes

Reservoir Valleys with Woodland	Current Landscape Character Attributes
Land Use	Utilities and recreation
Main Habitat Type	Reservoirs
Other Habitat Type	Woodland
Woodland Character	Widespread large plantations
Woodland Vision	N/A
Woodland Type	Pine, spruce & larch with occasional broadleaved woodland
Hedgerow Trees	Occasional hedgerows
Watercourse Trees	None
Amenity Trees	None
Boundary Type	Dry stone walls
Settlement Character	Unsettled (very occasional farm)
Traditional Materials	Gritstone
Cultural Interests	-

Table 72: Reservoir Valleys with Woodland – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Although there is some low intensity pastoral farming, water supply with forestry and recreation around the reservoirs are the dominant land uses in this landscape. Some of the steep valley slopes have been planted with interlocking blocks of coniferous and mixed plantation woodland while others support acid grassland and clough woodlands. Management strategy is to enhance areas of semi-natural grassland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. This landscape is extensively wooded, mostly recent conifer plantations of pine, spruce and larch planted on land that was previously open heath, or grassland. Some of the plantations were planted on the site of ancient woodlands that were cleared of native trees. Patches of ancient semi-natural woodland are now linked by the areas of plantation woodland to create a heavily wooded landscape. In Longdendale, woodland is patchier and there are fewer coniferous plantations. Some of the steep valley slopes have been planted with interlocking blocks of coniferous and mixed plantation woodland while others support acid grassland and clough woodlands Management strategy is to manage and enhance woodland, in particular plantation woodland / manage and enhance landscape around reservoirs. Woodland is a secondary habitat type within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. There is bracken associated with acid grassland on the sloping land in these landscapes.
Wetland	f	Yes	There are wetland habitats that are formed due to the valley slopes with narrow valley bottoms, the wetland habitats are associated with the reservoirs and provide water supply to adjoining urban areas. Management strategy is to manage and enhance wetland landscapes / create and link patches of wetland farmland habitats.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is not a significantly settled landscape with just occasional isolated gritstone farmsteads. These are more prevalent in the Longdendale Valley than the Upper Derwent Valley which has a more unsettled character. However, this landscape was formerly more densely settled but was deliberately de-populated in order to establish the reservoirs.
Sparsely Vegetated Land	s	Yes	There are no active quarries within the Dark Peak but there are remains of old quarries, which form an important part of the character of the area. They are a valued cultural heritage, biodiversity, educational and, particularly, recreational resource, with many old quarries being used for rock climbing and bouldering.

Management Action	Code	Potential for Change (Yes/No)	Comments
			The Upper Derwent Valley was an important location for charcoal production with burning taking place in many locations on the lower slopes. In the 18th century much of this was produced on an industrial scale and used for iron smelting around Sheffield. Quarrying was carried out at several sites in Longdendale, particularly towards the west.
Rivers and Lakes	r	Yes	The reservoirs which now occupy the earlier mill sites in Longdendale were built in the 1840s to supply water to Manchester. In the Upper Derwent Valley the Howden and Derwent reservoirs, constructed in the early 1900s, were built to supply water to nearby settlements in the East Midlands. The construction of the later Ladybower Dam led to the flooding of Derwent and Ashopton villages, which were small agricultural settlements. Reservoirs are the primary habitat type within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This landscape has been heavily influenced by human activity with reservoirs, transport routes and large plantation woodlands. The priorities for this landscape include protecting and enhancing the connectivity between semi-natural woodland, replacing coniferous woodland with native, broadleaved species where appropriate; and enhancing recreation and educational opportunities, climate mitigation and the existing, historical enclosure patterns.

5.3.5 Upper Valley Pastures

A pastoral landscape with a low lying, undulating topography, rising more steeply in places towards nearby hills. Settlement is restricted to dispersed gritstone farmsteads set within a well defined pattern of a small to medium sized fields, mostly bounded by hedgerows, but with some walls. Views are enclosed by valley sides and filtered through scattered hedgerow and streamline trees.

Key Characteristics:

- A low lying gently undulating topography, rising towards adjacent higher ground;
- Network of streams and localised damp hollows;
- Pastoral farmland enclosed by hedgerows;
- Small to medium sized fields;
- Dense streamline and scattered hedgerow trees;
- Narrow, winding lanes, sunken on sloped; and
- Dispersed settlement with isolated farmsteads and small clusters of farms and dwellings.

Table 73: Upper Valley Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Upper Valley Pastures	Network of streams and localised damp hollows; Portions of the LCT is contained within flood zones 2 + 3 localised along stream network; and Small portions of the LCT contained within CRoW access land.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 74: Upper Valley Pastures - Landscape character attributes

Upper Valley Pastures	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture
Woodland Character	Densely scattered small woodlands
Woodland Vision	N/A
Woodland Type	Alder with birch & willow along watercourses
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows (occasional wall)
Settlement Character	Hamlets & scattered farmsteads
Traditional Materials	Gritstone with stone slate roofs
Cultural Interests	-

Table 75: Upper Valley Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is a pastoral landscape used mainly for sheep and cattle rearing which has been a traditional land use since at least medieval times. For the most part this is a moderately intensively farmed pastoral landscape with some ecologically interesting grasslands, particularly in the Edale valley. Biodiversity value is found mainly in surviving unimproved pastures and hay meadows, which can provide a range of flora. Farmland is a primary habitat type within this LCT. Unimproved Pasture is a secondary habitat type within this LCT. Management strategy is to manage and enhance the diversity of agricultural grasslands / semi-natural grassland and wetland landscapes.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Despite the lack of larger woodlands, tree cover is generally well represented throughout this landscape due to the scattered hedgerow and watercourse trees. Tree cover is densest adjacent to watercourses and through cloughs. Management strategy is to manage and enhance woodlands.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the

Management Action	Code	Potential for Change (Yes/No)	Comments
			internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	Yes	There may be opportunities within the flatter pastures of the Upper Valley Pastures to create flood meadows, helping to reduce flood risks downstream. Management strategy is to manage and enhance wetland landscapes / create and link patches of wetland farmland habitats.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Settlement is of dispersed gritstone farmsteads. Much of this dispersed pattern originates from the medieval period if not before. In the Edale Valley there are distinctive small clusters of the oldest properties. Other more scattered but post-medieval farmsteads are also common. There is a Victorian nucleated settlement in the centre of the valley which grew up in association with the creation of the railway station and Edale Mill. Management strategy is to manage the sparse and historical patterns of development.
Sparsely Vegetated Land	s	Yes	There are no active quarries within the Dark Peak but there are remains of old quarries, which form an important part of the character of the area. They are a valued cultural heritage, biodiversity, educational and, particularly, recreational resource, with many old quarries being used for rock climbing and bouldering. Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	No	Rivers Nae, Ashop and Alport as well as Grinds Brook dissect this LCT, although are not mentioned specifically within the Landscape Strategy and Action Plan for any management strategy.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is a lower lying pastoral landscape with dispersed gritstone farmsteads and cottages as well as a small nucleated settlement. Priorities for this landscape are to protect this historical settlement and enclosure pattern and the views into and out of settlements, whilst enhancing and increasing the extent of habitats within a sustainable farming system.

6.0 NCA 52: White Peak

6.1 Key Characteristics

- Elevated, gently undulating limestone plateau with occasional knolls and crags, dissected by steeply cut dales and gorges with rock outcrops, screes and caves;
- Clear rivers, streams and springs in some dales; others are dry or run water only in winter;
- Steep dale sides with a mosaic of flower-rich limestone grassland, ash woodland and wildlife-rich scrub;
- Improved grassland for dairy and livestock farming dominates the plateau, punctuated by occasional dew ponds, narrow shelterbelts of broadleaved trees and small patches of rough grassland, meadow and heath;
- Grassland enclosed by limestone walls, with small narrow strip fields often of medieval origin around villages, and larger rectangular fields away from the villages;
- Nucleated villages and small towns connected by crest and valley roads;
- A mix of limestone and gritstone used as building materials and stone and Welsh slate for roofs. Widespread features of special archaeological and historical interest including Neolithic and bronze-age ritual monuments; and
- Many visible reminders of early industry, including historic limestone and lead workings, lime kilns and dramatic water mills from the 18th-century textile industry.

6.2 Landscape Character Types within NCA 52: White Peak within DCC

6.2.1 Limestone Dales

- Narrow, deeply incised river valleys with steep slopes and extensive amounts of exposed rock. There are blocks of ancient woodland, areas of scrub and rough grassland grazed by sheep.
- Key Characteristics:
- Very steeply sloping valley sides;
- Frequent bare rock outcrops and scree slopes;
- Very shallow loamy soils over Carboniferous Limestones;
- Rough grazing by sheep in enclosures bounded by dry-stone walls;
- Blocks of ancient woodland; and
- Areas of scrub dominated by hawthorn

Table 76: Limestone Dales - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Dales	Very steeply sloping valley sides; Frequent bare rock outcrops and scree slopes; Broad tracts of Ancient Woodland located within LCT; and LCT contains 3 Registered Parks and Gardens and Matlock Parks Country Park.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 77: Limestone Dales - Landscape character attributes

Limestone Dales	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Calcareous grassland
Other Habitat Type	Woodland
Woodland Character	Widespread large semi-natural woodlands
Woodland Vision	Widespread large woodland
Woodland Type	Ash-elm with field maple and lime
Hedgerow Trees	None
Watercourse Trees	Scattered
Amenity Trees	None
Boundary Type	Unenclosed (occasional wall)
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	Railways

Table 78: Limestone Dales - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. As the slopes are often too steep for improved pasture or afforestation, the land is used mainly for rough grazing by sheep. This semi-natural grassland is of good grazing value. Calcareous grassland is a main habitat type within this LCT. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Conserve and restore all ancient woodland sites by natural regeneration or use of locally occurring native species; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species;

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure a balance is maintained between new woodland planting and areas of nature conservation value; and Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees. Woodland vision is to create widespread large woodlands. Woodland is a secondary habitat type within this LCT. Management strategy is to manage and enhance surviving areas of natural landscapes / Manage and enhance woodlands.
Heathland and Shrub	h	Yes	Not a dominant land cover within this LCT however management strategy is to create areas of limestone grassland and heath.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. This is due to the nature of the steep valley slopes within this LCT however, should be reviewed on a case-by-case basis.
Urban	u	No	Not a dominant land cover within this LCT.
Sparsely Vegetated Land	s	Yes	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT. The low grazing pressure on the slopes within this LCT distinguishes them from other limestone landscapes and maintains the floristic diversity of the grasslands.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and

Management Action	Code	Potential for Change (Yes/No)	Comments
			contribute to the White Peak's strong sense of place and history. The river channel is an important ecological corridor and often retains its natural bank profiles with some occasional, marginal, aquatic vegetation and riparian trees. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

6.2.2 Limestone Slopes

A landscape of small, nucleated limestone villages and dispersed farmsteads nestling within moderate to steeply sloping limestone slopes. Distinctive dry-stone walls enclose former open fields and semi-regular fields with a pastoral land-use.

Key Characteristics:

- Steep slopes;
- Localised bare rock outcrops on steeper slopes;
- Fine, silty brown soils over silty, Aeolian drift over Carboniferous Limestone;
- Stock rearing on permanent pasture;
- Small semi-regular and strip fields enclosed by dry-stone walls;
- Villages with limestone and slate roofed farmsteads and cottages;
- Small, isolated field barns; and
- Small pits and hummocks in areas of historic lead mining.

Table 79: Limestone Slopes - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Slopes	Steep slopes; Localised bare rock outcrops on steeper slopes; and Small pits and hummocks in areas of historic lead mining.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 80: Limestone Slopes - Landscape character attributes

Limestone Slopes	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Calcareous grassland
Woodland Character	Thinly scattered small plantations and semi-natural woodland
Woodland Vision	Densely scattered small-medium plantations
Woodland Type	Ash-elm with field maple and lime
Hedgerow Trees	None
Watercourse Trees	None
Amenity Trees	Localised around settlement
Boundary Type	Dry stone walls
Settlement Character	Villages and scattered farmsteads
Traditional Materials	Limestone with stone or Welsh slate roof
Cultural Interests	Lead mining, field barns

Table 81: Limestone Slopes - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a

Management Action	Code	Potential for Change (Yes/No)	Comments
			viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Unimproved pasture and calcareous grassland are the dominant and secondary habitat types for this LCT. Pasture, and particularly dairying, is the dominant land- use with much of the land being farmed in a low intensity system. The steepness of the slopes, allied to the thin soils and rocky outcrops, seriously restrict opportunities for providing improved pasture.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. Tree cover is apparent throughout this landscape with scattered boundary trees, small woodland blocks and extensive patches of scrub colonising abandoned pasture. Most of the woodland is associated with the steeper, less cultivable slopes where soils are thinnest and stony. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small scale woodland planting; Promote linked extensions to ancient woodland by natural regeneration and planting; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Encourage the management of scrub and secondary woodland to link with existing habitats and woodland; Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads; and Ensure new woodland does not conflict with features (e.g. ridge and furrow) that help to define landscape character. Woodland vision is to create areas of densely scattered small-medium plantations.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Where pasture has been abandoned, or on the steepest more sheltered slopes, scrub is beginning to colonise. This sometimes occurs with localised patches of gorse and bracken. Other features of interest include exposed rock and scree with their associated flora and fauna. Moorland is a secondary habitat type within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	The landscape is well settled with villages and scattered farmsteads.
Sparsely Vegetated Land	s	Yes	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT. Features of interest include exposed rock and scree with their associated flora and fauna. There are also habitats of particular interest in areas of former lead mining.

Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to

Management Action	Code	Potential for Change (Yes/No)	Comments
			provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

6.2.3 Plateau Pastures

A gently rolling upland, limestone plateau punctuated by steep sided dales, scattered villages and isolated farmsteads within a pastoral setting.

Key Characteristics:

- A gently rolling upland plateau;
- Limestone outcrops on hill summits and steeper slopes;
- Fine, silty brown soils over Carboniferous Limestone;
- Stock rearing on improved pasture;
- Small shelter blocks of plantation woodland and tree groups around villages and farmsteads Medium to large regular fields enclosed by dry-stone walls with narrow strip fields around settlements;
- Straight roads with uniform verges;
- Nucleated limestone villages and isolated limestone farmsteads with slate roofs;
- Small isolated field barns;
- Small pits and hummocks in areas of historic lead mining; and
- Open landscape with expansive views.

Table 82: Plateau Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Plateau Pastures	Limestone outcrops on hill summits and steeper slopes; and Small pits and hummocks in areas of historic lead mining.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 83: Plateau Pastures - Landscape character attributes

Plateau Pastures	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Calcareous grassland
Woodland Character	Thinly scattered small plantations
Woodland Vision	Thinly scattered small plantations
Woodland Type	Sycamore with ash, elm and beech
Hedgerow Trees	None
Watercourse Trees	None
Amenity Trees	Localised arounds settlement
Boundary Type	Dry stone walls
Settlement Character	Villages and sparsely scattered farmsteads
Traditional Materials	Limestone with stone or Welsh slate roof
Cultural Interests	Strip fields, lead mining, field barns

Table 84: Plateau Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Unimproved pasture and calcareous grassland are the dominant and secondary habitat types for this LCT. Pasture, and particularly dairying, is the dominant land- use in this landscape. Most of the fields have been ploughed and reseeded to improve the pasture. Some unimproved grassland is still found where the ground is unsuitable for cultivation such as on the more exposed crests and steeper slopes where soils are thin and often grazed by sheep.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads; and Conserve and enhance the plantations. Woodland vision is to create areas of thinly scattered small plantations.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	A landscape containing nucleated villages like Monyash, Chelmorton and Taddington. The limestone village is a key characteristic. Between villages there are sparsely scattered farmsteads, established at the time of parliamentary enclosure. The unifying influence of the limestone as a locally distinctive building material, together with strong pastoral traditions and lack of modern development, ensures that the landscape retains its rural character.
Sparsely Vegetated Land	s	Yes	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

6.2.4 Upland Limestone Pastures

An undulating highland landscape of rough grazing and stock rearing, with prominent limestone outcrops and open, expansive views.

Key Characteristics:

- Undulating highland plateau with steep slopes;
- Very shallow loamy soils over Carboniferous Limestone;
- Frequent bare rock outcrops and scree slopes;

- Extensive stock rearing and rough grazing;
- Occasional plantation block but essentially a treeless landscape;
- Large regular fields bounded by dry-stone walls; and
- Mainly unsettled with occasional farmstead built in stone with slate roof.

Table 85: Upland Limestone Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Upland Limestone Pastures	Frequent bare rock outcrops and scree slopes; Extensive stock rearing and rough grazing; and Occasional plantation block but essentially a treeless landscape.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 86: Upland Limestone Pastures - Landscape character attributes

Upland Limestone Pastures	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Calcareous grassland
Other Habitat Type	Unimproved pasture
Woodland Character	Open/unwooded
Woodland Vision	Open/unwooded
Woodland Type	N/A
Hedgerow Trees	Treeless
Watercourse Trees	Treeless
Amenity Trees	Treeless
Boundary Type	Dry stone walls
Settlement Character	Unsettled (very occasional farm)
Traditional Materials	Limestone with stone slate roof
Cultural Interests	N/A

Table 87: Upland Limestone Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Calcareous grassland and unimproved pasture are the dominant and secondary habitat types for this LCT. The ecological value of this landscape lies in the extensive area of unimproved grassland.
Woodland and Forest	w	No	Not in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. Where opportunities arise, the removal of coniferous plantation woodland should be encouraged as the existing character is open and unwooded as identified within The Landscape Character of Derbyshire planting and management guidelines. Woodland character is predominantly an open/unwooded/treeless landscape. Woodland vision is to remain open/unwooded. Not a dominant land cover within this LCT.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European

Management Action	Code	Potential for Change (Yes/No)	Comments
			importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	Largely unsettled landscape with the occasional isolated farmstead. Not a dominant land cover within this LCT.
Sparsely Vegetated Land	s	Yes	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT. The underlying limestone strongly influences this upland landscape, the form of which is moderately undulating with some steep slopes. Exposed rock is a common feature, giving the landscape a distinctly rugged appearance.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

6.3 Landscape Character Types within NCA 52: White Peak within Peak District National Park

6.3.1 Limestone Dales

A steeply sloping dale landscape with limestone outcrops and extensive tracts of woodland and scrub intermixed with limestone grassland. In some smaller dales this is an intimate, secluded landscape where views are tightly controlled by landform and tree cover, in others the dales are wild and open.

Key Characteristics:

- Steep sided Limestone Dales;
- Craggy outcrops, cliffs and scree slopes;
- Extensive patches of limestone grassland;
- Interlocking blocks of ancient semi-natural woodland, secondary woodland and scrub;
- Largely unsettled, apart from occasional small mill settlements; and
- Historic mineral working (quarrying, lead mining).

Table 88: Limestone Dales - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Dales	Steep sided Limestone Dales; Craggy outcrops, cliffs and scree slopes; Large portions of the LCT contained within CRoW access land; Large portions of the LCT contained within Ancient woodland; and Portions of the LCT contained within EA flood risk zones 2 + 3 associated with the river networks.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 89: Limestone Dales - Landscape character attributes

Limestone Dales	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Unimproved grassland

Limestone Dales	Current Landscape Character Attributes
Other Habitat Type	Woodland
Woodland Character	Extensive large semi-natural woodlands
Woodland Vision	N/A
Woodland Type	Ash & hazel
Hedgerow Trees	None
Watercourse Trees	Scattered
Amenity Trees	None
Boundary Type	Unenclosed (occasional wall)
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	-

Table 90: Limestone Dales - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. LCT associated with extensive patches of limestone grassland. As the slopes in the dales are too steep for agricultural improvement, this landscape still retains extensive areas of unimproved grassland and semi-natural

Management Action	Code	Potential for Change (Yes/No)	Comments
			woodland, with the former used mainly for rough grazing by sheep. Unimproved grassland is a primary habitat type within this LCT. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. Tree cover is a key feature of the dales, although in places its extent is limited. Some dalesides, like those in the Wye and Manifold valleys, are extensively wooded with large tracts of semi-natural woodland dominated by ash and hazel. Deciduous plantations also occur in some dales. In other dales, woodland cover is more sporadic and tends to be associated with scrub dominated by hawthorn. Overall the woodland cover, coupled with the steep valley sides, can create a strong sense of visual containment. Woodland is a secondary habitat type within this LCT. Management strategy is to manage and enhance surviving areas of natural landscapes / Manage and enhance woodlands / Manage and enhance linear tree cover and amenity trees.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces

Management Action	Code	Potential for Change (Yes/No)	Comments
			high-quality food and supports thriving rural communities. Where grazing is restricted, the grasslands are commonly mixed with other semi-natural habitats such as deciduous woodland and scrub. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	Human habitation is not a feature of this landscape owing to the topographical inaccessibility of the Limestone Dales. Some manmade activities do impact on this character including the large water powered textile mills at Cressbrook and Litton Mills in the Wye valley, and smaller mills such as the corn mill at Wetton Mill, and the lead processing and other mills in the Via Gellia.
Sparsely Vegetated Land	s	Yes	Quarries in the White Peak serve local and national demand for limestone used by the construction, cement and chemical industries. In addition, there is a national demand for vein minerals, e.g. fluorspar, used by the chemical industry. There are many landscape impacts associated with these sites, including visual intrusion, adverse effects on the historic landscapes and cultural heritage features, wildlife habitats, associated infrastructure and transportation of products, and tranquillity. There is also pressure to extend the size of the quarries and prolong quarrying beyond the dates of current planning permissions. In places quarrying has gone below the water table, resulting in an entirely new landscape.

Management Action	Code	Potential for Change (Yes/No)	Comments
			In parts of the Wye Valley, Lathkill Dale and the Via Gellia the remains of past lead mining and quarrying are important features. Management strategy is to develop appropriate landscapes from mineral workings.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. The rivers Wye, Dove, Manifold, Hamps, Lathkill and Derwent flow through well developed dale landscapes. There are also a number of associated smaller, outlying dry valley dales.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is an intimate, secluded and largely semi-natural landscape, where views are often tightly controlled by landform and tree cover. The priority in this landscape is to protect and manage the mosaic of internationally important grassland, scrub, woodland, rock and river habitats, and the cultural heritage features, while seeking opportunities to enhance diversity and opportunities for people to enjoy the landscape.

6.3.2 Limestone Hills and Slopes

A high pastoral landscape with a varied undulating topography and some steep slopes. This is a remote, sparsely populated landscape with a regular pattern of mostly medium to large walled fields, interspersed in places with extensive patches of rough ground and elsewhere by smaller regular fields. There are wide open views to distant skylines, especially around the edges of the White Peak.

Key Characteristics:

- High, undulating, in places steeply sloping topography;
- Frequent rock outcrops on steeper ground;
- Rich wildlife habitats including large patched of limestone grassland and limestone heath on the highest ground;
- A regular pattern of medium to large walled fields;
- Occasional groups and belts of trees;

- Prehistoric monuments, often on hilltops;
- Relict lead mining remains; and
- Wide open views to distant skylines.

Table 91: Limestone Hills and Slopes - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Hills and Slopes	Frequent rock outcrops on steeper ground; Rich wildlife habitats including large patched of limestone grassland and limestone heath on the highest ground; Prehistoric monuments, often on hilltops; Wide open views to distant skylines; and Portions of the LCT contained within CRoW Access Land.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 92: Limestone Hills and Slopes - Landscape character attributes

Limestone Hills and Slopes	Current Landscape Character Attributes
Land Use	Pastoral
Main Habitat Type	Calcareous & acid grassland
Other Habitat Type	Moorland
Woodland Character	Open/unwooded
Woodland Vision	N/A
Woodland Type	Treeless
Hedgerow Trees	Treeless
Watercourse Trees	Treeless
Amenity Trees	Localised around settlement
Boundary Type	None
Settlement Character	Unsettled (very occasional farm)
Traditional Materials	N/A
Cultural Interests	-

Table 93: Limestone Hills and Slopes - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. For the most part this is a pastoral landscape with improved grassland and localised hay meadows but in places, notably on the steeper slopes and higher summits, large tracts of rough grazing land have survived. Calcareous & acid grassland are the primary habitat types within this LCT. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. This is a fairly exposed, and in places treeless landscape with open views. In some more sheltered areas with deeper soils, small plantations and tree groups associated with farmsteads can be found. Management strategy is to manage and enhance surviving areas of natural landscapes / Create new native broadleaved woodland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Of special importance are the relatively rare remaining areas of limestone heath, largely consisting of heather, with bilberry and western gorse, associated with poorer soils developed on acidic wind blown silt. On hilltops and steep slopes a mosaic of semi-natural vegetation can be found including patches of both calcareous and acid grassland. Where grazing no longer takes place, localised patches of gorse, bracken and scrub are found. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	This is a sparsely settled landscape with only occasional, large, isolated stone farmsteads, many of which were first established in the 18th or 19th centuries. The higher parts of the limestone plateau is also characterised by a scattering of older medieval granges, although today's buildings are later rebuilds, dating from the 17th century onwards. There is a large number of surviving

Management Action	Code	Potential for Change (Yes/No)	Comments
			prehistoric monuments, often prominently sited on the highest hilltops.
Sparsely Vegetated Land	s	Yes	Quarries in the White Peak serve local and national demand for limestone used by the construction, cement and chemical industries. In addition, there is a national demand for vein minerals, e.g. fluorspar, used by the chemical industry. There are many landscape impacts associated with these sites, including visual intrusion, adverse effects on the historic landscapes and cultural heritage features, wildlife habitats, associated infrastructure and transportation of products, and tranquillity. There is also pressure to extend the size of the quarries and prolong quarrying beyond the dates of current planning permissions. In places quarrying has gone below the water table, resulting in an entirely new landscape. A significant amount of lead mining has taken place, particularly in the northern and eastern areas, often following linear rakes; in places historic features are still extensive. This landscape has also been heavily influenced in places by quarrying, with large active quarries near Buxton and above Hope. Grin Hill near Buxton is exceptional for its large number of early industrial limekilns and shallow quarries which date from the 17th century to the early 19th century. Management strategy is to develop appropriate landscapes from mineral workings.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is a higher, more remote landscape with frequent, and in places extensive, patches of rough ground. The priority is to protect and restore the diversity of the more remote landscapes and, where possible, to create a mosaic of extensive areas of unenclosed limestone grassland, heath, scrub and woodland.

6.3.3 Limestone Plateau Pastures

An upland pastoral landscape with a regular pattern of straight roads and small to medium sized rectangular fields bounded by limestone walls. Tree cover is mostly limited to occasional tree groups, or small shelter belts, allowing wide views to the surrounding higher ground.

Key Characteristics:

- A rolling upland plateau;
- Pastoral farmland enclosed by limestone walls;
- A regular pattern of small to medium sized rectangular fields;
- Localised field dewponds and farm limekilns;
- Discrete tree groups and belts of trees;
- Isolated stone farmsteads and field barns;
- Medieval granges surrounded by older fields;
- Relict lead mining and quarrying remains;
- Prehistoric monuments, often on hilltops; and
- Open views to surrounding higher ground.

Table 94: Limestone Plateau Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Plateau Pastures	Relict lead mining and quarrying remains; and Open views to surrounding higher ground.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 95: Limestone Plateau Pastures - Landscape character attributes

Limestone Plateau Pastures	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture

Limestone Plateau Pastures	Current Landscape Character Attributes
Woodland Character	Open/unwooded
Woodland Vision	N/A
Woodland Type	N/A
Hedgerow Trees	Treeless
Watercourse Trees	Treeless
Amenity Trees	Localised around settlement
Boundary Type	Dry stone walls
Settlement Character	Unsettled (very occasional farm)
Traditional Materials	N/A
Cultural Interests	-

Table 96: Limestone Plateau Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. In relation to the surrounding upland landscapes in the Peak District, this is an intensively farmed agricultural landscape where stock rearing and dairying are the primary land uses. Two types of historical feature that are relatively common are dewponds and field kilns. Pasture land is a primary habitat type within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Unimproved grassland is a secondary habitat type within this LCT. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. For the most part the Limestone Plateau Pastures have a fairly open character where tree cover is largely restricted to discrete groups of trees, often around farmsteads. In places, larger coverts and occasional belts of sycamore, beech or ash trees, often planted on abandoned lead rakes, provide a stronger sense of enclosure. These linear or rectangular shelter belts are a distinctive feature of the White Peak landscape. Management strategy is to manage and enhance surviving areas of natural landscapes / Manage traditional plantation woodlands / Manage and enhance linear tree cover and amenity trees / Create new native broadleaved woodland.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Although not a dominant land cover within this LCT the management actions still state that the aims should be to create areas of limestone grassland and heath, albeit

Management Action	Code	Potential for Change (Yes/No)	Comments
			only a consideration in some locations where appropriate.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	This is a landscape of isolated stone farmsteads and scattered stone field barns, mostly dating from the period of Parliamentary Enclosure in the late 18th and early 19th centuries. There are also medieval granges, although today's buildings are mostly later rebuilds from the 17th century onwards. There is also a scattering of prehistoric monuments including the henges at Arbor Low and the Bull Ring, Neolithic chambered tombs and round barrows on hilltops.
Sparsely Vegetated Land	s	Yes	Quarries in the White Peak serve local and national demand for limestone used by the construction, cement and chemical industries. In addition, there is a national demand for vein minerals, e.g. fluorspar, used by the chemical industry. There are many landscape impacts associated with these sites, including visual intrusion, adverse effects on the historic landscapes and cultural heritage features, wildlife habitats, associated infrastructure and transportation of products, and tranquillity. There is also pressure to extend the size of the quarries and prolong quarrying beyond the dates of current planning permissions. In places quarrying has gone below the water table, resulting in an entirely new landscape. Large amounts of lead mining have taken place in the past, particularly in the northern and eastern parts of the plateau, and historic features are still extensive in places. The landscapes around Dove Holes and Peak Forest are exceptional for the large number of early industrial

Management Action	Code	Potential for Change (Yes/No)	Comments
			limekilns and shallow quarries, dating from the 17th to the early 19th centuries. Today, only small relics of unimproved grassland survive, in areas where the ground is unsuitable for cultivation, such as along lead rakes and on the more exposed crests close to rock outcrops, where the soils are particularly thin. Management strategy is to manage historic mineral landscapes / Develop appropriate landscapes from mineral workings.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is a more recent, planned agricultural landscape with a regular pattern of historic, small to medium sized, rectangular fields, usually resulting from the enclosure of Medieval wastes and commons, and discrete groups/blocks of trees. The priority should be to protect the historic pattern of enclosure and the wooded character, whilst restoring the biodiversity of the pastoral farmland and expanding boundary trees where appropriate, within a sustainable farming system.

6.3.4. Limestone Village Farmlands

A small-scale settled agricultural landscape characterised by limestone villages, set within a repeating pattern of narrow strip fields bounded by drystone walls.

Key Characteristics:

- A gently undulating plateau;
- Pastoral farmland enclosed by drystone walls made from limestone;
- A repeated pattern of narrow strip fields originating from medieval open fields;
- Scattered boundary trees and tree groups around buildings;
- Discrete limestone villages and clusters of stone dwellings;
- Relict mine shafts and associated lead mining remains; and
- Localised field dewponds.

Table 97: Limestone Village Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Limestone Village Farmlands	A repeated pattern of narrow strip fields originating from medieval open fields.

Table 98: Limestone Village Farmlands - Landscape character attributes

Limestone Village Farmlands	Current Landscape Character Attributes
Land Use	Pastoral
Main Habitat Type	Farmland
Other Habitat Type	-
Woodland Character	Open/unwooded
Woodland Vision	N/A
Woodland Type	None
Hedgerow Trees	Scattered
Watercourse Trees	None
Amenity Trees	Localised around settlement
Boundary Type	Dry stone walls
Settlement Character	Villages
Traditional Materials	Local Carboniferous limestone, stone tile, or Welsh slate roofs
Cultural Interests	-

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 99: Limestone Village Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Although it has a largely pastoral character today, dominated by stock rearing and dairying, historically this landscape had once a more mixed farming character. Dewponds which provided a source of water are a relatively common historical feature. Management strategy is to manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. Tree cover is largely restricted to small groups of trees and a scattering of trees along boundaries around village margins, often creating quite intimate rural scenes. Elsewhere the landscape is often more open, but even here more distant views are typically framed by surrounding hills, or rising ground. Management strategy is to manage and enhance surviving areas of natural landscapes / Manage traditional plantation woodlands / Manage and enhance linear tree cover and amenity trees / Create new native broadleaved woodland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Although not a dominant land cover within this LCT the management actions still state that the aims should be to create areas of limestone grassland and heath, albeit only a consideration in some locations where appropriate.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	The present settlement pattern is long established within this landscape, with origins before the Norman Conquest, and tends to be strongly nucleated, with most farmsteads and dwellings concentrated into a central village within each parish, reflecting historic townships. Today's buildings, with the exception of some medieval churches, date mostly from the 17th century onwards.
Sparsely Vegetated Land	s	Yes	Quarries in the White Peak serve local and national demand for limestone used by the construction, cement and chemical industries. In addition, there is a national demand for vein minerals,

			e.g. fluorspar, used by the chemical industry. There are many landscape impacts associated with these sites,

Management Action	Code	Potential for Change (Yes/No)	Comments
			including visual intrusion, adverse effects on the historic landscapes and cultural heritage features, wildlife habitats, associated infrastructure and transportation of products, and tranquility. There is also pressure to extend the size of the quarries and prolong quarrying beyond the dates of current planning permissions. In places quarrying has gone below the water table, resulting in an entirely new landscape. A significant amount of lead mining has taken place, particularly in the areas in the northern and eastern parts of the plateau, and in places historic features are still extensive. Management strategy is to manage historic mineral landscapes / Develop appropriate landscapes from mineral workings.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

Additional Comments:
This is a historic landscape and the most settled agricultural landscape of the White Peak, characterised by repeating patterns of narrow strip fields usually resulting from the enclosure of Medieval open fields. These field systems surround associated limestone villages with traditional stone-built buildings. The priority should be to protect the historic pattern of enclosure, the nucleated settlement pattern and the integrity and setting of traditional buildings, whilst restoring the biodiversity of the pastoral farmland within a sustainable farming system.

7.0 NCA 68: Needwood and South Derbyshire Claylands

7.1 Key Characteristics

- The area, which is dissected by the river systems of the Trent, the Blithe and the Dove, forms a rolling glacial till plateau that slopes south-eastwards from the southern edge of the Peak District to the valley of the River Trent. There is a distinctive scarp to the south of the Dove, whose broad flood plain divides the Staffordshire and Derbyshire elements;
- The south is dominated by heavy, seasonally waterlogged soils derived from glacial till. In the north, red and pink soils underlain by Mercia Mudstones and Sherwood Sandstone are more amenable to cultivation;
- A predominantly pastoral landscape of rolling countryside that is still largely rural and relatively tranquil, featuring distinctive field boundary patterns and characteristic hedgerows with hedgerow trees. Grassland for livestock is the dominant land use although dairy and cereal farming are also important. The majority of the farms are small- to medium-sized dairying and livestock holdings. Arable cultivation occurs on the better land north and south of the Dove and in the river flood plains;
- An overall wooded character derived from scattered ancient and semi-natural woods, parkland and boundary trees. Some large woodland blocks are prominent in Needwood Forest; however, much consists of smaller, fragmented remnants. There is new woodland creation within The National Forest;
- Predominantly hedgerow bounded, the field pattern varies from small- to medium-sized fields to the north of the Dove; mostly large-scale and rectilinear on the broad river flood plains; strongly rectilinear in Needwood Forest; and smaller and more irregular to the west;
- A wide range of habitats associated predominantly with pasture, varying from damp lowland grassland and marshland to drier neutral grassland. There are good surviving examples of water meadows featured along the three main river valleys. Areas of open water such as Blithfield Reservoir and the major rivers are important for birds. Chartley Moss (a basin mire) and Pasturefields (an inland salt marsh) are internationally important examples of rare habitats;
- Wood pasture and designed parklands, often with veteran trees, are found throughout the area. They are generally associated with landscape parks and country houses, such as Sandon, Sudbury and Kedleston. Tutbury Castle and the internationally important Derwent Valley Mills, together with a variety of features such as moated sites and medieval settlements and the Trent and Mersey Canal, add to the historical richness of this landscape. Extensive earthworks relating to ridge and furrow and water meadow systems survive, particularly around the Dove;
- A dispersed historical settlement pattern, particularly in the higher pastoral farmlands that fringe the Peak District to the north, with the older villages generally sited along the valleys or valley sides, and more recent crossroad settlements on the higher ground. Buildings are usually of red brick and clay tile roofs, and local sandstone. Timber frame buildings are rare with notable examples at Somersal Hall and the village of Abbots Bromley. There are market towns at Ashbourne, Stone, Tutbury and Uttoxeter, and the more significant urban areas of Burton-upon-Trent and the City of Derby extend into the eastern boundary of the NCA; and

- The Trent and Dove valleys are major transport corridors. The Trent Valley includes the Trent and Mersey Canal, the West Coast Main Line railway and the A51 road, while the Dove Valley features the Derby to Stoke railway line and the A50 road. The A52 links Derby and Ashbourne.

7.2 Landscape Character Types within NCA 68: Needwood and South Derbyshire Claylands within DCC

7.2.1 Estate Farmlands

A broad, gently rolling lowland mixed farming landscape with occasional red brick villages, scattered estate farmsteads and country houses. Tree cover is well represented with small estate woodlands, dense watercourse

Key Characteristics:

- Gently rolling lowland dissected by minor river valleys;
- Seasonally waterlogged fine loamy soils over Permo-Triassic Mudstones, Siltstone and Sandstone;
- Mixed farming with intensive arable cropping and improved permanent pasture;
- Prominent estate woodlands with broadleaf and coniferous species;
- Scattered oak and ash trees along hedgerow;
- Dense lines of trees along streams;
- Small to medium size semi-regular and regular field enclosed by hedgerows;
- Small villages constructed of red brick with Staffordshire blue clay tiled roofs; and
- Scattered red brick estate farmsteads and the occasional country house.

Table 100: Estate Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Estate Farmlands	Mixed farming with intensive arable cropping and improved permanent pasture; Dense lines of trees along streams; Occasional country house; and Keddleston Hall Registered park and garden.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 101: Estate Farmlands - Landscape character attributes

Estate Farmlands	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture

Woodland Character	Densely scattered small plantations
Woodland Vision	Densely scattered small plantations
Woodland Type	Ash-oak with field maple, holly & hazel
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows
Settlement Character	Hamlets & scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Keddleston Hall & Park

Table 102: Estate Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. land-use within this landscape type is mixed farming, with intensive arable cropping and improved permanent pasture. Pasture is most prevalent on the slightly heavier soils over mudstone and on the locally steeper slopes. Ecologically, this landscape type is poor as a result of intensive farming practices. The arable crops and improved permanent pastures and leys are of little ecological value. Remnant unimproved grassland is now confined to the road margins and the occasional field margin in pastoral areas. Farmland is a main habitat type within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision; and SEO 2: Manage the area's diverse range of woodlands, veteran trees, wood pasture and parklands to enhance landscape character and safeguard their biodiversity value, while seeking opportunities to enhance access. Plan, with emphasis on The National Forest, for new opportunities to plant woods and new areas of wood pasture to expand existing sites; and create short rotation coppice to enhance timber and biomass provision, increase carbon storage, regulate water flow and quality, and reduce habitat fragmentation. Trees and especially woodlands are well represented in this landscape type and play an important role in emphasising its estate character. The wooded character is reinforced by dense lines of trees along watercourses. In and around the small village's amenity trees are prominent, as are the parkland trees where they occur. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small-medium scale woodland planting; Promote linked extensions to ancient woodland by natural regeneration and planting; Re-establish and enhance physical links between existing isolated woodland and hedgerows; and Enhance the visual and ecological continuity or river corridors by management, natural regeneration and planting of riparian trees.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Woodland vision is to retain areas of densely scattered small plantations.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. Wet pasture and patches of marsh with Juncus are a feature of some of the minor stream valleys. Mercaston Marsh is an important wetland meadow site and is a designated SSSI. It exhibits a range of habitats which would once have been much more widespread in other stream valleys that dissect this landscape.
Cropland	c	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. Land-use within this landscape type is mixed farming, with intensive arable cropping and improved permanent pasture. Pasture is most prevalent on the slightly heavier soils over mudstone and on the locally steeper slopes. Ecologically, this landscape type is poor as a result of intensive farming practices. The arable crops and improved permanent pastures and leys are of little ecological value. Remnant unimproved grassland is now confined to the road margins and the occasional field margin in pastoral areas. Farmland is a main habitat type within this LCT.
Urban	u	No	Broadly in accordance with SEO 3: Protect the historic and cultural features of Needwood and the South Derbyshire Claylands, in particular the traditional settlement patterns of remaining villages, traditional

Management Action	Code	Potential for Change (Yes/No)	Comments
			farmsteads and the country estates that provide a strong sense of place. This is a sparsely populated landscape. Villages, like Weston Underwood and Mercaston, tend to be small and nucleated, often being located away from modern through routes. Most of these settlements have grown relatively little, although modern infill development is beginning to modify their original loose knit character. A key feature of this landscape and quintessential to its character is the Kedleston Estate. Kedleston Hall is a Grade 1 listed building and a superb example of a Georgian country house.
Sparsely Vegetated Land	s	No	Bracken is occasionally present in road verges being indicative of a heathier habitat. Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. Enhance the visual and ecological continuity or river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

7.2.2 Riverside Meadows

Flat flood plains, containing meandering rivers and streams with dense trees along riverbanks. A pastoral landscape of large, hedged fields with trees scattered along boundaries.

Key Characteristics:

- Flat flood plains containing meandering rivers and streams;
- Seasonally waterlogged soils over alluvium;
- Permanent pasture;
- Localised patches of rushes in damp hollows;

- Scattered trees along boundaries;
- Regular shaped fields bounded by hawthorn hedges;
- Lanes alongside or crossing the flood plain; and
- Active and disused railway lines with secondary woodland along embankments.

Table 103: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	Flat flood plains containing meandering rivers and streams; Permanent pasture; and Majority of LCT contained within flood risk areas 2 and 3.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 104: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional small wet woodlands
Woodland Type	Alder-crack with hawthorn and elder
Hedgerow Trees	None
Watercourse Trees	Dense
Amenity Trees	None
Boundary Type	Hawthorn hedgerows
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	Railways, ridge & furrow

Table 105: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. The remaining unimproved pasture occurs in concentrations along the Dove, north of Doveridge. Pasture with a high-water table and where the soil is permanently wet is important ecologically for its species-rich flora and fauna. Unimproved pasture is a secondary habitat type within this LCT .
Woodland and Forest	w	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision SEO 2: Manage the area's diverse range of woodlands, veteran trees, wood pasture and parklands to enhance landscape character and safeguard their biodiversity value, while seeking opportunities to enhance access. Plan, with emphasis on The National Forest, for new opportunities to plant woods and new areas of wood pasture to expand existing sites; and create short rotation coppice to enhance timber and biomass provision, increase carbon storage, regulate water flow and quality, and reduce habitat fragmentation Large portions of the LCT are unwooded, there are dense lines of trees along riverbanks, although some have been removed as part of flood protection works, and there is die-back in other places. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines:

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Encourage the continuing practice of pollarding to maintain the traditional riparian character of the landscape. Woodland vision is to create areas of occasional small wet woodlands.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. The flood plain makes good quality fattening pastures. The wet, fine textured soils and risk of flooding make the land difficult to work for arable cropping, although some arable fields can be found in the lower Dove Valley as a result of recent drainage improvements and flood protection measures. The remaining unimproved pasture occurs in concentrations along the Dove, north of Doveridge. Pasture with a high-water table and where the soil is permanently wet is important ecologically for its species-rich flora and fauna. Wetland is a main habitat type within this LCT.
Cropland	c	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Former pastures have often been converted to arable following drainage improvements.
Urban	u	No	Broadly in accordance with SEO 3: Protect the historic and cultural features of Needwood and the South Derbyshire Claylands, in particular the traditional settlement patterns of remaining villages, traditional farmsteads and the country estates that provide a strong sense of place. There are occasional farmsteads on the higher, better drained areas. Due to their unsuitability for built development, some flood plain areas have been given over to recreational use.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats The Sutton Brook and its tributaries are narrow with unpolluted water making it very valuable as a freshwater habitat. The River Dove is fairly wide and deep with relatively clean water. All these watercourses are important wildlife habitats, as are their banks and margins. Some old oxbow lakes, such as Old Marston SSSI, are diverse habitats of value as part of the river corridor. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

7.2.3 Sandstone Slopes and Heaths

A landscape of moderate to steep sandstone slopes with prominent rounded undulations and hillocks forming the upper slopes. A pastoral landscape, with small woodlands and scattered hedgerow trees.

Key Characteristics:

- Moderate to steep sandstone slopes and valleys with rounded undulations;
- Well-drained sandy soils;
- A pastoral land-use on steeper slopes with mixed farming on gentler gradients;
- Heathy associations with patches of gorse on steeper slopes and bracken along some hedgerow trees and patches of woodland;
- Small to medium sized regular and sub-regular fields with mixed species hedgerows; and
- Sparsely settled landscape with the very occasional red brick and Staffordshire blue clay tile farmsteads and roadside cottages;

Table 106: Sandstone Slopes and Heaths - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Sandstone Slopes and Heaths	Heathy associations with patches of gorse on steeper slopes and bracken along some hedgerow trees and patches of woodland.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 107: Sandstone Slopes and Heaths - Landscape character attributes

Sandstone Slopes and Heaths	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Acid grassland/heath
Woodland Character	Thinly scattered small plantations
Woodland Vision	Thinly scattered small plantations
Woodland Type	Ash-oak with field maple, holly & hazel
Hedgerow Trees	Thinly scattered
Watercourse Trees	None
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Sparsely scattered farms & cottages
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Medieval deer parks

Table 108: Sandstone Slopes and Heaths - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. The relatively steep slopes and impoverished nature of the soils ensures that pasture predominates. However, where the slopes are moderately steep or gentle, the agriculture is more mixed with some arable cropping. These free-draining sandy soils will naturally support acid grassland and heathy habitats. In areas of unimproved pasture on the steepest slopes, patches of acid grassland persist. Where this grassland has become neglected, gorse is beginning to colonise and there are some sizeable patches of gorse thicket. In other areas of neglected pasture and grassland some localised scrub has developed. Unimproved pasture is a main habitat type within this LCT. Acid grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision; and SEO 2: Manage the area's diverse range of woodlands, veteran trees, wood pasture and parklands to enhance landscape character and safeguard their biodiversity

Management Action	Code	Potential for Change (Yes/No)	Comments
			value, while seeking opportunities to enhance access. Plan, with emphasis on The National Forest, for new opportunities to plant woods and new areas of wood pasture to expand existing sites; and create short rotation coppice to enhance timber and biomass provision, increase carbon storage, regulate water flow and quality, and reduce habitat fragmentation. Tree cover is apparent throughout this landscape type but is rarely visually prominent. There are small woodlands usually associated with the steeper, less cultivable areas. The overall character is one of a well-treed landscape, but the undulating nature of the landform ensures that whilst there are open views across adjacent country, views through the landscape and along the slopes are often blocked or filtered by trees. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species Ensure a balance is maintained between new woodland planting and areas of nature conservation value Woodland vision is to retain areas of thinly scattered small plantations.
Heathland and Shrub	h	Yes	These free-draining sandy soils will naturally support acid grassland and heathy habitats. In areas of unimproved pasture on the steepest slopes, patches of acid grassland persist. Where this grassland has become neglected, gorse is beginning to colonise and there are some sizeable patches of gorse thicket. In other areas of neglected pasture and grassland some localised scrub has developed. Heathland is a secondary habitat type within this LCT.
Wetland	f	No	Not in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food

Management Action	Code	Potential for Change (Yes/No)	Comments
			provision, while recognising the needs of individual species and habitats. Not a dominant land cover within this LCT.
Cropland	c	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. Where the slopes are moderately steep or gentle, the agriculture is more mixed with some arable cropping. Water retention is poor and areas under arable production need regular irrigation during the summer months.
Urban	u	No	Broadly in accordance with SEO 3: Protect the historic and cultural features of Needwood and the South Derbyshire Claylands, in particular the traditional settlement patterns of remaining villages, traditional farmsteads and the country estates that provide a strong sense of place. Settlement has been sparse in this landscape primarily due to steep, uncultivable slopes, although there are occasional farmsteads and cottages. There are remains of medieval deer parks, notably Mansell Park and Ravensdale Park, associated with a once extensive hunting forest.
Sparsely Vegetated Land	s	No	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	No	Not in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

7.2.4 Settled Farmlands

An undulating to gently rolling, dairy farming landscape with hedgerow trees, dense watercourse trees and occasional small woodlands. A well-settled landscape of red brick farmsteads and cottages along winding country lanes.

Key Characteristics:

- Gently undulating to rolling lowland dissected by minor stream valleys with localised steep slopes;
- Seasonally waterlogged soils over Permo-Triassic Mudstone, Siltstone and Sandstone;
- Dairy farming on permanent pasture with localised arable cropping;
- Small woodland blocks and copses associated with steeper slopes;
- Scattered oak and ash trees along hedgerows;
- Dense lines of trees along streams;
- Small to medium size, semi-regular and strip fields enclosed by hedgerows;
- Extensive ridge and furrow;
- Network of winding lanes often sunken on steeper slopes; and
- Small clusters of red brick ad Staffordshire blue clay tile farms and cottages.

Table 109: Settled Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Settled Farmlands	Dairy farming on permanent pasture with localised arable cropping; Extensive ridge and furrow; and Sudbury Hall.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 110: Settled Farmlands - Landscape character attributes

Settled Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Neutral grassland
Woodland Character	Occasional small woodlands
Woodland Vision	Occasional small woodlands
Woodland Type	Ash-oak with field maple, holly & hazel

Settled Farmlands	Current Landscape Character Attributes
Hedgerow Trees	Densely scattered
Watercourse Trees	Dense
Amenity Trees	None
Boundary Type	Mixed species hedgerows
Settlement Character	Small villages & scattered farms and cottages
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Ridge & furrow

Table 111: Settled Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. The land-use is predominantly dairying and stock rearing on improved permanent pasture and leys. Much of this landscape is intensively farmed either as improved permanent pasture or arable cropping. As a result, much is of little ecological value. However, there are isolated patches of unimproved grassland and hay meadow, associated with small family farms and steeper slopes, which provide local floristic interest. Unimproved pasture is a main habitat type within this LCT. Neutral grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets,

Management Action	Code	Potential for Change (Yes/No)	Comments
			enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision; and SEO 2: Manage the area's diverse range of woodlands, veteran trees, wood pasture and parklands to enhance landscape character and safeguard their biodiversity value, while seeking opportunities to enhance access. Plan, with emphasis on The National Forest, for new opportunities to plant woods and new areas of wood pasture to expand existing sites; and create short rotation coppice to enhance timber and biomass provision, increase carbon storage, regulate water flow and quality, and reduce habitat fragmentation. In general woodland is poorly represented within this LCT. Exceptions to this rule are interlocking woodlands like Eaton Wood and Bradley Wood, that follow the steeper slopes of the Dove and Henmore Valleys, creating a distinct wooded edge. Other exceptions include densely scattered hedgerow and trees along watercourses and localised parkland. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; Ensure the conservation and management of mature/ veteran trees within hedgerows; and Ensure new woodland does not conflict with features (e.g. ridge and furrow) that help to define landscape character. Woodland vision is to retain occasional small woodlands.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands,

Management Action	Code	Potential for Change (Yes/No)	Comments
			increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. Lowland areas are susceptible to short periods of waterlogging resulting in areas of improved permanent pasture.
Cropland	c	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. There is some arable farming where the local topography and soil conditions dictate, particularly around Shirley, Brailsford and Somersal Herbert. Indeed, this is amongst some of the finest agricultural land found in the county being officially classified Grade 2.
Urban	u	No	Broadly in accordance with SEO 3: Protect the historic and cultural features of Needwood and the South Derbyshire Claylands, in particular the traditional settlement patterns of remaining villages, traditional farmsteads and the country estates that provide a strong sense of place. This is a well settled but sparsely populated landscape containing small villages, isolated groups of roadside cottages and scattered farmsteads. Villages tend to be small, like Somersal Herbert and Marston Montgomery, and some loose knit, such as Roston and Norbury on the eastern flanks of the Dove.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

7.2.5 Settled Plateau Farmlands

A medium scale pastoral landscape on gently rolling upland plateaux. A sense of elevation with extensive views filtered by scattered hedgerow trees and small woodlands.

Key Characteristics:

- A gently rolling upland plateau extending onto ridge tops;
- Slowly permeable, seasonally waterlogged soils over glacial till;
- Pastoral farming with some cropping;
- Marl pits forming small ponds;
- Densely scattered boundary trees and occasional small woodland blocks;
- Small to medium fields surrounded by hedgerows;
- Parkland estates;
- Areas of former common land with clusters of red brick and Staffordshire blue clay tile roofed cottages;
- Scattered red brick and Staffordshire blue clay tile roofed farmsteads and estate farms; and
- Extensive views over lower ground.

Table 112: Settled Plateau Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Settled Plateau Farmlands	Pastoral farming with some cropping; and Parkland estates - Ednaston manor.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 113: Settled Plateau Farmlands - Landscape character attributes

Settled Plateau Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Unimproved pasture
Other Habitat Type	Neutral grassland
Woodland Character	Thinly scattered small plantations
Woodland Vision	Thinly scattered small plantations
Woodland Type	Ash-oak with field maple, holly & hazel
Hedgerow Trees	Densely scattered
Watercourse Trees	None
Amenity Trees	None
Boundary Type	Thorn & mixed species hedgerows
Settlement Character	Small villages & scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Late Parliamentary enclosures, historic commons

Table 114: Settled Plateau Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. This is moderately good mixed farmland although dairying and improved grassland and leys dominate. Much of this landscape type is intensively farmed as permanent pasture or for cereals. The improved grassland and cultivated fields have little ecological interest.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Unimproved pasture is a main habitat type within this LCT. Neutral grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision; and SEO 2: Manage the area's diverse range of woodlands, veteran trees, wood pasture and parklands to enhance landscape character and safeguard their biodiversity value, while seeking opportunities to enhance access. Plan, with emphasis on The National Forest, for new opportunities to plant woods and new areas of wood pasture to expand existing sites; and create short rotation coppice to enhance timber and biomass provision, increase carbon storage, regulate water flow and quality, and reduce habitat fragmentation. Boundary trees are scattered throughout giving filtered views, often over extensive areas. Occasional small blocks of broadleaved woodland and shelter groups are found. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Ensure the conservation and management of mature/ veteran trees within hedgerows; and Ensure new woodland does not conflict with features (e.g. ridge and furrow) that help to define landscape character.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Woodland vision is to retain areas of thinly scattered small plantations.
Heathland and Shrub	h	Yes	There are significant patches of bracken in hedgerows and along road verges. The network of lanes around Bradley is particularly rich in bracken.
Wetland	f	Yes	Broadly in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. The many marl pits support valuable base-rich wetland communities. Older pastures, particularly if poorly drained, can develop a distinctive base-rich association. At Hulland Moss, a SSSI, there is an important example of lowland bog and heath with areas of dry oak and wet alder woodland.
Cropland	c	Yes	Broadly in accordance with SEO 1: Conserve and enhance the essential character of this mainly pastoral mixed farm landscape with its distinctive field and settlement patterns, hedgerow trees, varied hedgerow types and heritage assets, enhancing and expanding the network of farmland habitats and improving access opportunities while sustaining food provision. Autumn sown crops of wheat, barley and oil-seed rape are found throughout this type, but principally in the Bradley and Shirley Common/Brailsford areas in the east drained, can develop a distinctive base-rich association. At Hulland Moss, a SSSI, there is an important example of lowland bog and heath with areas of dry oak and wet alder woodland.
Urban	u	No	Broadly in accordance with SEO 3: Protect the historic and cultural features of Needwood and the South Derbyshire Claylands, in particular the traditional settlement patterns of remaining villages, traditional farmsteads and the country estates that provide a strong sense of place. This is a landscape of widely scattered farmsteads and small settlements. The villages which are found on this landscape type, such as Bradley, Shirley, Yeaveley,

Management Action	Code	Potential for Change (Yes/No)	Comments
			Alkmonton and Wyaston, were originally very small nucleated settlements surrounded by open fields.
Sparsely Vegetated Land	s	Yes	The many marl pits support valuable base-rich wetland communities. There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	No	Not in accordance with SEO 4: Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

8.0 NCA 69: Trent Valley Washlands

8.1 Key Characteristics

- Distinctly narrow, linear and low-lying landscape largely comprised of the flat flood plains and gravel terraces of the rivers and defined at its edges by higher ground;
- Geology dominated by superficial alluvium and gravel river terrace deposits underpins the contrast in arable and pastoral agricultural use, arable crops predominating on the free-draining soils of the river terraces, with grassland more commonly located along the alluvial river flood plains where soils are subject to frequent flooding or are naturally wet;
- Flood plain pastoral areas where riverside pastures are subdivided by thick, full hedgerows with some trees contrast with arable areas with larger fields divided by low, small hedgerows with few trees;
- Limited tree cover, but local concentrations give the impression of a well timbered landscape in many places. Riparian trees, especially willows, provide an important component. A landscape strongly defined by its rivers and their flood plains with the extensive canal network adding significantly to the watery character and providing major recreational assets for the area;
- Diverse range of wetland habitats supporting notable species such as spined loach and bullhead fish, otter, water vole, white-clawed crayfish, shoveler, bittern, lapwing, snipe and redshank;
- Rich history of human settlement and activity reflected in the archaeology and historic buildings with a particular focus on river crossing points and the gravel terraces, as well as being significant for early Christianity in the Midlands, and later for its canal and brewing heritage;
- Settlement pattern heavily influenced by flood risk, confining villages to the gravel river terraces and to rising ground at the edges of the flood plains. Traditional buildings are characteristically of red brick and clay plain tile with earlier timber frame and grander dwellings and churches typically built from sandstone. Red brick and Welsh slate of 19th- and early 20th-century urban expansion prominent in larger settlements along with modern housing and development;
- A landscape heavily used as transport and communication corridors along the rivers and canals, for major roads and railways, and for power lines; and
- A landscape marked by extensive sand and gravel extraction, power stations and prominent urban-edge industrial and commercial development.

8.2 Landscape Character Types within NCA 69: Trent Valley Washlands within DCC

8.2.1 Lowland Village Farmlands

An agricultural landscape set within broad, open river valleys with many urban features.

Key Characteristics:

- Gently rolling, almost flat, lowland with river terraces;

- Low slopes and summits give a sense of elevation over a broad flood plain;
- Mixed farming with arable cropping and improved pasture;
- Thinly scattered hedgerow trees including some willow pollards;
- Scattered, locally dense, watercourse trees;
- Medium to large regular fields with thorn hedgerows;
- Discrete red brick villages with farms and cottages; and
- Large red brick outlying farms.

Table 115: Lowland Village Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Lowland Village Farmlands	Mixed farming with arable cropping and improved pasture; Gently rolling, almost flat, lowland with river terraces; and Elvaston Castle with its formal grounds and estate plantations.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 116: Lowland Village Farmlands - Landscape character attributes

Lowland Village Farmlands	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture
Woodland Character	Thinly scattered small plantations
Woodland Vision	Thinly scattered small plantations
Woodland Type	Ash-oak with field maple, holly and hazel
Hedgerow Trees	Thinly scattered
Watercourse	None
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Villages and sparsely scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Elvaston Castle and Gardens, ridge and furrow

Table 117: Lowland Village Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The traditional land-use is mixed farming with arable crops and improved pasture. Grassland is now restricted to the areas of heaviest soils and smaller field parcels associated with the villages. With a long tradition of mixed farming with intensive cropping, this landscape is ecologically poor. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Carefully plan and manage new development within the NCA to ensure that landscape character and ecosystem services are strengthened, that heritage features, wildlife habitats, woodland and the hedgerow network are enhanced, and that opportunities for creation of multifunctional green infrastructure are realised so that this landscape is resilient to the forces of change that it is experiencing. Tree cover is variable throughout this landscape character type, although it is rarely visually prominent. Woodland is largely absent from this landscape, or occurs as small, sparsely scattered blocks. Sparsely scattered hedgerow trees are locally prominent where the fields are smaller, particularly in association with villages. There are scattered, locally dense trees along watercourses. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads; Encourage the continuing practice of pollarding to maintain the traditional riparian character of the landscape; and

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure new woodland does not conflict with features (e.g. ridge and furrow) that help to define landscape character. Woodland vision is to retain thinly scattered small plantations.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Canals and standing open water provide additional habitat opportunities for wetland flora and fauna, such as those found at the Hilton Gravel Pits SSSI.
Cropland	c	Yes	The resultant land-use is typically mixed, with cropping on the flatter, more cultivable, soils and improved pasture in damper areas. With a long tradition of mixed farming with intensive cropping, this landscape is ecologically poor.
Urban	u	Yes	Settlements are generally nucleated and some are much extended. They are located on the gentle slopes and gravel river terraces, immediately off the flood plain, where drainage is better. A significant feature within this landscape is Elvaston Castle with its formal grounds and estate plantations. Large power stations dominate views across the landscape as do the many pylons carrying the resultant electricity. Settlements like Hatton, Hilton, Breaston and Borrowash have undergone rapid expansion with the construction of new housing estates to serve the city of Derby.
Sparsely Vegetated Land	s	Yes	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT. Further gravel extraction is providing opportunities for increasing wetland habitats but there are constraints due to issues such as the proximity to East Midlands Airport, flood flows and availability of suitable fill. There have also been major changes to landscape character as a result of large-scale mineral extraction.

Rivers and Lakes	r	Yes	Broadly in accordance with SEO 2: Manage and enhance the Trent Valley Washlands' river and flood plain
			landscape to combine its essential provision and regulation of water role with landscape enhancement, nature conservation, climate regulation, farming, recreation and a resource for understanding geodiversity. The Trent and Mersey Canal was once a major industrial transport route. It now caters mainly for recreational water traffic crossing the area from south-east of Egginton eastwards to Swarkestone.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

8.2.2 Riverside Meadows

Broad, flat flood plains, containing meandering rivers and streams with scattered trees along riverbanks. A pastoral landscape of large, hedged fields and trees scattered along boundaries.

Key Characteristics:

- Flat flood plains containing meandering rivers and streams;
- Seasonally waterlogged soils over alluvium;
- Intensive permanent pasture;
- Localised patches of rushes in damp hollows;
- Dense watercourse trees, mainly alder with some localised willow;
- Scattered trees along hedgerows and ditches;
- Regular shaped fields bounded by hawthorn hedges;
- Lanes alongside or crossing the flood plain; and
- Generally uninhabited with sparsely scattered, isolated farmsteads.

Table 118: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	Flat flood plains containing meandering rivers and streams; and Important ecological sites include the Old River Dove SSSI at Marston-on-Dove and Lockington Marshes SSSI.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 119: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional wet woodlands
Woodland Type	Alder-crack willow with ash and downy birch
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Unsettled
Traditional Materials	Not applicable (Red brick mills)
Cultural Interests	Swarkstone Causeway, Historic mills

Table 120: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The land-use is mixed farming with an increasing move towards arable. Today there are still patches of unimproved grassland and rush pasture.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Carefully plan and manage new development within the NCA to ensure that landscape character and ecosystem services are strengthened, that heritage features, wildlife habitats, woodland and the hedgerow network are enhanced, and that opportunities for creation of multifunctional green infrastructure are realised so that this landscape is resilient to the forces of change that it is experiencing. There are scattered lines of trees along riverbanks.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Many trees have been removed from the riverbanks as part of flood protection works. Pollarded willows form distinct localised features in the landscape. Scattered trees in association with the flat topography filter views through the landscape. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Encourage the continuing practice of pollarding to maintain the traditional riparian character of the landscape. Woodland vision is to retain occasional wet woodlands.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Many of the inherent habitat types would be associated with wetland habitats. There are scattered trees along most hedgerows, ditches and minor streams. Wetland is a main habitat type within this LCT.
Cropland	c	Yes	The water level is increasingly being controlled by ditches and field drainage, allowing for more extensive cropping. Opportunities for spring cultivation are limited, so winter cereals form the main crop. Intensification of farming and an increasing move towards cropping means that the ecological value of this landscape is diminishing.

Management Action	Code	Potential for Change (Yes/No)	Comments
Urban	u	No	This is traditionally an uninhabited landscape due to the risk of flooding, although there are occasional scattered farmsteads. This landscape immediately abuts the urban fringes of Derby and urban expansion, especially residential, is having a major impact on this landscape type.
Sparsely Vegetated Land	s	No	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 2: Manage and enhance the Trent Valley Washlands' river and flood plain landscape to combine its essential provision and regulation of water role with landscape enhancement, nature conservation, climate regulation, farming, recreation and a resource for understanding geodiversity. Flat flood plains containing meandering rivers and streams. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees, as identified by The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

8.2.3 Wet Pasture Meadows

A flat, low-lying mixed farming landscape, with regular and geometric field patterns. Hawthorn hedgerows enclose fields and there are scattered trees, including willow pollards along hedges and ditches.

Key Characteristics:

- Flat low-lying irregular shaped basins;
- Waterlogged soils;
- Mixed farming with patches of unimproved grassland;
- Scattered trees along hedgerows and ditches;
- Visually prominent willow pollards;
- Medium to large regular or geometric shaped fields with hawthorn hedgerows; and
- Largely uninhabited with very occasional, large, red brick farmsteads.

Table 121: Wet Pasture Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Wet Pasture Meadows	Flat low-lying irregular shaped basins; Visually prominent willow pollards; and Scattered trees along most hedgerows, ditches and minor streams.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 122: Wet Pasture Meadows - Landscape character attributes

Wet Pasture Meadows	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional small wet woodland
Woodland Type	Alder-crack willow with ash & downy birch
Hedgerow Trees	Thinly scattered
Watercourse	Scattered
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Unsettled
Traditional Materials	Not applicable
Cultural Interests	Late Parliamentary enclosures

Table 123: Wet Pasture Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The land-use is mixed farming with an increasing move towards arable. Today there are still patches of unimproved grassland and rush pasture. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Carefully plan and manage new development within the NCA to ensure that landscape character and ecosystem services are strengthened, that heritage features, wildlife habitats, woodland and the hedgerow network are enhanced, and that opportunities for creation of multifunctional green infrastructure are realised so that this landscape is resilient to the forces of change that it is experiencing. There are scattered trees along most hedgerows, ditches and minor streams. Tree cover is not a prominent feature of this landscape, although trees are well represented throughout and, coupled with tall hedgerows, provide filtered views. Pollarded willows are a particularly distinctive feature. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Encourage the continuing practice of pollarding to maintain the traditional riparian character of the landscape. Woodland vision is to retain occasional small wet woodland.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Wetland	f	Yes	Broadly in accordance with SEO 2: Manage and enhance the Trent Valley Washlands' river and flood plain landscape to combine its essential provision and regulation of water role with landscape enhancement, nature conservation, climate regulation, farming, recreation and a resource for understanding geodiversity. Trees are apparent throughout, usually scattered along hedgerows, ditches and minor streams. Wetland is a main habitat type within this LCT.
Cropland	c	Yes	The land-use is mixed farming with an increasing move towards arable. The water level is increasingly being controlled by ditches and field drainage, allowing for more extensive cropping. Opportunities for spring cultivation are limited, so winter cereals form the main crop. Intensification of farming and an increasing move towards cropping means that the ecological value of this landscape is diminishing.
Urban	u	No	This is traditionally an uninhabited landscape due to the risk of flooding, although there are occasional scattered farmsteads. This landscape immediately abuts the urban fringes of Derby and urban expansion, especially residential, is having a major impact on this landscape type.
Sparsely Vegetated Land	s	No	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 2: Manage and enhance the Trent Valley Washlands' river and flood plain landscape to combine its essential provision and regulation of water role with landscape enhancement, nature conservation, climate regulation, farming, recreation and a resource for understanding geodiversity. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

9.0 NCA 70: Melbourne Parklands

9.1 Key Characteristics

- An undulating landform of Sherwood Sandstone in the west of the NCA, with Carboniferous limestones forming a broken ridge of hills in the east and extending south-eastwards. Flatter areas around Ticknall, Calke Abbey and Dimminsdale.
- In the east of the NCA the less resistant Triassic siltstones and mudstones of the Mercia Mudstone Group produce a gently rolling lowland plateau of productive, reddish clay soils suitable for agriculture. The less permeable soils are typically used for pasture (and, historically, for dairying), the drier soils are for cereals and potatoes, and the dark loams around Melbourne are for market gardening.
- The Breedon Hill Site of Special Scientific Interest (SSSI) comprises one of the largest areas of species-rich limestone grassland in Leicestershire.
- Alluvium deposits and river terraces are evident between Hemington and Lockington, in the north-east of the NCA;
- Differential erosion by dynamic river systems has dissected the plateau and created narrow-sided, north- flowing river valleys. Two valleys have been dammed to form large reservoirs;
- Large landscaped parks with grand country houses and mixed woodlands, and remnant orchards associated with market gardening;
- New woodland planting associated with The National Forest;
- There are many scattered, sometimes ancient, hedgerow trees in the core area. By contrast, low and well- trimmed hedges are found around some arable fields in peripheral areas;
- Extensive areas of unimproved pasture and remnant acid grassland with heathy scrub persist, with woodland on some steep, undulating sandstone slopes;
- The major Mercian ecclesiastical centres at Repton and Breedon-on the-Hill are rich in Christian and Viking heritage, and prominently-sited churches invoke a historic feel to the NCA. Breedon-on-the-Hill was the site of a Saxon monastery, with Saxon carvings preserved in the church;
- Large, nucleated villages – the most remote built of attractive, mellow yellow brick, with a few surviving timber-framed buildings;
- Small, clustered red-brick villages retain a rural character, but those close to the River Trent valley, including Melbourne, Repton and Castle Donington, are larger; and
- East Midlands Airport, with its important passenger and freight terminal, is located in the east of the NCA and serviced by the A42 and M1.

9.2 Landscape Character Types within NCA 70: Melbourne Parklands within DCC

9.2.1 Estate Farmlands

A broad, gently rolling lowland mixed farming landscape with occasional red brick villages, scattered estate farmsteads and country houses. Tree cover is well represented with small estate woodlands, dense watercourse trees, scattered hedgerow trees and localised parkland trees.

Key Characteristics:

- Gently rolling plateau dissected by minor river valleys;
- Seasonally waterlogged fine loamy soils over Permo-Triassic Mudstones, Siltstones and Sandstones;
- Mixed farming with intensive arable copping and improved permanent pasture;
- Estate woodlands with broadleaf and coniferous species;
- Scattered hedgerow trees;
- Dense watercourse trees;
- Predominantly medium size semi-regular and regular fields enclosed by hedgerows;
- Settlements constructed of red brick with clay tiled roofs;
- Scattered red brick estate farmsteads and the occasional country house; and
- Open views from elevated areas over surrounding lower lying landscapes.

Table 124: Estate Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Estate Farmlands	Mixed farming with intensive arable copping and improved permanent pasture; Open views from elevated areas over surrounding lower lying landscapes; and Cultural associations with large estates, and the settlements of Repton and Melbourne.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 125: Estate Farmlands - Landscape character attributes

Estate Farmlands	Current Landscape Character Attributes
Land Use	Mixed arable
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture
Woodland Character	Thinly scattered small plantations
Woodland Vision	Thinly scattered small plantations/refer to National Forest Strategy
Woodland Type	Ash-oak with field maple, holly & hazel

Estate Farmlands	Current Landscape Character Attributes
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	Localised around settlement & parkland
Boundary Type	Mixed species hedgerows
Settlement Character	Villages & sparsely scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Historic villages, green lanes

Table 126: Estate Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The land-use is mixed farming with intensive arable cropping and improved permanent pasture. The plateau areas are predominantly arable due to the gentle relief and the well-drained, easily cultivated soils. Remnant unimproved grassland is now confined to the road margins and the occasional field margin in pastoral areas. Ecologically, this landscape type is poor as a result of intensive farming practices. The arable crops and improved permanent pastures and leys are of little ecological value. Farmland is a main habitat type within this LCT. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Manage the new planting of The National Forest and restore the characteristics of the historic parklands and woodlands. Conserve and manage the hedgerows and hedgerow trees, preserving the field patterns of early enclosures and maintaining the legacy of historic land use, bringing benefits for soil quality, biodiversity and recreation. The trees and woodlands play an important role in emphasising estate character. The wooded character is reinforced by dense lines of trees along watercourses.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Numerous small woodland blocks interlink to form a more complex network of habitats that supplement the terrestrial corridors. Trees combine to restrict or filter views through the landscape. The relative lack of trees on the plateaux means that there are open views. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Small scale woodland planting; Promote linked extensions to ancientwoodland by natural regeneration and planting; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Conserve and renew ornamental plantations and individual parkland trees; and National Forest Guidelines apply for the area within the National Forest. Woodland vision is to retain thinly scattered small plantations/refer to National Forest Strategy.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Wet pasture and patches of marsh with rushes are a feature of some of the minor stream valleys. Not a dominant land cover within this LCT.
Cropland	c	Yes	The land-use is mixed farming with intensive arable cropping and improved permanent pasture. Ecologically, this landscape type is poor as a result of intensive farming practices. The arable crops and improved permanent pastures and leys are of little ecological value. Farmland is a main habitat type within this LCT. Unimproved pasture is a secondary habitat type within this LCT.
Urban	u	No	This relatively sparsely populated landscape has a number of country houses set in landscaped parks. The principal settlements of Repton and Melbourne have an impressive number of historic buildings.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Between villages there are sparsely scattered estate farmsteads.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Terrestrial corridors are strong with many hedgerows and lines of trees along watercourses. Wet pasture and patches of marsh with rushes are a feature of some of the minor stream valleys. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

9.2.2. Riverside meadows

Narrow, flat flood plains, containing meandering rivers and streams with dense trees along riverbanks. A mixed farming landscape of medium sized hedged fields.

Key Characteristics:

- Flat flood plains containing meandering rivers and streams;
- Seasonally waterlogged soils over alluvium;
- Traditional pasture now reverted to intensive mixed farming;
- Localised patches of rushes in damp hollows;
- Dense watercourse trees;
- Regular shaped fields bounded by hawthorn hedges; and
- Lanes alongside or crossing the flood plain.

Table 127: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	Flat flood plains containing meandering rivers and streams; Ridge and furrow add local distinctiveness to the river meadows; and The flood plain remains fairly open with relatively distant views along the valley;

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 128: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Occasional small wet woodlands
Woodland Type	Alder-crack willow with ash & downy birch
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Unsettled
Traditional Materials	Not applicable (Red brick mills)
Cultural Interests	Small historic mills, ridge & furrow

Table 129: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Intensification of farming in the surrounding landscapes has transgressed onto the flood plains and, with improved drainage, there is an increasing shift towards arable farming. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Manage the new planting of The National Forest and restore the characteristics of the historic parklands and woodlands. Conserve and manage the hedgerows and hedgerow trees, preserving the field patterns of early enclosures and maintaining the legacy of historic land use, bringing benefits for soil quality, biodiversity and recreation.

Management Action	Code	Potential for Change (Yes/No)	Comments
			There are dense lines of trees along the riverbanks. The flood plain remains fairly open with relatively distant views along the valley. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and Encourage the continuing practice of pollarding to maintain the traditional riparian character of the landscape. Woodland vision is to retain occasional small wet woodlands.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Some areas are permanently waterlogged and some hollows retain floodwater long after the majority of floods have subsided. The narrow Ramsley Brook flows with unpolluted water, making it very valuable as a freshwater habitat. All watercourses are important wildlife habitats, as are their banks and margins. Pasture with a high-water table, where the soil is permanently wet, is important ecologically for species rich meadows associated with ground beetles and birds, such as curlew and snipe. Wetland is a main habitat type within this LCT.
Cropland	c	Yes	Intensification of farming in the surroundinglandscapes has transgressed onto the flood plains and, with improved drainage, there is an increasing shift towards arable farming.
Urban	u	No	Historically there was little built development on the flood plain, excepting the occasional water mill for grinding corn.

Management Action	Code	Potential for Change (Yes/No)	Comments
			There are occasional farmsteads on the higher, better drained sections. As a result, transport routes are also scarce, other than the occasional river crossing. A single railway line impinges on the flood plain immediately south of New Bridge.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	The narrow Ramsley Brook flows with unpolluted water, making it very valuable as a freshwater habitat. All watercourses are important wildlife habitats, as are their banks and margins. Pasture with a high-water table, where the soil is permanently wet, is important ecologically for species rich meadows associated with ground beetles and birds, such as curlew and snipe. Some sections of Ramsley Brook have been canalised and as a consequence their biodiversity value has diminished. Sections of the river are lost entirely in places where they have been culverted or drained. The landscape is characterised by a narrow flood plain associated with the Ramsley Brook and Carr Brook, which eventually discharge into the River Trent. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

9.2.3 Sandstone Slopes & Heaths

A wooded, pastoral landscape on moderate to steep slopes with prominent rounded undulations and hillocks.

Key Characteristics:

- Prominent landform of moderate to steep sandstone slopes and valleys with rounded undulations;
- Well-drained sandy soils;
- A pastoral land-use with mixed farming on gentler gradients;
- Heathy associations on steeper slopes and along some hedgerows;

- Prominent woodland with small linear woods, scattered hedgerow trees, scrub and occasional parkland trees;
- Medium to large size regular and sub-regular fields with mixed species hedgerows; and
- Sparsely settled landscape with very occasional red brick and clay tile farmsteads and estate cottages.

Table 130: Sandstone Slopes & Heaths - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Sandstone Slopes & Heaths	A pastoral land-use with mixed farming on gentler gradients; Heathy associations on steeper slopes and along some hedgerows; and Sandstone weathers away slowly to form steep slopes and valley sides, and differential erosion of the slopes themselves has created visually prominent rounded undulations and hillocks.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 131 Sandstone Slopes & Heaths - Landscape character attributes

Sandstone Slopes & Heaths	Current Landscape Character Attributes
Land Use	Mixed Farming
Main Habitat Type	Unimproved pasture
Other Habitat Type	Acid grassland/heath
Woodland Character	Densely scattered small woodlands
Woodland Vision	Densely scattered small woodlands/Refer to National Forest Strategy
Woodland Type	Ash-oak with field maple, holly & hazel
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Sparsely scattered farms & cottages

Sandstone Slopes & Heaths	Current Landscape Character Attributes
Traditional Materials	Red brick or sandstone with Staffordshire blue clay tile roofs
Cultural Interests	Remnant parkland

Table 132: Sandstone Slopes & Heaths - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	In areas of unimproved pasture, on the steepest slopes, patches of acid grassland still persist. The light sandy soils are easily worked and lend themselves to arable cropping. Unimproved pasture is the main habitat type within this LCT. Acid grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Manage the new planting of The National Forest and restore the characteristics of the historic parklands and woodlands. Conserve and manage the hedgerows and hedgerow trees, preserving the field patterns of early enclosures and maintaining the legacy of historic land use, bringing benefits for soil quality, biodiversity and recreation. A key habitat type is woodland, which is also a visually prominent feature. On the steeper upper slopes, where land is less cultivable, woodland prevails. Small woodland blocks tend to hug the upper, steeper slopes and are often linear in shape, following the natural contours of slopes and valleys. There are scattered boundary trees along hedgerows, sparsely scattered in areas of mixed farming. Views through the landscape and along the slopes are often blocked or filtered, mainly by trees and woodlands. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines:

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; and National Forest Strategy and Guidance applies for the area within the National Forest. Woodland vision is to retain densely scattered small woodlands/Refer to National Forest Strategy.
Heathland and Shrub	h	Yes	This heathy association, as a result of the free-draining soils, is further evidenced by the amount of bracken that can be seen in road verges, hedgerows and woodland margins. Heath is a secondary habitat type within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	Yes	The light sandy soils are easily worked and lend themselves to arable cropping.
Urban	u	Yes	Traditionally settlement is sparse, primarily due to the predominance of steep, uncultivable slopes. Some isolated slopes are totally uninhabited whilst others are only sparsely settled with an occasional farmstead and cottage. Today this sparsely scattered character is still obvious, but development pressures are beginning to increase to the south of Repton and on the slopes to the east of Burton-on-Trent.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Other impacts are few with the exception of Foremark Reservoir, which covers a sizeable area of one of these sandstone valleys. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

9.2.4 Wooded Estatelands

A well-wooded, gently undulating, estate landscape with large, estate farms and occasional country houses.

Key Characteristics:

- Underlying geology of sandstone, mudstone and Coal Measures giving rise to a large scale, gently undulating landform;
- Mixed farming with occasional areas of improved pasture;
- Medium size interlocking plantation woodlands of mixed species composition;
- Densely scattered hedgerow trees and dense lines of watercourse trees;
- Extensive parkland trees including ornamental specimens, tree groups and avenues;
- Medium size regular shaped fields with hawthorn hedgerows; and
- Well-wooded landscape with views restricted by tree cover.

Table 133: Wooded Estatelands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Wooded Estatelands	Mixed farming with occasional areas of improved pasture; Well-wooded landscape with views restricted by tree cover; and Calke Abbey and its landscaped park which contains ancient woodlands.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 134: Wooded Estatelands - Landscape character attributes

Wooded Estatelands	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Woodland
Other Habitat Type	Farmland
Woodland Character	Densely scattered small plantations
Woodland Vision	Refer to the National Forest Strategy and Guidelines
Woodland Type	Ash-oak with field maple, holly & hazel

Wooded Estatelands	Current Landscape Character Attributes
Hedgerow Trees	Densely scattered
Watercourse	Dense
Amenity Trees	Localised around settlement & parkland
Boundary Type	Thorn hedgerows
Settlement Character	Villages & sparsely scattered farmsteads
Traditional Materials	Sandstone or red brick with Staffordshire blue clay roof tiles
Cultural Interests	Calke Abbey

Table 135: Wooded Estatelands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The predominant land-use is mixed farming although there are extensive areas of parkland. Typically, remnant acid grassland is found over sandstone and neutral grassland in the more nutrient- rich valleys. Farmland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 1: Manage the new planting of The National Forest and restore the characteristics of the historic parklands and woodlands. Conserve and manage the hedgerows and hedgerow trees, preserving the field patterns of early enclosures and maintaining the legacy of historic land use, bringing benefits for soil quality, biodiversity and recreation. A well-wooded landscape where tree cover is visually prominent. Trees and woodland are a key ecological resource. Numerous small to medium size plantations interlink to form a complex network of habitats, supplemented by connecting corridors formed by the hedgerows. The wooded character is further enhanced by dense lines of trees along the watercourses.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Within the grounds of Calke Abbey and the immediate surroundings, there are numerous parkland trees, ancient reminders of former wood pasture. Together the trees and woodlands combine to restrict views through the landscape and limit views to landscapes beyond. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Conserve and restore all ancient woodland sites and restock with locally occurring native species; Promote linked extensions to ancientwoodland by natural regeneration and planting; Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; Conserve and renew ornamental plantations and individual parkland trees; Ensure the conservation and management of mature/veteran trees within hedgerows; and Refer to the National Forest Strategy and Guidance. Woodland vision, refer to the National Forest Strategy and Guidance. Woodland is the main habitat type within this LCT.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	No	The wooded character is further enhanced by dense lines of trees along the watercourses. Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Cropland	c	Yes	The predominant land-use is mixed farming although there are extensive areas of parkland. Much of the pasture has been improved and where the soils are free-draining there is some cropping. Farmland is a secondary habitat type within this LCT.
Urban	u	No	This is inherently a sparsely settled landscape, due in part to its development as estateland. Ticknall is a settlement associated with the quarrying of a small outcropping of limestone but also had a post- medieval pottery industry. Between villages there are scattered farmsteads and cottages. Many of these are estate farms and as such tend to be large. At the centre of this landscape character type, and a major determinant of its overall character, is Calke Abbey and its landscaped park which contains ancient woodlands.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	No	The wooded character is further enhanced by dense lines of trees along the watercourses. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

10.0 NCA 71: Leicestershire & South Derbyshire Coalfield

10.1 Key Characteristics

- The landscape is unenclosed with shallow valleys, subdued sandstone ridges and a gently undulating plateau;
- There are heavy, poorly draining soils over the Coal Measures and mudstones of the Mercia Mudstone Group, and free-draining soils on the sandstone ridges. The area forms part of a regional watershed between the River Mease to the south and the River Soar to the east and has many minor, swift flowing streams draining the area, for example Saltersford Brook and Rothley Brook. Flooded clay pits and mining have resulted in many subsidence pools or flashes, which in combination with Thornton Reservoir provide valuable open water sites for nature conservation and recreation;
- The area has a developing woodland character that is heavily influenced by the work of The National Forest initiative, which augments locally dense riparian woodland and prominent amenity trees around settlements with developing woodland on former colliery sites;
- Small- to medium-sized fields occur with a wide variation in field pattern, including some narrow, curved fields that preserve the strips of the open field system. Where arable production predominates, fields have been enlarged. Hedgerows are low with a few scattered hedgerow trees and in places show the effects of former open cast workings;
- Agriculture comprises a mixture of arable and mixed sheep and beef units and, to a lesser extent, dairy. Combinable crops are grown on the freer-draining soils. Potatoes are grown in rotation on the heavier soils around Measham and Packington;
- There is remnant acid grassland over sandstone with neutral grassland in the valleys, and acid heathland on open mosaic habitats on previously developed land, particularly colliery spoil. The River Mease SSSI and SAC has internationally important spined loach and bullhead fish and nationally important white- clawed crayfish, otter, and aquatic plants such as water crowfoot.
- Rich heritage assets include Ashby-de- la-Zouch medieval castle and industrial heritage including the Ashby Canal and Moira Furnace, one of the best examples of an early 18th-century blast furnace. Archaeological assets include a moated medieval village at Desford and the Roman town at Ravenstone;
- Traditional vernacular is predominately locally manufactured red brick with tile or slate roofs. Some older buildings are of stone. Locally characteristic around Measham is a double-sized brick of the late 18th century known as the 'Measham gob'. There are many three-storey brick built farmhouses;
- The settlement pattern is dominated by mining settlements. Isolated hamlets along the roadsides and small villages centred on a church contrast with extensive areas of 20th-century housing and prominent industrial and commercial distribution warehouses at the edge of larger centres, notably Ashby-de-la- Zouch, Measham and Coalville;
- Around Coleorton, a more dispersed pattern of settlement associated with small-scale bell pit mining of the 13th century, spoil heaps, small fields, a dense network of footpaths and a fine example of historic parkland landscape contribute to the distinctiveness of this part of the coalfield landscape; and

- The area is easily accessible by major roads and rail and is close to East Midlands Airport. Long-distance recreational routes include the Ivanhoe Way, the Leicestershire Round, and a wide network of local trails and footpaths associated with the recreational assets of The National Forest. The Ashby Canal also provides a link to the wider area.

10.2 Landscape Character Types within NCA 71: Leicestershire & South Derbyshire Coalfield within DCC

10.2.1 Coalfield Village Farmlands

An undulating, industrialised mixed farming landscape with former mining settlement, punctuated by woodland, scattered hedgerow and watercourse trees.

Key Characteristics:

- Heavy, poorly draining soils over mudstone with patches of free-draining soils on sandstone ridges;
- Rolling plateau of sandstone and mudstone beds with coal seams;
- Pastoral farming with localised arable farming on better drained soils;
- Patches of semi-natural woodland;
- Scattered hedgerow trees and locally dense trees along watercourses;
- Scrub and secondary woodland on derelict ground and along rail and road embankments;
- Areas of former parkland, and common land, now enclosed and farmed;
- Network of small irregular lanes between larger urban roads;
- Red brick buildings with Staffordshire blue clay tile roofs;
- Expansion of villages with red brick terraces, ribbon development and housing estates; and
- Legacy of coal extraction.

Table 136: Coalfield Village Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Coalfield Village Farmlands	Patches of semi-natural woodland; Areas of former parkland, and common land, now enclosed and farmed; and Legacy of coal extraction.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 137: Coalfield Village Farmlands - Landscape character attributes

Coalfield Village Farmlands	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Unimproved pasture

Other Habitat Type	Acid & neutral grassland
Woodland Character	Thinly scattered small woodlands
Woodland Vision	Refer to the National Forest Strategy and Guidelines
Woodland Type	Oak-birch with ash, downy birch & hazel
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows
Settlement Character	Villages & scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Strip fields around villages, industrial heritage

Table 138: Coalfield Village Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The relatively subdued topography ensures that the dominant land use is mixed farming, resulting in a mixture of pasture and feed crops. The farmland supports remnants of acid grassland over sandstone with neutral grassland in the more nutrient rich valleys. Unimproved pasture is the main habitat type within this LCT. Acid and neutral grassland is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Manage and conserve ancient and plantation woodland and plan appropriately scaled new woodland cover, particularly in The National Forest; restore and reinstate hedgerows and hedgerow trees and increase biomass provision, timber supply and biodiversity that will mitigate the impact of climate change and enhance the experiential qualities of the area. Along streamlines there are occasional, locally dense watercourse trees. There are also locally prominent amenity trees around settlements.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Small scale woodlands occur in this landscape, often associated with areas of former parkland or with estate ownership. Some woodlands, like Hall Wood and Several Wood, are remnant ancient woodlands. Woodland is being significantly extended through the National Forest area. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Re-establish and enhance physical links between existing isolated woodland and hedgerows; Ensure the management and enhancement of hedgerow trees, through selection and natural regeneration, or by planting; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; Ensure the conservation and management of mature/veteran trees within hedgerows; and Refer to National Forest Strategy and Guidance. Woodland vision, refer to the National Forest Strategy and Guidelines.
Heathland and Shrub	h	Yes	Acid heathland has colonised free-draining colliery spoil and birch has invaded some derelict sites, beginning the slow succession to woodland.
Wetland	f	Yes	Broadly in accordance with SEO 1: Protect and manage the area's riverine and flood plain environment, its manmade and natural wetland habitats, especially the River Mease for its internationally and nationally important species and range of river plants, for the benefit of biodiversity, sense of place, water quality, recreation, geodiversity and climate regulation.
Cropland	c	Yes	The relatively subdued topography ensures that the dominant land use is mixed farming, resulting in a mixture of pasture and feed crops.
Urban	u	No	There was very rapid development of the coalfield following the start of the industrial revolution. Most of the buildings of the past two centuries have been

Management Action	Code	Potential for Change (Yes/No)	Comments
			constructed of red brick. Such buildings are particularly significant in mining settlements.
Sparsely Vegetated Land	s	Yes	There is evidence of previous extraction as identified through Historic Landscape Characterisation data produced by Historic England within this LCT. Much of the coalfield has been impacted upon by mining. Derelict areas have been reworked as part of opencast mining schemes, creating tracts of immature landscape.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 1: Protect and manage the area's riverine and flood plain environment, its manmade and natural wetland habitats, especially the River Mease for its internationally and nationally important species and range of river plants, for the benefit of biodiversity, sense of place, water quality, recreation, geodiversity and climate regulation. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

11.0 NCA 72: Mease/Sence Lowlands

11.1 Key Characteristics

- This is a gently rolling landscape with rounded clay ridges and shallow valleys, with a more undulating landform in the north-west. This is a well ordered agricultural landscape of open views, with a relatively tranquil character;
- Triassic Mercia Mudstones underlie this area and give rise to productive clay soils; outcrops of sandstone extend across the area southwards and westwards from the edge of the adjacent coalfield;
- Woodland cover is generally limited to scattered hedgerow trees, coverts and spinneys, and occasional groups of trees along rivers and streams. Larger-scale planting associated with The National Forest in the north of the NCA has significantly increased woodland cover and strengthened the wooded character of the landscape;
- The majority of the farmland has a strongly rectilinear pattern of low hedgerows and scattered hedgerow trees. On steeper ground and heavier clays, hedgerows are more substantial and hedgerow trees more frequent;
- Extensive, open areas of arable cultivation predominate. On steeper ground and heavier clays the land is less intensively farmed, and arable and pasture are mixed. Beef and dairy farming are also common;
- The main river courses of the Mease and Sence are generally very open; they are nationally important for nature conservation and support internationally rare species, including the white-clawed crayfish, spined loach, and bullhead fish. Willow and alder riparian vegetation is a feature along minor streams;
- Important habitats include neutral grasslands, wet meadows, parkland, wet woodlands, rivers and streams, all of which support characteristic and rare species;
- The Ashby Canal and Coventry Canal are landscape features that are important for nature conservation and recreation. They act as reminders of our cultural heritage;
- Landscaped parklands and fine country house estates, spired churches and historic farmsteads, areas of remnant ridge and furrow and deserted settlements contribute to the time depth and sense of history of the area;
- with wide verges and straight enclosure roads. Red brick buildings and spired churches are often prominent landscape features. Isolated large 19th-century red brick farmsteads are also notable; and
- Larger modern urban development is present on the fringes of the NCA in Nuneaton, Hinckley and Burton- upon-Trent. Straight motorways and main roads cut through the area north–south and east–west.

11.2 Landscape Character Types within NCA 72: Mease/ Sence Lowlands within DCC

11.2.1 Riverside Meadows

A narrow, flat flood plain, containing a tightly meandering river with scattered trees along riverbanks, including willow pollards. A pastoral landscape of generally small, regular, hedged fields.

Key Characteristics:

- Flat flood plains containing a tightly meandering river;
- Seasonally waterlogged soils over alluvium;
- Moderate intensity permanent pasture;
- Localised patches of rushes in damp hollows;
- Scattered, locally dense trees along watercourses;
- Regular shaped fields bounded by predominantly hawthorn hedges; and
- Lanes alongside or crossing the flood plain.

Table 139: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	Localised patches of rushes in damp hollows; Flat flood plains containing a tightly meandering river; and A narrow, flat river meadow landscape characterised by a narrow alluvium flood plain associated with the River Mease.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 140: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Wetland
Other Habitat Type	Unimproved pasture
Woodland Character	Unwooded
Woodland Vision	Refer to National Forest Strategy and Guidelines
Woodland Type	Alder-crack willow with ash & downy birch
Hedgerow Trees	None
Watercourse	Dense
Amenity Trees	None
Boundary Type	Thorn hedgerows
Settlement Character	Unsettled
Traditional Materials	Not applicable (Red brick mills)

Cultural Interests	Water mills

Table 141: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Risk of flooding makes the land difficult to work for arable cropping although some arable fields can be found as a result of recent drainage improvements and flood protection measures. There are a few fields that remain unimproved and, as a consequence, retain some ecological value. Unimproved pasture is a secondary habitat type within this LCT.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Manage and conserve the woodland habitat of the landscape and plan to expand appropriately scaled woodland cover, particularly in The National Forest, to increase people's access and enjoyment and to secure opportunities to enhance biomass and biodiversity and manage the impact of climate change. Broadly in accordance with SEO 3: Protect and appropriately manage the historic character, settlement pattern and features of this landscape, in particular its ancient woodlands, veteran trees, landscaped parklands and areas of archaeological interest, including ridge and furrow. There are scattered, locally dense lines of trees along the riverbanks. Many trees have been removed from the riverbanks as part of flood protection works. The flood plain remains fairly open with relatively distant views along the valley. The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Ensure the use of indigenous tree and shrub species, including a proportion of large, long- lived species;

Management Action	Code	Potential for Change (Yes/No)	Comments
			Ensure a balance is maintained between new woodland planting and areas of nature conservation value; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; Encourage the continuing practice of pollarding to maintain the traditional riparian character of the landscape; and Refer to the National Forest Strategy and Guidance. Woodland vision, refer to the National Forest Strategy and Guidance.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 1: Protect and appropriately manage this important network of natural and manmade rivers, streams, ponds, canals and other wetland habitats for its internationally important populations of white-clawed crayfish, spined loach and bullhead fish and their contribution to sense of place, water quality and climate regulation. Some areas are more permanently waterlogged and some hollows retain floodwater long after the majority of floods have subsided. The River Mease is relatively unpolluted making it very valuable as a freshwater habitat. Additional ecological value relates to the riverbanks and margins particularly associated with riparian trees. The flood plain remains fairly open with relatively distant views along the valley. Wetland is a main habitat type within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Historically, there was little built development on the flood plain, excepting the occasional water mill for grinding corn.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 1: Protect and appropriately manage this important network of natural and manmade rivers, streams, ponds, canals and other

Management Action	Code	Potential for Change (Yes/No)	Comments
			wetland habitats for its internationally important populations of white-clawed crayfish, spined loach and bullhead fish and their contribution to sense of place, water quality and climate regulation. In places there are natural raised banks to the rivers known as levees. The River Mease is relatively unpolluted making it very valuable as a freshwater habitat. Additional ecological value relates to the riverbanks and margins particularly associated with riparian trees. The flood plain remains fairly open with relatively distant views along the valley. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

11.2.2 Village Estate Farmlands

This is a well-ordered, gently rolling agricultural landscape punctuated by discrete villages, scattered estate farmsteads and country houses. There are small game coverts and dense lines of trees along watercourses.

Key Characteristics:

- Broad scale, gently rolling lowland landscape;
- Seasonally waterlogged fine loamy soils over Permo-Triassic Mudstone;
- Mixed farming with intensive cropping and improved permanent pasture;
- Broadleaf plantations and game coverts;
- Tree lined, pastoral stream corridors;
- Medium to large regular and sub-regular fields with mainly hawthorn hedgerows;
- Winding country lanes with wide grass verges; and
- Small nucleated hilltop villages often with prominent church spire.

Table 142: Village Estate Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Village Estate Farmlands	Mixed farming with intensive cropping and improved permanent pasture; Tree lined, pastoral stream corridors; and Between villages there are scattered, large, red brick farm complexes, characteristic of estate properties, and occasional country houses like Caldwell Hall and Grangewood Hall.

More information on individual LCT's can be found here: Landscape character - Derbyshire County Council

Table 143: Village Estate Farmlands - Landscape character attributes

Village Estate Farmlands	Current Landscape Character Attributes
Land Use	Mixed farming
Main Habitat Type	Farmland
Other Habitat Type	Unimproved pasture
Woodland Character	Thinly scattered small plantations
Woodland Vision	Refer to National Forest Strategy and Guidelines
Woodland Type	Ash-oak with field maple, holly & hazel
Hedgerow Trees	Thinly scattered
Watercourse	Dense
Amenity Trees	Localised around settlement
Boundary Type	Thorn & mixed species hedgerows
Settlement Character	Villages & sparsely scattered farmsteads
Traditional Materials	Red brick with Staffordshire blue clay tile roof
Cultural Interests	Country houses

Table 144: Village Estate Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	The land-use is typically mixed farming but with appropriate management and some underdrainage, the land grows moderately good crops and cereals. Ley grassland usually forms part of the crop rotation so that cattle and sheep are an integral part of the farming system. The Mease/Sence Lowlands is primarily an agricultural landscape and most of its habitats are associated with farmland. Remnant unimproved grassland persists in many of the wide road verges throughout this landscape character type. Their value is unfortunately diminishing due to a lack of management. Patches of unimproved grassland still persist around some of the villages and along the minor stream valleys.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Manage and conserve the woodland habitat of the landscape and plan to expand appropriately scaled woodland cover, particularly in The National Forest, to increase people's access and enjoyment and to secure opportunities to enhance biomass and biodiversity and manage the impact of climate change. Broadly in accordance with SEO 3: Protect and appropriately manage the historic character, settlement pattern and features of this landscape, in particular its ancient woodlands, veteran trees, landscaped parklands and areas of archaeological interest, including ridge and furrow. Tree cover patterns are variable relating mainly to the intensity of agriculture and new planting as part of the National Forest. Many of the woodlands tend to be small with regular shaped outlines. Along the minor streams that dissect this landscape type there are dense continuous lines of trees. Where trees are absent there are views through the landscape, the village church often appears as a focal point to these.

Management Action	Code	Potential for Change (Yes/No)	Comments
			The bullet points below are identified within The Landscape Character of Derbyshire planting and management guidelines: Promote linked extensions to ancient woodland by natural regeneration and planting; Re-establish and enhance physical links between existing isolated woodland and hedgerows; Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees; Conserve and renew ornamental plantations and individual parkland trees; and Refer to the National Forest Strategy and Guidance. Woodland vision, refer to the National Forest Strategy and Guidance. Woodland is becoming more visually prominent due to the National Forest Initiative.
Heathland and Shrub	h	No	Not a dominant land cover within this LCT.
Wetland	f	Yes	Broadly in accordance with SEO 1: Protect and appropriately manage this important network of natural and manmade rivers, streams, ponds, canals and other wetland habitats for its internationally important populations of white-clawed crayfish, spined loach and bullhead fish and their contribution to sense of place, water quality and climate regulation. Watercourses are also important as wildlife corridors, forming a network of linked sites that are lined by dense tree belts.
Cropland	c	Yes	The land-use is typically mixed farming but with appropriate management and some underdrainage, the land grows moderately good crops and cereals. Ley grassland usually forms part of the crop rotation so that cattle and sheep are an integral part of the farming system.
Urban	u	Yes	Nucleated villages, occupying locally higher ground, are dotted around this rolling lowland landscape. The characteristically tall spires of village churches punctuate the skyline.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Between villages there are scattered, large, red brick farm complexes, characteristic of estate properties, and occasional country houses like Caldwell Hall and Grangewood Hall.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 1: Protect and appropriately manage this important network of natural and manmade rivers, streams, ponds, canals and other wetland habitats for its internationally important populations of white-clawed crayfish, spined loach and bullhead fish and their contribution to sense of place, water quality and climate regulation. Small streams have created shallow valleys. Watercourses are also important as wildlife corridors, forming a network of linked sites that are lined by dense tree belts. Patches of unimproved grassland still persist around some of the villages and along the minor stream valleys. Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees as identified within The Landscape Character of Derbyshire planting and management guidelines.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.0 Geospatial Data and other published written assessment used

Geospatial Data and other published written assessment

Geospatial Data sets used include:

Crow access land
Green belt
Flood risk mapping zones 2 + 3
Country Parks
Registered Parks and Gardens
National Parks
National Trails
PRoWs
Ancient Woodland
Listed buildings
Scheduled monuments
Registered Parks and Gardens
World Heritage Sites
Heritage at Risk

Other Data sets used:

National Character Areas
DCC – Landscape Character Types
PDNP – Landscape Character Types
Historic Landscape Character – Specifically Extraction
Quarry draft areas from Derbyshire habitat map

12.1 Key Characteristics

- Sharply defined, elevated and vast plateau with gritstone ridges and edges and long, uninterrupted views;
- Wild and remote semi-natural character created by blanket bog, dwarf shrub heath and heather moorland which support internationally important habitats and assemblages of upland birds and breeding waders;
- Contrasting valley heads created by a combination of sheltered, deeply-incised cloughs with fast-flowing streams around the plateau margins, with their greater diversity of vegetation, including semi-natural broadleaved woodland;
- Pastoral character of margins created by in-bye land with dispersed farmsteads, gritstone wall boundaries (hedgerows in valley bottoms) and the small scale of enclosure;
- Major valleys, some of which are dominated by coniferous woodland and reservoirs; these supply drinking water to distant urban conurbations including Derby and Nottingham. The wider valleys also provide habitats for wintering and breeding birds and other important species such as fungi, as well as high-quality recreational experiences for visitors;
- Durable and stocky architectural style to dispersed buildings and settlements constructed from local gritstone with typical blackened appearance;
- Extensive prehistoric field systems and settlement behind the gritstone edges, with early post-glacial occupation beneath the higher, deeper peats; and

- Historic routes traverse the moorland as well as more modern trails such as the Pennine Bridleway and Pennine Way. More recent road and rail routes are located along valley bottoms.

12.2 Landscape Character Types within NCA 51: Dark Peak within Peak District National Park

12.2.1 Estatelands (Derwent Valley)

Estatelands in Derwent valley sits largely within NCA 51: Dark Peak, but also sits within NCA 52: White Peak.

An enclosed, estate landscape where views of agricultural land are framed by discrete blocks of woodland and scattered field boundary trees set within a varied, undulating topography. This is a landscape of villages, with historic halls and houses surrounded by parkland.

This landscape is found in three blocks, the largest centred on Pilsley, Haddon and Hassop. The remaining two areas include Chatsworth House and gardens east of the Derwent and Stanton Hall in the south.

Key Characteristics:

- A varied undulating topography with steep slopes in places;
- Large historic halls and houses set in parkland;
- Villages and outlying estate farmsteads and field barns;
- Regular pattern of medium large sized fields;
- Large blocks of plantation woodland; and
- Patches of acid grassland and bracken on steep slopes.

Table 145: Estatelands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Estatelands	• Important designated landscapes at Chatsworth, Haddon, Hassop and Thornbridge, contains registered parks and gardens; • A small, isolated limestone ridge at Cracknowl Pasture, to the north of Bakewell, forms part of this character type; • Large historic halls and houses set in parkland; • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 1: Estatelands - Landscape character attributes

Estatelands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Improved pasture
Other Habitat Type	Woodland

Woodland Character	Extensive coniferous woodland plantations/ Linear shelter belts/Tree screens
Woodland Vision	N/A
Woodland Type	Ash is the dominant native tree along with oak, sycamore, beech and hawthorn. Spruce, pine and larch are to be found in the plantations.
Hedgerow Trees	Scattered
Watercourse	N/A
Amenity Trees	Localised around settlement
Boundary Type	N/A
Settlement Character	Villages, large halls and farmsteads
Traditional Materials	Sandstone or Gritstone
Cultural Interests	Large historic halls and houses set in parkland including; Chatsworth House, Haddon Hall, Hassop Hall and Thornbridge Hall

Table 2: Estatelands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is an area of improved permanent pasture with mature hedgerow trees, drystone walls and hedges. In places, on the poorer soils, there are remnants of acid grassland with patches of bracken; in particular this can be found on northern slopes around Pilsley. Elsewhere there are isolated patches of semi-improved grassland alongside tracks and edges of fields. This is a landscape of intensively managed permanent pasture in a regular pattern of fields with extensive coniferous woodlands and parkland. Stock rearing for beef and, in particular, dairying is an important land use. Management strategy is to eEnhance the diversity of agricultural grassland and enhance the diversity of arable farmland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Views are filtered by the extensive tree cover throughout the area. This is found as a mixture of large plantation coniferous woodlands, discrete linear shelter belts, tree screens and scattered mature boundary trees. Ash is the dominant native tree along with oak, sycamore, beech and hawthorn. Spruce, pine and larch are to be found in the plantations. This is a landscape of intensively managed permanent pasture in a regular pattern of fields with extensive coniferous woodlands and parkland. Stock rearing for beef and, in particular, dairying is an important land use. Parkland is one of the key features of the estatelands, with important designed landscapes at Chatsworth, Haddon, Hassop and Thornbridge. Management strategy is to Protect historic parkland landscapes / m~~M~~anage and enhance woodlands / m~~M~~anage and enhance plantation woodlands/ ~~M~~manage and enhance linear tree cover and amenity trees and ~~C~~create new native broadleaved woodland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	No	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	Yes	Management strategy is to ~~E~~enhance the diversity of agricultural grassland and ~~E~~enhance the diversity of arable farmland.
Urban	u	No	There is a strongly nucleated pattern of discrete villages, large halls and outlying farms. The villages and several of the smaller settlements and halls have medieval origins, although the largely of today's buildings date from the 17th century onwards. There are large numbers of estate buildings, both in the villages and in the countryside, which have architectural details beyond the local vernacular styles, including houses, lodges and outbuildings. Impressive estate-designed buildings are also found at Hassop and Pilsley.
Sparsely Vegetated Land	s	No	There are no active quarries within the Dark Peak but there are remains of old quarries, which form an important part of the character of the area. They are a valued cultural heritage, biodiversity, educational and, particularly, recreational resource, with many old quarries being used for rock climbing and bouldering. Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.2 Gritstone Village Farmlands (Derwent Valley)

Gritstone Village Farmlands in Derwent valley sits within NCA 51: Dark Peak.
A small-scale, settled pastoral landscape associated with gently rolling gritstone uplands. The landscape is enclosed by a pattern of small to medium sized fields bounded by gritstone walls. Views are open and wide, framed by surrounding higher land.
The Gritstone Village Farmlands are long established agricultural landscapes, each associated with a central village. They are found in two locations around the villages of Abney and Birchover.

Key Characteristics:

- Rolling gritstone upland;
- Pastoral farmland enclosed by drystone walls;
- Small to medium-sized fields;
- Gritstone villages with outlying farms and dwellings; and
- Wide views to surrounding high hills.

Table 148: Gritstone Village Farmlands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Gritstone Village Farmlands	• Wide views to surrounding high hills; • Pastoral farmland enclosed by drystone walls; and • This is an open, settled landscape with a well defined pattern of small fields enclosed by drystone walls often resulting from the enclosure of Medieval open fields.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 3: Gritstone Village Farmlands - Landscape character attributes

Gritstone Village Farmlands	Current Landscape Character Attributes
Land Use	Pasture
Main Habitat Type	Improved pasture
Other Habitat Type	N/A
Woodland Character	Small groups localised around settlements
Woodland Vision	N/A
Woodland Type	Sycamore, ash and oak
Hedgerow Trees	Sycamore, ash and oak
Watercourse	N/A
Amenity Trees	Localised around settlement
Boundary Type	Drystone wall
Settlement Character	Nucleated villages and scattered farmsteads
Traditional Materials	Gritstone with stone slate or Staffordshire blue clay roof tile
Cultural Interests	-

Table 4: Gritstone Village Farmlands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. The land here mainly consists of permanent pasture of moderate to high intensity, grazed by sheep and cattle. There is little ecological interest over most of the area because pasture predominates. Management strategy is to eEnhance the diversity of agricultural grassland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. This is an open landscape with trees confined to small groups around settlements and as mature trees within boundaries. Sycamore, ash and oak are the predominant species. Management strategy is to ~~M~~manage and enhance linear tree cover and amenity trees.
Heathland and Shrub	h	No	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Management strategy is to e~~E~~nhance the diversity of agricultural grassland.
Urban	u	No	The nucleated villages of Abney and Birchover lie at the cores of the two small areas of this landscape type. There are several isolated outlying farmsteads within the two traditional townships. Birchover was associated with the nearby gritstone quarries and benefited from good building stone. Management strategy is to Protect historic drystone walls / m~~M~~anage the network of tracks and footpaths to maximise opportunities to enjoy the landscape and manage the built environment to enhance landscape character.

Management Action	Code	Potential for Change (Yes/No)	Comments
Sparsely Vegetated Land	s	Yes	Management strategy is to dDevelop appropriate landscapes from mineral workings.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.3 Moorland Slopes and Cloughs (Dark Peak Western Fringe)

Moorland Slopes and Cloughs in Dark Peak Western Fringe sits within NCA 51: Dark Peak.
Steep slopes and cloughs rising to precipitous gritstone edges and scree slopes, with rough grassland and heather moor grazed by sheep. This is largely an exposed, unsettled landscape with views over lower ground.
This landscape occurs in one location within the Dark Peak Western Fringe, in the west of the area, along Coombes Edge and around Long Clough.

Key Characteristics:

- Steep slopes and cloughs, in places rising to precipitous edges;
- Prominent gritstone outcrops, boulders and scree slopes;
- Thin soils over gritstone bedrock;
- Rough acid grassland and heather moorland grazed by sheep; and
- Exposed views over lower ground, sometimes limited by clough sides.

Table 5: Moorland Slopes and Cloughs - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Moorland Slopes and Cloughs	• Prominent gritstone outcrops, boulders and scree slopes; • LCT sits within EA flood risk zones 2 + 3; • This LCT contains areas of CROW access land; • Rough acid grassland and heather moorland grazed by sheep; and • Landform creates a sense of elevation with panoramic views over surrounding countryside and settlements.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 6: Moorland Slopes and Cloughs - Landscape character attributes

Moorland Slopes and Cloughs	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Moorland
Woodland Character	Treeless/oOccasional small coniferous plantation woodland
Woodland Vision	Create new native broadleaved woodland
Woodland Type	Scattered trees

Moorland Slopes and Cloughs	Current Landscape Character Attributes
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	N/A
Boundary Type	Drystone wall
Settlement Character	Occasional isolated farmstead
Traditional Materials	Gritstone roof tiles
Cultural Interests	Coombes Edge

Table 7: Moorland Slopes and Cloughs - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Owing to poor quality soils, this is a landscape with patches of semi-natural vegetation with a mixture of heather and bilberry, and acid grassland where mat grass and purple moor grasses are dominant. Owing to its elevation and poor quality soils, this is a marginal agricultural landscape used primarily as rough grazing for sheep; there are some improved pastures but these tend to be small and localised. Management strategy is to mAanage and enhance semi-natural grassland and wetland landscapes and Manage and enhance the diversity of agricultural grassland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The poor soils, exposure and grazing on these moorland slopes restrict tree growth, resulting in an essentially treeless landscape over much of the type. However, scattered trees and patches of scrub occur within cloughs and occasional small coniferous plantation woodlands are found on moorland slopes. Management strategy is to mAanage and enhance woodlands and cCreate new native broadleaved woodland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Owing to poor quality soils, this is a landscape with patches of semi-natural vegetation with a mixture of heather and bilberry, and acid grassland where mat grass and purple moor grasses are dominant. Management strategy is to ~~M~~manage and enhance areas of heath/moor, and ~~/ C~~create, ~~extend~~extend, and link areas of heath/moor.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is a very sparsely settled landscape with only occasional isolated gritstone farmsteads with stone tile roofs on lower slopes.
Sparsely Vegetated Land	s	No	Upper slopes and steep clough sides have gritstone outcrops. Some support fern banks while on land that is inaccessible to grazing, such as ledges, tall vegetation species such can flourish. There are some outcrops of gritstone, on steeper slopes most notably where it forms distinct edges with precipitous rock faces as at Coombes Edge.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.4 Moorland Slopes and Cloughs (Eastern Moors)

Moorland Slopes and Cloughs in Eastern Moors sits within NCA 51: Dark Peak.

Steep slopes and dramatic gritstone edges rising to Open Moors, with widespread rough grassland, bracken and heather moor, grazed by sheep. This is a wild unsettled landscape with exposed views over lower ground.

This landscape occurs as a series of narrow strips around the edge of the open moorland core, on both the west and the east.

Key Characteristics:

- Steep slopes rising to precipitous edges;
- Prominent gritstone outcrops and spreads of boulders beneath these;
- Thin soils over gritstone and coal measure bedrock with relict quarries, mining and hollow-ways;
- Rough acid grassland, bracken and heather moorland grazed by sheep; and
- Exposed views over lower ground.

Table 8: Moorland Slopes and Cloughs - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Moorland Slopes and Cloughs	• Steep slopes rising to precipitous edges; • The slopes are of outstanding importance for a range of recreation activities including rock climbing on the gritstone edges, bouldering, paragliding and walking; • Today, most of the slopes are open access land and are only accessible on foot; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 9: Moorland Slopes and Cloughs - Landscape character attributes

Moorland Slopes and Cloughs	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Moorland
Woodland Character	Thinly scattered small plantations
Woodland Vision	N/A
Woodland Type	N/A
Hedgerow Trees	None
Watercourse	N/A
Amenity Trees	N/A
Boundary Type	Drystone walls
Settlement Character	Occasional buildings and isolated farmsteads
Traditional Materials	Gritstone
Cultural Interests	Recreation

Table 10: Moorland Slopes and Cloughs - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	No	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Because of poor soils, this is a landscape with widespread patches of semi-natural vegetation, usually comprising a mixture of heather moorland, with areas of purple moor grass and bilberry, or acid grassland. Owing to its elevation and poor quality soils, this is a very marginal agricultural landscape used primarily as rough grazing. Management actions are geared towards enhancing biodiversity and the management and enhancement of existing woodland
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The wet soils, exposure and open grazing on these moorland slopes restrict tree growth. However, scattered trees and scrub sometimes occur on moorland slopes as at White Edge. Plantation woodlands can sometimes be found on the moorland slopes, such as Stanage Plantation. Bunkers Hill Wood is a plantation woodland dating from the early 18th century that was associated with Chatsworth's former deer park. Management strategy is to ~~M~~manage and enhance woodlands, and ~~M~~manage and enhance plantation woodlands.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Because of poor soils, this is a landscape with widespread patches of semi-natural vegetation, usually comprising a mixture of heather moorland, with areas of purple moor grass and bilberry, or acid grassland. Management strategy is to ~~C~~create, extend and link areas of heath and create, extend and link areas of heath.
Wetland	f	Yes	Surface water drainage is often impeded by the formation of a thin ironpan and in less steeply sloping areas the soils can have a wet peaty surface horizon
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is a sparsely settled landscape with very occasional buildings, including Bolehill Lodge, and isolated gritstone farmsteads, and cottages or inns, such as the Peacock Inn above Owler Bar, along historic transport routes as the only forms of settlement. Some of these date from the medieval period. There are some field barns and stock pens within the landscape, associated with sheep farming and constructed from the local Millstone Grit. Although very sparsely settled there is more settlement on the eastern than the western slopes of the Eastern Moors.
Sparsely Vegetated Land	s	Yes	This is a sloping landscape that is strongly influenced by the underlying Millstone Grit geology and defined by steep upper slopes and edges that fringe the open moorland, such as at Burbage and Stanage Edges. There are outcrops of gritstone, most notably where it forms distinct edges with precipitous rock faces and boulder strewn slopes. The Millstone Grit is interspersed with beds of softer shales which erode to leave the upstanding gritstone edges and sloping land. On the east of the moors the coal measures influence this landscape character type, particularly below Ramsley Moor and Blacka Hill. Historically, quarrying would have been a major activity to the west, with coal mining on the eastern side of the moors and on some edges in the west. Quarried stone would have been used for millstones, pulpstones, grindstones, and as a building resource, both for blocks and detailing, such as lintels. Management strategy is to ~~P~~protect and maintain cultural heritage resources.
Rivers and Lakes	r	No	Several fast-flowing streams draining the moorlands above have incised into the slopes where they descend into the Derwent Valley to the west, forming short side valleys as at Burbage Brook and Upper Hurst Brook. Surface water drainage is often impeded by the formation of a thin ironpan and in less steeply sloping areas the soils can have a wet peaty surface horizon.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.5 Open Moors (Derwent Valley)

Open Moors in Derwent Valley sits within NCA 51: Dark Peak, but also sits in NCA 53: South West Peak.

An open rolling moor and heathland landscape associated with gritstone summits. This is an unsettled landscape with wide views and a sense of remoteness and space.

The Open Moors are to be found on the highest land within the Derwent Valley character area. They are found at the tops of three gritstone hills: two in the north at Abney and Offerton and Eyam whilst the third is found near Birchover.

Key Characteristics:

- Rolling gritstone summits;
- Thin impoverished soils over gritstone bedrock;
- Unenclosed heather moor extensively grazed by sheep;
- Patches of secondary birch woodland and bracken;
- Wide views to distant hilltops;
- Scattered rock outcrops and tors; and
- Extensive archaeological evidence from prehistoric and later activity.

Table 11: Open Moors - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Open Moors	• Unenclosed heather moor extensively grazed by sheep; • Wide views to distant hilltops; and • Scattered rock outcrops and tors.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 12: Open Moors - Landscape character attributes

Open Moors	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Moorland
Other Habitat Type	Unimproved pasture
Woodland Character	Treeless
Woodland Vision	N/A
Woodland Type	Treeless
Hedgerow Trees	N/A
Watercourse	None
Amenity Trees	None
Boundary Type	Drystone walls
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	Monuments such as stone circles, barrows, ring cairns and standing stones.

Table 13: Open Moors - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Due to poor soils and vegetation, the land has low agricultural value and rough grazing predominates with extensive grazing by sheep. Management actions are based around the creation/enhancement of heath and moorland habitats however, SEO 2 seeks to increase ecological network and improve biodiversity as part of NCA 51: Dark Peak as part of the overarching management strategy
Woodland and Forest	w	No	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. In places, on the steeper slopes around the edges of the moors, some bracken is found, elsewhere, for example on Stanton Moor, birch woodland has developed. On Abney, Eyam and Offerton Moors this is generally an open, treeless landscape with expansive views owing to the elevation: historical grazing pressures and climate have inhibited tree growth. By contrast, on Stanton Moor, there are extensive areas of mature and secondary birch woodland interspersed with oaks.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Impoverished, shallow soils over gritstone bedrock predominate, sometimes with a peaty surface layer. This gives rise to extensive, dry moorland or heath habitat with heather as the dominant species; rocks and boulders are a feature locally. Where areas of the moor have been

Management Action	Code	Potential for Change (Yes/No)	Comments
			grazed, grazing tolerant shrubs such as bilberry, crowberry and grasses are more dominant. Management strategy is to create, extend and link areas of heath/moor.
Wetland	f	Yes	Impoverished, shallow soils over gritstone bedrock predominate, sometimes with a peaty surface layer. This gives rise to extensive, dry moorland or heath habitat with heather as the dominant species; rocks and boulders are a feature locally. Where areas of the moor have been grazed, grazing tolerant shrubs such as bilberry, crowberry and grasses are more dominant. Management strategy is to create, extend and link areas of heath/moor. Braided hollow-ways, often deeply eroded into the land, can be seen running across the moorlands, especially across Eyam Moor. These gave local access to commons, quarries and mines and linked settlements to the main packhorse routes to Sheffield and Chesterfield. Large parts of the open moorland are open access land.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Although now an unsettled landscape, there is much evidence of later prehistoric settlement and monuments, particularly on Offerton Moor, Highlow Bank and Eyam Moor. These are features which are more commonly found on the Eastern Moors. These include field boundaries and clearance cairns around farmstead sites, and monuments such as stone circles, barrows, ring cairns and standing stones. Transport is a limited feature of this landscape character type. This enhances the sense of remoteness because of the absence of roads running through the landscape and the need to access the area on foot.
Sparsely Vegetated Land	s	Yes	On Stanton Moor there are extensive relict gritstone quarries dating from the 18th to 20th centuries. Braided hollow-ways, often deeply eroded into the land, can be seen running across the moorlands, especially across Eyam Moor. These gave local access to commons, quarries and mines and linked settlements to the main packhorse routes to Sheffield and Chesterfield. Management strategy is to Develop appropriate landscapes from mineral workings.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.6 Open Moors (Eastern Moors)

Open Moors in Eastern Moors sits within NCA 51: Dark Peak, but also sits in NCA 53: South West Peak.

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An open, undulating gritstone moor and heathland landscape with mineral soils and shallow blanket peat covered by heather moorland and grass moor. This is an unsettled landscape with wide views to distant surrounding hills and valleys and a sense of remoteness and space.
This is a visually prominent landscape which covers a large area of the Eastern Moors, with heather moorland and localised thick blanket peat such as at Totley Moss and Leash Fen.

Key Characteristics:

- Undulating unsettled gritstone summits;
- Thin impoverished soils with some deposits of peat;
- Extensive archaeological evidence from prehistoric and later activity;
- Unenclosed heather and grass moorland, with birch and willow scrub locally; and
- Large gritstone edges, scattered rock outcrops and tors.

Table 14: Open Moors - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Open Moors	• Much of the open moorland is open access land and only accessible on foot; • This is generally an open, treeless landscape with expansive views over the adjacent valleys; and • Undulating unsettled gritstone summits.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 15: Open Moors - Landscape character attributes

Open Moors	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Moorland
Other Habitat Type	Unimproved pasture
Woodland Character	Treeless
Woodland Vision	N/A
Woodland Type	Treeless
Hedgerow Trees	N/A
Watercourse	None
Amenity Trees	None
Boundary Type	Drystone walls
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	Memorial to the Duke of Wellington & Nelson

Table 16: Open Moors - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field

Management Action	Code	Potential for Change (Yes/No)	Comments
			patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This landscape generally has a low agricultural value being used predominantly for rough grazing, and in places grouse rearing. Areas of heather moorland are maintained through regimes of cutting, burning and grazing by sheep and sometimes cattle. No specific management actions are outlined within the PDNP strategy however, SEO 2 and 3 seek to enhance grassland habitats within NCA 51: Dark Peak as part of the overarching management strategy
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. This is generally an open, treeless landscape with expansive views over the adjacent valleys. Historic grazing pressures and climate have inhibited tree growth. There are some localised patches of birch and willow scrub on lower lying moors. There are also a number of localised plantation woodlands, possibly associated with past industrial needs. Sheffield Plantation, on the western edge of the area near to Longshaw Lodge, was planted prior to 1840 and established by the Sheffield Planting Company. Other woodland, as on Ramsley Moor, Birchen Edge and Gardom's Edge, is not planted but the result of natural regeneration from seed sources on lower adjacent ground. Management strategy is to ~~M~~manage and enhance plantation woodlands, and ~~M~~manage the extent of birch scrub to maintain a diverse landscape mosaic.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources.~~;~~ SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Much of this landscape is covered by dwarf shrub heath dominated by heather but including variable quantities

Management Action	Code	Potential for Change (Yes/No)	Comments
			of crowberry, cowberry and bilberry, particularly on more mineralised soils where the peat is thinner. Here, past grazing and burning management mean that heather tends to be the dominant species on the moorland. Where the peat is wetter, other species such as cottongrass and purple moor grass are more prevalent. Areas of heather moorland are maintained through regimes of cutting, burning and grazing by sheep and sometimes cattle. Management strategy is to ~~E~~encourage diverse approaches to moorland management and ~~C~~create, extend and link areas of heath.
Wetland	f	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Much of this landscape is covered by dwarf shrub heath dominated by heather but including variable quantities of crowberry, cowberry and bilberry, particularly on more mineralised soils where the peat is thinner. Here, past grazing and burning management mean that heather tends to be the dominant species on the moorland. Where the peat is wetter, other species such as cottongrass and purple moor grass are more prevalent. Areas of heather moorland are maintained through regimes of cutting, burning and grazing by sheep and sometimes cattle. Management strategy is to ~~E~~encourage diverse approaches to moorland management, and ~~C~~create, extend, and link areas of heath.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	This is a largely unsettled landscape with built features existing only locally, often as infrastructure for shooting and stock management. Some are simple livestock barns, ruined shooting cabins and gamekeepers' lodges; but Longshaw Lodge is exceptional, built as a comfortable shooting lodge by the Duke of Rutland to offer hospitality to guests. A similar example of guest accommodation is hidden away in plantations above Redmires Reservoirs at Stanage Lodge. Another atypical building is the reservoir keeper's lodge next to the old Barbrook Reservoir. There is also a memorial to the Duke of Wellington, adjacent to

Management Action	Code	Potential for Change (Yes/No)	Comments
			Baslow Edge, matched by another to Nelson on Birchin Edge, both above Baslow, erected in 1866.
Sparsely Vegetated Land	s	No	To the south and, more significantly, in the eastern parts of the area the Yorkshire Coal Measures overlie this gritstone bedrock. Historically this landscape would have supported a range of industrial processes including coal mining, quarrying and bole hearths for smelting lead.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Flushes and bogs associated with headwater basins ('sitches' or 'sicks') and moorland streamsides often support a rich flora with a number of local species typically rare or absent in the higher Dark Peak.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.7 Open Moors (South West Peak)

Open Moors in South West Peak sits within NCA 51: Dark Peak, but also sits in NCA 53: South West Peak.

An open, rolling moorland landscape associated with high gritstone hill summits and broad upland basins. This is a wild, unsettled landscape with extensive areas of blanket bog and patches of dry heath. There are wide views across these moorlands and to surrounding hills. The moorland is crossed by historic transport routes.

This landscape character type occurs in extensive tracts on the highest hill summits and broad upland basins of the South West Peak, including Axe Edge Moor, Shining Tor, Combs Moss and Swallow Moss.

Key Characteristics:

- Rolling hill summits extending to rounded ridges;
- Extensive deposits of blanket bog and some thinner peaty mineral soils;
- Unenclosed heather moorland extensively grazed by sheep;
- Wide views to distant hilltops;
- Historic transport routes, including packhorse tracks and turnpike roads; and
- Coal mining remains.

Table 17: Open Moors - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Open Moors	• This is a landscape of high undulating moorland summits; • Extensive relics of past coal mining exist on Combs Moss, Goyt' s Moss and west of Axe Edge; and • Unenclosed heather moorland extensively grazed by sheep.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 18: Open Moors - Landscape character attributes

Open Moors	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Moorland
Other Habitat Type	Unimproved pasture
Woodland Character	Treeless
Woodland Vision	N/A
Woodland Type	Treeless
Hedgerow Trees	N/A
Watercourse	None
Amenity Trees	None
Boundary Type	Drystone walls (occasional)
Settlement Character	Unsettled (occasional roadside dwelling)
Traditional Materials	Gritstone with stone
Cultural Interests	-

Table 19: Open Moors - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is a rough grazing landscape that supports extensive stock rearing. Management strategy is to ~~E~~enhance and restore moorland landscapes, and ~~E~~encourage diverse approaches to moorland management.

Management Action	Code	Potential for Change (Yes/No)	Comments
Woodland and Forest	w	No	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. This is mostly an open, treeless landscape. There are some patches of scrub encroaching on the open moorland which tends to be dominated by birch, grey willow and some rowan. Not a dominant land cover within this LCT.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. This landscape is dominated by wild, unenclosed heath and blanket mire. Dwarf shrub heath dominated by heather and bilberry, together with cottongrass blanket mire, provide habitat for the curlew and many other upland birds.
Wetland	f	Yes	Parts of the moorland are managed for shooting through a combination of regular burning and low level grazing which leads to a dominance of heather. Management strategy is to ~~E~~enhance and restore moorland landscapes, and ~~E~~encourage diverse approaches to moorland management.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Urban	u	No	This is a largely unsettled landscape, except for occasional isolated roadside dwellings or inns. These are robust buildings constructed of local gritstone with stone slate roofs.
Sparsely Vegetated Land	s	No	Extensive relics of past coal mining exist on Combs Moss, Goyt' s Moss and west of Axe Edge.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.8 Riverside Meadows (Dark Peak Western Fringe)

Riverside Meadows in Dark Peak Western Fringe sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak and NCA 68: Needwood and South Derbyshire Claylands.

A small scale pastoral landscape characterised by a meandering river channel in a flat alluvial floodplain. Views are often tightly framed by lines of riverside trees. Patches of wetland vegetation are a distinctive feature associated with the river channel.

This landscape character type exists in two locations within this fringe landscape along the River Etherow and further south along the River Goyt.

Key Characteristics:

- A flat alluvial river corridor;
- Meandering river channel with shingle beds and marginal vegetation;
- Seasonally waterlogged alluvial soils;
- Grazing meadows, often with patches of wet grassland; and
- Dense waterside and scattered hedgerow trees.

Table 20: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	• Meandering river channel with shingle beds and marginal vegetation; • This landscape character type exists in two locations within this fringe landscape along the River Etherow and further south along the River Goyt; • Grazing meadows, often with patches of wet grassland; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 21: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Semi-improved grassland
Woodland Character	Densely lined riverine
Woodland Vision	N/A
Woodland Type	Alder and Willow
Hedgerow Trees	Scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Hedgerows
Settlement Character	Unsettled (occasional farmstead)
Traditional Materials	N/A
Cultural Interests	The Bugswoth Canal Basin

Table 22: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is a pastoral landscape with permanent pasture dominating due to heavy soils and seasonal waterlogging. There is some semi-improved grassland. In the past, land uses have been more industrial, the fast flowing rivers were used to power industry. Management strategy is to ~~M~~manage and enhance semi-natural grassland and wetland landscapes, and ~~M~~manage and enhance the diversity of agricultural grassland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The river banks are densely lined with alder and some willow. This creates an intimate landscape where views are filtered by watercourse trees and framed by the adjacent wooded slopes. In places there are small copses of willow carr and poplars. Generally, small fields are bound by mixed species thorn dominated hedgerows creating a sense of enclosure adjacent to the river; the presence of riverside trees enhances this sense of enclosure.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Management strategy is to ~~M~~manage and enhance woodlands, and c~~C~~reate new native broadleaved woodland.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features.
Wetland	f	Yes	The floodplain is characterised by gleyed soils that are either continuously or seasonally waterlogged. The river enhances the fertility of the soil when flood water deposits nutrients that replenish the wet soils. The meadows are either seasonally or permanently wet, creating wet pastures which support soft rush and some sedges. Management strategy is to ~~M~~manage and enhance semi-natural grassland and wetland landscapes.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	In the past, land uses have been more industrial, the fast flowing rivers were used to power industry. Away from the urban areas on the narrow floodplain some mills still survive and are often converted to other uses, while other mills have been demolished and only remnant mill ponds and races give evidence of this past industry in this tranquil landscape. This is a largely unsettled landscape where the wet ground and risk of flooding make development difficult. There are occasional gritstone farmsteads on the higher ground above the valley bottoms and several sites of former mills.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	The river enhances the fertility of the soil when flood water deposits nutrients that replenish the wet soils. The meadows are either seasonally or permanently wet, creating wet pastures which support soft rush and some sedges.

Management Action	Code	Potential for Change (Yes/No)	Comments
			This landscape character type exists in two locations within this fringe landscape along the River Etherow and further south along the River Goyt. Management strategy is to mManage and enhance semi-natural grassland and wetland landscapes.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.9 Riverside Meadows (Derbyshire Peak Fringe)

Riverside Meadows in Dark Peak Western Fringe sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak and NCA 68: Needwood and South Derbyshire Claylands.

This is a pastoral landscape characterised by a meandering river channel in a flat alluvial floodplain. Views are often tightly framed by lines of riverside trees. Patches of wetland vegetation are a distinctive feature associated with the river channel.

Riverside Meadows occur on all the valley bottom areas of the Derbyshire Peak Fringe including the lower valley of the River Dove and those at Bradbourne and Bletch Brooks.

Key Characteristics:

- A flat alluvial river corridor;
- Meandering river channel with shingle beds and marginal vegetation;
- Seasonally waterlogged alluvial soils;
- Grazing meadows, often with patches or extensive areas of wet grassland;
- Dense waterside and scattered hedgerow trees; and
- Regular pattern of small to medium sized fields divided by hedges.

Table 23: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	• Riverside Meadows occur on all the valley bottom areas of the Derbyshire Peak Fringe including the lower valley of the River Dove and those at Bradbourne and Bletch Brooks; • Meandering river channel with shingle beds and marginal vegetation; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 24: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Extensive/Riverine
Woodland Vision	N/A
Woodland Type	Alder, Willow, Oak and Ash

Riverside Meadows	Current Landscape Character Attributes
Hedgerow Trees	Scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Hedgerow
Settlement Character	Unsettled
Traditional Materials	Limestone, gritstone and stone
Cultural Interests	-

Table 25: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Due to heavy soils and seasonal waterlogging the main land use in this character type is permanent pasture, grazed by cattle and sheep. Patches of wet grassland are a feature throughout much of this landscape. Management strategy is to ~~e~~Enhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Tree cover is extensive throughout the landscape. It is made up of densely scattered riverside trees, primarily of alder and willow, with scattered hedgerow trees of oak and ash across the floodplain. In places there are small copses of willow carr. Management strategy is to ~~M~~manage and enhance woodlands, / ~~M~~manage and enhance linear tree cover and amenity trees, and ~~C~~create new native broadleaved woodland.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by

Management Action	Code	Potential for Change (Yes/No)	Comments
			drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features.
Wetland	f	Yes	In places the rivers have cut through the harder gritstone, resulting in a much narrower alluvial floodplain defined by steeper valley sides. This is particularly noticeable in part of the Dove Valley and the lower stretch of the Bradbourne Brook. As a result, the width of the floodplain can vary from more than half a kilometre to less than 50 metres at its narrowest point. Where the floodplain retains flood water for long periods of time extensive areas of wetland and marshy riverside vegetation can sometimes be found and support specialist species including ragged robin, common marsh bedstraw and occasionally the common spotted orchid. Management strategy is to ~~M~~manage and enhance wetland landscapes, and c~~C~~reate, expand and link wetland landscapes. The priority is to restore the diversity of the river corridor landscape and manage it to provide flood water storage and help prevent flooding elsewhere along the river corridor.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Historically settlement did not develop on floodplains, due to possible flooding risks. However, in parts of the Dove Valley and Bletch Brook areas the underlying geology of shales gives rise to gently sloping land with reduced flood risk enabling the establishment of some isolated farmsteads. In addition to isolated scattered farmsteads, parts of the villages of Fenny Bentley and Mapleton have developed on the edge of the floodplain. Buildings are predominantly a limestone rubble construction with gritstone detailing and stone slate roofs. Modern development can be found in isolated locations.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	A key feature of this landscape is the flat alluvial floodplain across which the rivers meander. These rivers have developed on a number of different geological formations. In places the rivers have cut through the harder gritstone, resulting in a much narrower alluvial floodplain defined by steeper valley sides. This is

Management Action	Code	Potential for Change (Yes/No)	Comments
			particularly noticeable in part of the Dove Valley and the lower stretch of the Bradbourne Brook. As a result the width of the floodplain can vary from more than half a kilometre to less than 50 metres at its narrowest point. Management strategy is to mManage and enhance wetland landscapes, and Ccreate, expand and link wetland landscapes. The priority is to restore the diversity of the river corridor landscape and manage it to provide flood water storage and help prevent flooding elsewhere along the river corridor.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.10 Riverside Meadows (Derwent Valley)

Riverside Meadows in Dark Peak Western Fringe sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak and NCA 68: Needwood and South Derbyshire Claylands.

This is a small-scale pastoral landscape characterised by a meandering river channel in a flat alluvial floodplain. Views are often tightly framed by lines of riverside trees. Patches of wetland vegetation are a distinctive feature associated with the floodplain.

The Riverside Meadows form a narrow continuous strip of floodplain, one to two fields wide, adjacent to the rivers. This landscape stretches from just below the Ladybower reservoir on the River Derwent in the north, includes Hope on the River Noe and Bakewell on the River Wye to the west, down to Matlock in the south.

Key Characteristics:

- A flat alluvial river corridor;
- Meandering river channel with shingle beds and marginal vegetation;
- Seasonally waterlogged alluvial soils;
- Grazing meadows, often with patches of wet grassland, marsh and fen;
- Dense waterside and scattered hedgerow trees;
- Regular pattern of small to medium sized fields divided by hedges; and
- Mills with mill races, weirs and ponds.

Table 26: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	• Meandering river channel with shingle beds and marginal vegetation; • Grazing meadows, often with patches of wet grassland, marsh and fen; • LCT sits within EA flood risk zones 2 + 3. • Part of Chatsworth Park with its weir, mature trees and derelict mill sits within the floodplain; and • A key feature of this landscape is the flat alluvial floodplain across which the rivers

	Derwent and Wye meander as they flow downstream.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 27: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Riverine
Woodland Vision	N/A
Woodland Type	Alder, Willow, Oak and Ash
Hedgerow Trees	Scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Hedgerow
Settlement Character	Unsettled (occasional farmsteads)
Traditional Materials	Gritstone, limestone and stone
Cultural Interests	Historic mills, mill races, ponds and weirs

Table 28: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Because of heavy soils and seasonal waterlogging land use is permanent pasture, grazed by cattle and sheep. Management strategy is to eEnhance the diversity of agricultural grassland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of

Management Action	Code	Potential for Change (Yes/No)	Comments
			benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Although tree cover is relatively extensive throughout the landscape type, it is only a small percentage of the land cover but has a high visual impact. It is often confined to river banks which are densely lined with alder and some willow. This almost continuous belt of riverside trees creates an intimate landscape when combined with scattered hedgerow trees of oak and ash across the floodplain. In places there are small copses of willow carr and some poplars. Management strategy is to ~~A~~manage and enhance linear tree cover and amenity trees.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Safeguard, manage, restore and enhance the large areas of open, expansive moorland and the internationally important habitats and species that they support, protecting both soils and water resources; SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	Yes	Some areas on the floodplain are permanently waterlogged and some wet hollows retain flood water for long periods of time. These have created linked patches of wetland and marshy riverside vegetation associated with the meandering river although much of the land has been improved. The priority is therefore to restore the diversity of the river corridor landscape and manage the landscape to provide flood water storage.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Part of Chatsworth Park with its weir, mature trees and derelict mill sits within the floodplain. A series of historic mills, mill races, ponds and weirs are also found along the rivers. This is mainly an unsettled landscape with occasional farmsteads and some modern development. Historically, settlement would have been restricted

Management Action	Code	Potential for Change (Yes/No)	Comments
			on the floodplain due to seasonal flooding, but a series of local water-powered flour mills were built, as at Bakewell and Ashford, in the medieval period. This was supplemented during the Industrial Revolution with large textile mills at Bakewell, Calver and Bamford, although these have now been converted into apartments modern industry or other uses. Where there is settlement, it is usually farmsteads, and buildings are predominantly gritstone with stone slate roofs. In places there are limestone rubble constructed buildings with blue slate roof.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Some areas on the floodplain are permanently waterlogged and some wet hollows retain flood water for long periods of time. These have created linked patches of wetland and marshy riverside vegetation associated with the meandering river although much of the land has been improved. The priority is therefore to restore the diversity of the river corridor landscape and manage the landscape to provide flood water storage.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.11 Riverside Meadows (South West Peak)

Riverside Meadows in Dark Peak Western Fringe sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak and NCA 68: Needwood and South Derbyshire Claylands.

This is a pastoral landscape characterised by a meandering river channel in a flat alluvial floodplain. Views are often tightly framed by lines of riverside trees and adjacent wooded slopes. Patches of wetland vegetation are a distinctive feature associated with the river channel.

This landscape character type is very limited in extent, occurring only as narrow bands along the lower reaches of the River Goyt and the River Dane.

Key Characteristics:

- A flat alluvial river corridor;
- Meandering river channel with shingle beds and marginal vegetation;
- Seasonally waterlogged alluvial soils;
- Grazing meadows, often with patches of wet grassland; and
- Dense waterside and scattered hedgerow trees.

Table 29: Riverside Meadows - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Riverside Meadows	• Meandering river channel with shingle beds and marginal vegetation; • Grazing meadows, often with patches of wet grassland; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 30: Riverside Meadows - Landscape character attributes

Riverside Meadows	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Semi-improved grassland
Woodland Character	Well wooded
Woodland Vision	N/A
Woodland Type	Alder, Oak and Sycamore
Hedgerow Trees	None
Watercourse	Dense
Amenity Trees	None
Boundary Type	Hedgerows and Drystone walls
Settlement Character	Unsettled
Traditional Materials	N/A
Cultural Interests	Danebridge

Table 31: Riverside Meadows - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is a pastoral landscape with improved permanent pasture dominating. There is some semi-improved grassland. Management strategy is to Enhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. This is a well wooded landscape with dense streamside trees and small patches of wet woodland which are dominated by alder with some willow. River banks are densely lined with alder, together with some oak and sycamore. This creates an intimate landscape where views are filtered by watercourse trees and framed by the adjacent wooded slopes.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Management strategy is to ~~P~~protect historic hedgerows, and m~~M~~anage and enhance linear tree cover and amenity trees.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	Yes	Beside the river channel the floodplain is underlain by alluvial mud lying over gravels. There are hollows in the floodplain reflecting the past course of the river. The floodplain is characterised by gleyed soils, that are either continuously or seasonally waterlogged, giving rise to wet pastures which support soft rush, Yorkshire fog grass and some sedges. The priority is to protect the diversity of the river corridor landscape and manage the landscape to provide flood water storage, helping prevent flooding elsewhere along the river corridor.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is an unsettled landscape because of the wet nature of the soils and the risk of flooding.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Beside the river channel the floodplain is underlain by alluvial mud lying over gravels. There are hollows in the floodplain reflecting the past course of the river. The floodplain is characterised by gleyed soils, that are either continuously or seasonally waterlogged, giving rise to wet pastures which support soft rush, Yorkshire fog grass and some sedges. The priority is to protect the diversity of the river corridor landscape and manage the landscape to provide flood water storage, helping prevent flooding elsewhere along the river corridor.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.12 Slopes and Valleys With Woodland (Derbyshire Peak Fringe)

Riverside Meadows in Dark Peak Western Fringe sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak, NCA 53: South West Peak and NCA 68: Needwood and South Derbyshire Claylands.

An undulating, in places steeply sloping, topography with an interlocking pattern of fields and blocks of woodland both ancient and secondary. There are patches of semi-improved and acid grasslands on steeper slopes with permanent pasture in small fields.

This landscape is found in two locations. In the south it is closely associated with the steep valley sides of the River Dove and its tributary the Bradbourne and Bletch Brook. In the east the landscape forms a series of interlinked areas along the eastern fringe of the Peak District and creates a natural border between the Peak District and the more urban landscapes to the east.

Key Characteristics:

- Undulating, in places steeply sloping, topography;
- Irregular blocks of ancient and secondary woodland;
- Patches of semi-improved and acid grassland and bracken;
- Permanent pasture in small fields enclosed by hedgerows;
- Narrow winding, often sunken lanes;
- Scattered gritstone farms and loose clusters of dwellings; and
- Remains of historic coal mining, smelting and other industrial sites.

Table 32: Slopes and Valleys With Woodland - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Slopes and Valleys With Woodland	• Permanent pasture in small fields enclosed by hedgerows; • Remains of historic coal mining, smelting and other industrial sites; • Patches of semi-improved and acid grassland; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 33: Slopes and Valleys With Woodland - Landscape character attributes

Slopes and Valleys With Woodland	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Densely scattered small-medium woodlands
Woodland Vision	N/A
Woodland Type	Oak-birch with hazel, Aash and Aalder
Hedgerow Trees	Densely scattered
Watercourse	Scattered
Amenity Trees	Localised around settlement
Boundary Type	Mixed species hedgerows and Gritstone walls
Settlement Character	Hamlets and scattered farmsteads

Slopes and Valleys With Woodland	Current Landscape Character Attributes
Traditional Materials	Gritstone, Stone tile and Welsh slate
Cultural Interests	-

Table 34: Slopes and Valleys With Woodland - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. There is widespread pasture in this landscape, including some unimproved grassland. Wetter grasslands support patches of soft rush. Higher up in this landscape character type grassland tends to be acidic and can support patches of bilberry and gorse along with species such as harebell and tormentil. This is a well wooded pastoral landscape and land use is characterised by permanent pasture for sheep and cattle. As the landscape rises up to higher areas the permanent pastures tend to give way to rough grazing land. Management strategy is to ~~E~~enhance the diversity of agricultural grasslands
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Around Fenny Bentley the woodland tends to be associated with the lower slopes. Lower woodlands can have a wet association and support more ash and alder than upland woods. Ground flora also varies to favour more hydrophilic species including meadowsweet and marsh marigold. This landscape has a strongly wooded character with extensive broadleaved semi-natural woodland, including upland oak wood on the higher slopes. There are patches of wet woodland with alder in flushes. There are some 20th century plantation woodlands, usually coniferous, and there are tree groups around settlements, providing shelter to properties. To the west of Chesterfield many of the woodlands were managed to maximise fuel production for industry and were coppiced, particularly in the 16th to 18th centuries to provide white coal (kiln dried wood) and charcoal. There is significant deciduous woodland cover, made up of some ancient semi-natural woodland interlinked with more recent woodlands. These woodlands often support a good ground flora

Management Action	Code	Potential for Change (Yes/No)	Comments
			resource including bluebells and honeysuckle. Oak woodland predominates, supporting both pedunculate oak and sessile oak with other species including birch, rowan, holly and hazel. Management strategy is to ~~P~~protect and maintain drystone walls, hedgerows and historical enclosure patterns, ~~M~~manage and enhance woodlands, ~~M~~manage and enhance linear tree cover and amenity ~~trees and~~trees and create new native broadleaved woodland.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	Yes	No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Between Thorpe and Bradbourne the steep slopes have only a few scattered gritstone-built farmsteads and dwellings with stone slate roofs. The farmsteads on the slopes are probably post-medieval in date and part of a predominantly nucleated settlement pattern with the village sited on nearby better land. Limestone from the adjacent White Peak is the common building material around Parwich. West of Chesterfield and Dronfield settlement varies, consisting of scattered farmsteads mixed with villages and hamlets. Some of the scattered farmsteads are historic monastic granges in origin such as at Harewood. Management strategy is to m~~M~~anage the historical patterns of development.
Sparsely Vegetated Land	s	Yes	To the south of Bradbourne and Tissington the geology consists of interbedded limestone and shales from the Widmerpool formation giving way to the Bowland Shale group, a combination of shales, siltstone and sandstone.

Management Action	Code	Potential for Change (Yes/No)	Comments
			West of Chesterfield and Dronfield the landscape is shaped by the underlying Millstone Grit and Coal Measures giving rise to undulating steep slopes. North of Holymoorside the remains of old industries, are still evident in places, including mining remains, smelting hearths and mills.
Rivers and Lakes	r	Yes	This is a landscape with a prominent sloping topography, dissected by stream valleys. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.13 Slopes and Valleys With Woodland (Derwent Valley)

Slopes and Valleys with Woodlands in Derwent Valley sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak, NCA 53: South West Peak and NCA 68: Needwood and South Derbyshire Claylands.

A pastoral landscape with interlocking blocks of ancient and secondary woodland. On the tops of steeper slopes gritstone edges with boulder slopes below are a prominent feature and there are patches of semi-improved and acid grasslands with bracken on steeper slopes.

Wooded slopes and side valleys can be found on most of the steep gritstone slopes throughout the Derwent Valley character area. They are most common on the west facing slopes that form the eastern edge of the Derwent Valley and run in a continuous strip from the Derwent reservoirs to Matlock. They are also found below Stanton, Eyam and Abney Moors. In the latter area they include Abney and Bretton Clough.

Key Characteristics:

- A steeply sloping landform with gritstone edges characterising the tops of steeper slopes;
- Patches and extensive areas of semi-improved and acid grasslands with patches of bracken and gorse;
- Irregular blocks of ancient and secondary woodland;
- Permanent pasture in small fields enclosed by hedges and gritstone walls;
- Narrow winding, often sunken lanes; and
- Scattered gritstone farmsteads and loose clusters of dwellings.7

Table 35: Slopes and Valleys With Woodland - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Slopes and Valleys With Woodland	• This is a landscape with a prominent, sloping topography on the edge of the Eastern Moors and around the series of outlying gritstone uplands and ridges within the Derwent Valley character area; • Irregular blocks of ancient and secondary woodland; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 36: Slopes and Valleys With Woodland - Landscape character attributes

Slopes and Valleys With Woodland	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Semi-improved pasture/Acid grassland
Other Habitat Type	Woodland
Woodland Character	Densely scattered small-medium woodlands
Woodland Vision	N/A
Woodland Type	Ash and oak
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	None
Boundary Type	Hedgerows and Gritstone walls
Settlement Character	Scattered farmsteads
Traditional Materials	Gritstone and Stone slate
Cultural Interests	Gardom's and Froggatt Edges

Table 37: Slopes and Valleys With Woodland - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. There are frequent fields of semi-improved and acid grasslands, with bracken and gorse on steeper slopes. Fields of improved grassland are found on the easily accessible areas. The combination of steep, often boulder strewn, slopes and poor soils mean that much of this land has never been suitable for arable or intensive pastoral farming: woodland and rough grazing has dominated the landscape for centuries. Occasionally, due to land ownership and better ground conditions, there are a few improved fields where the intensity of use increases. Management strategy is to eEnhance the diversity of agricultural grassland
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Main tree species are ash and oak with a few blocks of coniferous woodland planted on estate land. There is often good woodland ground flora reflecting continuous woodland cover for hundreds of years. Large interlocking, in places extensive, blocks of woodland and mature boundary trees are a continuous feature throughout this landscape type. Woodland is predominantly secondary and ancient with some blocks of coniferous plantation. There is evidence that these woodlands were important for high quality timber and as coppiced woodland for white coal (kiln dried wood), used for lead smelting from the 16th to 18th centuries. The influence of the estates on the wooded slopes is extensive; much is still owned by Chatsworth, Haddon and Stanton estates. Interlocking blocks combine with the sloping landform to frame views within this landscape character type. Management strategy is to protect historic parkland landscapes, Protect historic hedgerows, manage and enhance woodlands, manage and enhance plantation woodlands, manage and enhance linear tree cover and amenity trees, manage the extent of birch scrub to maintain a diverse landscape mosaic and create new native broadleaved woodland.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	Yes	No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Settlement generally consists of scattered or isolated gritstone farms and dwellings with stone slate roofs. Some of the farmsteads have medieval origins, while others were built later; all have been rebuilt in stone from the 17th century onwards. To the south, around Upper Hackney, Darley Hillside and Northwood, there is a more dense and clustered pattern of hamlets on the slopes with wayside

Management Action	Code	Potential for Change (Yes/No)	Comments
			dwellings and scattered farms, together with 20th century housing. Management strategy is to ~~p~~Protect historic drystone walls, Manage the built environment to enhance landscape character.
Sparsely Vegetated Land	s	Yes	Sometimes, along the upper edge of the valley side, gritstone outcrops form a series of vertical cliff-like faces, known as edges. Some of these edges have been modified by quarrying; this occurs particularly between Chatsworth and Hathersage. Locally the failure of the interbedded shales has given rise to characteristic landslip landscapes, for example in Bretton Clough. On Eyam and Bradwell Edge the shales overlie limestone that contain a series of mineral veins. Many of the edges, in particular Gardom's and Froggatt Edges, have relict gritstone quarries that produced millstones and other items from the medieval period to the 19th and 20th centuries. Management strategy is to ~~M~~manage historic mineral landscapes.
Rivers and Lakes	r	Yes	Small streams and wet flushes often occur at the junction of shales and gritstone. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.14 Slopes and Valleys With Woodland (South West Peak)

Slopes and Valleys with Woodlands in Derwent Valley sits largely within NCA 51: Dark Peak, but also sits in NCA 52: White Peak, NCA 53: South West Peak and NCA 68: Needwood and South Derbyshire Claylands.

This is a pastoral landscape with a varied undulating topography of steep slopes, low ridges and incised valleys. Blocks of woodland are a characteristic feature of this landscape, together with patches of acid grassland and bracken on steeper slopes and higher ground. This is an area of traditional dispersed settlement with probable ancient origins. Views to lower ground are framed by woodlands and valley sides.

This landscape covers extensive tracts of the western slopes of the South West Peak, in the landscapes rising above Macclesfield and Leek.

Key Characteristics:

- Undulating topography with incised valleys and rounded summits;
- Patches of acid grassland on steeper slopes;
- Irregular blocks of ancient woodland along cloughs and valley sides;
- Permanent pasture in fields enclosed by hedgerows and trees;
- Narrow winding, often sunken lanes;
- Scattered farms and loose clusters of dwellings;

- Variable shaped, small to medium sized fields of various dates; and
- Coal mining remains.

Table 38: Slopes and Valleys With Woodland - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Slopes and Valleys With Woodland	• There is ornamental parkland in this landscape at Lyme Park and Swythamley Hall; • This landscape has a strongly wooded character which creates filtered views through the landscape; • Coal mining remains; • Irregular blocks of ancient woodland along cloughs and valley sides; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 39: Slopes and Valleys With Woodland - Landscape character attributes

Slopes and Valleys With Woodland	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Densely scattered small-medium woodlands
Woodland Vision	N/A
Woodland Type	Oak, Birch, Rowan, Hazel and Alder
Hedgerow Trees	Scattered
Watercourse	Scattered
Amenity Trees	Localised around settlements
Boundary Type	Scattered trees/Drystone walls
Settlement Character	Farmsteads and occasional large houses
Traditional Materials	Gritstone, stone slates
Cultural Interests	Lyme Park

Table 40: Slopes and Valleys With Woodland - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. There is unimproved grassland which can provide for a range of herbs; in places the grassland is wet, containing soft rush.

Management Action	Code	Potential for Change (Yes/No)	Comments
			This is a pastoral landscape dominated by stock rearing for sheep and cattle. Due to the often steep topography, the land is difficult to reseed so is usually managed as permanent pasture. On higher ground and on the steepest slopes there are areas of rough grazing. Management strategy is to e~~E~~nhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. The oak woodland on the slopes has both sessile and pedunculate oak, mixed with downy and silver birch, holly, rowan and hazel. The acid soil supports bracken, wavy hair-grass and locally bilberry as well as an abundance of ferns. There are patches of alder dominated wet woodland along streams and in wet hollows. This landscape has a strongly wooded character which creates filtered views through the landscape. There are woodland blocks along cloughs and slopes, which combine with scattered trees along field boundaries and watercourses and with tree groups around settlements. A lot of the woodlands have presumably existed for many hundreds of years and may have been managed by coppicing to provide wood and charcoal. Woodland blocks, belts and specimens are a notable feature of parkland landscapes such as at Lyme Park. There are large 20th century plantation woodlands, including extensive areas of coniferous woodland at Macclesfield Forest. Management strategy is to p~~P~~rotect historic hedgerows, p~~P~~rotect historic parkland landscapes, m~~M~~anage and enhance woodlands, ~~M~~manage and enhance clough woodlands, m~~M~~anage and enhance plantation woodlands, m~~M~~anage and enhance linear tree cover and amenity trees, ~~C~~create new native broadleaved woodland, and c~~C~~reate clough woods.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration

Management Action	Code	Potential for Change (Yes/No)	Comments
			offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. There are relic patches of dry heath which support heather, bilberry and gorse with some bracken on the steeper slopes.
Wetland	f	Yes	There is unimproved grassland which can provide for a range of herbs; in places the grassland is wet, containing soft rush.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Settlement is very dispersed in this landscape consisting of farmsteads and occasional large houses. In places there are loose clusters of farms and cottages, sometimes more nucleated around a road junction. This is a generally peaceful landscape with small winding lanes which are often sunken on slopes. The lanes are supplemented by a network of footpaths that link dispersed farmsteads. Management strategy is to manage the dispersed and historic settlement patterns of development.
Sparsely Vegetated Land	s	Yes	The lower ground is underlain by shale with some limestone interbedded and there are also some outcrops of Coal Measures. Important coal mining and quarrying remains are restricted to Kerridge to the south east of Bollington.
Rivers and Lakes	r	Yes	There are patches of alder dominated wet woodland along streams and in wet hollows. On flushed slopes the wet ground often has a layer of mosses, sedges, horsetails and ferns. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.15 Valley Farmlands with Villages (Derwent Valley)

Slopes and Valleys with Woodlands in Derwent Valley sits largely within NCA 51: Dark Peak and also sits in NCA 52: White Peak.

A settled pastoral landscape, often with a low lying topography associated with a network of streams and damp hollows. This is an enclosed landscape, with views filtered through scattered hedgerow and streamline trees. Gritstone-built villages with outlying farms and dwellings are set within small to medium fields that are often bound by hedgerows.

Valley Farmlands With Villages can be found throughout the Derwent Valley character area, the largest area being centred on Hope and Castleton. Other areas where this type occurs are Calver, Froggatt to Baslow, Over End, Great Longstone, Beeley, Two Dales and Harthill.

Key Characteristics:

- A low lying, gently undulating topography;
- Network of streams and localised damp hollows;
- Pastoral farmland enclosed by hedgerows and some drystone walls;
- Small to medium sized fields;
- Dense streamline and scattered hedgerow trees; and
- Gritstone villages and outlying farms with associated dwellings and field barns.

Table 41: Valley Farmlands with Villages - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Valley Farmlands with Villages	• A low lying, gently undulating topography; • Pastoral farmland enclosed by hedgerows and some drystone walls; and • Network of streams and localised damp hollows.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 42: Valley Farmlands with Villages - Landscape character attributes

Valley Farmlands with Villages	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Small woodland blocks
Woodland Vision	N/A
Woodland Type	Ash, Oak, Willow and Alder
Hedgerow Trees	Scattered
Watercourse	Dense
Amenity Trees	None
Boundary Type	Hedgerows and Gritstone walls
Settlement Character	Villages, hamlets and scattered farmsteads
Traditional Materials	Gritstone, stone and slate
Cultural Interests	-

Table 43: Valley Farmlands with Villages - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. Largely improved reseeded grassland with isolated patches of semi-improved grassland and occasional

Management Action	Code	Potential for Change (Yes/No)	Comments
			hay meadows. Seasonal waterlogging and wet flushes mean that soft rush can be found in places. Land use is determined by the heavy soils and permanent pasture dominates the landscape. There is a mixture of improved fields with a moderate to high intensity of usage for dairying and silage. Management strategy is to ~~E~~enhance the diversity of agricultural grassland and ~~e~~Enhance the diversity of arable farmland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Mixed hedges include hawthorn, blackthorn, hazel and holly as the main species. Ash and oak are the principle tree species, giving way to willow and alder in the wetter areas whilst on drier ground, bracken and birch can be found. Secondary planting of ancient woodland sites with broadleaved trees or conifers is common but the original ground flora of wood anemone and bluebells is still evident in places. The density of trees varies throughout this landscape. There is a mixture of mature hedgerow trees, mainly ash, oak and sycamore, as well as small blocks of woodland, both broadleaved and coniferous, which filter views. There are occasional isolated, discreet blocks of ancient semi-natural woodland. Management strategy is to ~~P~~protect historic hedgerows, ~~M~~manage and enhance linear tree cover and amenity trees, and c~~C~~reate new native broadleaved woodland.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. Not a dominant land cover within this LCT.
Wetland	f	Yes	Seasonal waterlogging and wet flushes mean that soft rush can be found in places.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Priority is to seek opportunities to restore biodiversity.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	The modern manufacturing and ancillary buildings associated with cement works is a prominent atypical feature within the Hope Valley. The density of settlement varies over the landscape, but is predominantly a mixture of villages, hamlets and scattered farmsteads, many of which have medieval origins. Villages, including Castleton, Hope, Hathersage, Calver, Baslow and Beeley, are scattered through the valley. With the exception of some medieval churches, buildings are normally of 17th century and more commonly later date. Occasional simple stone field barns with stone slate roofs are found in field corners. Management strategy is to manage the built environment to enhance landscape character.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	No	Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

12.2.16 Valley Pastures with Industry (Dark Peak Western Fringe)

Valley Pastures with Industry in Dark Peak Western Fringe sits within NCA 51: Dark Peak.

A small scale, settled pastoral landscape on undulating lower valley slopes. There are filtered views through scattered hedgerows and dense streamside trees. Stone built terraced housing on lower slopes is associated with historic mills. There are dispersed gritstone farmsteads as well as small clusters of farms with associated dwellings. Pastoral farmland is bounded by hedgerows and drystone walls.

This landscape character type exists as a large area running from the north to the south of the Dark Peak Western Fringe running from Bleak Hey to Stalybridge and from Arnfield to Chapel-en-le-Frith.

Key Characteristics:

- A low lying undulating valley topography, rising towards adjacent higher ground;
- Network of streams and localised damp hollows with millponds and least;
- Pastoral farmland enclosed by hedgerows and drystone walls;
- Small to medium sized fields;
- Trees are dense along watercourses and scattered along hedgerows and around settlement;
- Dispersed settlement with isolated farmsteads and small clusters of dwellings;
- Stone built terraced housing associated with historic mills; and
- Narrow winding lanes, sunken on slopes.

Table 44: Valley Pastures with Industry - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics

Valley Pastures with Industry	Pastoral farmland enclosed by hedgerows and drystone walls; There are reservoirs in this landscape, such as the Coombes Reservoir, the Bottoms Reservoir and the Dovestone Reservoir; There were once further railway branches in this landscape character type that have now closed, some now forming recreational routes such as the Sett Valley Trail; and LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 45: Valley Pastures with Industry - Landscape character attributes

Valley Pastures with Industry	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Semi-improved grassland
Woodland Character	Densely lined riverine
Woodland Vision	N/A
Woodland Type	Alder, Willow, Willow carr and Poplars
Hedgerow Trees	Scattered
Watercourse	Dense
Amenity Trees	Scattered
Boundary Type	Hedgerows
Settlement Character	Settled
Traditional Materials	Gritstone
Cultural Interests	-

Table 46: Valley Pastures with Industry – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Broadly in accordance with SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character. This is a pastoral landscape of cattle and sheep grazing. In some areas, agriculture is more intensive with dairying and stock rearing. An agricultural landscape with limited biodiversity value as much of the land is improved, although there are occasional, isolated patches of unimproved grassland which enhances biodiversity. Management strategy is to mAnage and enhance the diversity of agricultural grassland.

Management Action	Code	Potential for Change (Yes/No)	Comments
Woodland and Forest	w	Yes	Broadly in accordance with SEO 4: Increase the extent of native woodland, scrub and trees, and manage existing tree cover to provide a range of benefits including helping to assimilate new infrastructure, restore lost habitats and landscape features, store carbon, reduce run-off and provide fuel, shelter and recreational opportunities. Mixed species hedgerows provide an important habitat linking woodland and other habitats. Woodland exists as shelterbelts and often densely along streams and tributaries giving the impression of a well wooded landscape even though much farmland exists. There are scattered ancient woodlands throughout the character type such as around the western side of Shire Hill; these further contribute to the wooded nature of the landscape. Most woodlands are broadleaved and contain species such as oak, ash and sycamore. There is some coniferous plantation woodland such as around Dovestones Reservoir in the nNorth of the area. Management strategy is to oProtect and maintain drystone walls, hedgerows and historical enclosure patterns, ~~M~~manage and enhance woodlands. and c~~C~~reate new native broadleaved woodland.
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 2: Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows, and their strong field patterns defined by drystone walls, to improve ecological networks and strengthen landscape character; and SEO 3: Improve opportunities for the enjoyment and understanding of the National Park landscape, and to experience the sense of escapism and inspiration offered by the wide, open moorlands, while also conserving the qualities of the landscape and its valuable historic, geological and wildlife features. In wetter fields there are rushy pastures which provide diversity as do the heath species such as heather and bilberry that are often located along verges. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Urban	u	No	This is a settled landscape with distinctive gritstone mill settlements and dispersed outlying settlement. Beyond the urban centres, such as Glossop, New Mills and Whaley Bridge, there are three distinctive forms of settlement in the landscape: dispersed farmsteads, farmsteads clustered with other dwellings in hamlets, and terraces associated with historic mills. There are some industrial mills surviving in the valley bottoms, as for example around Birch Vale, Chinley and Uppermill. Areas such as Whaley Bridge and New Mills were also historically important for coal mining and the coal extracted was very important in the 19th and early 20th centuries to provide fuel for local manufacturing and industry. Management strategy is to ~~P~~protect and maintain features associated with the historic industrial character and manage the historical patterns of development.
Sparsely Vegetated Land	s	No	Areas such as Whaley Bridge and New Mills were historically important for coal mining and the coal extracted was very important in the 19th and early 20th centuries to provide fuel for local manufacturing and industry. Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	There are reservoirs in this landscape, such as the Coombes Reservoir, the Bottoms Reservoir and the Dovestone Reservoir. Management strategy is to m~~M~~anage and enhance landscape around reservoirs.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

13.0 NCA 52: White Peak

13.1 Key Characteristics

- Elevated, gently undulating limestone plateau with occasional knolls and crags, dissected by steeply cut dales and gorges with rock outcrops, screes and caves;
- Clear rivers, streams and springs in some dales; others are dry or run water only in winter;
- Steep dale sides with a mosaic of flower-rich limestone grassland, ash woodland and wildlife-rich scrub;

- Improved grassland for dairy and livestock farming dominates the plateau, punctuated by occasional dew ponds, narrow shelterbelts of broadleaved trees and small patches of rough grassland, meadow and heath;
- Grassland enclosed by limestone walls, with small narrow strip fields often of medieval origin around villages, and larger rectangular fields away from the villages;
- Nucleated villages and small towns connected by crest and valley roads;
- A mix of limestone and gritstone used as building materials and stone and Welsh slate for roofs. Widespread features of special archaeological and historical interest including Neolithic and bronze-age ritual monuments; and
- Many visible reminders of early industry, including historic limestone and lead workings, lime kilns and dramatic water mills from the 18th-century textile industry.

13.2 Landscape Character Types within NCA 52: White Peak within DCC

13.2.1 Village Farmland on Shale Ridges (Derbyshire Peak Fringe)

Village Farmland on Shale Ridges in Derbyshire Peak Fringe sits within NCA 52: White Peak.
A small scale, settled pastoral landscape associated with gently rolling shale uplands, where views are typically filtered through scattered mature trees in field boundaries.
This landscape occurs on five discrete uplands in the south of the Derbyshire Peak Fringe, around Brassington and Bradbourne, at Kniveton, near Parwich, at Tissington and Thorpe, and to the west of the Dove at Blore in Staffordshire.

Key Characteristics:

- Rolling plateau summits;
- Pastoral farmland;
- Small to medium sized fields and strip fields, enclosed by hedgerows;
- Filtered views through scattered mature hedgerow trees;
- Clustered pattern of villages and scattered farms; and
- Buildings are a mixture of limestone and gritstone.

Table 47: Village Farmland on Shale Ridges – Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Village Farmland on Shale Ridges	• A small area of this character type, north of the settlement of Thorpe, is open access land; • The former Tissington railway line is now an important recreational route for walking and cycling; and • Filtered views through scattered mature hedgerow trees.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 48: Village Farmland on Shale Ridges – Landscape character attributes

Village Farmland on Shale Ridges	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Densely scattered

Village Farmland on Shale Ridges	Current Landscape Character Attributes
Woodland Vision	N/A
Woodland Type	Ash, Oak and Alder
Hedgerow Trees	Densely scattered
Watercourse	n/a
Amenity Trees	Localised around settlement & parkland
Boundary Type	Hedgerow trees
Settlement Character	Villages with scattered farms
Traditional Materials	Gritstone, Limestone and Stone slate
Cultural Interests	Tissington Hall

Table 49: Village Farmland on Shale Ridges – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities; and SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Permanent pasture dominates this landscape with a mixture of improved fields and occasional semi-improved fields. This is a largely pastoral landscape that has been improved and farmed for many years. The habitat network is relict with isolated patches of semi-improved grassland and occasional hay meadows. Hay meadows provide an important habitat for a range of grasses and flower species including oxeye daisy and knapweed. Management strategy is to eEnhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. This is an enclosed landscape where views are often filtered through densely scattered hedgerow trees in field boundaries. Tree species include ash and oak with some alder on wetter areas. There is an avenue of

Management Action	Code	Potential for Change (Yes/No)	Comments
			lime trees along the main road to Tissington village, possibly associated with the estate influence on the local landscape here. Management strategy is to ~~P~~protect historic parkland landscapes, p~~P~~rotect and maintain drystone walls, hedgerows and historical enclosure patterns, manage and enhance woodlands and manage and enhance linear tree cover and amenity trees.
Heathland and Shrub	h	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not in accordance with SEO 3: Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. Not a dominant land cover within this LCT.
Urban	u	No	Settlement consists of a clustered pattern of villages within a scattering of outlying farmsteads. Although buildings may have a medieval origin all of today's buildings, except some churches, date from the 17th century onwards and are built in stone. Buildings are simple and robust in design, being a mixture of either gritstone or limestone, with stone slate or Staffordshire blue tiled roofs. There is a unity to the buildings in the village here, giving it the feel of a quintessential English village because in its present form design has been controlled by the estate. Management strategy is to p~~P~~rotect and maintain historic field barns, and m~~M~~anage the historical patterns of development.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	No	Not in accordance with SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.0 NCA 53: South West Peak

14.1 Key Characteristics

- An upland landscape characterised by Carboniferous age Millstone Grit with isolated basins of Coal Measures, deeply dissected by streams and rivers, resulting in a ridge-and-valley landscape of distinctive pattern and character;
- Isolated gritstone ridges and tors provide a dramatic contrast to the upland landscape, such as at Ramshaw Rocks, The Roaches and Windgather Rocks;
- Moorland core with a mosaic of landform, vegetation and wooded cloughs;
- Enclosed farmed landscape with a pastoral character created by semi improved grassland, hay meadows, rushy pastures which are also marshy with springs and flushes, more productive farmland and small woodlands;
- Rivers Bollin, Churnet, Dane, Dean, Dove, Hamps, Goyt and Manifold, all with their sources in the upland core and some feeding reservoirs as they flow downstream;
- Extensive livestock farming (sheep and beef) and grouse shooting on the moorlands with some dairy farming in the valleys;
- Intricate and distinctive field boundary patterns often with historic associations; gritstone walls at higher elevations and hedgerows at lower elevations;
- Heritage assets from prehistory to the present, with features particularly from the medieval period and later;
- Robust architectural style built predominantly of local stone with stone slate or Staffordshire blue clay tiled roofs, reflecting local geology and history;
- Predominantly dispersed settlement across the NCA;
- Moorland area to the north of Leek used for military training; Ministry of Defence management and restricted access add to the isolated character;
- Tourism industry and outdoor recreation centred on honeypot sites including Tittesworth and Goyt Valley reservoirs, The Roaches, Ramshaw Rocks and the National Trust's Lyme Park;
- Dramatic series of gritstone edges and tors exposed by a combination of glacial and fluvial action provide distinctive landscape features and are a major focus for rock climbing;
- Remote moorlands criss-crossed by historic pack-horse routes;
- Remains of former stone quarries and coal mining activities, particularly around Flash and Goyt's Moss; and
- Long, uninterrupted views from margins to upland areas and vice versa, with contained and intimate views around the foothills and within the valleys. Views into Manchester, Wales, Shropshire, Staffordshire and over the Cheshire Plain are possible from the upland core, tors and ridges. Landscape Character Types within NCA 51: Dark Peak within Peak District National Park.

14.2 Landscape Character Types within NCA 53: South West Peak within Peak District National Park

14.2.1 Densely Enclosed Gritstone Uplands (South West Peak)

Densely Enclosed Gritstone Uplands in South West Peak sits largely within NCA 53: South West Peak, but also within NCA 51: Dark Peak.

An undulating upland landscape with occasional rocky summits. There are a significant number of dispersed small gritstone farmsteads and cottages in this remote landscape, some associated with the former coal mining industry. This is a landscape of rough permanent pasture enclosed by gritstone walls. There are patches of heather moorland and areas of pasture reverting to moorland. This landscape character type occurs in one discrete area in the area around Flash and Goldsitch Moss.

Key Characteristics:

- Undulating upland landscape with occasional rocky summits;
- Dispersed settlement of small gritstone farmsteads and cottages, some associated with former coal mining industry;
- Thin soils over gritstone bedrock;
- Permanent pasture enclosed by gritstone walls;
- Patches of heather moorland and areas of pasture reverting to moorland;
- Open views over surrounding landscape and to adjacent hills; and
- Coal mining remains.

Table 50: Densely Enclosed Gritstone Uplands – Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Densely Enclosed Gritstone Uplands	• Permanent pasture enclosed by gritstone walls; • Patches of heather moorland and areas of pasture reverting to moorland; and • Largely of LCT contained within CroW Access land.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 51: Densely Enclosed Gritstone Uplands – Landscape character attributes

Densely Enclosed Gritstone Uplands	Current Landscape Character Attributes
Land Use	Acid grassland
Main Habitat Type	Heathland
Other Habitat Type	Pasture
Woodland Character	Occasional groups and small plantations
Woodland Vision	N/A
Woodland Type	N/A
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	Localised around settlement
Boundary Type	Gritstone walls
Settlement Character	Small farmsteads and cottages
Traditional Materials	Gritstone, slate and Staffordshire blue clay
Cultural Interests	-

Table 52: Densely Enclosed Gritstone Uplands – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a pastoral farming landscape which supports stock rearing. There are some areas of rough grazing associated with heathland. There are areas of acid grassland, the most diverse of which are dominated by sheep's fescue and common bent usually with a mixture of other species. Other areas of grassland are dominated by wavy hair-grass and are often associated with patches of heather and bilberry. Management strategy is to e~~E~~nhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	There is little tree cover in this landscape. Trees are limited to occasional trees grouped around farmsteads. There are occasional small blocks of 20th century coniferous plantation woodland. Management strategy is to m~~M~~anage and enhance plantation woodlands.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak.

Management Action	Code	Potential for Change (Yes/No)	Comments
			There are some areas of rough grazing associated with heathland. There are extensive patches of heathland with heather, bilberry, gorse and bracken. Remnants of heathland vegetation are also found in the roadside verges. Other areas of grassland are dominated by wavy hair-grass and are often associated with patches of heather and bilberry. Management strategy is to ~~E~~enhance and restore moorland landscapes, and e~~E~~ncourage diverse approaches to moorland management.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Considering the remoteness of this landscape and poor soils, this is a remarkably settled landscape with frequent dispersed small farmsteads and cottages. Buildings are constructed from local gritstone and are roofed with stone slate or Staffordshire blue clay tiles. The most likely explanation for the high density of dwellings in such a remote landscape is that a significant proportion were built to provide housing for people working in the local coal industry, which included small-scale local operations and the somewhat larger scale mines at Danebower, Orchard Common and Goldsitch Moss. The additional income associated with the mining allowed the land to support a larger population than would otherwise be possible. Management strategy is to manage the dispersed and historic settlement patterns of development, and m~~M~~anage intrusive features on farmland and farmsteads.
Sparsely Vegetated Land	s	Yes	There are extensive relict coal mines in a band from Orchard Farm southwards to Blue Hills, with a particularly important concentration at Goldsitch Moss. Management strategy is to manage historic mineral landscapes.
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.2 Enclosed Gritstone Uplands (Dark Peak Western Fringe)

Enclosed Gritstone Uplands in Dark Peak Western Fringe sits within NCA 53: South West Peak. An enclosed upland landscape associated with high, gently undulating upland tops. This is a landscape of isolated stone farmsteads, straight roads and regular fields enclosed by drystone walls. Patches of remnant moorland vegetation are a feature in places within this landscape character type.

This landscape occurs on the edge of the moorland core, on the western margin of the Peak District, on the uplands centred on New Mills and to the west of Hayfield.

Key Characteristics:

- High rolling upland with some steeper slopes;
- Thin soils over gritstone bedrock with localised pockets of peat;
- Remnant patches of rough land with bracken and gorse, some heather and bilberry;
- Permanent pasture and rough grazing enclosed by gritstone walls;
- Regular pattern of medium to large fields;
- Straight roads with wide verges of grass and, in some places, heather;
- Scattered gritstone farmsteads with stone slate roofs and some relict quarry and coal mining sites; and
- Trees grouped around farmsteads for shelter.

Table 53: Enclosed Gritstone Uplands – Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Gritstone Uplands	• There is a network of footpaths throughout this landscape including the Pennine Bridleway and some small areas of access land; • Permanent pasture and rough grazing enclosed by gritstone walls; and • High rolling upland with some steeper slopes.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 54: Enclosed Gritstone Uplands – Landscape character attributes

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Improved pasture
Other Habitat Type	Moorland
Woodland Character	Treeless
Woodland Vision	N/A
Woodland Type	Oak, ash and sycamore
Hedgerow Trees	Occasional
Watercourse	N/A
Amenity Trees	Localised around settlement

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Boundary Type	Mixed species hedgerows and drystone walls
Settlement Character	Isolated farmsteads
Traditional Materials	Gritstone, stone slate
Cultural Interests	-

Table 55: Enclosed Gritstone Uplands – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a landscape of mostly improved permanent pasture with sheep and cattle grazing and some rough grazing. There are some reseeded grass leys and very occasional arable fields. However, the soils are mostly nutrient poor. Acid grassland exists where the soils have not been improved and some fields are dominated by rushes or are reverting to moorland habitats providing ecological interest. Management strategy is to mManage and enhance the diversity of agricultural grassland.
Woodland and Forest	w	No	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. The sheep grazing, poor soils and exposure restrict tree growth so this is essentially a treeless landscape. However, there are occasional tree groups of mainly broadleaved species such as oak, ash and sycamore.

Management Action	Code	Potential for Change (Yes/No)	Comments
			Tree groups are planted adjacent to some farmsteads to create shelter around properties. There are some shelterbelts and occasional blocks of 19th or 20th century coniferous plantation woodland within this type.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Heath-associated species, such as heather, bilberry and gorse, are a common feature in places. Management strategy is to mManage and enhance areas of heath/moor, and cCreate, extend and link areas of heath/moor.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Settlement tends to consist of isolated gritstone farmsteads with stone slate roofs often dating from the time that much of this landscape was enclosed from the 18th century onwards. Settlements often use the natural land form for weather protection. Higher up, towards where the enclosure gives way to the open moorland, the landscape is largely unsettled. Management strategy is to pProtect and maintain features associated with the historic industrial character, and dDevelop small-scale renewable energy for local needs.

Management Action	Code	Potential for Change (Yes/No)	Comments
Sparsely Vegetated Land	s	No	Historically, there was quarrying and mining associated with this landscape. At Chinley Churn there are particularly extensive relict quarries where surface quarrying and underground stone extraction was carried out. Historically, the landscape would also have supported coal mining as around Whaley Moor, Aspenshaw and Ludworth Intakes. There are extensive mining remains at Ollersett Moor dating from the early 18th to late 19th century.
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.3 Enclosed Gritstone Uplands (Derbyshire Peak Fringe)

Enclosed Gritstone Uplands in Derbyshire Peak Fringe sits within NCA 53: South West Peak.

An enclosed landscape on former moorland, associated with a high, gently undulating ridge summit. This is a landscape of isolated stone farmsteads, straight roads and regular fields enclosed by drystone walls.

This landscape occurs on the edge of the Eastern Moors character area in one location at Lidgate near Holmesfield.

Key Characteristics:

- Rolling uplands;
- Thin soils over gritstone bedrock;
- Remnant patches of rough land;
- Permanent pasture and rough grazing enclosed by gritstone walls;
- Regular pattern of medium to large fields;
- Straight roads with wide verges of grass; and
- Isolated sandstone farmsteads and cottages with stone slate roofs.

Table 56: Enclosed Gritstone Uplands – Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Gritstone Uplands	• Permanent pasture and rough grazing enclosed by gritstone walls; • Rolling uplands; and • Straight roads with wide verges of grass.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 57: Enclosed Gritstone Uplands – Landscape character attributes

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Improved pasture
Other Habitat Type	Unimproved pasture
Woodland Character	Treeless
Woodland Vision	N/A
Woodland Type	Oak, Ash and Sycamore
Hedgerow Trees	None
Watercourse	N/A
Amenity Trees	Localised around settlement
Boundary Type	Drystone walls
Settlement Character	Hamlet
Traditional Materials	Gritstone and stone
Cultural Interests	-

Table 58: Enclosed Gritstone Uplands – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. There is little semi-natural vegetation; fields are mainly improved grasses, but there is some bracken and gorse on the edge of the area providing local variation. This is a pastoral landscape of improved or semi-improved permanent pasture with sheep and cattle grazing and some rough grazing. There are some reseeded grass leys, however, soils are mostly of poor quality and some fields are dominated by rushes. Although not a priority management strategy, objectives to eEnhance the diversity of agricultural grasslands may be considered in some locations.

Management Action	Code	Potential for Change (Yes/No)	Comments
Woodland and Forest	w	No	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. The sheep grazing, poor soils and exposure restrict tree growth making this ~~an~~ essentially a treeless landscape. There are some trees associated with settlement, these are mainly scattered oak, ash and sycamore.
Heathland and Shrub	h	No	Broadly in accordance with SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Verges occasionally support relict heath vegetation including bilberry and heather. Not a dominant land cover within this LCT.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Not a dominant land cover within this LCT.
Urban	u	No	Settlement is restricted to the hamlet of Lidgate and wayside farmsteads and cottages which are dated from the time the landscape was enclosed. Buildings are gritstone with stone tiled roofs. There has been some modern infill development. Management strategy is to p~~P~~rotect and maintain drystone walls, hedgerows and historical enclosure patterns.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.4 Enclosed Gritstone Uplands (Derwent Valley)

Enclosed Gritstone Uplands in Derwent Valley sits within NCA 53: South West Peak.
An enclosed upland landscape associated with high ridges, shelves and former moortops. This is a landscape of isolated stone farmsteads with regular and irregular fields enclosed by drystone walls with patches of acid grassland. There are scattered mature boundary trees and groups of trees. Enclosed Gritstone Uplands can be found in four discrete blocks on hilltops and are, but not exclusively, associated with areas of Open Moors. They can be found above Stanton, Harthill Moor, around Bretton and on Calton Pastures.

Key Characteristics:

- Rolling uplands;
- Thin soils over gritstone bedrock;
- Scattered mature trees in field boundaries and some tree groups;
- Remnant patches of rough land with bracken;
- A pattern of small to medium sized fields of regular and irregular shapes;
- Straight roads with wide verges;
- Isolated gritstone farmsteads with stone slate roofs with tree groups for shelter; and
- Important historic monuments.

Table 59: Enclosed Gritstone Uplands – Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Gritstone Uplands	This is a landscape with a high, rolling topography associated with gritstone ridges, shelves and former moortops; There are numerous public footpaths and bridleways linking farmsteads, and historic trackways giving access to local quarries and fields; and Important historic monuments.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 60: Enclosed Gritstone Uplands – Landscape character attributes

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Other Habitat Type	N/A
Woodland Character	Treeless/Occasional tree groups
Woodland Vision	N/A
Woodland Type	Oak, Ash and Sycamore
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	Localised around settlements
Boundary Type	Gritstone walls
Settlement Character	Scattered farmsteads
Traditional Materials	Gritstone and stone
Cultural Interests	Calton Pastures

Table 61: Enclosed Gritstone Uplands – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a landscape of mainly permanent pasture grazed by sheep. Land use is mainly permanent pasture with a few isolated fields of ley grassland. There are isolated patches of acid grassland on the steeper areas and heather is found in old quarries, whilst bracken is found within roadside verges. Management strategy is to enhance the diversity of agricultural grassland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak.

Management Action	Code	Potential for Change (Yes/No)	Comments
			There is a mixture of trees including oak, ash and sycamore with thorn scrub. Sheep grazing, poor soils and exposure restrict tree growth making this essentially a treeless landscape. However, there are occasional tree groups, generally adjacent to farmsteads and planted to create shelter around properties using broadleaved species such as ash and sycamore. There are thinly scattered mature trees and scrub within some field boundaries. At Calton there are large blocks of woodland within and around the edge of the area, primarily coniferous, whilst around old quarries on Harthill Moor secondary birch woodland is developing. Although not a priority management strategy, objectives: to manage the extent of birch scrub to maintain a diverse landscape mosaic may be considered in some locations.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. There are isolated patches of acid grassland on the steeper areas and heather is found in old quarries, whilst bracken is found within roadside verges. Although not a priority management strategy, opportunities : to create, extend and link areas of heath/moor may be considered in some locations.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Settlement is confined to a few scattered isolated farmsteads. While Bretton has existed since the medieval period the buildings have been rebuilt in stone in post-medieval times; other farmsteads are likely to be post-medieval in date. Buildings are gritstone with stone slate roofs.

Management Action	Code	Potential for Change (Yes/No)	Comments
Sparsely Vegetated Land	s	Yes	There are numerous public footpaths and bridleways linking farmsteads, and historic trackways giving access to local quarries and fields. Management strategy is to manage historic mineral landscapes.
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.5 Enclosed Gritstone Uplands (Eastern Moors)

Enclosed Gritstone Uplands in Eastern Moors sits within NCA 53: South West Peak.

An enclosed upland pasture landscape associated with high, gently undulating moortops, sloping in places to higher ground. This is a landscape of isolated stone farmsteads, regular fields with patches of acid grassland enclosed by drystone walls, and straight roads. Boulder fields and rocky outcrops are a feature in places, often associated with patches of remnant moorland vegetation. Plantation woodland is also a localised feature.

To the north this landscape occurs in discrete blocks on a similar elevation or on lower land running down from the open moorland. However, it is the dominant character type in the lower lying southern area of the Eastern Moors.

Key Characteristics:

- Rolling uplands with some steeper slopes;
- Thin mineral soils over gritstone bedrock;
- Remnant patches of rough land with bracken and heather;
- Permanent pasture and rough grazing enclosed by gritstone walls;
- Regular pattern of medium to large fields;
- Straight roads with wide verges of grass and, in some places, heather;
- Isolated gritstone farmsteads with stone slate roofs with tree groups for shelter; and
- Extensive conifer plantations around Matlock Moo.

Table 62: Enclosed Gritstone Uplands – Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Gritstone Uplands	• This landscape is associated with broad, gently undulating gritstone uplands in places rising steeply to higher open moorlands; • Permanent pasture and rough grazing enclosed by gritstone walls; and

	• Extensive conifer plantations around Matlock Moo.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 63: Enclosed Gritstone Uplands – Landscape character attributes

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Woodland
Woodland Character	Plantation woodlands
Woodland Vision	N/A
Woodland Type	Ash, Oak and Sycamore
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	Localised around settlement
Boundary Type	Drystone walls
Settlement Character	Farmsteads and hamlets
Traditional Materials	Gritstone and stone
Cultural Interests	-

Table 64: Enclosed Gritstone Uplands – Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a landscape of mostly improved or semi-improved permanent pasture with sheep and cattle grazing and some rough grazing except in the south, on Matlock Moor where plantation woodland is the dominant land use. Soils are mostly impoverished and some fields are dominated by rushes or are reverting to moorland habitats. Management strategy is to manage and enhance the diversity of agricultural grassland.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Tree growth tends to be limited to, although in places extensive plantation woodlands occur around Matlock Moor (Farley Moor, Upper Moor, Bottom Moor and Flash Lane), to the south. Elsewhere grazing, poor soils and exposure restrict natural tree generation. However, there are occasional tree groups, generally adjacent to farmsteads and planted to create shelter around properties, using broadleaved species such as oak, ash and sycamore. Plantation woodlands are a strong characteristic in some areas, such as at Stand Wood above Chatsworth. Although not a priority management strategy: to manage and enhance woodlands may be considered in some locations.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	No	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Heath-associated species such as heather, bilberry and gorse are a feature in many places. Although not a priority management strategy, ~~:~~ to create, extend and link areas of heath may be considered in some locations.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	Yes	Settlement is dispersed within this landscape. Gritstone farmsteads with stone slate roofs, often dating from the time that the landscape was enclosed from the 18th and 19th centuries, are the most frequent settlement type. Higher up, towards the open moorland, the landscape is often unsettled. In some areas, such as Fallinge, Burley and Farley, the hamlets have medieval origins but the buildings are later replacements in stone dating from the 17th century onwards. Management strategy is to protect historic drystone walls, protect and maintain cultural heritage resources, manage the sparse and historic pattern of development, and develop small-scale renewable energy for local needs.
Sparsely Vegetated Land	s	No	Historically, this landscape has supported coal mining and small scale quarrying in some areas. Baslow Colliery, near Robin Hood, was the largest mine and may have been worked from medieval times, ~~,~~ but was at its height during the 18th and early 19th centuries. The coal is likely to have been used for local industrial and domestic markets. Although not a priority management strategy, ~~: to~~ the ~~consider the~~ reopening of small-scale quarries for local stone supply may be considered in some locations.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.6 Enclosed Gritstone Uplands (South West Peak)

Enclosed Gritstone Uplands in South West Peak sits within NCA 53: South West Peak.

An open landscape associated with broad, rolling hill summits. This is a landscape of isolated stone farmsteads, straight roads, regular fields of variable sizes enclosed by drystone walls and patches of remnant dry heath.

This landscape character type occurs on the lower hill summits across the South West Peak around the fringes of the highest upland core, including Sponds Hill, Gun Hill, Butterton Moor and the southern part of Morridge.

Key Characteristics:

- High rolling hill summits;
- Thin soils over gritstone bedrock;
- Permanent pasture enclosed by gritstone walls;
- Remnant patches of rough land with bracken and gorse and some heather;
- Regular patterns of different sized fields;
- Straight roads with wide grass verges; and
- Isolated gritstone farmsteads with stone slate roofs.

Table 65: Enclosed Gritstone Uplands - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Enclosed Gritstone Uplands	• This is a landscape of relatively high rolling hill summits which in places form rounded ridge summits; • There are some areas of access land associated with heathland; and • Permanent pasture enclosed by gritstone walls.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 66: Enclosed Gritstone Uplands - Landscape character attributes

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture

Enclosed Gritstone Uplands	Current Landscape Character Attributes
Other Habitat Type	Heathland
Woodland Character	Occasional small plantation
Woodland Vision	N/A
Woodland Type	Mature ash and sycamore
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	Localised around settlements
Boundary Type	Gritstone walls
Settlement Character	Farmsteads and Cottages
Traditional Materials	Gritstone, stone, Staffordshire blue clay tiles
Cultural Interests	-

Table 67: Enclosed Gritstone Uplands - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a pastoral farming landscape which supports stock rearing and some dairying. There are some areas of rough grazing associated with the areas of dry heath. There are areas of acid grassland, the most diverse of which are dominated by sheep's fescue and common bent usually with a mixture of other species. Other areas of grassland are dominated by wavy hair-grass and are often associated with patches of heather and bilberry. Management strategy is to enhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed

Management Action	Code	Potential for Change (Yes/No)	Comments
			settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. There is little tree cover in this landscape. Trees are mostly limited to tree groups of mature ash and sycamore that shelter farmsteads. There are occasional small blocks of post-war plantation woodland. Although not a priority management strategy, consideration should be given: to the creation of~~e~~ clough woods, to p~~P~~rotect historic parkland landscapes, and p~~P~~rotect historic hedgerows may be considered in some locations.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. There are occasional patches of heathland with heather, bilberry, gorse and bracken and remnants of heathland vegetation in the roadside verges. There are areas of acid grassland, the most diverse of which are dominated by sheep's fescue and common bent usually with a mixture of other species. Other areas of grassland are dominated by wavy hair-grass and are often associated with patches of heather and bilberry. Much of this landscape was once open moorland but was enclosed, probably ~~mostly~~ during the 18th and 19th centuries. Drystone walls and occasional hedgerows define regular patterns of fields. Management strategy is to protect historic drystone walls, enhance and restore moorland landscapes, encourage diverse approaches to moorland management and create, extend and link areas of heath/moor.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	Yes	This is a sparsely settled landscape with only occasional isolated farmsteads. Farmsteads are

Management Action	Code	Potential for Change (Yes/No)	Comments
			constructed from local gritstone and are roofed with stone slate or Staffordshire blue clay tiles. Most farmsteads were presumably constructed during the 18th and 19th centuries when the landscape was enclosed. Although not a priority management strategy, objectives should: ~~to~~ manage the dispersed and historic settlement patterns of development and manage intrusive features on farmland and farmsteads may be considered in some locations.
Sparsely Vegetated Land	s	Yes	Important coal mining remains are restricted to Bakestonedale Moor and Sponds Moor to the north east of Bollington. Although not a priority management strategy, ~~to~~consider ~~mana~~management of~~ge~~ historic mineral landscapes ~~may be considered~~ in some locations.
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.7 Moorland Hills And Ridges (South West Peak)

Moorland Hills And Ridges in South West Peak sits within NCA 53: South West Peak.

This is a landscape of steep hill slopes and high ridges with heathland vegetation and prominent outcrops of steeply dipping gritstone. This wild, sparsely settled landscape has panoramic views to surrounding hills and over the lowlands to the west. Drystone walls define large enclosures.

This landscape character type occurs on high hills and slopes along the central spine of the South West Peak. It includes distinctive hill and ridge summits, the steep slopes of the Roaches, Ramshaw Rocks, Shuttlingsloe, Morridge and the steep slopes above the Goyt Valley.

Key Characteristics:

- Steep hills, slopes and ridges with narrow summits;
- Prominent outcrops of steeply dipping gritstone;
- Thin impoverished soils over gritstone bedrock;
- Rough grassland and dry heath extensively grazed by sheep;
- Panoramic views to surrounding hills and over the lowlands to the west; and
- Occasional historic stone quarries and coal mining remains.

Table 68: Moorland Hills And Ridges - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics

Moorland Hills And Ridges	• There are popular climbing routes on the steep rocky outcrops at the Roaches, Hen Cloud and Ramshaw Rocks; • Rough grassland and dry heath extensively grazed by sheep; and • Panoramic views to surrounding hills and over the lowlands to the west.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 69: Moorland Hills And Ridges - Landscape character attributes

Moorland Hills And Ridges	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Heathland
Woodland Character	Treeless
Woodland Vision	N/A
Woodland Type	Treeless
Hedgerow Trees	N/A
Watercourse	N/A
Amenity Trees	Treeless
Boundary Type	Thorn hedgerows/Gritstone walls
Settlement Character	Occasional Farmstead
Traditional Materials	Gritstone, stone, Staffordshire blue clay tiles
Cultural Interests	Roaches, Hen Cloud and Ramshaw Rocks

Table 70: Moorland Hills And Ridges - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a pastoral farming landscape with patches of rough grazing on heathland. Stock rearing of sheep and cattle predominates. Areas of smaller fields often

Management Action	Code	Potential for Change (Yes/No)	Comments
			have improved permanent grassland although some fields are reverting to heathland habitats.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. There is very little tree cover in this exposed landscape. Thorn bushes mark the course of some former hedgerows and there are occasional patches of willow scrub. Management strategy is to manage and enhance plantation woodlands. Although not a priority management strategy, ~~: to~~ creation of ~~e~~ clough woods may be considered in some locations.
Heathland and Shrub	h	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak.

Management Action	Code	Potential for Change (Yes/No)	Comments
			West Peak and internationally important habitats and species that they support, protecting both soil and water resources. The dominant vegetation is dwarf shrub heath with heather and bilberry. Management strategy is to enhance and restore moorland landscapes, encourage diverse approaches to moorland management and create, extend and link areas of heath / moor.
Wetland	f	No	Not a dominant land cover within this LCT.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	This is a sparsely settled landscape with only occasional isolated farmsteads set into the hill slopes for shelter. Farmsteads are constructed from local gritstone and are roofed with stone slates or Staffordshire blue clay tiles. Presumably most if not all were constructed in the 18th and 19th centuries when the landscape was enclosed.
Sparsely Vegetated Land	s	Yes	There are several sites of historic stone and roof slate quarries, while important examples of former coal mines are restricted to the upper Dane Valley, parts of the Goyt Valley and Burbage. Although not a priority management strategy,~~:~~ ~~to~~ managment of~~e~~ historic mineral landscapes may be considered in some locations.
Rivers and Lakes	r	No	Not in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Not a dominant land cover within this LCT.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.8 Upland Pastures (South West Peak)

Upland Pastures in South West Peak sits within NCA 53: South West Peak, but also sits in NCA 52: White Peak.

This is an upland pastoral landscape with a traditional dispersed pattern of gritstone farmsteads of probable ancient origins. There are also localised village settlements. Permanent pasture is enclosed by drystone walls and some hedgerows. Trees are scattered along incised cloughs and around dispersed gritstone farmsteads. This is a very peaceful rural landscape with open views to surrounding higher ground.

This landscape character type occurs on the higher ground towards the southern part of the South West Peak, around Mixon, Warslow, Butterton, Longnor, Hollinsclough and Grindon.

Key Characteristics:

- Undulating slopes with gentler summits and incised cloughs;
- Dispersed gritstone farmsteads and loose clusters of dwellings, with stone slates or clay tile roofs;
- Permanent pasture enclosed by gritstone walls and some thorn hedgerows;
- Scattered trees along cloughs and around farmsteads;
- Fields of rushy pasture and occasional patches of bracken, bilberry and heather;
- Narrow winding lanes which are sunken on slopes; and
- Various shaped small to medium fields of various dates.

Table 71: Upland Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Upland Pastures	• Fields of rushy pasture and occasional patches of bracken, bilberry and heather; • Undulating slopes with gentler summits and incised cloughs; • This is a settled landscape with dispersed farmsteads, sometimes in loose clusters, and a few villages; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 72: Upland Pastures - Landscape character attributes

Upland Pastures	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	Heathland
Woodland Character	Scattered
Woodland Vision	N/A
Woodland Type	N/A
Hedgerow Trees	Scattered
Watercourse	Scattered
Amenity Trees	Localised around settlement
Boundary Type	Gritstone walls and hedgerows
Settlement Character	Village and farmsteads
Traditional Materials	Gritstone, limestone and clay tile roofs
Cultural Interests	-

Table 73: Upland Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity:

Management Action	Code	Potential for Change (Yes/No)	Comments
			SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Wet or marshy grasslands are often characterised by the grass, Yorkshire fog and have patches of soft rush. There are also occasional fields of acid grassland and localised patches of bracken. This is a pastoral farming landscape with stock rearing of sheep and cattle and some dairying. Many fields have been highly improved and are cut for silage. Some fields are still cut for hay while other poorer quality pasture has patches of rushes. Management strategy is to ~~E~~enhance the diversity of agricultural grasslands.
Woodland and Forest	w	No	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Tree cover is fairly limited in this landscape. Trees are grouped around settlements for shelter. There are also scattered trees along some field boundaries and watercourses which filter views in places. Higher land is particularly open and un-wooded. Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	Yes	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. The soils in this landscape are heavy and prone to seasonal waterlogging. In places soils are particularly impoverished or peaty which gives rise to remnant patches of wet heath and/or bog.
Wetland	f	Yes	The soils in this landscape are heavy and prone to seasonal waterlogging. In places soils are particularly impoverished or peaty which gives rise to remnant patches of wet heath and/or bog. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	Yes	This is a settled landscape with dispersed farmsteads, sometimes in loose clusters, and a few villages. Three of the villages flank the limestone plateau and are an extension of the nucleated settlement pattern here. Further north, Longnor is probably a medieval imposition on the dispersed settlement landscape, created to provide a local market-place and service centre for the farming community. Sheen is very small today and is perhaps little different from the hamlet clusters found throughout much of the South West Peak. Settlement on these uplands is often associated with springs. While some places have medieval or earlier origins, today's buildings mostly date from between the 17th to 19th centuries and are constructed of local gritstone with clay tile roofs. There is also some limestone used for the construction of buildings in the areas adjacent to White Peak landscapes. This landscape is crossed by narrow sinuous lanes with narrow verges. There is a dense network of public footpaths, providing routes through the landscape and linking farmsteads. Management strategy is to manage the dispersed and historic settlement patterns of development, and

Management Action	Code	Potential for Change (Yes/No)	Comments
			mManage intrusive features on farmland and farmsteads.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

14.2.9 Upper Valley Pastures (South West Peak)

Upper Valley Pastures in South West Peak sits within NCA 53: South West Peak, but also sits in NCA 51: Dark Peak.

This is a settled pastoral valley landscape with scattered trees along hedgerows, around settlements and following streams. Fields of permanent pasture are divided by hedgerows and occasional drystone walls. This is a settled landscape with dispersed gritstone farmsteads with stone or clay tile roofs. Views along the valley and to surrounding hills are filtered through scattered trees.

This landscape is found as discrete valley units in the foothills of the South West Peak. It includes the upper valleys of the River Dove and Manifold, and valleys near Kettleshulme and Combs.

Key Characteristics:

- Undulating lower valley slopes with incised stream valleys;
- Scattered trees along hedgerows, around settlements and alders along incised streams;
- A settled landscape with dispersed gritstone farmsteads and loose clusters of dwellings with stone slate or clay tile roofs;
- Permanent pasture enclosed by a mixture of drystone walls and hedgerows;
- Patches of rushy pasture; and
- Narrow winding lanes.

Table 74: Upper Valley Pastures - Landscape characteristics

Landscape Character Type	Distinctive Local Characteristics
Upper Valley Pastures	• This is a low lying landscape of valley slopes that is framed by surrounding higher ground; • Permanent pasture enclosed by a mixture of drystone walls and hedgerows; • Patches of rushy pasture; and • LCT sits within EA flood risk zones 2 + 3.

More information on individual LCT's can be found here: Landscape Strategy: Peak District National Park

Table 75: Upper Valley Pastures - Landscape character attributes

Upper Valley Pastures	Current Landscape Character Attributes
Land Use	Rough grazing
Main Habitat Type	Pasture
Other Habitat Type	N/A
Woodland Character	Scattered
Woodland Vision	N/A
Woodland Type	Alder
Hedgerow Trees	Scattered
Watercourse	Scattered
Amenity Trees	Localised around settlement
Boundary Type	Drystone walls/
Settlement Character	Farmsteads and cottages
Traditional Materials	Gritstone and limestone
Cultural Interests	-

Table 76: Upper Valley Pastures - Landscape management actions

Management Action	Code	Potential for Change (Yes/No)	Comments
Grassland	g	Yes	Management actions are broadly in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that

Management Action	Code	Potential for Change (Yes/No)	Comments
			they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. This is a pastoral farming landscape with stock rearing of sheep and cattle and some dairying. Many fields have been highly improved and are cut for silage. There are damp hollows in some fields which have patches of rushes. Wet or marshy grasslands are often characterised by the grass, Yorkshire fog and have patches of soft rush. Alder is found fringing the watercourses, sometimes forming denser wooded belts. Management strategy is to eEnhance the diversity of agricultural grasslands.
Woodland and Forest	w	Yes	Broadly in accordance with SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Although there is little woodland in this landscape, there is often a well-wooded feel due to the many scattered trees along field boundaries, watercourses and around settlement. Hedgerows are mostly dominated by hawthorn and blackthorn but some are more mixed and include holly and hazel. Management strategy is to pProtect historic hedgerows, and mManage and enhance linear tree cover and amenity trees.

Management Action	Code	Potential for Change (Yes/No)	Comments
Heathland and Shrub	h	No	Management actions are not in accordance with the following Statements of Environmental Opportunity: SEO 1: Protect, manage and enhance the open, expansive moorlands of the South West Peak and internationally important habitats and species that they support, protecting both soil and water resources. SEO 2: Protect, manage and enhance the moorland fringes and valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, strong field boundary patterns defined by drystone walls and hedgerows, and small, dispersed settlements, to safeguard water quality, enhance biodiversity and ecological networks and strengthen the distinctive historic landscape character of the South West Peak. Not a dominant land cover within this LCT.
Wetland	f	Yes	Wet or marshy grasslands are often characterised by the grass, Yorkshire fog and have patches of soft rush. Alder is found fringing the watercourses, sometimes forming denser wooded belts. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.
Cropland	c	No	Not a dominant land cover within this LCT.
Urban	u	No	Settlement is dispersed through the landscape with farmsteads built of local gritstone and often with stone slate roofs. There are also small clusters of farms and cottages, often found at crossing points of the many streams and rivers. Although some places have medieval if not earlier origins, the present buildings date from the 17th to 19th century. Some limestone is found in buildings and walls near to the adjacent White Peak landscapes. Those parts of the valleys of the Dove and Manifold in this character type were part of the forest of Malbanc Frith and forest laws may have inhibited settlement until later medieval times.
Sparsely Vegetated Land	s	No	Not a dominant land cover within this LCT.

Management Action	Code	Potential for Change (Yes/No)	Comments
Rivers and Lakes	r	Yes	Broadly in accordance with SEO 3: Protect and manage the South West Peak's Upper Mersey, Weaver and Trent catchments, watercourses and reservoirs to maintain their high water quality and significance to water supply and flood risk mitigation, to enhance their nature conservation interest, and to strengthen their contribution to landscape character, and the recreational opportunities that they provide for public enjoyment. Wet or marshy grasslands are often characterised by the grass, Yorkshire fog and have patches of soft rush. Alder is found fringing the watercourses, sometimes forming denser wooded belts. No specific management actions are outlined within the PDNP strategy however, this is likely to have potential for change as this LCT sits within EA flood risk zones 2 + 3.

Management action habitat types taken from UK Habitat Classification Level 2. When considering potential for change, further analysis and assessment will be required on a site-by-site basis.

15.0 Geospatial Data and other published written assessment used

15.1 Geospatial Data and other published written assessment

Geospatial Data sets used include:

- Crow access land
- Green belt
- Flood risk mapping zones 2 + 3
- Country Parks
- Registered Parks and Gardens
- National Parks
- National Trails
- PRoWs
- Ancient Woodland
- Listed buildings
- Scheduled monuments
- Registered Parks and Gardens
- World Heritage Sites
- Heritage at Risk

Other Data sets used:

- National Character Areas
- DCC – Landscape Character Types
- DCC – Extended Landscape Character Types within Derby City
- PDNP – Landscape Character Types
- Historic Landscape Character – Specifically Extraction
- Quarry Draft areas from Envsys

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Derbyshire Natural Capital Strategy – Appendix 9

Habitat priorities according to Landscape Character Type and National Character Area

This appendix provides a summary of habitat types that are a priority for conservation, restoration or creation within each Landscape Character Type / National Character Area combination (Table 1). It also provides a lists of management actions associated with the Grassland, Woodland, Heathland and Wetland broad habitat types that were used as a basis of ecological network modelling for the Strategy (Tables 2-5). The habitat recommendations have been drawn from the Baseline Landscape Character Assessment (Appendix 8).

Summary of terms and symbols in Table 1:

P: Principal Habitat - prominent and key characteristic of the area

S: Secondary Habitat - variable and local characteristic of the area

L: Locally Significant - unusual, often a minor characteristic of the area

-: Not applicable

*: Specifically relates to heather/moorland

+: Specifically relates to thorn-dominated scrub

#: Specifically relates to hedgerows

Table 1: Habitats that are a priority focus for conservation, restoration or habitat creation within specific landscape types and National Character Areas

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
NCA 30: Southern Magnesian Limestone	Limestone Farmlands	P	P	P#	-	-	-	P	L
NCA 30: Southern Magnesian Limestone	Limestone Gorges	P	P	-	S	P	-	-	P
NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfield Estatelands	P	P	P#	S	-	P	-	P
NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfield Village Farmlands	P	P	P#	S	-	S	-	P
NCA 38: Nottinghamshire, Derbyshire and Yorkshire	Estate Farmlands	P	P	S#	-	-	S	P	P

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
Coalfield									
NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Plateau Estate Farmland	S	P	S#	-	-	-	P	-
NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Riverside Meadows	P	P	-	P	-	S	-	P
NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Farmland	P	P	P#	S	-	-	-	P
NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Hills and Valleys	P	P	P#	-	-	-	-	P
NCA 50:	Enclosed Moors and	P	-	S#	-	L	-	-	-

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
Derbyshire Peak Fringe and Lower Derwent	Heaths								
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Gritstone Heaths and Commons	P	S	L#	-	-	-	-	-
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Riverside Meadows	P	P	-	P	-	-	-	P
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Settled Farmlands	P	S	P#	-	-	-	-	P
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Farmlands	P	P	P#	-	-	-	-	P
NCA 50: Derbyshire Peak Fringe and Lower	Wooded Slopes and Valleys	P	P	P#	-	-	-	-	P

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
Derwent									
NCA 51: Dark Peak	Enclosed Gritstone Uplands (Dark Peak)	P	-	S*	S*	-	-	-	-
NCA 51: Dark Peak	Enclosed Moorland	P	-	P*	S	S	-	-	-
NCA 51: Dark Peak	Estatelands (Derwent Valley)	L	S	S#	-	-	-	S	-
NCA 51: Dark Peak	Gritstone Village Farmlands (Derwent Valley)	P	L	-	-	S	-	-	-
NCA 51: Dark Peak	Moorland Fringe	P	S	P*	S	S	-	-	-
NCA 51: Dark Peak	Moorland Slopes & Cloughs (Dark Peak)	L	S	S	S	L	-	-	-
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Dark Peak Western Fringe)	S	P	S*	P*	-	-	-	-
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Eastern Moors)	-	S	S*	L*	L	-	-	-

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
NCA 51: Dark Peak	Open Moors	-	-	P*	P	S	-	-	-
NCA 51: Dark Peak	Open Moors (Derwent Valley)	-	L	P*	P*	L	-	-	-
NCA 51: Dark Peak	Open Moors (Eastern Moors)	-	S	P*	P*	-	-	-	-
NCA 51: Dark Peak	Open Moors (South West Peak)	-	-	L*	P*	L	-	-	-
NCA 51: Dark Peak	Reservoir Valleys with Woodland (Dark Peak)	S	P	L	S	L	-	-	P
NCA 51: Dark Peak	Riverside Meadows (Dark Peak Western Fringe)	P	S	S#	P	-	-	-	-
NCA 51: Dark Peak	Riverside Meadows (Dark Peak)	P	P	-	P	-	-	-	P
NCA 51: Dark Peak	Riverside Meadows (Derbyshire Peak Fringe)	P	S	S#	P	-	-	-	-
NCA 51: Dark Peak	Riverside Meadows (Derwent Valley)	P	L	L#	-	-	-	-	-

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
NCA 51: Dark Peak	Riverside Meadows (South West Peak)	P	S	S#	-	-	-	-	-
NCA 51: Dark Peak	Settled Valley Pastures	P	P	S*	S	-	-	-	S
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derbyshire Peak Fringe)	S	P	S#	-	-	-	-	-
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derwent Valley)	S	P	S#	-	S	-	-	-
NCA 51: Dark Peak	Slopes and Valleys With Woodland (South West Peak)	S	S	P#	-	L	-	-	-
NCA 51: Dark Peak	Upper Valley Pastures (Dark Peak)	P	S	S#	P	-	-	-	-
NCA 51: Dark Peak	Valley Farmlands with Villages (Derwent Valley)	S	P	P#	-	-	-	S	-
NCA 51: Dark Peak	Valley Pastures with Industry (Dark Peak Western Fringe)	P	S	P#	-	-	-	-	P

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
NCA 52: White Peak	Limestone Dales/Limestone Dales (White Peak)	P	P	S+	-	S	-	-	P
NCA 52: White Peak	Limestone Slopes (White Peak)	P	S	L*	-	L	-	-	-
NCA 52: White Peak	Limestone Village Farmlands (White Peak)	S	-	L*	-	S	L	-	-
NCA 52: White Peak	Plateau Pastures/Limestone Plateau Pastures (White Peak)	P	S	L*	-	L	-	-	-
NCA 52: White Peak	Upland Limestone Pastures/Limestone Hills & Slopes (White Peak)	P	-	-	-	P	-	-	-
NCA 52: White Peak	Village Farmland on Shale Ridges (Derbyshire Peak Fringe)	S	S	-	-	-	P	-	-
NCA 53: South West Peak	Densely Enclosed Gritstone Uplands (South West Peak)	S	S	S*	S	S	S	-	-
NCA 53: South	Enclosed Gritstone	S	L	P*	L	-	S	-	-

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
West Peak	Uplands (Dark Peak Western Fringe)								
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derbyshire Peak Fringe)	L	-	-	-	-	-	-	-
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derwent Valley)	P	L	L*	-	S	L	-	-
NCA 53: South West Peak	Enclosed Gritstone Uplands (Eastern Moors)	P	L	L*	-	L	P	-	-
NCA 53: South West Peak	Enclosed Gritstone Uplands (South West Peak)	S	L	S*	S*	L	-	-	-
NCA 53: South West Peak	Moorland Hills And Ridges (South West Peak)	-	S	P*	P*	L	-	-	-
NCA 53: South West Peak	Upland Pastures (South West Peak)	P	L	L	L	L	P	-	-
NCA 53: South West Peak	Upper Valley Pastures (South West Peak)	S	P	-	-	-	S	-	-

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
NCA 68: Needwood and South Derbyshire Claylands	Estate Farmlands	P	P	S#	-	-	-	P	P
NCA 68: Needwood and South Derbyshire Claylands	Riverside Meadows	P	P	-	P	-	-	-	P
NCA 68: Needwood and South Derbyshire Claylands	Sandstone Slopes and Heaths	P	-	P#	-	-	-	-	-
NCA 68: Needwood and South Derbyshire Claylands	Settled Farmlands	P	S	P#	-	-	-	S	P
NCA 68: Needwood and South Derbyshire Claylands	Settled Plateau Farmlands	P	S	P#	-	-	-	S	-
NCA 69: Trent Valley Washlands	Lowland Village Farmlands	P	S	S#	-	-	S	P	P

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
NCA 69: Trent Valley Washlands	Riverside Meadows	P	P	-	P	-	-	-	P
NCA 69: Trent Valley Washlands	Wet Pasture Meadows	P	-	P#	P	-	S	P	P
NCA 70: Melbourne Parklands	Estate Farmlands	P	P	S#	-	-	-	P	P
NCA 70: Melbourne Parklands	Riverside Meadows	P	P	-	P	-	-	-	P
NCA 70: Melbourne Parklands	Sandstone Slopes and Heaths	P	-	P#	-	-	-	-	-
NCA 70: Melbourne Parklands	Wooded Estatelands	P	P	S#	-	-	-	-	S
NCA 71: Leics & South Derbyshire Coalfield	Coalfield Village Farmlands	P	P	P#	S	-	S	-	P
NCA 72: Dark Peak Yorkshire	Enclosed Gritstone Uplands	P	-	S*	S*	-	-	-	-

NCA	LCT	Supportive habitat creation/restoration opportunity							
		Grassland	Woodland & Forest	Heathland & Shrub	Wetland	Sparsely Vegetated Land	Urban	Cropland	Rivers & Lakes
Fringe									
NCA 72: Mease/ Sence Lowlands	Riverside Meadows	P	P	-	P	-	-	-	P
NCA 72: Mease/ Sence Lowlands	Village Estate Farmlands	P	P	P#	-	-	-	S	P
NCA 73: Urban	Urban	-	-	-	-	-	-	-	-

Table 2: Recommended grassland management actions for each LCT and NCA region, based on baseline landscape character assessment

NCA	LCT	Grassland priority actions
NCA 30: Southern Magnesian Limestone	Limestone Farmlands	Restore, create and enhance areas of magnesian limestone grassland, including improving linkages between existing grassland areas
NCA 30: Southern Magnesian Limestone	Limestone Gorges	Restore, create and enhance areas of magnesian limestone grassland, including improving linkages between existing grassland areas
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfield Estatelands	Enhance unimproved pastures
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfields Village Farmlands	Enhance unimproved Pastures
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Estate Farmlands	Enhance acid grassland areas and corridors
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Plateau Estate Farmlands	Enhance unimproved pastures
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Farmland	Enhance unimproved pasture
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Hills & Valleys	Enhance acid grassland areas and corridors
NCA 50: Derbyshire Peak Fringe	Enclosed Moors and Heaths	Restore and enhance acid grassland

NCA	LCT	Grassland priority actions
and Lower Derwent		
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Gritstone Heaths & Commons	Restore and enhance acid grassland
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Settled Farmlands	Enhance and restore unimproved pasture and neutral grassland
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Farmlands	Enhance unimproved pasture
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Slopes & Valleys	Enhance unimproved pasture
NCA 51: Dark Peak	Enclosed Moorland	Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows; Enhance unimproved pasture
NCA 51: Dark Peak	Enclosed Gritstone Uplands (Dark Peak)	Enhance connectivity of wet pasture in a mixed farming regime
NCA 51: Dark Peak	Estatelands (Derwent Valley)	Enhance the diversity of agricultural grassland and arable farmland.
NCA 51: Dark Peak	Gritstone Village Farmlands (Derwent Valley)	Enhance the diversity of agricultural grasslands.

NCA	LCT	Grassland priority actions
NCA 51: Dark Peak	Moorland Fringe	Enhance unimproved pastures
NCA 51: Dark Peak	Moorland Slopes & Coughs (Dark Peak)	Enhance Unimproved Pasture
NCA 51: Dark Peak	Moorland Slopes and Coughs (Dark Peak Western Fringe)	Enhance Unimproved Pasture
NCA 51: Dark Peak	Moorland Slopes and Coughs (Eastern Moors)	N/A
NCA 51: Dark Peak	Open Moors	Enhance unimproved pastures
NCA 51: Dark Peak	Open Moors (Derwent Valley)	Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows; Enhance unimproved pasture
NCA 51: Dark Peak	Open Moors (Eastern Moors)	Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows; Enhance unimproved pasture
NCA 51: Dark Peak	Open Moors (South West Peak)	Manage and enhance the moorland fringes and valleys, with their mosaics of pastures and meadows; Enhance unimproved pasture
NCA 51: Dark Peak	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 51: Dark Peak	Riverside Meadows (Dark Peak Western Fringe)	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows

NCA	LCT	Grassland priority actions
NCA 51: Dark Peak	Riverside Meadows (Derbyshire Peak Fringe)	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 51: Dark Peak	Riverside Meadows (Derwent Valley)	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 51: Dark Peak	Riverside Meadows (South West Peak)	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 51: Dark Peak	Reservoir Valleys with Woodland (Dark Peak)	Enhance areas of semi- natural grassland
NCA 51: Dark Peak	Settled Valley Pastures	Enhance unimproved pasture
NCA 51: Dark Peak	Slopes and Valleys with Woodland (Derbyshire Peak Fringe)	Enhance the diversity of agricultural grasslands.
NCA 51: Dark Peak	Slopes and Valleys with Woodland (Derwent Valley)	Enhance the diversity of agricultural grasslands.
NCA 51: Dark Peak	Slopes and Valleys with Woodland (South West Peak)	Enhance the diversity of agricultural grasslands.
NCA 51: Dark Peak	Upper Valley Pastures (Dark Peak)	Manage and enhance agricultural grasslands and semi-natural grassland
NCA 51: Dark Peak	Valley Farmlands with Villages	Enhance the diversity of agricultural grassland and

NCA	LCT	Grassland priority actions
	(Derwent Valley)	arable farmland.
NCA 51: Dark Peak	Valley Pastures with Industry (Dark Peak Western Fringe)	Enhance the diversity of agricultural grasslands.
NCA 52: White Peak	Upland Limestone Pastures	Enhance calcareous grassland
NCA 52: White Peak	Limestone Dales	Restore and enhance calcareous grassland
NCA 52: White Peak	Limestone Slopes	Restore and enhance calcareous grassland
NCA 52: White Peak	Plateau Pastures	Restore and enhance calcareous grassland and unimproved pastures
NCA 52: White Peak	Limestone Village Farmlands (White Peak)	Manage and enhance surviving areas of natural landscapes / Enhance the diversity of agricultural grassland / Create areas of limestone grassland and heath
NCA 52: White Peak	Village Farmland on Shale Ridges (Derbyshire Peak Fringe)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Densely Enclosed Gritstone Uplands (South West Peak)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Enclosed Gritstone Uplands (Dark Peak Western Fringe)	Enhance the diversity of agricultural grasslands.

NCA	LCT	Grassland priority actions
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derbyshire Peak Fringe)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derwent Valley)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Enclosed Gritstone Uplands (Eastern Moors)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Enclosed Gritstone Uplands (South West Peak)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Moorland Hills And Ridges (South West Peak)	Enhance areas of semi- natural grassland
NCA 53: South West Peak	Upland Pastures (South West Peak)	Enhance the diversity of agricultural grasslands.
NCA 53: South West Peak	Upper Valley Pastures (South West Peak)	Enhance the diversity of agricultural grasslands.
NCA 68: Needwood and South Derbyshire Claylands	Estate Farmlands	Enhance Unimproved Pastures
NCA 68: Needwood and South Derbyshire Claylands	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 68: Needwood and South Derbyshire Claylands	Sandstone Slopes & Heath	Enhance unimproved pasture and acid grassland
NCA 68: Needwood and South Derbyshire Claylands	Settled Farmlands	Enhance and restore unimproved pasture and neutral grassland

NCA	LCT	Grassland priority actions
NCA 68: Needwood and South Derbyshire Claylands	Settled Plateau Farmlands	Enhance unimproved pasture
NCA 69: Trent Valley Washlands	Lowland Village Farmlands	Enhance unimproved pastures
NCA 69: Trent Valley Washlands	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 69: Trent Valley Washlands	Wet Pasture Meadows	Enhance unimproved grassland and rush pasture
NCA 70: Melbourne Parklands	Estate Farmlands	Enhance unimproved pastures
NCA 70: Melbourne Parklands	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 70: Melbourne Parklands	Sandstone Slopes & Heath	Enhance unimproved pasture and acid grassland
NCA 70: Melbourne Parklands	Wooded Estatelands	Enhance acid grassland areas and corridors
NCA 71: Leics & South Derbyshire Coalfield	Coalfield Village Farmlands	Restore and enhance acid and neutral grassland
NCA 72: Mease/ Sence Lowlands	Riverside Meadows	Enhance unimproved pasture - restore floodplain grazing marsh and lowland meadows
NCA 72: Mease/ Sence Lowlands	Village Estate Farmlands	Enhance unimproved grassland

Table 3: Recommended woodland and forest management actions for each LCT and NCA region, based on baseline landscape character assessment

NCA	LCT	Woodland Priority Actions
NCA 30: Southern Magnesian Limestone	Limestone Farmlands	Restore all ancient woodland sites. Create and enhance native woodland - general, riparian woodland and hedgerow planting
NCA 30: Southern Magnesian Limestone	Limestone Gorges	Restore all ancient woodland sites. Create and enhance native woodland - general, riparian woodland and hedgerow planting - but not at the cost of overall landscape/habitat value
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfield Estatelands	Create and enhance native woodland - general, and hedgerow planting
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfields Village Farmlands	Create and enhance native woodland - general, and hedgerow planting
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Estate Farmlands	Create and enhance native woodland - general, and hedgerow planting
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Plateau Estate Farmlands	Create and enhance native woodland - general, and hedgerow planting
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Riverside Meadows	Create and enhance riparian woodland and floodplain woodland
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Farmland	Restore all ancient woodland sites. Where suitable, consider removal of conifer plantation woodlands. Create and enhance native woodland - general, and hedgerow planting. Create scrub and secondary

NCA	LCT	Woodland Priority Actions
		woodland to link with existing habitats
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Hills & Valleys	Restore all ancient woodland sites. Create and enhance native woodland - general, and hedgerow planting. Create scrub and secondary woodland to link with existing habitats
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Enclosed Moors and Heaths	N/A
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Gritstone Heaths & Commons	Where suitable, consider removal of conifer plantation woodlands.
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Riverside Meadows	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Settled Farmlands	Create and enhance small scale native woodland - general, riparian woodland, and hedgerow planting
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Farmlands	Restore all ancient woodland sites. Where suitable, consider removal of conifer plantation woodlands. Create and enhance native woodland - general, and hedgerow planting. Create scrub and secondary woodland to link with existing habitats
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Slopes & Valleys	Restore all ancient woodland sites. Where suitable, consider removal of conifer plantation woodlands. Create and enhance native woodland - general, riparian woodland and hedgerow planting. Create scrub and secondary woodland to link with existing habitats

NCA	LCT	Woodland Priority Actions
NCA 51: Dark Peak	Enclosed Moorland	N/A
NCA 51: Dark Peak	Enclosed Gritstone Uplands (Dark Peak)	Manage and enhance existing tree groups and shelterbelts
NCA 51: Dark Peak	Estatelands (Derwent Valley)	Manage and enhance woodlands
NCA 51: Dark Peak	Gritstone Village Farmlands (Derwent Valley)	Manage and enhance linear tree cover and amenity trees.
NCA 51: Dark Peak	Moorland Fringe	Where suitable, consider removal of conifer plantation woodlands.
NCA 51: Dark Peak	Moorland Slopes & Cloughs (Dark Peak)	Manage and enhance woodlands as well as create and restore clough woods
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Dark Peak Western Fringe)	Manage and enhance woodlands and create new native broadleaved woodland.
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Eastern Moors)	Manage and enhance woodlands particularly plantation woodlands.
NCA 51: Dark Peak	Open Moors	N/A
NCA 51: Dark Peak	Open Moors (Derwent Valley)	N/A
NCA 51: Dark Peak	Open Moors (Eastern Moors)	N/A

NCA	LCT	Woodland Priority Actions
NCA 51: Dark Peak	Open Moors (South West Peak)	N/A
NCA 51: Dark Peak	Riverside Meadows	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 51: Dark Peak	Riverside Meadows (Dark Peak Western Fringe)	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 51: Dark Peak	Riverside Meadows (Derbyshire Peak Fringe)	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 51: Dark Peak	Riverside Meadows (Derwent Valley)	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 51: Dark Peak	Riverside Meadows (South West Peak)	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 51: Dark Peak	Reservoir Valleys with Woodland (Dark Peak)	Manage and enhance plantation woodland and landscape around reservoirs
NCA 51: Dark Peak	Settled Valley Pastures	Restore all ancient woodland sites. Where suitable, consider removal of conifer plantation woodlands. Create and enhance native woodland - general, riparian woodland and hedgerow planting. Create

NCA	LCT	Woodland Priority Actions
		scrub and secondary woodland to link with existing habitats
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derbyshire Peak Fringe)	N/A
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derwent Valley)	Manage and enhance woodlands, historic hedgerows, clough woodlands, plantation woodlands, linear tree cover and amenity trees
NCA 51: Dark Peak	Slopes and Valleys With Woodland (South West Peak)	Manage and enhance woodlands, historic hedgerows, clough woodlands, plantation woodlands, linear tree cover and amenity trees
NCA 51: Dark Peak	Upper Valley Pastures (Dark Peak)	Manage and enhance woodlands
NCA 51: Dark Peak	Valley Farmlands with Villages (Derwent Valley)	Manage and enhance woodlands, hedgerows, linear tree cover and amenity trees
NCA 51: Dark Peak	Valley Pastures with Industry (Dark Peak Western Fringe)	Manage and enhance woodlands
NCA 52: White Peak	Upland Limestone Pastures	Where opportunities arise, the removal of coniferous plantation woodland should be encouraged

NCA	LCT	Woodland Priority Actions
NCA 52: White Peak	Limestone Dales	Restore all ancient woodland sites, enhance riparian woodland
NCA 52: White Peak	Limestone Slopes	Small scale woodland planting; Extend ancient woodland by natural regeneration and planting; Conserve the tree groups that occur within and around rural settlements and isolated farmsteads
NCA 52: White Peak	Plateau Pastures	Conserve the tree groups that occur within and around rural settlements and isolated farmsteads; Conserve and enhance the plantations. Create areas of thinly scattered small plantations.
NCA 52: White Peak	Limestone Village Farmlands (White Peak)	Manage and enhance traditional plantation woodlands, linear tree cover and amenity trees and create new native broadleaved woodland.
NCA 52: White Peak	Village Farmland on Shale Ridges (Derbyshire Peak Fringe)	Manage and enhance woodlands and manage and enhance linear tree cover and amenity trees.
NCA 53: South West Peak	Densely Enclosed Gritstone Uplands (South West Peak)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands (Dark Peak Western Fringe)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands	Manage the extent of birch scrub to maintain a diverse landscape mosaic may be considered in some

NCA	LCT	Woodland Priority Actions
	(Derbyshire Peak Fringe)	locations.
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derwent Valley)	Manage and enhance woodlands may be considered in some locations.
NCA 53: South West Peak	Enclosed Gritstone Uplands (Eastern Moors)	Consideration should be given to the creation of clough woods, the protection of historic parkland landscapes, and historic hedgerows in some locations
NCA 53: South West Peak	Enclosed Gritstone Uplands (South West Peak)	Manage and enhance plantation woodlands, some consideration of the establishment of clough woodland
NCA 53: South West Peak	Moorland Hills And Ridges (South West Peak)	N/A
NCA 53: South West Peak	Upland Pastures (South West Peak)	N/A
NCA 53: South West Peak	Upper Valley Pastures (South West Peak)	N/A
NCA 68: Needwood and South Derbyshire Claylands	Estate Farmlands	Create and enhance native woodland - general, and hedgerow planting
NCA 68: Needwood and South Derbyshire Claylands	Riverside Meadows	Create small areas of riparian woodland - but not at the cost of overall landscape/habitat value
NCA 68: Needwood and South Derbyshire Claylands	Sandstone Slopes & Heath	Create small areas of scattered woodland - but not at the cost of overall landscape/habitat value
NCA 68: Needwood and South Derbyshire Claylands	Settled Farmlands	Create small areas of riparian woodland and hedgerow planting - but not at the cost of overall

NCA	LCT	Woodland Priority Actions
		landscape/habitat value
NCA 68: Needwood and South Derbyshire Claylands	Settled Plateau Farmlands	Create small areas of riparian woodland and hedgerow planting - but not at the cost of overall landscape/habitat value
NCA 69: Trent Valley Washlands	Lowland Village Farmlands	Conserve trees around rural settlements, and encourage pollarding practice. Ensure new planting does not occur on sensitive landscape features, e.g. ridge and furrow
NCA 69: Trent Valley Washlands	Riverside Meadows	Create and enhance riparian woodland and floodplain woodland
NCA 69: Trent Valley Washlands	Wet Pasture Meadows	Create small areas of riparian woodland and hedgerow planting - but not at the cost of overall landscape/habitat value
NCA 70: Melbourne Parklands	Riverside Meadows	Create and enhance riparian woodland and floodplain woodland
NCA 70: Melbourne Parklands	Sandstone Slopes & Heath	Create small areas of riparian woodland and scattered small native woodlands but not at the cost of overall landscape.
NCA 70: Melbourne Parklands	Wooded Estatelands	Restore all ancient woodland sites. Create and enhance native woodland - general, and hedgerow planting
NCA 70: Melbourne Parklands	Estate Farmlands	Create and enhance small scale native woodland - general, riparian woodland, and hedgerow planting

NCA	LCT	Woodland Priority Actions
NCA 71: Leics & South Derbyshire Coalfield	Coalfield Village Farmlands	Create and enhance native woodland - general, and hedgerow planting
NCA 72: Mease/ Sence Lowlands	Riverside Meadows	Create and enhance riparian woodland and floodplain woodland
NCA 72: Mease/ Sence Lowlands	Village Estate Farmlands	Create small areas of riparian woodland and hedgerow planting

Table 4: Recommended heathland and shrub management actions for each LCT and NCA region, based on baseline landscape character assessment (management actions for cells highlighted in orange have been modified to reflect their sub-categorisation in Table 1)

NCA	LCT	Heathland and Shrub Priority Actions
NCA 30: Southern Magnesian Limestone	Limestone Farmlands	Restore, enhance and plant hedgerows
NCA 30: Southern Magnesian Limestone	Limestone Gorges	N/A
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfield Estatelands	Restore, enhance and plant hedgerows
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfields Village Farmlands	Restore, enhance and plant hedgerows
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Estate Farmlands	Restore, enhance and plant hedgerows
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Riverside Meadows	N/A
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Plateau Estate Farmlands	Restore, enhance and plant hedgerows
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Farmland	Restore, enhance and plant hedgerows
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Hills & Valleys	Restore, enhance and plant hedgerows
NCA 50: Derbyshire Peak Fringe	Enclosed Moors and Heaths	Restore, enhance and plant hedgerows

NCA	LCT	Heathland and Shrub Priority Actions
and Lower Derwent		
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Gritstone Heaths & Commons	Restore, enhance and plant hedgerows
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Riverside Meadows	Restore, enhance and create heathland and shrub habitat
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Settled Farmlands	Restore, enhance and plant hedgerows
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Farmlands	Restore, enhance and plant hedgerows
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Slopes & Valleys	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Enclosed Moorland	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Enclosed Gritstone Uplands (Dark Peak)	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Estatelands (Derwent Valley)	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Gritstone Village Farmlands (Derwent Valley)	N/A
NCA 51: Dark Peak	Moorland Fringe	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Moorland Slopes & Cloughs (Dark Peak)	Restore, enhance and create heathland and moorland

NCA	LCT	Heathland and Shrub Priority Actions
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Dark Peak Western Fringe)	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Eastern Moors)	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Open Moors	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Open Moors (Derwent Valley)	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Open Moors (Eastern Moors)	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Open Moors (South West Peak)	Restore, enhance and create heathland and moorland
NCA 51: Dark Peak	Riverside Meadows	Enhance or create scrub habitat adjacent to woodland
NCA 51: Dark Peak	Riverside Meadows (Dark Peak Western Fringe)	Enhance or create scrub habitat adjacent to woodland. Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Riverside Meadows (Derbyshire Peak Fringe)	Enhance or create scrub habitat adjacent to woodland. Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Riverside Meadows (Derwent Valley)	Enhance or create scrub habitat adjacent to woodland. Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Riverside Meadows (South West	Enhance or create scrub habitat adjacent to

NCA	LCT	Heathland and Shrub Priority Actions
	Peak)	woodland. Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Reservoir Valleys with Woodland (Dark Peak)	Restore, enhance and create heathland
NCA 51: Dark Peak	Settled Valley Pastures	Restore, enhance and create heathland
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derbyshire Peak Fringe)	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derwent Valley)	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Slopes and Valleys With Woodland (South West Peak)	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Upper Valley Pastures (Dark Peak)	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Valley Farmlands with Villages (Derwent Valley)	Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Valley Pastures with Industry (Dark Peak Western Fringe)	Restore, enhance and plant hedgerows
NCA 52: White Peak	Upland Limestone Pastures	Restore, enhance and limestone heaths
NCA 52: White Peak	Limestone Dales	Restore, enhance and create heathland in conjunction with calcareous grassland
NCA 52: White Peak	Limestone Slopes	Restore, enhance and create heathland in conjunction with calcareous grassland
NCA 52: White Peak	Plateau Pastures	Restore, enhance and create heathland

NCA	LCT	Heathland and Shrub Priority Actions
NCA 52: White Peak	Limestone Village Farmlands (White Peak)	Create areas of limestone grassland and heath, albeit only a consideration in some locations where appropriate
NCA 52: White Peak	Village Farmland on Shale Ridges (Derbyshire Peak Fringe)	Restore, enhance and create heathland in conjunction with calcareous grassland
NCA 53: South West Peak	Densely Enclosed Gritstone Uplands (South West Peak)	Enhance and restore moorland landscapes
NCA 53: South West Peak	Enclosed Gritstone Uplands (Dark Peak Western Fringe)	Restore, enhance and create heathland and moorland
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derbyshire Peak Fringe)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derwent Valley)	Creation and extension of heath/moor may be considered in some locations.
NCA 53: South West Peak	Enclosed Gritstone Uplands (Eastern Moors)	Creation and extension of heath/moor may be considered in some locations.
NCA 53: South West Peak	Enclosed Gritstone Uplands (South West Peak)	Restore, enhance and create heathland and moorland
NCA 53: South West Peak	Moorland Hills and Ridges (South West Peak)	Enhance and restore moorland landscapes

NCA	LCT	Heathland and Shrub Priority Actions
NCA 53: South West Peak	Upland Pastures (South West Peak)	Restore, enhance and create heathland
NCA 53: South West Peak	Upper Valley Pastures (South West Peak)	Restore, enhance and create heathland
NCA 68: Needwood and South Derbyshire Claylands	Estate Farmlands	Restore, enhance and plant hedgerows
NCA 68: Needwood and South Derbyshire Claylands	Riverside Meadows	N/A
NCA 68: Needwood and South Derbyshire Claylands	Sandstone Slopes & Heath	Restore, enhance and plant hedgerows
NCA 68: Needwood and South Derbyshire Claylands	Settled Farmlands	Restore, enhance and plant hedgerows
NCA 68: Needwood and South Derbyshire Claylands	Settled Plateau Farmlands	Restore, enhance and plant hedgerows
NCA 69: Trent Valley Washlands	Lowland Village Farmlands	Restore, enhance and plant hedgerows
NCA 69: Trent Valley Washlands	Riverside Meadows	N/A
NCA 69: Trent Valley Washlands	Wet Pasture Meadows	Restore, enhance and plant hedgerows
NCA 70: Melbourne Parklands	Riverside Meadows	N/A
NCA 70: Melbourne Parklands	Sandstone Slopes & Heath	Restore, enhance and plant hedgerows
NCA 70: Melbourne Parklands	Wooded Estatelands	Restore, enhance and plant hedgerows
NCA 70: Melbourne Parklands	Estate Farmlands	Restore, enhance and plant hedgerows

NCA	LCT	Heathland and Shrub Priority Actions
NCA 71: Leics & South Derbyshire Coalfield	Coalfield Village Farmlands	Restore, enhance and plant hedgerows
NCA 72: Mease/ Sence Lowlands	Riverside Meadows	N/A
NCA 72: Mease/ Sence Lowlands	Village Estate Farmlands	Restore, enhance and plant hedgerows

Table 5: Recommended wetland actions for each LCT and NCA region, based on baseline landscape character assessment (management actions for cells highlighted in orange have been modified to reflect their sub-categorisation in Table 1)

NCA	LCT	Wetland priority actions
NCA 30: Southern Magnesian Limestone	Limestone Farmlands	N/A
NCA 30: Southern Magnesian Limestone	Limestone Gorges	Enhance wet meadow and marsh habitats
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfield Estatelands	N/A
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Coalfields Village Farmlands	Restore, enhance and create natural continuity of river corridors
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Estate Farmlands	N/A

NCA	LCT	Wetland priority actions
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Riverside Meadows	Restore, enhance and create natural continuity of river corridors
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Plateau Estate Farmlands	N/A
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Farmland	Restore, enhance and create natural continuity of river corridors
NCA38: Nottinghamshire, Derbyshire and Yorkshire Coalfield	Wooded Hills & Valleys	Restore, enhance and create natural continuity of river corridors
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Enclosed Moors and Heaths	N/A
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Gritstone Heaths & Commons	N/A
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Riverside Meadows	Enhance wet meadow and marsh habitats
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Settled Farmlands	Restore, enhance and create natural continuity of river corridors
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Farmlands	Restore, enhance and create natural continuity of river corridors
NCA 50: Derbyshire Peak Fringe and Lower Derwent	Wooded Slopes & Valleys	Restore, enhance and create natural continuity of river corridors and wet woodlands
NCA 51: Dark Peak	Enclosed Moorland	Restore, enhance and create moorland/bog habitats
NCA 51: Dark Peak	Enclosed Gritstone Uplands (Dark	Restore, enhance and create wetland habitats

NCA	LCT	Wetland priority actions
	Peak)	
NCA 51: Dark Peak	Estatelands (Derwent Valley)	N/A
NCA 51: Dark Peak	Gritstone Village Farmlands (Derwent Valley)	N/A
NCA 51: Dark Peak	Moorland Fringe	Restore, enhance and create moorland/bog habitats
NCA 51: Dark Peak	Moorland Slopes & Cloughs (Dark Peak)	Restore, enhance and create wetland habitats
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Dark Peak Western Fringe)	Restore, enhance and create moorland/bog habitats
NCA 51: Dark Peak	Moorland Slopes and Cloughs (Eastern Moors)	Restore, enhance and create moorland/wetland habitats
NCA 51: Dark Peak	Open Moors	Manage and enhance wetland landscapes and create and link patches of wetland farmland habitats
NCA 51: Dark Peak	Open Moors (Derwent Valley)	Restore, enhance and create wetland habitats
NCA 51: Dark Peak	Open Moors (Eastern Moors)	Restore, enhance and create moorland/bog habitats
NCA 51: Dark Peak	Open Moors (South West Peak)	Restore, enhance and create moorland/bog habitats
NCA 51: Dark Peak	Riverside Meadows	Enhance wet meadow and marsh habitats. Restore, enhance and create natural continuity of river corridors
NCA 51: Dark Peak	Riverside Meadows (Dark Peak	Enhance wet meadow and marsh habitats. Restore,

NCA	LCT	Wetland priority actions
	Western Fringe)	enhance and create natural continuity of river corridors. Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Riverside Meadows (Derbyshire Peak Fringe)	Enhance wet meadow and marsh habitats. Restore, enhance and create natural continuity of river corridors. Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Riverside Meadows (Derwent Valley)	Enhance wet meadow and marsh habitats. Restore, enhance and create natural continuity of river corridors
NCA 51: Dark Peak	Riverside Meadows (South West Peak)	Enhance wet meadow and marsh habitats. Restore, enhance and create natural continuity of river corridors
NCA 51: Dark Peak	Reservoir Valleys with Woodland (Dark Peak)	Reservoir Valleys with Woodland (Dark Peak)
NCA 51: Dark Peak	Settled Valley Pastures	Enhance wet meadow and marsh habitats
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derbyshire Peak Fringe)	N/A
NCA 51: Dark Peak	Slopes and Valleys With Woodland (Derwent Valley)	Enhance wet meadow and marsh habitats
NCA 51: Dark Peak	Slopes and Valleys With Woodland (South West Peak)	Enhance wet meadow and marsh habitats
NCA 51: Dark Peak	Upper Valley Pastures (Dark Peak)	Manage and enhance wetland landscapes and create and link patches of wetland farmland habitats.

NCA	LCT	Wetland priority actions
		Restore, enhance and plant hedgerows
NCA 51: Dark Peak	Valley Farmlands with Villages (Derwent Valley)	Seek opportunities to restore biodiversity
NCA 51: Dark Peak	Valley Pastures with Industry (Dark Peak Western Fringe)	N/A
NCA 52: White Peak	Upland Limestone Pastures	N/A
NCA 52: White Peak	Limestone Dales	N/A
NCA 52: White Peak	Limestone Slopes	N/A
NCA 52: White Peak	Plateau Pastures	N/A
NCA 52: White Peak	Limestone Village Farmlands (White Peak)	N/A
NCA 52: White Peak	Village Farmland on Shale Ridges (Derbyshire Peak Fringe)	N/A
NCA 53: South West Peak	Densely Enclosed Gritstone Uplands (South West Peak)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands (Dark Peak Western Fringe)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derbyshire Peak Fringe)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands (Derwent Valley)	N/A

NCA	LCT	Wetland priority actions
NCA 53: South West Peak	Enclosed Gritstone Uplands (Eastern Moors)	N/A
NCA 53: South West Peak	Enclosed Gritstone Uplands (South West Peak)	N/A
NCA 53: South West Peak	Moorland Hills And Ridges (South West Peak)	Restore, enhance and create moorland/bog habitats
NCA 53: South West Peak	Upland Pastures (South West Peak)	N/A
NCA 53: South West Peak	Upper Valley Pastures (South West Peak)	N/A
NCA 68: Needwood and South Derbyshire Claylands	Estate Farmlands	Enhance wet meadow and marsh habitats
NCA 68: Needwood and South Derbyshire Claylands	Riverside Meadows	Restore, enhance and create natural continuity of river corridors
NCA 68: Needwood and South Derbyshire Claylands	Sandstone Slopes & Heath	N/A
NCA 68: Needwood and South Derbyshire Claylands	Settled Farmlands	Enhance wet meadow habitats. Restore, enhance and create natural continuity of river corridors
NCA 68: Needwood and South Derbyshire Claylands	Settled Plateau Farmlands	Manage and enhance wetlands, such as lowland bog
NCA 69: Trent Valley Washlands	Lowland Village Farmlands	Restore and enhance canals and areas of standing open water

NCA	LCT	Wetland priority actions
NCA 69: Trent Valley Washlands	Riverside Meadows	Restore, enhance and create natural continuity of river corridors
NCA 69: Trent Valley Washlands	Wet Pasture Meadows	Restore, enhance and plant hedgerows
NCA 70: Melbourne Parklands	Estate Farmlands	Enhance wet meadow and marsh habitats
NCA 70: Melbourne Parklands	Riverside Meadows	Restore and enhance floodplain and wet meadow habitats especially around the Ramsley Brook
NCA 70: Melbourne Parklands	Sandstone Slopes & Heath	N/A
NCA 70: Melbourne Parklands	Wooded Estatelands	Restore, enhance and create natural continuity of river corridors
NCA 71: Leics & South Derbyshire Coalfield	Coalfield Village Farmlands	Restore, enhance and create natural continuity of river corridors
NCA 72: Mease/ Sence Lowlands	Riverside Meadows	Restore, enhance and create natural continuity of river corridors
NCA 72: Mease/ Sence Lowlands	Village Estate Farmlands	Restore, enhance and create natural continuity of river corridors

Derbyshire Natural Capital Strategy – Appendix 10

Appendix 10 – Maps of habitat priorities according to Landscape Character Type and National Character Area – Derby City

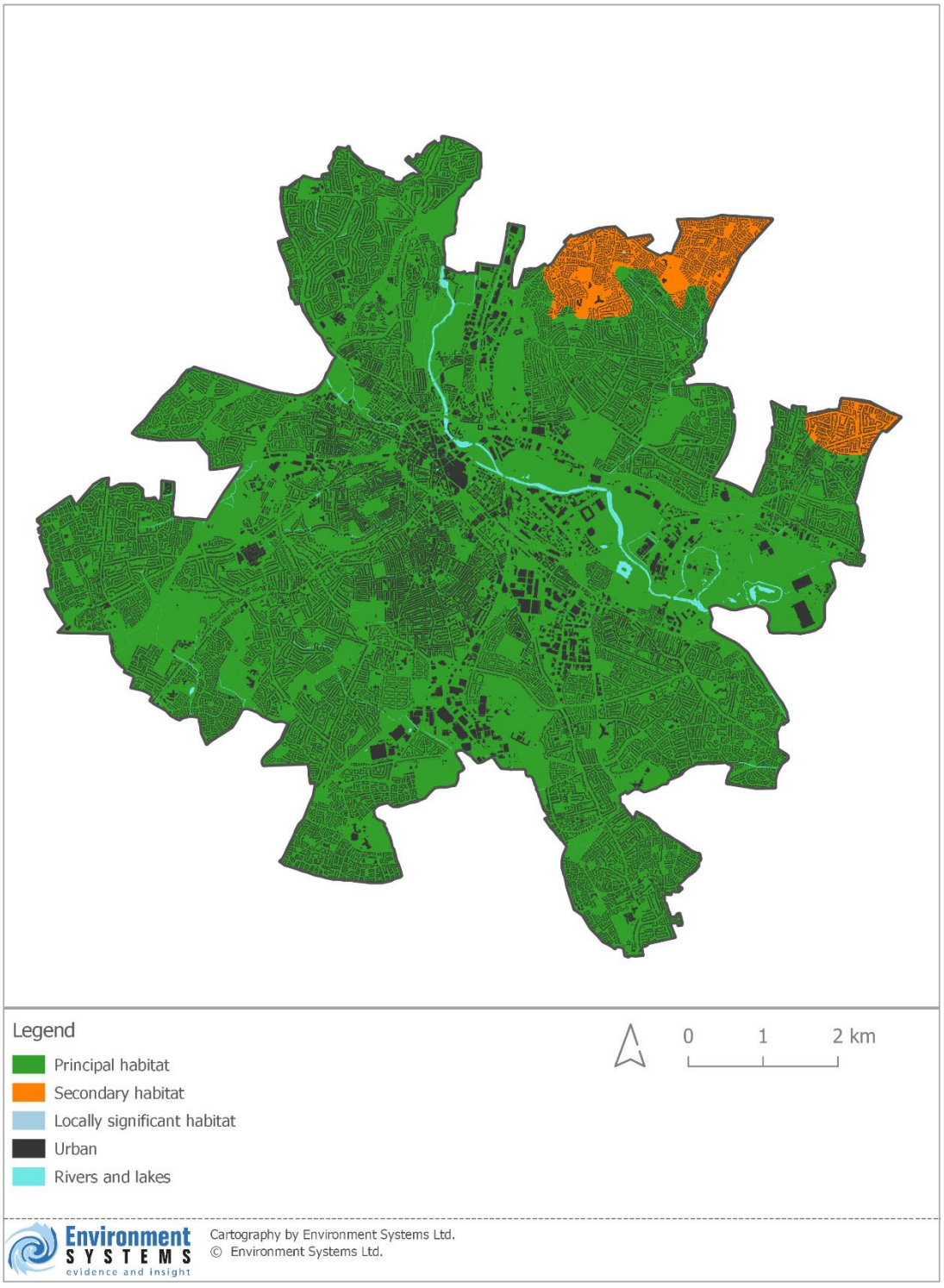


Figure 1: Landscape Character Types where the Grassland broad habitat type is a priority for conservation, restoration or habitat creation

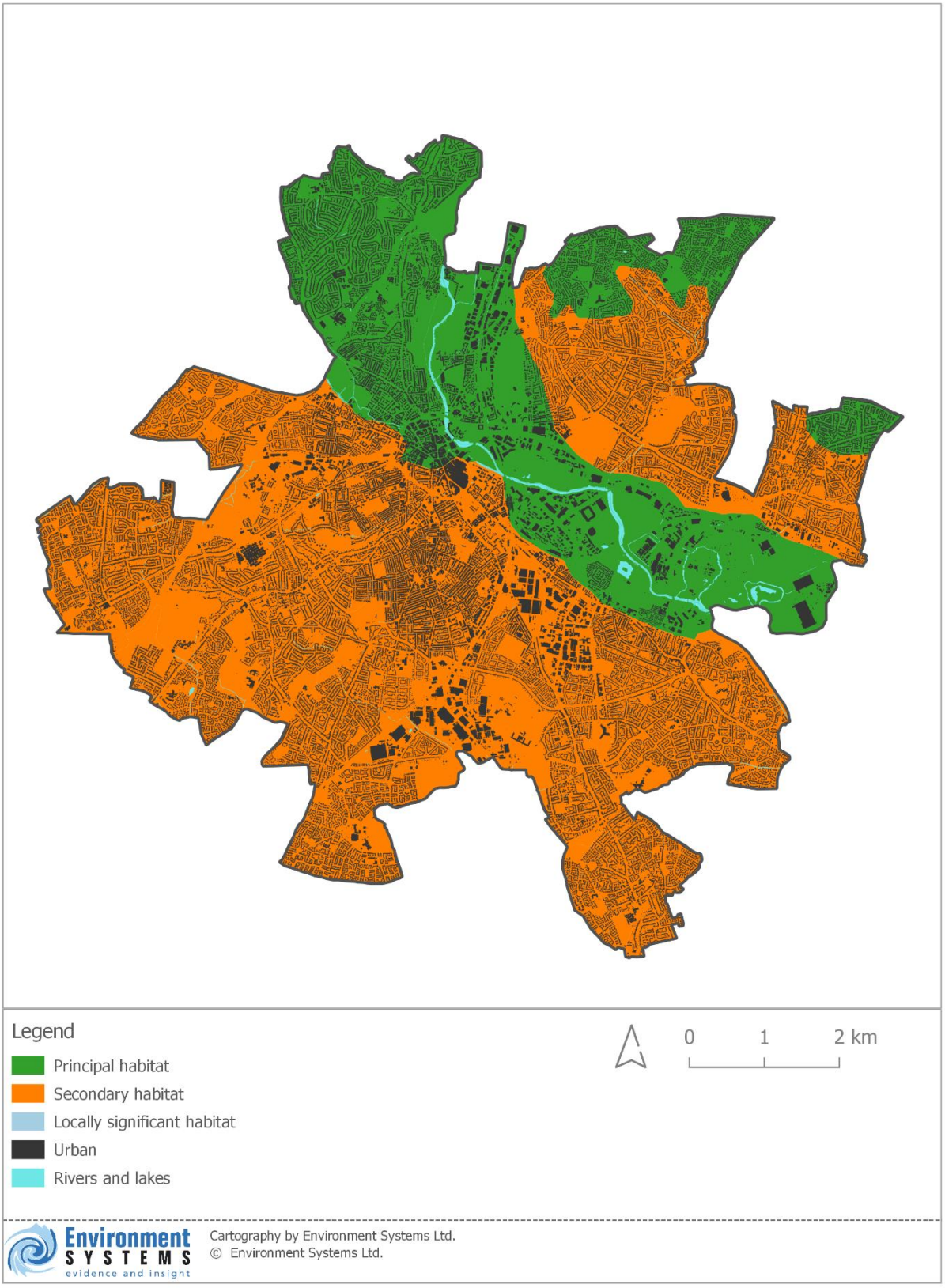


Figure 2: Landscape Character Types where the Woodland & Forest broad habitat type is a priority for conservation, restoration or habitat creation

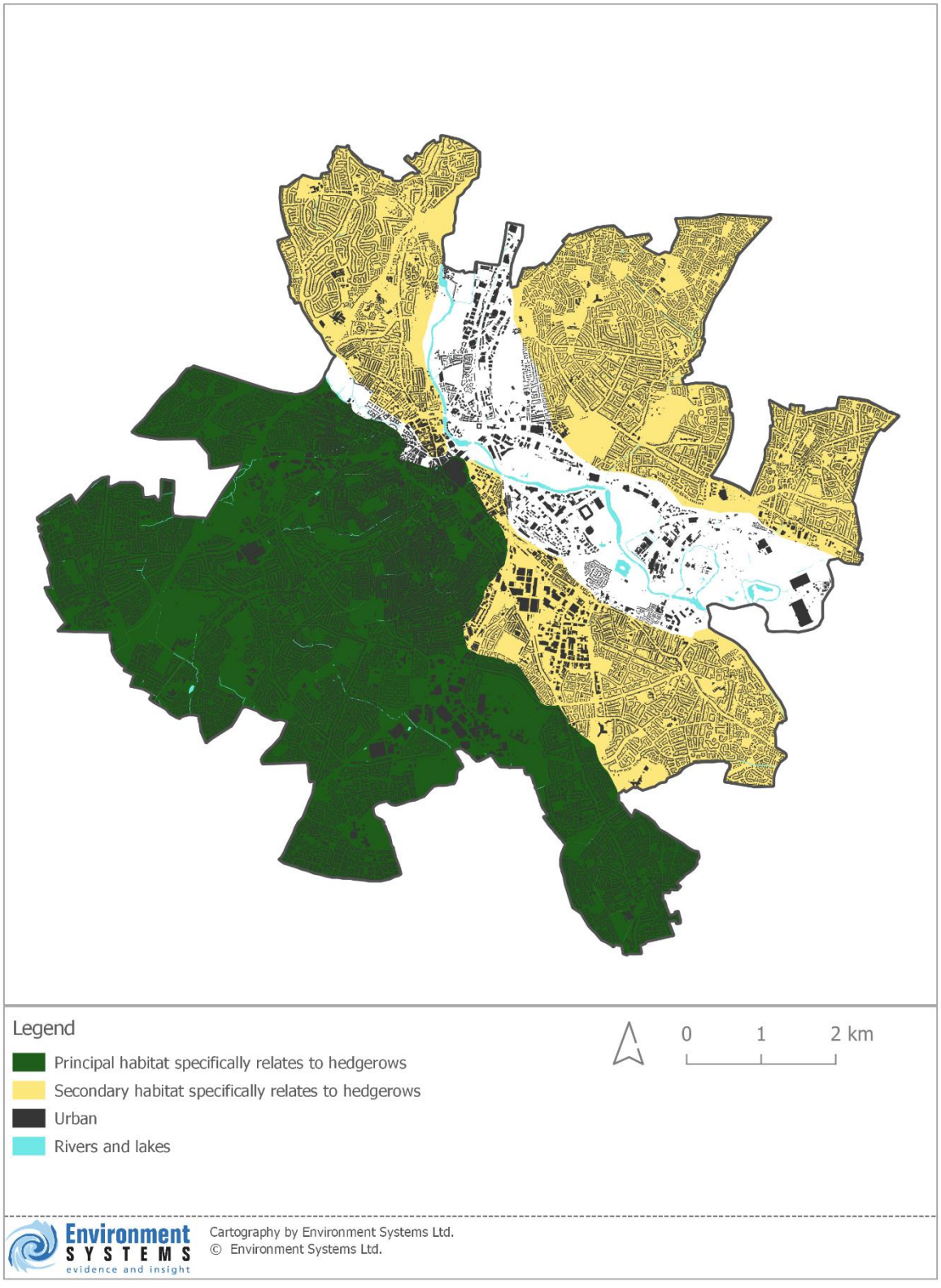


Figure 3: Landscape Character Types where the Heathland & Shrub broad habitat type is a priority for conservation, restoration or habitat creation

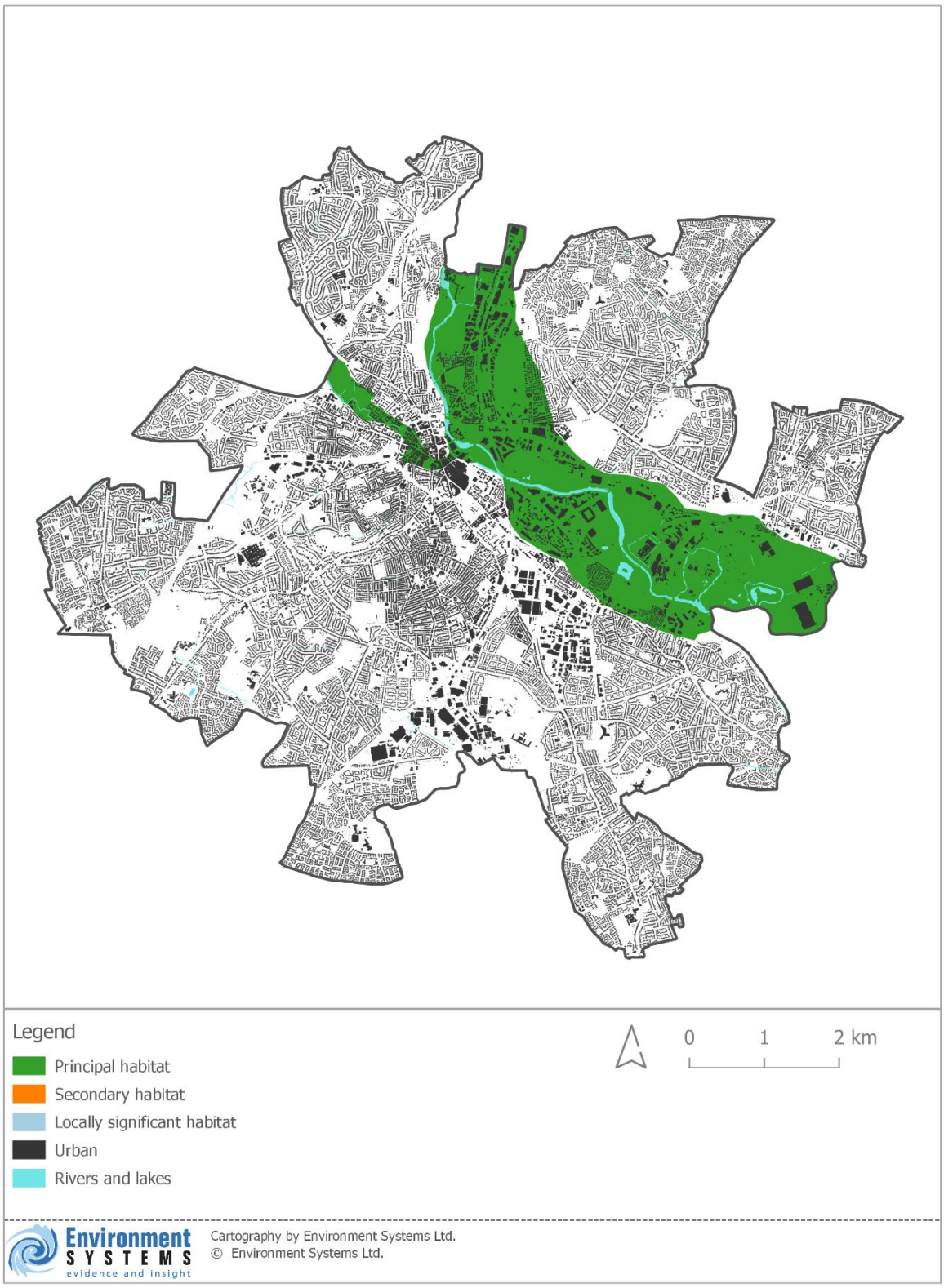


Figure 4: Landscape Character Types where the Wetland broad habitat type is a priority for conservation, restoration or habitat creation

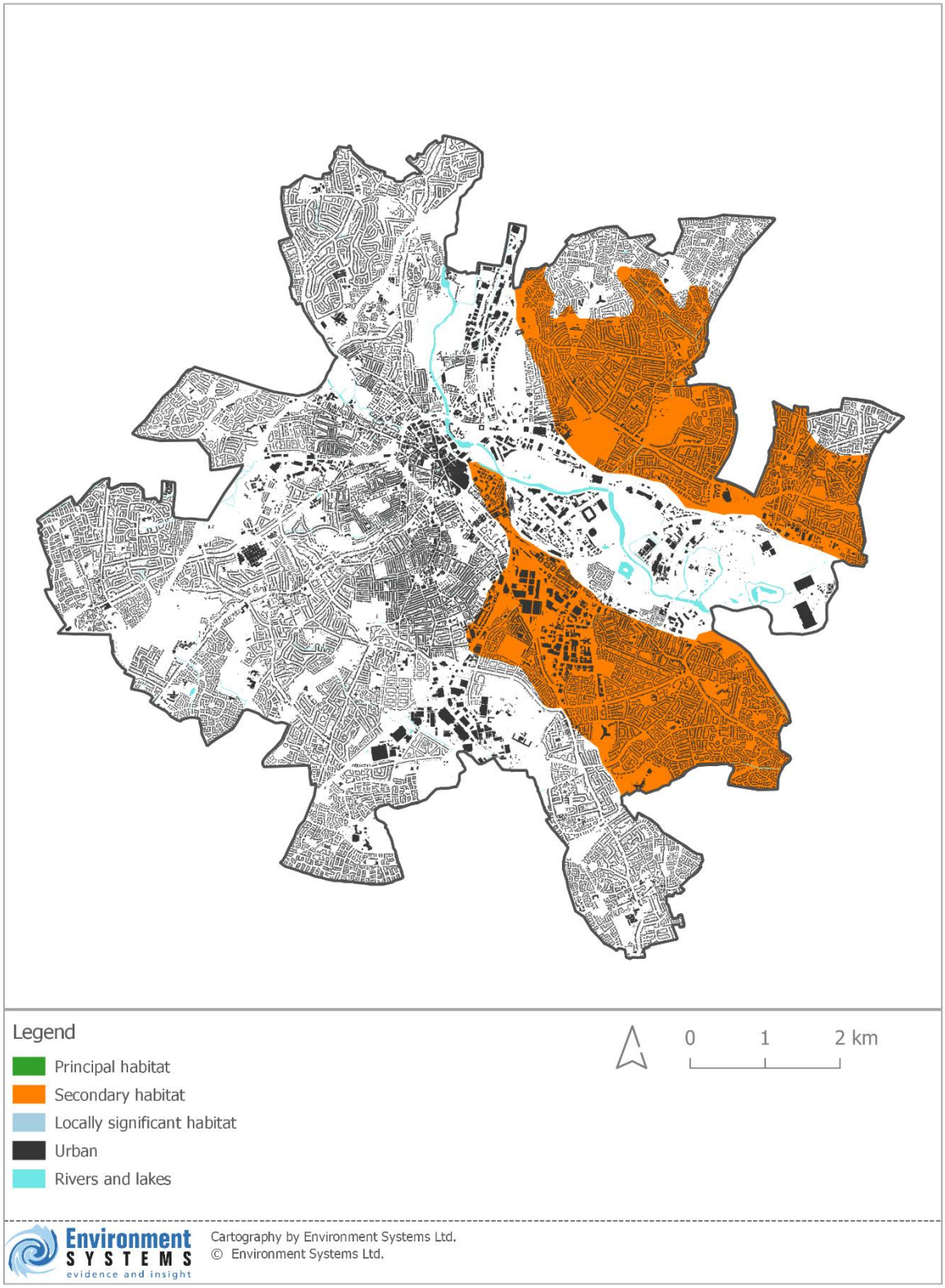


Figure 5: Landscape Character Types where the Urban broad habitat type is a priority for conservation, restoration or habitat creation

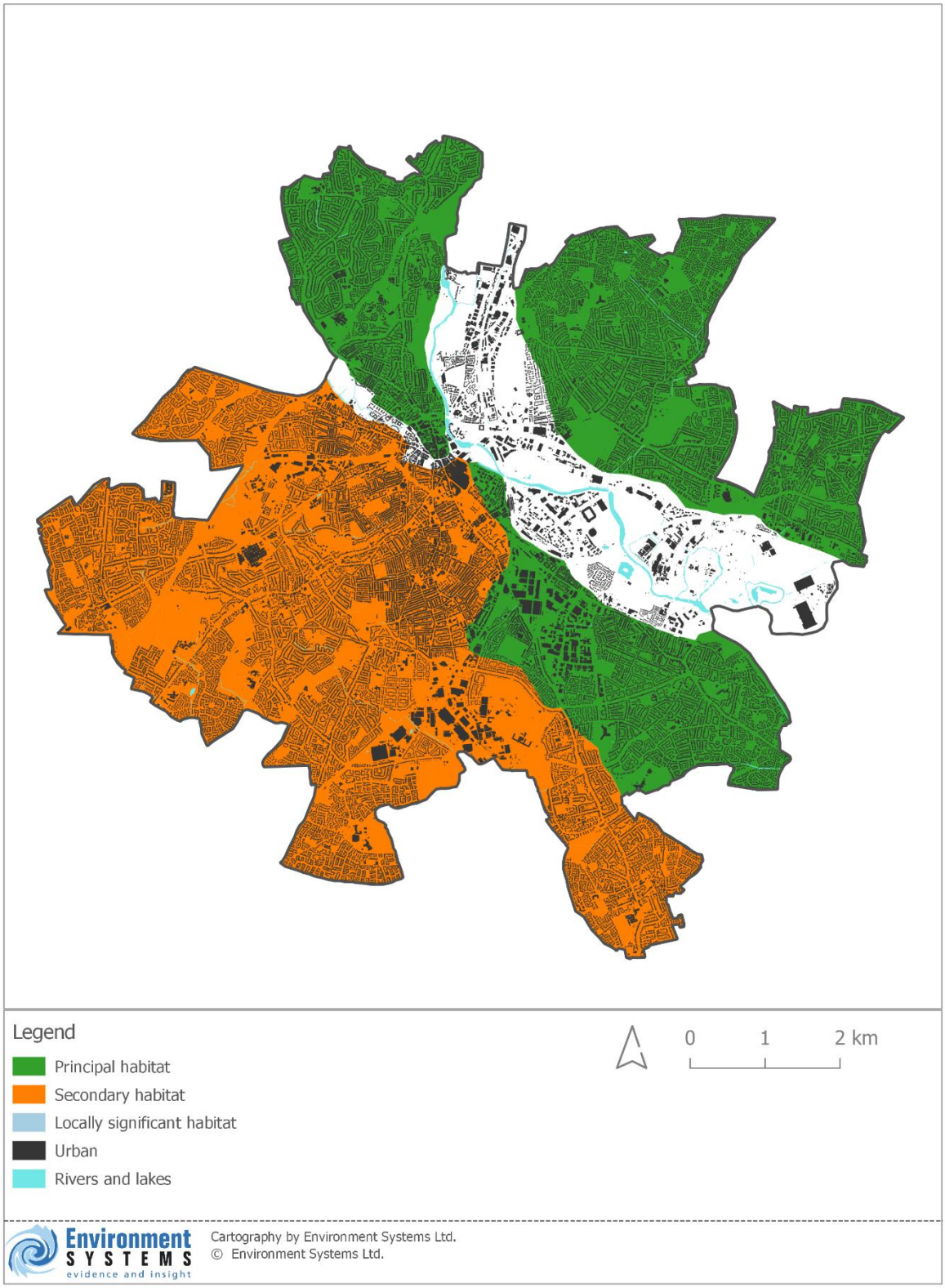


Figure 6: Landscape Character Types where the Cropland broad habitat type is a priority for conservation, restoration or habitat creation

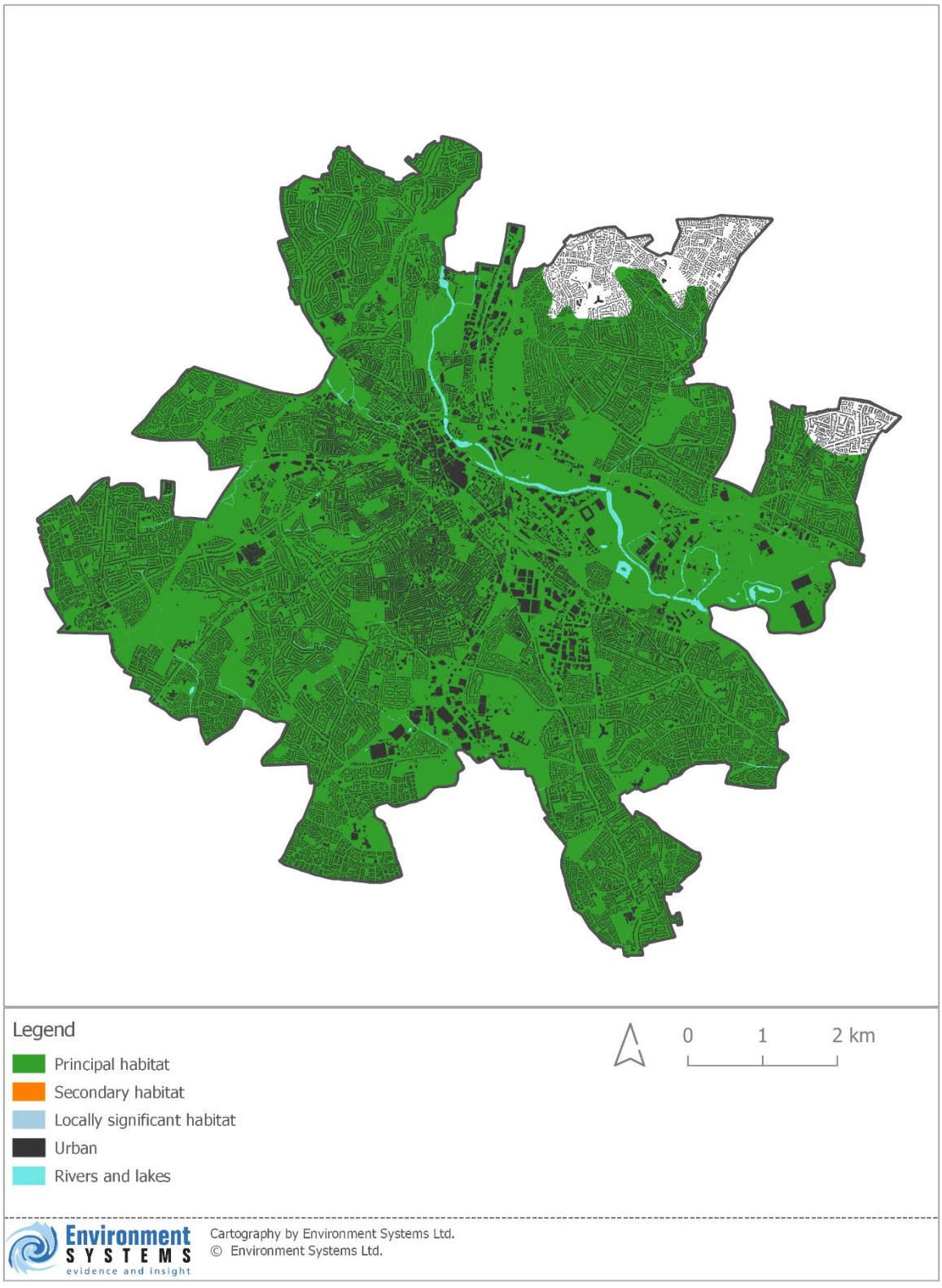


Figure 7: Landscape Character Types where the Rivers & Lakes broad habitat type is a priority for conservation, restoration or habitat creation

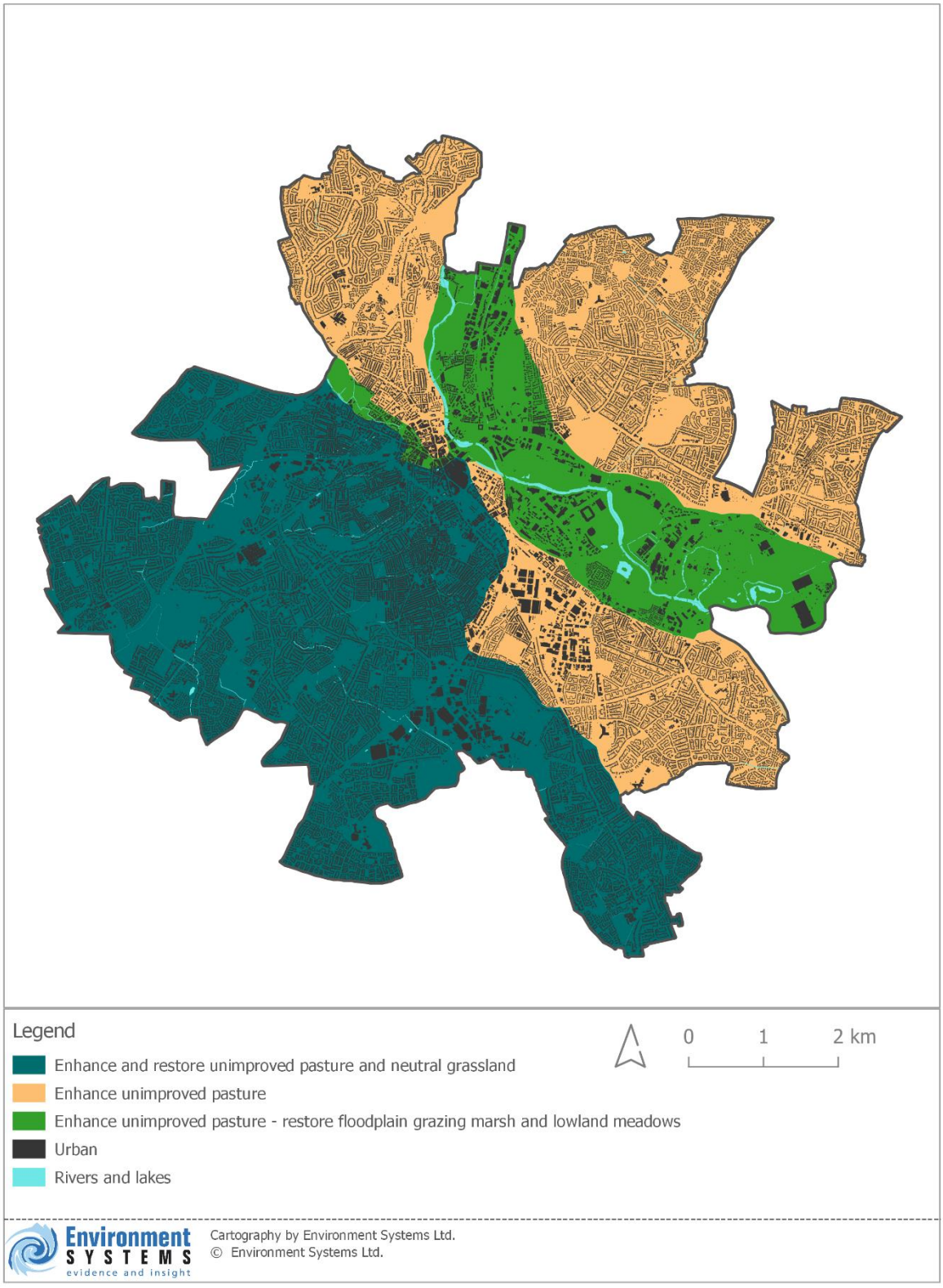


Figure 8: Locations where grassland-based habitat restoration or nature-based solutions could support the Landscape Character Type

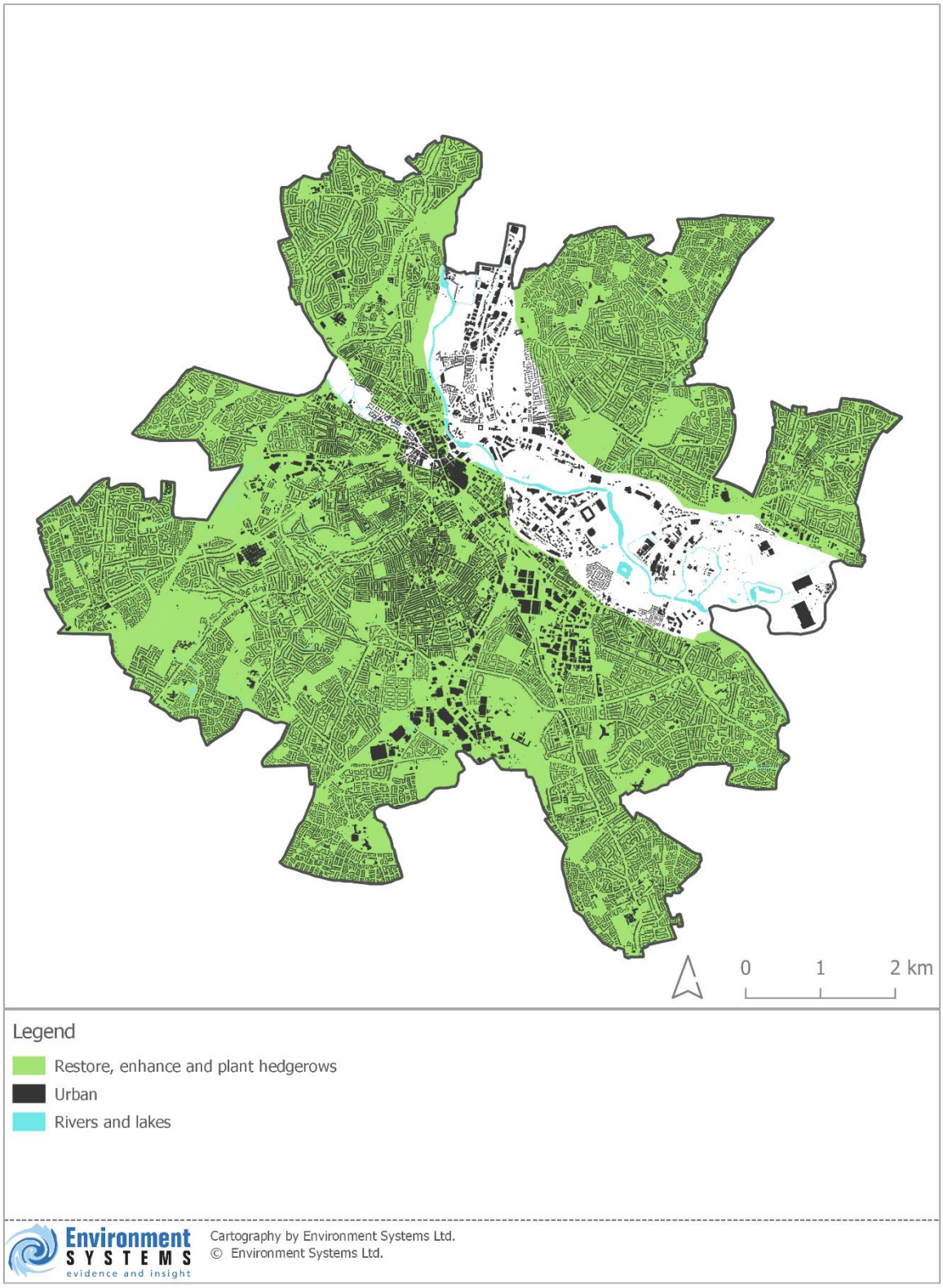


Figure 9: Locations where heathland-based habitat restoration or nature-based solutions could support the Landscape Character Type

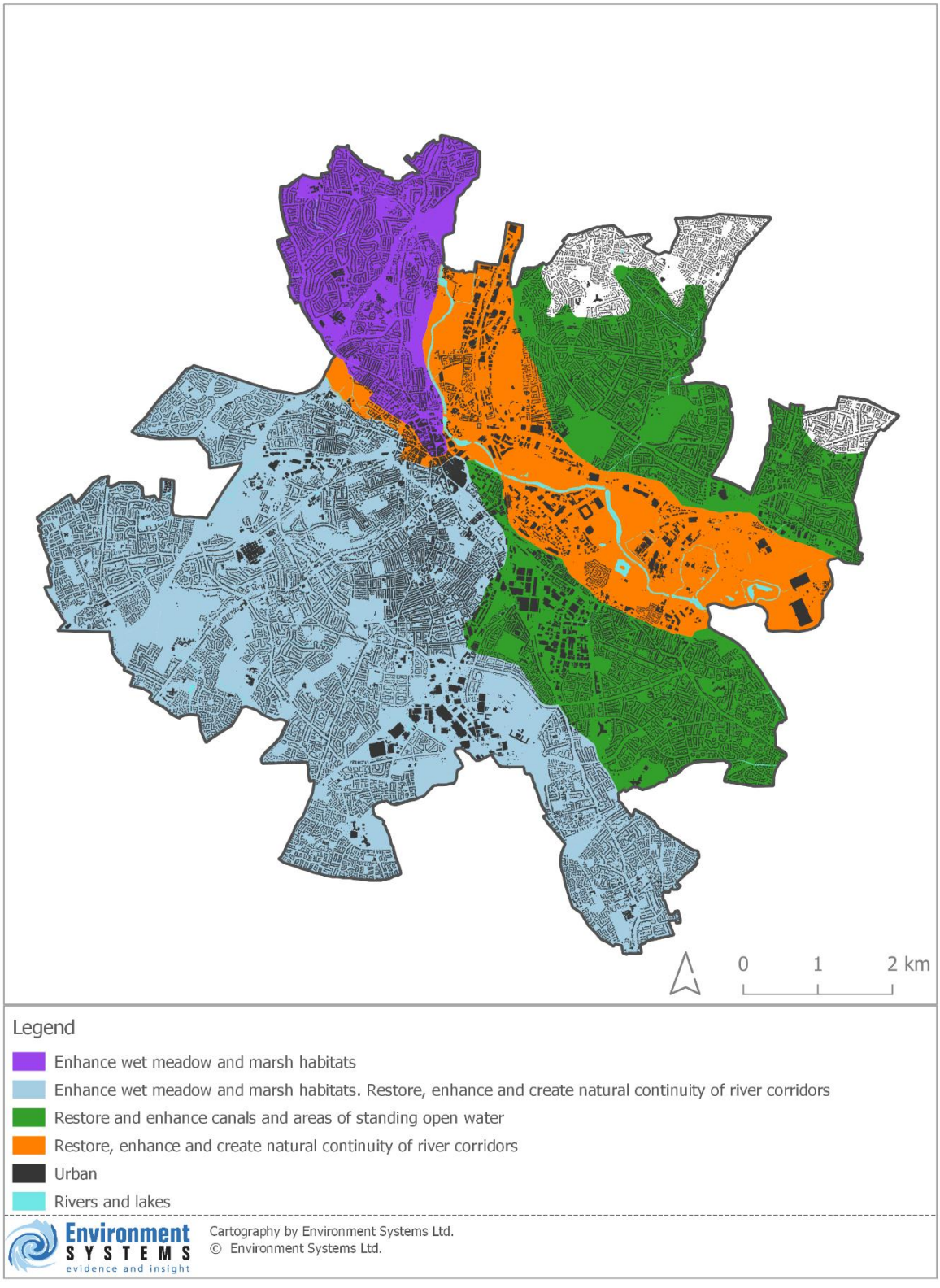


Figure 10: Locations where wetland-based habitat restoration or nature-based solutions could support the Landscape Character Type

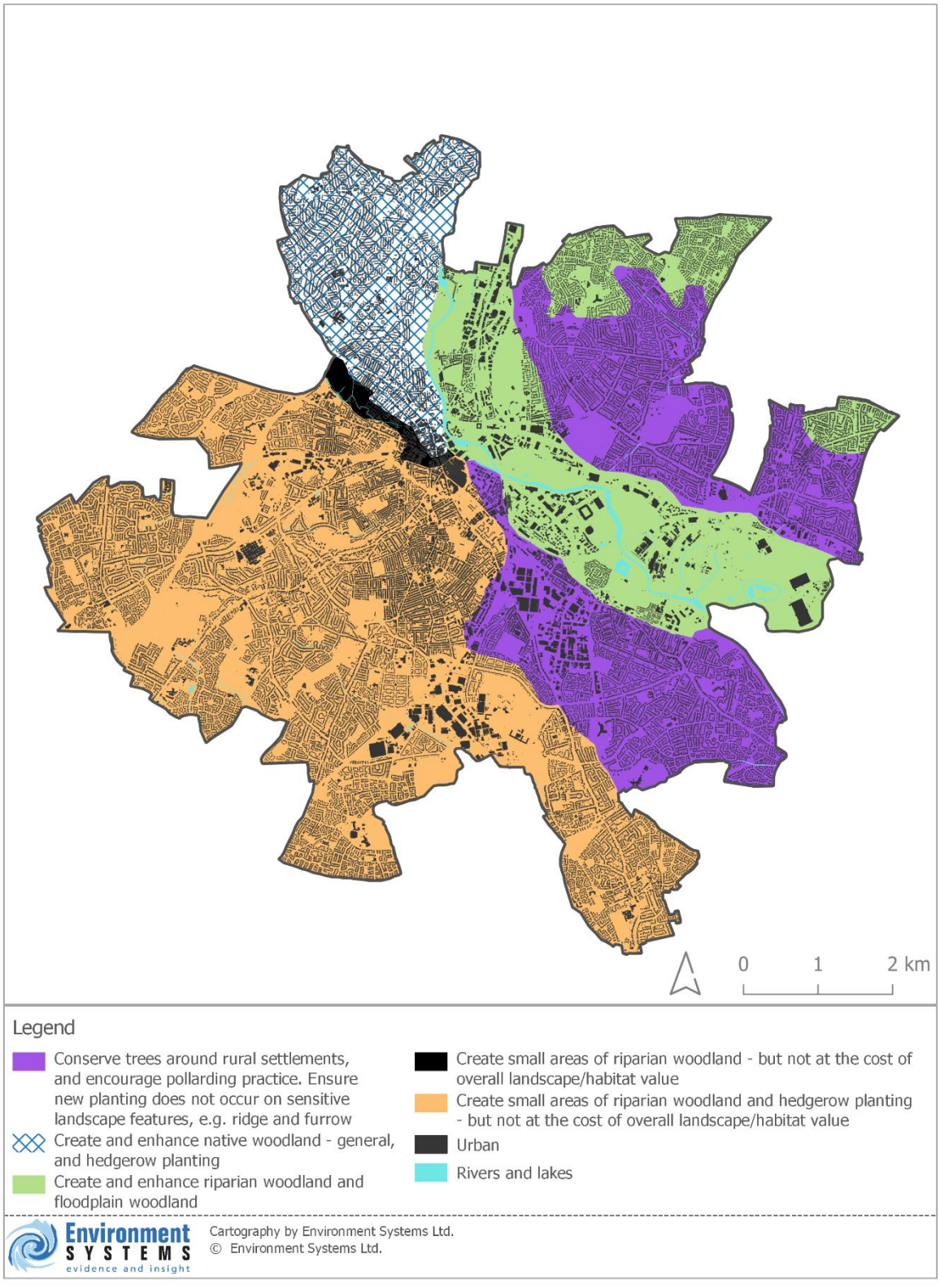


Figure 11: Locations where woodland-based habitat restoration or nature-based solutions could support the Landscape Character Type

Derbyshire Natural Capital Strategy – Appendix 11

Contents

Appendix 11: Cultural historic features and their relationship to the natural capital assets and ecosystem services

Designated status – World Heritage Site – The Derwent Valley Mills

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service or the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	**Food provision** Areas under crop or being used to rear livestock	Yes - the buffer zone includes the 'green cradle' of the WHS– the influx of workers and their concentration in the factories within the WHS led to a necessary intensification of the land for food provision in the eighteenth and nineteenth century. This relict landscape is still appreciable as a contextual backdrop to the historic WHS community.	The landscape within the buffer zone was managed variously for industrial and arable/pastoral logistics but sometimes with reference to important views from mill owners' private residences. An appreciation of this often-fossilised landscape supports an understanding of the Outstanding Universal Value (OUV) of the WHS. Any changes to landscapes/woodlands within the WHS, its buffer zone or wider setting should consider this potential effect upon the OUV, albeit it is recognised that change does not necessarily equate to harm and can be positive. Effects upon the World Heritage Site through setting change caused by natural capital projects should be explored and understood, with harm avoided wherever possible.
	Timber Areas of woodland	Yes - parts of the WHS buffer zone are under woodland. This includes steep wooded valley sides in the north with smaller woodlands elsewhere. Some of the woodlands were exploited in the eighteenth and nineteenth century for building materials for the construction of the mills and associated buildings.	
	Water supply Water supplies for public, agricultural or industrial use	Yes - the WHS extends along the footprint of the River Derwent and has many elements associated with harnessing the power of the river for industrial use. These include mill ponds, aqueducts, culverts, weirs, leats, soughs and launders. The underground Bessalone Reservoir is also notable, built by mill owner George Henry Strutt as a clean water supply for Belper in 1895.	An appreciation of the physical supply of water provided by the Derwent and how it was engineered to provide power is fundamental to the understanding of the WHS. Any natural capital projects which affect the River Derwent and its tributaries should ensure that the effect of this on the appreciation and experience of the WHS is understood, with harm to key historic infrastructure avoided wherever possible.
	Minerals Minerals which could be exploited for human benefit	Yes - the buffer zone extends across areas of limestone with mineralised veins. Areas of sandstone are also present. Historic disused quarries represent the extraction of stone for the building of the mills and associated buildings.	The disused quarries evoke an understanding of the early industrial activity and the arrest of activity which fossilised many elements of the landscape within the WHS. Any natural capital projects which affect mineral resources within the WHS, its buffer zone or wider setting should ensure that the effect of this on the appreciation and experience of the WHS is understood, with harm to OUV avoided wherever possible.

	Fish Freshwater areas capable of providing fish for human consumption	Yes - the WHS extends along the footprint of the River Derwent.	Fisheries could take advantage of the River Derwent and its tributaries with positive outcomes for conservation through investment associated with diversification. Scheduled Monument/Listed Building Consent may be required for any physical change to statutorily designated structures within the WHS. Setting changes may also be a consideration, with careful design encouraged to negate/minimise harm to the WHS through setting change.
	Peat Peat deposits	Unlikely	No peat deposits are recorded.
Regulating Services	**Carbon sequestration** Areas of tree planting and vegetation which store carbon dioxide.	Yes – the WHS and the buffer zone include areas of planting and vegetation.	Removal/addition of trees/vegetation could affect important setting elements contributing towards the OUV of the WHS. Effects to the World Heritage Site through setting change caused by natural capital projects should be explored and understood, with harm avoided wherever possible.
	Air pollutant removal Areas of vegetation which help to lessen air pollution.		
	Water flow regulation Areas of vegetation which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water which reduce air temperature in Summer.	Yes – the WHS and the buffer zone include areas of woodland, planting and open water.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could physically affect statutorily designated structures and require Scheduled Monument/Listed Building Consent. However, the positive outcome of restoring or revealing a Scheduled Monument/Listed Building and/or its intended setting within the WHS would likely be beneficial to the WHS and an appreciation of its OUV. Effects should be clearly understood with harm avoided wherever possible.
	Waste remediation Areas with the ability to act as a 'sink' for natural recycling of waste.	Yes –the buffer zone includes areas where green waste could be spread.	None anticipated with respect to affects to OUV.

Cultural Services	**Recreation and tourism/Physical Health and Mental Wellbeing** Publicly accessible green spaces which provide for opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Yes. A visitor centre exists at the North Mill, Belper and other opportunities to experience these services are present or possible across the WHS.	Increased public access to areas within the WHS and the provision of education resources to allow for an understanding of the OUV of the WHS may afford for a greater sense of place and public wellbeing through increased opportunities to appreciate cultural services. The opening up of buildings and areas within the WHS could provide for additional opportunities for visitors and residents to be educated about and understand the history of the WHS and the areas Outstanding Universal Value.
	Volunteering Opportunities for volunteering particularly in association with charitable organisations.	Yes.	
	Education Educational benefits may be readily appreciable, particularly where assets are accessible to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.	Yes.	
Bundled environmental effects	**Biodiversity** All animals, plants and fungi	Yes. The WHS supports a wide variety of flora and fauna.	The introduction of new species of flora and fauna is unlikely to be detrimental to the WHSs OUV as long as an appreciation of the woodlands, pasture and arable areas of the asset's 'green cradle' are not adversely affected.
	Amenity Tranquillity and recreational opportunities.	Yes.	See 'cultural services' above.
	Landscape	Yes.	See 'cultural services' above.

	Landscapes providing cultural and aesthetic benefits.		
	Soil health Soils storing carbon, filtering water and providing nutrients	Yes. The soils within the footprint of the buffer zone provide this service.	None anticipated with respect to affects to OUV.

Designated status - Scheduled Monuments

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service or the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	**Food provision** Areas under crop or being used to rear livestock within the footprint of or within the setting of a Scheduled Monument.	Possible. Many monuments within an agricultural/moorland setting are currently under an arable or grazing regime or within the immediate vicinity of one.	New arable use of a monument has the potential to disturb buried archaeological remains and would require Scheduled Monument Consent. Continued arable or horticultural activity within a monument's footprint should be undertaken in accordance with class consent (1) of the Scheduled Monuments and Archaeological Areas Act (1979). The removal of a monument from arable or horticultural use could be positive, ensuring the preservation of any remaining earthworks should they be present; for example those associated with **barrows, cairns, ridge and furrow**. Indirectly, arable areas and areas of rough pasture may be important setting elements which contribute towards an understanding of a monument. Changes to landscapes within the setting of a monument should consider this potential effect, albeit it is recognised that change does not necessarily equate to harm and can be positive. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
	Timber Areas of woodland within the footprint of or within the setting of a Scheduled Monument.	Possible. Many monuments are located within areas under forestry and may be under tree cover themselves.	Removal of trees from within a monument (cut to ground level) may be positive in respect to preventing intrusive root damage to archaeological remains. New forestry within the footprint of a Scheduled Monument has the potential to disturb buried archaeological remains and would require Scheduled Monument Consent. Continued forestry activity within a monument's footprint should be undertaken in accordance with class consent (1) of the Scheduled Monuments and Archaeological Areas Act (1979). With regard to the setting of monuments, changes to vegetation could affect an understanding and appreciation of monuments topographical/functional location. Effects could be positive or negative. Planting in the setting may be detrimental if important views are adversely affected. Removal of trees in the landscape may reinstate important views – benefit the setting. Particularly sensitive asset types to tree planting/removal in terms of changes to views might be **barrows, beacons cairns, chambered tombs, hill forts, henges, promontory forts**. Effects to Scheduled Monuments through setting change should be explored and understood, with harm avoided wherever possible.
	Water supply Water supplies for public, agricultural or industrial use associated within the setting of a Scheduled Monument	Possible. Certain monuments may be associated with water supply infrastructure, such as dams. Other monuments of an industrial nature may rely on a water supply for their function, water being an important element of their	The maintenance of a water supply with an infrastructure incorporating a Scheduled Monument could affect the conservation of the monument's heritage significance. Any maintenance to waterbodies which could physically affect a scheduled monument such as a **bridge or a mill** would need to consider the physical effect of any works to the scheduled monument's interest with any physical change requiring scheduled monument consent. The indirect effect of any works on the setting of associated scheduled monuments should also be understood, with priority given to avoiding harm wherever possible.

		setting, for example, **building/mill**	
	Minerals Minerals which could be exploited for human benefit within/beneath the footprint of a Scheduled Monument or within its setting	Possible. Certain monuments are directly related to past mineral extraction: **Industrial – iron working/lead working/limestone**	Any mineral extraction beneath or within the vicinity of a Scheduled Monument would need to carefully consider direct and indirect effects. The need for Scheduled Monument Consent would be required for disturbance within the footprint of a monument and explored for works at depth beneath a monument. Mineral extraction in the vicinity of a monument may cause change to important setting elements or may cause change which does not affect an understanding of significance. The indirect effect of any works on the setting of scheduled monuments should be understood, with harm avoided wherever possible.
	Fish Freshwater areas capable of providing fish for human consumption within a Scheduled Monument or within the setting of a Scheduled Monument	Possible. Certain monuments such as **medieval fishponds** historically held this natural capital and could therefore hold a modern potential. Other monuments such as those associated with rivers may have the potential to be affected by natural capital changes in relation to this service: **building/mill**	Fisheries could take advantage of waterbodies which incorporate scheduled monuments with positive outcomes for their conservation through investment associated with diversification. Scheduled Monument Consent would be required for any physical change to designated structures. Setting changes may also be a consideration, with careful design encouraged to avoid harm through setting change.
	Peat Peat deposits within waterlogged areas of Scheduled Monuments or within the setting of a Scheduled Monument.	Possible. Deposits of peat may be located within the footprint of monuments or their vicinity.	Peat deposits have particular archaeological potential due to their anaerobic conditions which allow for the preservation of organic matter. Disturbance to peat deposits/creation of new peat deposits within a Scheduled Monument would require Scheduled Monument Consent. The creation of any peatland in the vicinity of a Scheduled Monument may also need to consider the effect on landscape features which may be important setting elements associated with the understanding of a monument. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
Regulating Services	**Carbon sequestration** Areas of tree planting and vegetation within the setting of a Scheduled Monument which store carbon dioxide.	Possible. Many monuments are located within areas under planting.	Removal/addition of trees/vegetation could affect important setting elements contributing towards the significance of a monument. Effects could be positive or negative. Planting of tracts of woodland could block important sight lines between contemporary monuments, monuments built in relation to earlier monuments or views of the horizon/sky that are important un understanding the ritual functionality of monuments. Conversely, the removal of trees/vegetation could reinstate lost sightlines. Particularly sensitive monuments might comprise, **barrows, castles, cairns, chambered tombs, henges, beacons, hill forts**. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
	Air pollutant removal Areas of vegetation within the setting of a Scheduled Monument which help to lessen air pollution.		

	Water flow regulation Areas of vegetation and trees within the setting of a Scheduled Monument which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water within the footprint of or the setting of a monument which reduce air temperature in Summer.	Possible. Many monuments are located within areas under planting or are located nearby to or directly associated with waterbodies, for example **building/mill**.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could physically affect designated structures and require Scheduled Monument Consent. However, the positive outcome of restoring or revealing a Scheduled Monument and/or its intended setting would likely be beneficial to the heritage resource. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
	Waste remediation Areas within the footprint or setting of a Scheduled Monument with the ability to act as a 'sink' for natural recycling of waste.	Possible. Monuments within land under arable cultivation may be subject to green waste strategies.	Detrimental effects of the spreading of waste on land including Scheduled Monuments should be considered. For example, the spreading of 'green waste' is known to affect the efficacy of geophysical survey. This could result in a lack of understanding of any below ground archaeological potential associated with a Scheduled Monument.
Cultural Services	**Recreation and tourism/Physical Health and Mental Wellbeing** Publicly accessible green spaces within a monument or its setting which provide for opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Possible. For example, monuments owned by organisations allowing for public access and appreciable monuments accessible by public rights of way	Increased public access to areas including Scheduled Monuments may afford for improved access to monuments such that their presence and function can be better understood, allowing for a greater sense of place and public wellbeing through increased opportunities to appreciate cultural services. Monuments likely to provide this service or have the potential to hold this service include **castles, building manion/abbey/house/ecclesiastical/industrial/barrows/hillforts/cairns and caves.** The revelation of these assets within the landscape, which natural capital projects may result in, could allow for a visual understanding of topographic advantage and important vistas, assisting in the public comprehension of the function and use of these assets and their relevance in the understanding of a place's rich historic tapestry.
	Volunteering	Possible.	

	Opportunities for volunteering particularly in association with charitable organisations.		
	Education Educational benefits may be readily appreciable, particularly where Scheduled Monuments are accessible to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.	Possible. For example, monuments owned by organisations allowing for public access and appreciable monuments accessible by public rights of way	
Bundled environmental effects	**Biodiversity** All animals, plants and fungi within a Scheduled Monument or within its setting.	Possible. Certain monuments provide for particular flora and fauna to thrive. For example, **caves** may be beneficial for bats and lichens whilst **industrial** monuments characterised by high levels of industrial residues may be associated with specific flora.	Scheduled Monuments may hold specific areas of isolated natural capital due to their designation which, whilst protecting the ground from disturbance, may facilitate specific habitat types to flourish. The industrial character of certain Scheduled Monuments may also benefit certain flora such as metal tolerant plants. The introduction of new species of flora could affect the current character of Scheduled Monuments. The effect of this should be investigated and understood. The control of specific fauna may better reveal a monument or protect it from damage, for example animal burrowing. The creation of habitat/facilities to encourage the translocation of mammals from a monument may be beneficial to long term conservation of monuments. Where appropriate, effects to Scheduled Monuments should be explored and understood with harm avoided wherever possible.
	Amenity Tranquillity and recreational opportunities.	Possible. Many publicly accessible monuments allow for a particular appreciation of tranquillity which is associated with their intended function, for example **building ecclesiastical.** Recreational opportunities can be provided through the exploring of **caves, castles** and other monuments accessible to the general public,	See 'cultural services' above.

	Landscape Landscapes providing cultural and aesthetic benefits.	Possible. Monuments are parts of rural and urban landscapes which have the potential to provide broad benefits.	See 'cultural services' above.
	Soil health Soils storing carbon, filtering water and providing nutrients	Possible	None anticipated with respect to affects to cultural significance.

Designated status – Listed Buildings

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service of the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	**Food provision** Areas under crop or being used to rear livestock in the setting of a listed building.	Possible. The setting of many Listed Buildings will include areas of an agricultural/pastoral character which may contribute positively towards an understanding of a building's overall significance.	Arable areas and areas of rough pasture may be important setting elements which contribute towards an understanding of a listed building. Changes to landscapes within the setting of a listed building should consider this potential effect, albeit it is recognised that change does not necessarily equate to harm and can be positive. For example, **farmhouses** may be particularly sensitive to changes which affect an appreciation of an immediate rural backdrop comprising rough pasture and/or arable land. Similarly, **country houses** may be affected by changes to arable and pastoral areas should this change be detrimental to the understanding of a particular design intention referencing arable/pastoral character. Potential effects upon the significance of Listed Buildings through setting change should be explored and understood, with harm avoided wherever possible.
	Timber Areas of woodland in the setting of a listed building.	Possible. Listed Buildings may be located within woodland, on the edge of the woodland or in wider association with woodland, the woodland potentially contributing positively towards an understanding of a building's overall significance.	Changes to tree planting could affect an understanding and appreciation of design intentions contributing to the significance of a vista appreciable from a listed building. Effects could be positive or negative. **Country houses** in-particular may be sensitive to the removal/addition of trees. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas of buildings blocked. Potential effects upon the significance of Listed Buildings through setting change should be explored and understood, with harm avoided wherever possible.
	Water supply Water supplies for public, agricultural or industrial use associated with a listed building or within its setting.	Possible. Certain Listed Buildings may be associated with water supply infrastructure, such as **bridges**. Other Listed Buildings of an industrial nature may rely on a water supply for their function, water being an	The maintenance of a water supply with an infrastructure incorporating listed buildings could affect the conservation of the listed building's heritage significance. Any maintenance to waterbodies which could physically affect a listed building would need to consider the physical effect of any works to the listed buildings interest with any physical change requiring listed building consent. The indirect effect of any works on the setting of

		important element of their setting, for example, **mills.**	associated listed buildings should also be understood, with consideration given to avoiding harm wherever possible.
	Minerals Minerals which could be exploited for human benefit beneath a listed building or within its setting.	Possible. Listed Buildings may be sensitive to setting change associated with mineral exploitation.	Any mineral extraction beneath or within the vicinity of a listed building would need to carefully consider direct and indirect effects. Adverse effects may occur although reinstatement could offer enhancement in the long term. Potential effects upon the significance of Listed Buildings through setting change should be explored and understood, with harm avoided wherever possible.
	Fish Freshwater areas capable of providing fish for human consumption associated with a listed building or within its setting.	Possible. Listed Buildings such as those associated with reservoirs and rivers may have the potential to be affected by natural capital changes in relation to this service: **mill.**	Fisheries could take advantage of waterbodies which incorporate listed buildings such as **weirs**, with positive outcomes for their conservation through investment associated with diversification. Listed building consent would be required for any physical change to listed structures. Setting changes may also be a consideration, with careful design encouraged to negate harm through setting change.
	Peat Peat deposits within waterlogged areas within the setting of a listed building.	Possible. Deposits of peat may be located within the setting of a Listed Building.	Deposits of peat are not likely to contribute towards the overall importance of a listed building. However, any creation of peatland would need to consider the effect on landscape features which may be important setting elements associated with specific listed buildings. Effects upon the significance of listed buildings through setting change should be explored and understood with harm avoided wherever possible.
Regulating Services	**Carbon sequestration** Areas of tree planting and vegetation within the setting of a listed building which store carbon dioxide.	Possible. Vegetation and planting may represent an important setting element of a Listed Building.	Removal/addition of trees/vegetation could affect an understanding and appreciation of design intentions contributing to the significance of a listed building. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees/vegetation could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas blocked. Building types most sensitive to change include **country houses and churches**.
	Air pollutant removal Areas of vegetation within the setting of a listed building which help to lessen air pollution.		
	Water flow regulation Areas of vegetation and trees within the setting of a listed building which reduce rainfall flows entering rivers.		
	Noise mitigation		

	Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water within the setting of a listed building which reduce air temperature in Summer.	Possible. Natural capital regulating the climate may represent an important setting element of a Listed Building.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could physically affect listed structures and require listed building consent. However, the positive outcome of restoring or revealing a listed building and/or its intended setting would likely be beneficial to the heritage resource. Effects upon the significance of listed buildings through setting change should be explored and understood with harm avoided wherever possible.
	Waste remediation Areas within the setting of a listed building with the ability to act as a 'sink' for natural recycling of waste.	Possible. Land under arable cultivation within the setting of a Listed Building may be subject to green waste strategies.	None identified.
Cultural Services	**Recreation and tourism, Physical Health and Mental Health** Publicly accessible green spaces within the setting of a listed building which provide for opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Possible. For example, Listed Buildings owned by organisations allowing for public access, for example **castles, churches, country house/mansion.**	Increased public access to areas including listed buildings may afford for improved access to listed buildings (at least externally) such that an assets historic, architectural and artistic interests may be better understood, allowing for a greater sense of place and public wellbeing through increased opportunities to appreciate cultural services and benefit from them.
	Volunteering Opportunities for volunteering particularly in association with charitable organisations.	Possible. For example, Listed Buildings owned by organisations allowing for public access, for example **castles, churches, country house/mansion.**	
	Education Educational benefits may be readily appreciable, particularly where listed buildings are open to the public and where exhibitions and material within public displays/information	Possible. For example, Listed Buildings owned by organisations allowing for public access, for example **castles, churches, country house/mansion.**	

	boards is readily accessible and informative.		
Buildings environmental effects	**Biodiversity** All animals, plants and fungi within a listed building, on its fabric or within its setting.	Possible. Some buildings may incidentally support wildlife, for example **churches** (bats) or have been designed specifically for livestock – **barn, stables**.	The introduction of new species of flora and fauna may be detrimental to design intentions within the setting of a listed building. The control of specific flora and fauna may better reveal original design intentions and/or rectify past interventions ultimately detrimental to earlier phases of development. The creation of habitat/facilities to encourage the translocation of mammals from roof spaces may be beneficial to long term conservation of listed buildings. Conversely the conservation of listed buildings designed for animal habitation would provide opportunities for preservation. Where necessary, effects upon the significance of listed buildings through biodiversity changes should be explored and understood with harm avoided wherever possible.
	Amenity Tranquillity and recreational opportunities.	Possible. Many publicly accessible Listed Buildings allow for a particular appreciation of tranquillity which is associated with their intended function. For example **churches, country house/mansion, garden-ornamental, statues.** Recreational opportunities can be provided through **boathouses, pavilions** etc.	See 'cultural services' above.
	Landscape Landscapes providing cultural and aesthetic benefits.	Possible. Listed Buildings are parts of rural and urban landscapes which have the potential to provide broad benefits.	See 'cultural services' above.
	Soil health Soils storing carbon, filtering water and providing nutrients	Not Possible	Not applicable.

Designated status – Registered Parks and Gardens

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service of the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning services	**Food provision** Areas under crop or being used to rear livestock.	Possible	Arable cultivation may have historically been undertaken within some areas of parkland and may therefore be in keeping with historic land use, allowing for an understanding and appreciation of the arable production associated with the parkland and its manor. Similarly, areas of rough pasture are commonly present to large tracts of parkland, for the grazing of livestock. The retention of this common character type would likely be beneficial towards an understanding of historic use and character. Particular note is provided in reference to medieval ridge and furrow earthworks within parks and gardens. These commonly reference the emparkment and desertion of medieval villages in close proximity to manor houses. Effects on parkland character and earthworks through any new areas of arable cultivation should be carefully considered. Effects or changes to crop/pasture regimes should be explored and understood with harm avoided wherever possible.
	Timber Areas of woodland.	Possible	Removal/addition of trees could affect an understanding and appreciation of design intentions contributing to the significance of a parkland/garden. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas blocked. Species considerations should also be taken into account when determining the effect on the parkland/garden. Changes to tree planting should be explored and understood with harm avoided wherever possible.
	Water supply Water supplies for public, agricultural or industrial use.	Possible	The maintenance of a water supply or the provision of a new supply of water affecting land within a registered park and garden or its setting could affect the conservation of its heritage significance. Any maintenance to waterbodies within a registered park and garden that contribute to a water supply should consider the physical effect of any works to historic elements of architectural or artistic interest and the indirect effect of the works on the setting of the park and garden, with

			consideration given to avoiding harm and providing for conservation and enhancement wherever possible.
	Minerals Minerals which could be exploited for human benefit.	Possible	The footprint of any mineral extraction within a registered park and garden would need to carefully consider direct and indirect effects. Adverse effects would be predicted, albeit reinstatement could offer enhancement in the long term. The effect of mineral extraction should be understood with any harm avoided where possible.
	Fish Freshwater areas capable of providing fish for human consumption.	Possible	Fisheries could take advantage of waterbodies within registered parks and gardens, with potential positive outcomes for their conservation through investment associated with diversification, albeit care would be required to minimise/negate harm to architectural/artistic elements of special interest. The effect of any change should be understood with harm avoided wherever possible.
	Peat Peat deposits within waterlogged areas.	Possible	Deposits of peat are not likely to contribute towards the overall importance of registered parks and gardens. However, any creation of peatland would need to consider the effect on park and garden features which do contribute towards the overall significance of the asset. The loss of any landscape contributing towards significance could be detrimental to the asset and would need to be understood with harm avoided wherever possible.
Regulating Services	**Carbon sequestration** Areas of tree planting and vegetation which store carbon dioxide.	Possible	Removal/addition of trees/vegetation could affect an understanding and appreciation of design intentions contributing to the significance of a parkland/garden. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees/vegetation could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas blocked. Species considerations should also be taken into account when determining the effect on the parkland/garden. The effect of any works on the registered park and garden should be understood with harm avoided wherever possible.
	Air pollutant removal Areas of vegetation which help to lessen air pollution.		
	Water flow regulation Areas of vegetation and trees which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water which reduce air temperature in Summer.	Possible	As above specifically for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could restore historic design intentions. However, the creation, damming or diversion of watercourses to create new waterbodies may adversely affect design intentions. The effect of any changes on

			the overall significance of the registered park and garden would need to be understood with harm avoided wherever possible.
	Waste remediation Areas with the ability to act as a 'sink' for natural recycling of waste.	Possible	Detrimental effects of the spreading of waste on land within a registered park and garden should be considered. For example, the spreading of 'green waste' is known to affect the efficacy of geophysical survey. This could result in a lack of understanding of any below ground archaeological potential associated with a park and garden.
Cultural Services	**Recreation and tourism, Physical Health, Mental Health** Publicly accessible green spaces providing opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Possible	Increased public access to a park and garden and/or improvements which better reveal a park and gardens historic, architectural or artistic interests could allow for a greater sense of public wellbeing through increased opportunities to appreciate cultural services.
	Volunteering Opportunities for volunteering may be available within the park and garden, particularly in association with charitable organisations.	Possible	
	Education Educational benefits may be readily appreciable, particularly where parks and gardens are open to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.	Possible	
Bundled environmental effects	**Biodiversity** All animals, plants and fungi.	Possible	The introduction of new species of flora and fauna may be detrimental to design intentions. The control of specific flora and fauna may better reveal original design intentions and/or rectify past interventions ultimately detrimental to an understanding of earlier phases of development. The effect of biodiversity change should be clearly understood with harm avoided.
	Amenity Tranquillity and recreational opportunities.	Possible	See 'cultural services' above
	Landscape	Possible	See 'cultural services' above

	Landscapes providing cultural and aesthetic benefits		
	Soil health Soils storing carbon, filtering water and providing nutrients	Possible	None anticipated with respect to affects to cultural significance.

Designated status – Conservation Areas

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service of the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning services	**Food provision** Areas under crop or being used to rear livestock within a Conservation Area or its setting.	Possible.	Arable areas and areas of rough pasture may be important setting elements which contribute towards an understanding of a Conservation Area. Changes to landscapes within a Conservation Area or its setting should consider this potential effect, albeit it is recognised that change does not necessarily equate to harm and can be positive. Conservation Area appraisals should be reviewed for reference to important views across, within and out of Conservation Areas. Any change should seek to preserve and enhance a Conservation Area and it setting, avoiding harm.
	Timber Areas of woodland within a Conservation Area or its setting.	Possible.	Changes to vegetation could affect an understanding and appreciation of design intentions contributing to the significance of a vista appreciable within/from a Conservation Area. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost views and be positive but could also block intended vistas and be negative. Conversely, the removal of trees could adversely affect a sense of intimacy and enclosure but could also reinstate lost views should areas have become overgrown. Any change should seek to preserve and enhance a Conservation Area and it setting, avoiding harm.
	Water supply Water supplies for public, agricultural or industrial use within a Conservation Area or its setting.	Possible.	The maintenance of a water supply or the provision of a new supply of water affecting land within a Conservation Area or its setting could affect the appearance of the Conservation Area and affect its overall significance. Any maintenance to waterbodies within a Conservation Area that contribute to a water supply should consider the physical effect of any works to historic elements of architectural or artistic interest and the indirect effect of the works on the setting of the Conservation Area, with consideration given to avoiding harm and providing for preservation and enhancement wherever possible.
	Minerals Minerals which could be exploited for human benefit beneath a Conservation Area or within its setting.	Possible.	Any mineral extraction beneath or within the vicinity of a Conservation Area would need to carefully consider direct and indirect effects. Adverse effects would be predicted, albeit reinstatement could offer enhancement in the long term.
	Fish	Possible.	Fisheries could take advantage of waterbodies within Conservation Areas with positive outcomes through investment associated with diversification, albeit

	Freshwater areas capable of providing fish for human consumption within a Conservation Area or its setting.		care would be required to ensure that changes offer enhancement to the Conservation Area.
	Peat Peat deposits within waterlogged areas within a Conservation Area or its setting.	Possible.	Deposits of peat are not likely to contribute towards the overall importance of a Conservation Area which would typically draw its significance from built form and manmade landscapes. However, in the event that the creation of peatland would affect setting elements contributing towards the importance of a Conservation Area, the significance of this effect would need to be understood.
Regulating Services	**Carbon sequestration** Areas of tree planting and vegetation within a Conservation Area or its setting which store carbon dioxide.	Possible.	Conservation Area appraisals should be reviewed for reference to important views across, within and out of Conservation Areas. Removal/addition of trees/vegetation could affect views within, across and out of Conservation Areas. Effects could be positive or negative. Planting of tracts of woodland or scattered trees could be positive but could also block important views. Conversely, the removal of trees/vegetation could adversely affect intentionally intimate/enclosed spaces but could also reinstate lost views should areas have become overgrown. Any change should seek to preserve and enhance a Conservation Area and it setting, avoiding harm.
	Air pollutant removal Areas of vegetation within a Conservation Area or its setting which help to lessen air pollution.		
	Water flow regulation Areas of vegetation and trees within a Conservation Area or its setting which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees within a Conservation Area or its setting which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water within a Conservation Area or its setting which reduce air temperature in Summer.	Possible.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could restore historic design intentions. However, the creation, damming or diversion of watercourses to create new waterbodies may adversely affect design intentions. Any change should seek to preserve and enhance a Conservation Area and it setting, avoiding harm.
	Waste remediation Areas within a Conservation Area or its setting with the ability to act as a 'sink' for natural recycling of waste.	Possible.	Detrimental effects of the spreading of waste on land within a Conservation Area should be considered. For example, the spreading of 'green waste' is known to affect the efficacy of geophysical survey. This could result in a lack of understanding of any below ground archaeological potential associated with a Conservation Area.

Cultural Services	**Recreation and tourism, physical and mental health** Publicly accessible green spaces within a Conservation Area or its setting providing opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Possible.	Increased public access to areas within a Conservation Area and/or improvements which better reveal historic, architectural or artistic interests could allow for a greater sense of public wellbeing through increased opportunities to appreciate cultural services.
	Volunteering Opportunities for volunteering with charitable organisations.	Possible.	
	Education Educational benefits may be readily appreciable, particularly where Conservation Areas include areas open to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.	Possible.	
Bundled environmental effects	**Biodiversity** All animals, plants and fungi.	Possible.	The introduction of new species of flora and fauna may be detrimental to design intentions within the footprint of a Conservation Area. The control of specific flora and fauna may better reveal original design intentions and/or rectify past interventions ultimately detrimental to earlier phases of development. Any change should seek to preserve and enhance a Conservation Area and it setting, avoiding harm.
	Amenity Tranquillity and recreational opportunities.	Possible.	See 'cultural services' above.
	Landscape Landscapes providing cultural and aesthetic benefits	Possible.	See 'cultural services' above.
	Soil health Soils storing carbon, filtering water and providing nutrients	Possible.	None anticipated with respect to affects to cultural significance.

Derbyshire Natural Capital Strategy – Appendix 12

Contents

Appendix 12 – Monitoring Plan

Introduction

This monitoring plan is part of the Derbyshire Natural Capital Strategy (NCS). It is designed to help the continued monitoring of natural capital within Derbyshire, with a focus on habitats as key resources underpinning the delivery of many natural capital themes. Monitoring natural capital will also support initiatives for nature recovery, biodiversity net gain, and wider ecosystem service delivery. Monitoring is essential to understand the current extent and condition of habitats, and monitor the effects of established and emerging threats, such as development, pollution, invasive non-native species, and climate change. Habitats underpin the

A workshop was help on May 25th 2022, where stakeholders discussed the habitats, species and specific threats of highest importance within Derbyshire, and what were the greatest monitoring needs; this information has been used to inform the development of the monitoring plan. The workshop included representatives from the following organisations:

- Environment Agency
- Derby City Council
- Derbyshire Wildlife Trust
- Forestry Commission
- Peak District National Park Authority
- National Forest Company
- Natural England
- National Trust
- RSPB
- Woodland Trust

Objectives of this monitoring plan

The objective of the monitoring plan is to document the priority monitoring requirements for Derbyshire that feed into the NCS, that address the main environmental issues identified by stakeholders. The monitoring plan focuses on the use of remote sensing technology where appropriate, as many indicators require frequent monitoring over large geographic areas, that could not be achieved by other means alone. It is not intended to take the place of a comprehensive environmental monitoring plan, but to identify priorities and methods that can assist the implementation of the NCS.

Monitoring priorities

The monitoring priorities identified by stakeholders are listed in Table 1. The issues raised operated across a range of scales (e.g. species vs. habitat; site vs. landscape) and disciplines (e.g. habitat classification vs. chemical water quality). The range of priorities highlight the breadth of ecosystem services valued by society (from food provision to flood regulation, biodiversity and recreation), underpinned by habitats and species which are major contributors to the stock of natural capital.

Table 1: Monitoring priorities identified by workshop attendees

Pressure/Risk	Affected Habitats	Regions affected
Agricultural intensification	Natural habitats	East Derbyshire has a higher proportion of larger farms
Flood risk	Lowland areas	Downstream areas, particularly the Lower Derwent settlements
Drought risk	Natural habitats, agriculture	Upland, wetland and freshwater habitats may be more at risk. Agricultural areas.
Increased demand for housing/land development	Natural habitats	Urban fringes and green belt
Climate change impacts on species distribution	All over for habitats/	Upland species may be more at risk as closer to their climate extremes
Water quality- agricultural runoff and developmental pressures	Rivers and their wider hydrological catchments	River Wye particularly high phosphorus levels around Buxton
Invasive species (mink, signal crayfish, Himalayan balsam, deer)	Rivers and adjoining habitats. Upland areas.	Deer overgrazing on SW peak, Eastern Moors and S Derbyshire
Recreational pressures	Natural habitats within key tourism areas	
Loss of soils and upland peat through erosion	Peatland	Upland areas
Ash dieback and other tree disease	Woodland	
Lack of transitional habitats; too many hard boundaries and lack of connectivity between habitats	All habitats	
Water abstraction upstream	Rivers, lowland habitats	
Biodiversity declines from inappropriate management	All habitats	
Fire (managed burns and wildfire)	Moorlands	Upland areas
Heather and *Molinia* monocultures	Primarily upland habitats	Upland areas

Monitoring methods

Many different types of data and recording methodologies can be used for long-term monitoring. The strengths and weaknesses of each option should be evaluated to ensure that the selected methods are fit-for-purpose; whether the type of monitoring collects the type of information needed, whether it is accurate enough, timely enough, and cost-effective enough. Six broad monitoring methods are outlined below, with a focus on monitoring habitat extent and condition, as these are key attributes from which many aspects of natural capital can be derived or inferred.

External monitoring data

Monitoring data collected for other projects or by other organisations could be sourced and assessed for incorporation into the NCS monitoring strategy; the benefit of this approach would be the conservation of resources through applying a 'collect once, use many times' approach to the data. However, monitoring schemes designed for other purposes may not completely meet the needs of the NCS monitoring plan, for example in terms of the type of data captured (e.g. habitat classification method, which habitats/features are monitored), or the frequency of data capture. Examples of existing monitoring that could provide useful input to the NCS monitoring indicators include SSSI monitoring (Common Standards Monitoring) and Water Framework Directive monitoring.

Field survey

Monitoring by professional field survey enables capture of high precision, high-confidence data, and this method may be the only option for some types of monitoring, for example where identification of particular species, or certain environmental sampling is required. However, field survey is very resource-intensive and often proves to be too expensive to repeat over wide areas on a regular basis. For this reason field survey often works best when focussed on high priority areas, or used in conjunction with other monitoring methods for the purpose of calibration and validation.

Aerial Photograph Interpretation (API)

API is a valuable method for many types of monitoring; it's advantages include the ability to assess large geographical areas in a short space of time, and the relatively low associated cost. However, this type of analysis is restricted by the quality and timing of the image capture, and the level of skill of the interpreter; imagery may not always be captured at the ideal point in time for identifying the monitoring feature. Furthermore, some features are not detectable from an aerial view, for example small habitats that are hidden by tree canopy cover.

Citizen science

Citizen science could involve data collection campaigns organised by external bodies, or ones set up specifically in support of the NCS monitoring. Citizen science data can be a low-cost method of obtaining regular monitoring data. However, many of the people contributing towards citizen science projects are non-specialists, and therefore a more stringent validation process is required when using this type of data for monitoring. Furthermore, the spatial coverage of data submitted by this method may be quite limited, or biased towards certain areas depending on where individuals live or visit most regularly.

Unmanned Aerial Systems (UAS)

UAS systems provide higher spatial and spectral resolution imagery than obtained by standard aerial photography; this means that individual plant species coverage, and aspects of plant health, can be assessed for many species. However, image acquisition is highly weather-dependent, and only small areas can be captured at any one time, which when combined with the image processing requirements can make this an expensive monitoring method.

Satellite image analysis

Satellite image analysis 2 provides a rapid and repeatable method of analysing land cover and land cover change. Although the spatial resolution obtained is lower than that of UAS and other aerial imagery, the geographical coverage is much greater and a regular repeat cycle can be depended upon, making this method very cost-effective. For example, Sentinel-2 captures data at 10m resolution and has a re-visit time of five days, although analysis is obstructed by cloud cover. Conversely, Sentinel-1 radar data is unaffected by cloud, but is more suited to field-scale (~50m resolution) studies. The spectral resolution of optical sensors allows analysis of functional properties of vegetation communities such as productivity, wetness and bareness, that are suited to many types of condition and change analysis.as well as the ability to discriminate broad vegetation types.

Baseline data and update procedure

The Habitat Asset Register (HAR) created for the Derbyshire Natural Capital Strategy is a seamless habitat baseline for Derbyshire, comprised of the most current datasets and local knowledge available to the project. However, habitat cover and land management do not remain static in time, and regular updates of the HAR will be necessary in order to maintain confidence in the data and enable its continued re-use. The update procedure should follow an agreed file naming system in order to maintain version control.

Table 2 lists the attribute fields contained within the vector version of the Habitat Asset Register. The table has been populated with fields to enable users to identify which parts of the HAR have changed between versions (by querying the 'UPDATED'

field), who was responsible for the update, and what types of data have been incorporated.

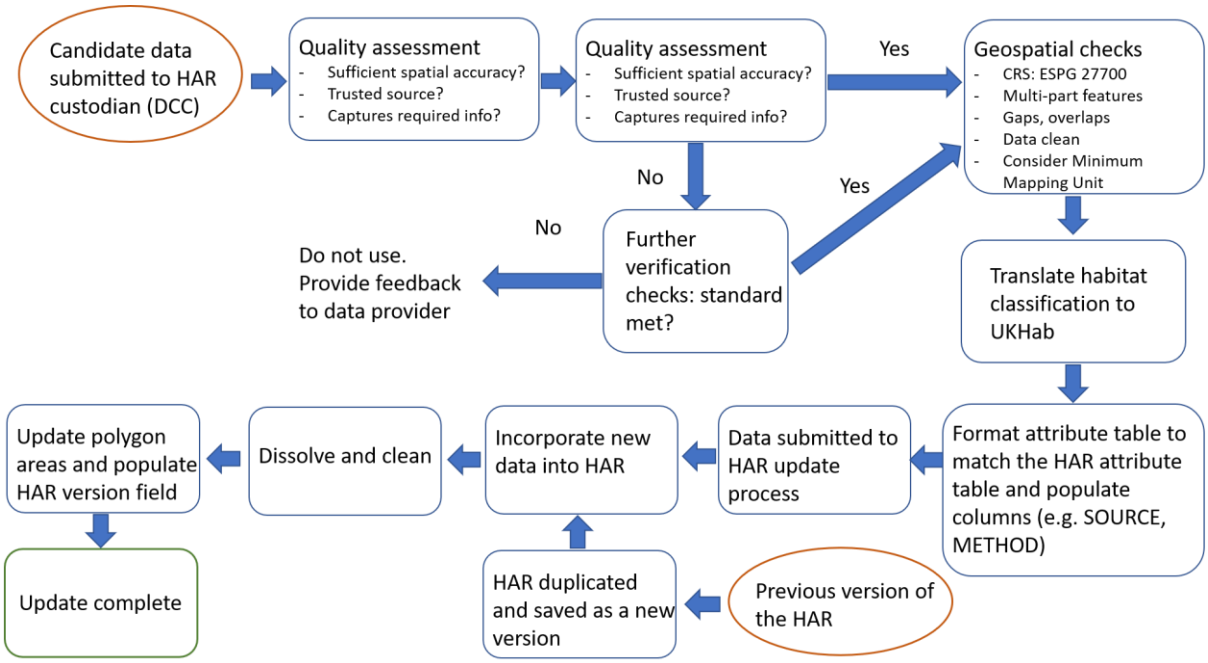
Table 2: Attribute fields contained within the Habitat Asset Register

Field name	Data type	Description
CLASSNAME	Integer	Unique ID identifying individual HARCLASS values
HARCLASS	String	The full UKHab classification code for the habitat
L2_CODE	String	UKHab Level 2 code (basic habitat types e.g. grassland, woodland)
LD_CODE	String	Most detailed UKHab code available, covering UKHab Levels 3-5 (includees priority habitat types and Annex 1 habitat types)
SEC_CODE	String	UKHab secondary habitat code
UKHAB_L2	String	UKHab Level 2 label: full text name of the habitat described by the code contained in field L2_CODE
UKHAB_LD	String	Full text name of the habitat described by the code contained in field LD_CODE
UKHABSEC	String	Full text name of the habitat/land use/ land management type described by the code contained in field SEC_CODE
Area_ha	Float	Polygon area in hectares
SOURCE	String	Data provider/source
METHOD	String	Method of data capture e.g. NVC survey; Aerial Photo Interpretation
S_DATE	Date	Date of original data capture by the surveyor
UPDATED	Date	Date of incorporation into the Habitat Asset Register
EDITOR	String	Name of person/department/organisation responsible for amending the data.
VERSION	Integer	Dataset version

There are potentially many sources of data that could be used to update the HAR. Data collected specifically for the purpose of updating the HAR is likely to require a relatively low level of checking, as the habitat classification method (UKHab), and resolution of the data, are likely to be compatible with the existing HAR format.

Alternatively (or in addition), datasets could be accepted from other sources including outside organisations (e.g. Natural England, Derbyshire Wildlife Trust) and individuals; but these types of data would require a more rigorous quality checking process prior to being incorporated into a new version of the HAR. Depending on factors such as: the amount of candidate update data available; the amount of staff resource dedicated to the process; and data processing times, a HAR update cycle could be scheduled on a monthly, annual, or five-yearly cycle, depending on business need. Figure 1 presents a workflow describing the different components of the HAR update process.

Figure 1: HAR update process



Monitoring plan

The key indicators and outline monitoring methodologies are detailed in Table 3. Many of the indicators reflect the requirement to maintain an up-to-date HAR to facilitate change detection; for example, increases or decreases in habitat extent. Other indicators involve analysis of specific components of a habitat, and interpreting how this indicator relates to habitat condition, subsequent ecosystem service delivery, and therefore the value of this natural capital feature. For example, the frequency of bare ground within an agricultural or peatland context can be a negative indicator for water quality, due to soil erosion. Conversely, bare ground within the context of open mosaic habitats can be a positive indicator due to the variety of ecological niches it provides, having high value for biodiversity and related ecosystem services that functioning diverse ecosystems support.

The HAR was one input dataset used in the production of the natural capital baseline accounts; over time many of these input datasets will become superseded by new versions (e.g. the latest WFD monitoring cycle), datasets that are not superseded become more unreliable as they age, but new datasets may become available. In order to maintain an accurate representation of natural capital benefits, and to identify trends of gain and loss, it is recommended that a data review and refresh of the accounts is undertaken on a five year cycle.

Table 3: Key indicators and monitoring methods

Indicator	Key habitats	Data	Outline methodology	Timings	Example frequency
Extent of habitat	Agricultural habitat features: hedgerows, field margins, headlands, ponds	Aerial photography, LiDAR (where available), verified external data	• Define Area of Interest • Update the existing Habitat Asset Register using appropriate earth observation imagery and manual interpretation. And / Or: • Update the existing Habitat Asset Register using verified external data.	Summer	Annual
	Peat moorlands	Sentinel-2, verified external data		Summer	Annual
	Grasslands	Sentinel-2, verified external data		Summer	Annual
	Urban trees	CIR Aerial photography, citizen science, verified external data		Summer	3-5 years
	Woodland	Sentinel-2, verified external data		Summer	Annual
Extent of core and stepping stone habitat	Grasslands	Habitat Asset Register	• Define Area of Interest • Select core habitat classes from the Habitat Asset Register. • Dissolve habitat polygons. • Apply size filters to identify core and stepping stone areas.	Any	Annual
	Heathland				
	Wetlands				
	Woodland				
Grazing pressure	Peat moorlands	Sentinel-2 with field survey	• Define Area of Interest. • Select habitats within the area from the Habitat Asset Register. • Define indicator of grazing pressure e.g. heather dominance, bare ground, sward height. • Obtain cloud-free imagery.	Summer	Annual
	Grasslands				

			• Image-based indicator classification, using field survey for calibration and validation.		
Extent of bare ground	Peat moorlands Grasslands Open mosaic habitats	Sentinel-2, CIR aerial photography	• Define Area of Interest. • Select habitats within the area from the Habitat Asset Register. • Obtain cloud-free imagery. • Image analysis to classify the extent of bare ground in each image/time period. • Export output to show the current extent and distribution of bare ground.	Summer	Annual
Frequency of bare ground	Agricultural lands	Sentinel-2	• Define Area of Interest • Select agricultural areas from the Habitat Asset Register and define the Area of Interest. • Identify extent and distribution of bare ground as described above. • Combine outputs over a period of time to produce summary statistics e.g. number of bare periods per year/5 years	Any	Monthly
Grazing pressure	Peat moorlands	Sentinel-2 with field survey	• Define Area of Interest. • Select habitats within the area from the Habitat Asset Register.	Summer	Annual

	Grasslands		• Define indicator of grazing pressure e.g. heather dominance, extent of bare ground, sward height. • Obtain cloud-free imagery. • Image-based indicator classification, using field survey for calibration and validation.		
Surface wetness	Peat moorlands	Sentinel-2	• Define Area of Interest. • Select habitats within the area from the Habitat Asset Register. • Obtain cloud-free imagery. • Image-based classification of wetness classes.	Summer and winter	Annual
Water table	Peat moorlands	Field survey	• Define Area of Interest • Install dip-wells, walrags or rust rods	Summer	Monthly
Biodiversity: presence of key indicator species e.g. breeding birds, butterflies	Woodlands Grasslands Peat moorlands Rivers	Field survey, citizen science, verified external data	• Define Area of Interest • Species-dependent e.g. transect, DNA analysis	Species-dependent	Annual
Peat depth	Peat moorlands	Field survey	• Define Area of Interest • Install surface-level rods	Summer	Annual
Evidence of fire	Grasslands Peat moorlands	Sentinel-2	• Define Area of Interest. • Select habitats within the area from the Habitat Asset Register.	Any	Monthly during risk and recovery periods

			• Obtain cloud-free imagery. • Image-based classification of fire damage / vegetation recovery.		
Flood extent	Floodplain habitats Wetlands Rivers	Sentinel-1	• Define Area of Interest. • Select habitats within the area from the Habitat Asset Register. • Obtain imagery. • Classify extent of inundation.	Any	Post-flood
Nitrate and phosphate concentration	Rivers Wetlands	Field survey, verified external data	• Define Area of Interest • High resolution automated measurement or analysis of external data.	Any	Daily, Monthly
Presence of INNS	Wetlands Rivers	Field survey, UAS, citizen science	• Define Area of Interest • Species-dependent e.g. transect, DNA analysis, image-based classification	Species-dependent	Annual
Die-back of trees due to disease	Woodlands	CIR Aerial photography, UAS, Sentinel-2, field survey, citizen science, verified external data	• Define Area of Interest. • Collect field data to establish presence of disease. • Obtain imagery. • Tree crown delineation (image analysis, manual editing, incorporation of external data) to establish baseline tree crown data.	Summer	Annual

			• Image analysis of tree crown productivity and other indices. • Monitor tree crown status between years to establish health status and disease spread. • Field data for validation.		

FOR PUBLICATION

DERBYSHIRE COUNTY COUNCIL

IMPROVEMENT AND SCRUTINY COMMITTEE – CLIMATE CHANGE, BIODIVERSITY AND CARBON REDUCTION

22 May 2023

Report of Derbyshire Wildlife Trust

Implementation of the Council's Nature Recovery

1. Purpose

1.1 The purpose of this report is To inform the Committee on work being undertaken by Derbyshire Wildlife Trust to embed a natural capital approach and payment for ecosystem services in Derbyshire.

2. Information and Analysis

The Committee will receive an update on three areas of work:

- **Project Delivery**: work DWT are currently implementing on the ground that deliver multiple benefits for people and wildlife;
- **Contributing to the Evidence Base:** partnering with local universities to produce relevant information for decision makers, whilst upskilling the student and research communities of Derbyshire; and
- **Collaboration with the Financial Sector**: working with financial experts to build pioneering commercial models around conservation.

3. Alternative Options Considered

3.1 Not applicable.

4. Implications

4.1 Not applicable.

5. Consultation

5.1 Not applicable.

6. Background Papers

6.1 Not applicable.

7. Appendices

7.1 Not applicable.

8. Recommendation(s)

That the Committee:

a) Notes the work of Derbyshire Wildlife Trust in enhancing natural capital and welcomes their continued and close involvement in developing the Local Nature Recovery Strategy; and

b) Recommends the Council use the Natural Capital Strategy as the basis to develop a Natural Capital Investment Plan for Derbyshire.

9. Reasons for Recommendation(s)

9.1 To recognise the work of wider partners in enhancing natural capital, and to maximise the long term value of the Natural Capital Strategy.

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Enhancing Natural Capital: lessons from Derbyshire & Beyond

Scott Blance, Advocacy Manager, Derbyshire Wildlife Trust
s.blance@derbyshirewt.co.uk

Derbyshire Wildlife Trust

Enhancing Natural Capital:

- Nature Based Solutions (NBS) are the most effective way to enhance natural capital and address societal challenges

NBS deliver multiple benefits for nature and people through the use of nature and natural processes

NBS must be acceptable to local communities and equitable

'Actions to **protect, conserve, restore**, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine **ecosystems** which address **social, economic and environmental** challenges effectively and adaptively, while simultaneously providing **human well-being, ecosystem services** and **resilience** and **biodiversity** benefits'.

United Nations Environment Assembly internationally agreed definition of Nature Based Solutions (Nairobi, 2022).

Derbyshire Wildlife Trust

How is Derbyshire Wildlife Trust Progressing Nature Based Solutions?

Derbyshire Wildlife Trust

Practical Delivery

Derbyshire Wildlife Trust

Derwent Forest:

- EA modelling shows that peak flows in Derby could be reduced by 340mm with development of 60% woodland cover across the catchment, potentially avoiding flooding in the city.
- Aim is to create 30,000 hectares of wooded ‘landscape’, including woodland, hedgerow, wood pasture and orchards.

Natural Capital Outcomes: Natural Flood Management (NFM), biodiversity, carbon sequestration air quality, food etc.

- How: land surveys, grant assistance, planting, community engagement and modelling. Where would NFM measures have greatest impact?
- Progress to date:
  - Implemented 91.5 hectares of NFM interventions, and led woodland creation management plans covering 50.5 hectares.
  - Project pipeline covering 73.9 hectares of NFM interventions and 47.3 hectares of woodland creation

Derbyshire Wildlife Trust

Contributing to the Evidence Base:

Research Partnerships

Derbyshire Wildlife Trust

Research Partnerships:

UNIVERSITY OF DERBY

Manchester Metropolitan University

'The KTPs are an exciting opportunity for academics and students at the University. ***The BNG work is cutting-edge, in a highly technical area and will draw on the skills of our academic team in remote sensing, biodiversity analysis and ecological modelling*** *to support Derbyshire Wildlife Trust in this innovative endeavour. It also offers a* ***great learning opportunity for hundreds of our undergraduate and postgraduate students,*** *from across business management, operations and supply chain, environmental management and sustainability courses. They will all learn a lot from the case studies, projects and guest lectures generated by this project'.*

Dr Anne Danby, Course Director for the School of Built and Natural Environment at the University of Derby

Derbyshire Wildlife Trust

Collaboration with the Finance Sector

Triodos Bank

Developing Markets:

- Huge finance gap in hitting the Government's long-term environmental targets - private finance is a necessity.

- Broader market and policy drivers stimulating market development – Biodiversity Net Gain, Task Force on Climate-Related Financial Disclosures etc

- Wave of Government interventions designed to develop private finance models that support nature recovery projects:
  - The Natural Environment Readiness Fund allocated grants of up to £100,000 to help organisations develop nature projects to a point where they can attract private investment.
  - Our scheme is called Derbyshire's Nature Recovery and Natural Capital Aggregator Project.

Financial Partnerships:

- Triodos' mission is to make money work for positive social, environmental and cultural change through provision of banking services, lending and investment
- At the forefront of developing commercial models for ecosystem services in the UK.
- Lead financial adviser to help us get the Aggregator Project 'investment ready' and can raise capital from investors:
    - Develop an investment case
    - Develop a pricing structure and review process for ecosystem services
    - Develop a financial forecast for the target project pipeline

Derbyshire Wildlife Trust

Leveraging the Natural Capital Strategy: Lessons from Greater Manchester

GMCA GREATER MANCHESTER COMBINED AUTHORITY

Derbyshire Wildlife Trust

Natural Capital Investment Plan:

- Used the authority's Natural Capital Strategy as the evidence base to create plan with 3 key components:
    1. A pipeline of potential project types which need investment;
    2. Finance models to facilitate private sector investment and the role of public sector, and
    3. Recommendations to put the plan into practice over the next 5 years.
- Identifying different sources of finance informs how the Council and other stakeholders can work more efficiently in terms of funding and policy/governance effort. It also informs choices between traditional environmental spending and regulation (which remain crucial) and innovative financing approaches. Some environmental priorities will always require public funding.
- Identified project types and investment opportunities aligned with the vision for Greater Manchester, and the role of local Government.

Recommendation to Cabinet:

- *That the Committee notes the work of Derbyshire Wildlife Trust in enhancing natural capital and welcomes their continued and close involvement in developing the Local Nature Recovery Strategy*
- *Recommends the Council use the Natural Capital Strategy as the basis to develop a Natural Capital Investment Plan for Derbyshire.*

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FOR PUBLICATION

DERBYSHIRE COUNTY COUNCIL

IMPROVEMENT AND SCRUTINY COMMITTEE – CLIMATE CHANGE, BIODIVERSITY AND CARBON REDUCTION

MONDAY, 22 MAY 2023

Report of the Executive Director - Place

Single Use Plastic Policy and Action Plan

1. Purpose

1.1 To present an update to the Improvement and Scrutiny Committee for Climate Change, Biodiversity and Carbon Reduction on the implementation of the Council's Single Use Plastic Policy and Action Plan.

2. Information and Analysis

2.1 Single Use Plastic (SUP) can be described as any disposable plastic item that is designed to be used only once, or for a short period of time. SUPs are often used in packaging, consumer products, cosmetics, personal protective equipment and healthcare products. Examples include plastic bags, disposable utensils, beverage containers, balloons and wet wipes. The COVID-19 pandemic caused a rise in the use of certain SUP items, such as aprons, health care equipment and lateral flow test kits.

2.2 SUPs have a number of benefits, including contributing to food safety and hygiene, and reducing packaging weight in transit, thereby reducing energy and emissions that would be generated by using alternative materials.

2.3 However, plastic pollution from SUPs is both a global and local issue that affects the natural and urban environment, oceans and coasts and impacts on the health and wellbeing of many living creatures. Plastic

pollution from SUPs has aesthetic impacts but is also costly to clear up. When SUP items are not adequately captured and managed at their end of life, they also represent a real threat to our ecosystems by degrading into tiny particles, known as microplastics.

2.4 There is a need to prevent plastics entering our ecosystems and a further challenge to remove what is already there. By reducing or removing SUPs from its operations and services, the Council can lead by example in finding alternatives to the types of SUPs that could pollute our environment if not disposed of correctly.

2.5 The Council's Corporate Environment Policy commits the Council to minimising waste by the best practicable environmental option by eliminating, reducing, reusing, composting and recycling. It also commits the Council to ensuring that its purchasing power is used to reduce negative environmental impacts and to improve the environmental standards of products and services the Council purchases. These commitments are echoed in the Council's Climate Change Strategy: Achieving Net Zero (2021-2025), which sets out ambitions for the Council to reduce its consumption and generation of resources and waste, and to embed environmental requirements and into all contracts.

2.6 To meet these objectives and to formalise and guide the Council's commitments to reduce the use of SUP in its own operations and services where practical, as well as encouraging a reduction in the use of SUPs across Derbyshire, a SUP Policy was developed by the Council and approved by Cabinet on 14 October 2021 (Minute No. 167/21 refers).

2.7 Following the approval of the SUP Policy, an Action Plan to achieve the goals and objectives set out in the Policy was then developed and approved by the Corporate Management Team on 26 July 2022.

2.8 Furthermore, the Council's Sustainable Procurement Policy was approved by Cabinet on 16 June 2022 (Minute No. 116/22 refers). Implementation of the Sustainable Procurement Policy is encompassing the ambitions set out in the SUPs Policy with "minimising and eliminating the use of SUPs" being explicitly stated. Therefore, actions listed in the SUPs Action Plan are intended to complement, rather than repeat, actions within the overarching Sustainable Procurement Policy.

2.9 A summary of progress made to-date to deliver the SUP Policy and Action Plan is detailed on the following pages.

Single Use Plastics Action Plan

Action	Timeframe	Success criteria	Status – Q1 2023-24
Develop and seek approval for a corporate Single Use Plastics Policy	Completed 14 October 2021	SUPs Policy approved by Cabinet	The Council's SUP Policy was approved by Cabinet on 14 October 2021. A review of the Policy was undertaken in October 2022 as part of the wider annual review of delivery of the Council's Climate Change Strategy and Programme. The review found that no changes were needed to the Policy at that time. The next annual review will be undertaken in October 2023. The Council's Corporate Environment Policy is also currently being reviewed and updated and will be presented to Cabinet during Q2 of 2023-24. It is intended that this update will include strengthened wording on the Council's commitment to sustainable procurement and the responsible use of resources.
Produce a qualitative baseline by engaging with teams and departments to continue to identify SUPs used by the Council.	On-going	SUPs list reviewed and updated annually Identify where alternatives to SUPS can be introduced Identify which SUPs are no longer procured and have been removed from list	The list of SUPs (included with the SUP Policy) used by the Council was reviewed in October 2022 as part of the annual review of the Policy. The review found that no changes were needed to the list at that time. Reducing the use of SUPs is included within the Sustainable Procurement Policy. SUPs were not relevant to the two completed pilot contracts where the Sustainable Procurement Policy has been applied, but opportunities to include appropriate wording and measures within procurement activities are assessed and will be implemented on a contract-by-contract basis.

Action	Timeframe	Success criteria	Status – Q1 2023-24
		& alternatives sourced	
Produce annual monitoring report	November Annually	Annual report produced	A high-level review of implementation of the SUP Policy was included as part of the preparation of the first annual report on delivery of the Council's Climate Change Strategy and Programme, the report for which was presented to Cabinet in January 2023. Going forward, further detail on delivery of this Action Plan will be included in these annual reports, with data included where the quantification of outcomes and impacts is possible.
Include a clause in large contracts requesting baseline and annual reports monitoring SUPs and which demonstrate a year-on-year reduction in SUPs	June 2022	Process integrated into implementation of Sustainable Procurement Policy	The Sustainable Procurement Policy was approved for adoption by Cabinet on 16 June 2022. SUPs are an integral part of the Sustainable Procurement Policy. Opportunities to include appropriate wording and measures to reduce the use of SUPs are assessed and implemented within procurement activities on a contract-by-contract basis. Embedding these requirements in contracts will enable baseline figures to be established and to confirm the mechanisms for how any improvements will be monitored.
Develop an agreed approach to monitoring waste and recycling from the Council estate	November 2022	Approach agreed based on sampling Resources identified to implement	At present the Council does not consistency keep a record of the volume, weight or composition of waste produced across the estate. The destination of SUP waste, and other materials, is also not fully understood at present. The Climate Change Team is working with Facilities Management to map corporate waste contracts and processes across the

Action	Timeframe	Success criteria	Status – Q1 2023-24
			Council and identify opportunities for standardising corporate approaches and measurement. This will include SUPs and will also take a wider view of the appropriate recycling (or reuse) of other materials, such as batteries.
Establish scope 3 emissions from waste produced from the Council estate	March 2023	Emission from all DCC waste calculated (where possible) & included in Scope 3 emissions data	The Council's Climate Change Team is undertaking significant work to baseline the Council's Scope 3 emissions by the end of 2023, as set as a target in the Council's Climate Change Strategy. This includes mapping corporate waste contracts and processes across the Council to understand the types and volumes of waste produced, as well as their destination and treatment, and a review of procurement data to identify the goods, services and contracts with the highest carbon footprint. Once the baseline has been established Scope 3 emission reduction targets will be set for 2024-25 onwards.
Produce a Staff Guide on SUPs to be made available to all staff through the website	Launch July 2022	Staff guide produced and made available to all staff on website Staff guide reviewed annually	A Staff Guide has been drafted and will be finalised once the mapping of the Council's corporate waste contracts and processes has been carried out. This will ensure consistent messaging and guidance can be provided to staff. The Climate Change Team is working with Facilities Management to enable consistency in the provision of bins and signage across the corporate estate. It is intended that the Staff Guide will also be launched at the same time as wider staff communication and guidance on the Sustainable Procurement Policy, expected to be during Q2 of 2023-24. This will enable clear communication on the role of procurement decisions in reducing SUPs.

Action	Timeframe	Success criteria	Status – Q1 2023-24
Deliver training and conduct an internal communications campaign about the Staff Guide to promote implementation of the SUP Policy	Launch July 2022	Internal campaign delivered Training programme started Reduction in SUP items used Increase in use of sustainable SUP alternatives	It is intended that the Staff Guide will also be launched at the same time as wider staff communication and guidance on the Sustainable Procurement Policy, expected to be during Q2 o 2023-24. An internal comms campaign is being planned for the launch. Reducing the use of SUPs is included within a 2-hour climate change training module available to all staff. Reducing the use of SUPs will also be promoted to staff during an engagement event being planned at County Hall on Clean Air Day on 15 June 2023. The event will be open to all staff.
Work with Facilities Management to reduce waste and improve recycling	March 2023	Facilities Management engaged and programme of initiatives agreed	The Climate Change Team is working with Facilities Management to map the Council's corporate waste contracts and processes, and to form recommendations for improvements. Work is also being carried out to enable consistency in the provision of bins and signage across the corporate estate. The first stage was an audit of waste facilities carried out at County Hall in January 2023.
Develop Procurement guidance, template documents and qualitative and quantitative measures to use in	Complete by June 2022	Documentation is updated to review SUPs in all procurements and process integrated into implementation of	SUPs are an integral part of the Sustainable Procurement Policy. Opportunities to include appropriate wording and measures to reduce the use of SUPs are assessed and implemented within procurement activities on a contract-by-contract basis. Embedding these requirements in contracts will enable an improvement in the data available on SUPs bought by the Council over time.

Action	Timeframe	Success criteria	Status – Q1 2023-24
Council procurement and commissioning		Sustainable Procurement Policy. SUP within contracts is reduced	
Work with departments to support the review and implementation of actions to reduce SUPs in current DCC Contracts	July 2022 onwards	The Council's use of SUPs is reduced	Through implementation of the Sustainable Procurement Policy the Council is seeking to reduce SUPs in new procurement activities and the ongoing contract management of existing contracts. There are good examples of departments and services taking steps to replace the use of plastics with sustainable alternatives, such as Childrens Services sourcing and procuring staff lanyards made of bamboo, rather than nylon. Other services are taking steps to support the circular economy and the reuse of waste plastics, such as through the procurement of pavement kerb stones made from recycled plastic. The Council recognises that there will be occasions when, for justifiable reasons, the use of SUPs cannot be reduced or removed. As markets catch up with the need to reduce SUPs, there can be additional costs incurred by the Council when seeking alternatives and, therefore, each situation is evaluated individually to assess whether the Council is achieving value for money.

Action	Timeframe	Success criteria	Status – Q1 2023-24
Engage with special-interest community groups e.g. Plastic-free Community Groups, to share approaches and increase awareness and understanding of the issues	November 2021 onwards	Hold three meetings per year	The Council has met with, and also has regular dialogue with, a range of community groups and charities to discuss SUPs, as well as wider waste reduction and circular economy matters. Groups engaged with include Surfers Against Sewage, Transition Chesterfield and Zero Waste Group Belper. Positive feedback has been received from these groups on the work that the Council is doing on SUPs and sustainable procurement, and an appetite has been expressed for collaborative working and the ongoing sharing of knowledge and experience.
Explore opportunity to promote a reduction in SUPs across the County explored e.g. become an accredited Plastic-Free County Council	May 2022	Three suggestions to promote a reduction of SUPs across the County agreed	In January 2022 the Council engaged with Surfers Against Sewage to understand the criteria that must be met to become an accredited Plastic Free County Council. The main criteria to be met is for at least 70% of the County's Parish and Town Councils to have signed up to the commitment and become accredited in their own right. This is a challenging target which would require a significant amount of promotion and coordination by the Council and so is not currently being pursued but will be reassessed on a regular basis. Through Vision Derbyshire the Council has shared the approach to managing and reducing SUPs with all eight of Derbyshire's district and borough councils and continues to encourage the adoption of a similar approach across the County. The Council's new Household Waste Recycling Centre (HWRC) contract, which commenced in October 2022, has incentivised increased recycling rates at HWRCs, including the recycling of flexible plastics which are now collected at five HWRC sites.

Action	Timeframe	Success criteria	Status – Q1 2023-24
			The new HWRC contract also has a requirement to redistribute good quality products from HWRCs. Two sites for Reuse Shops have initially been identified as Bolsover and Raynesway HWRCs, with Darley Dale and Ashbourne being proposed for the second phase. The scope and timeline are currently in discussion.
Work with local producers and businesses to restrict the use of single use products and support the market for remanufactured goods	Complete by September 2022	Highlighted the opportunities of reducing SUPs, particularly packaging, through the business start-up programme Inserted a question about reducing SUPs in the business start-up application form	The Sustainable Procurement Policy is helping to ensure that a reduction in the use of SUPs is embedded as a requirement within the supply chain thereby supporting the market for reuse, recycling and remanufactured goods. The Council actively promotes the County's network of Repair Cafés through its website and has provided funding through the Derbyshire Grants scheme to community groups and charities who are seeking to develop or grow initiatives around reuse and recycling.

3. Consultation

3.1 The proposal to develop a SUP Policy was presented to the Improvement and Scrutiny Committee for Climate Change, Biodiversity and Carbon Reduction on 26 July 2021.

3.2 The SUP Policy was approved for adoption by Cabinet on 14 Cabinet 2021.

3.3 The SUPs Action Plan was endorsed for implementation by the Corporate Management Team on 26 July 2022.

4. Alternative Options Considered

4.1 Not applicable.

5. Implications

5.1 Appendix 1 sets out the relevant implications considered in the preparation of the report.

6. Background Papers

6.1 Not applicable.

7. Appendices

7.1 Appendix 1 – Implications.

7.2 Appendix 2 – Single Use Plastic Policy and Action Plan.

8. Recommendation

That Committee:

a) Notes the update provided on the implementation of the Council's Single Use Plastic Policy and Action Plan.

9. Reason for Recommendation

9.1 To ensure that the progress made regarding implementation of the Single Use Plastic Policy and Action Plan is understood by the Committee.

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Appendix 1

Implications

Financial

1.1 The delivery of the Single Use Plastic Policy and Action Plan has resource implications and requires officer time to support its delivery and monitoring. This is expected to be a small requirement and will be covered by staff already in place and by the Climate Change Revenue Budget.

Legal

2.1 The delivery of the Single Use Plastic Policy and Action Plan may have legal implications. These are considered on a case-by-case basis.

2.2 All Council procurement and contracting activities need to comply with the applicable public procurement and contracting legislation and law, including the Public Contracts Regulations 2015 which prescribe processes for public contracts for goods and services above certain thresholds. The 2015 Regulations have been amended in accordance with the terms of the withdrawal of the UK from the EU by the Public Procurement (Amendment etc.) (EU Exit) Regulations 2020.

Human Resources

3.1 Training and guidance is needed for staff to understand the requirements and implications of the Single Use Plastic Policy and Action Plan.

Information Technology

4.1 There are no Information Technology implications associated with this report.

Equalities Impact

5.1 There are no equalities impact implications associated with this report.

Corporate objectives and priorities for change

6.1 The Single Use Plastic Policy and Action Plan support the Council's ambition to be a net zero organisation by 2032, or sooner, and for the County to be net zero by 2050.

6.2 The proposal will help deliver the following Council Plan priorities: Resilient, Healthy and Safe Communities; High Performing, Value for Money and Resident-Focused Services; A Prosperous and Green Derbyshire.

Other (for example, Health and Safety, Environmental, Sustainability, Property and Asset Management, Risk Management and Safeguarding)

Environmental Sustainability

7.1 Implementation of the Single Use Plastic Policy and Action Plan will improve the environmental sustainability of the Council and support delivery of the Corporate Environment Policy.

Appendix 2

Derbyshire County Council

Derbyshire County Council's Single Use Plastic Policy

Derbyshire County Council will act to remove the use of Single Use Plastic (SUP) from its operations and services where practical and to reduce the use of Single Use Plastic where its use cannot be avoided. The Council will work towards finding positive solutions for reducing unnecessary waste across Derbyshire.

A Single Use Plastics action plan will be developed to support the implementation and monitoring of this policy. The action plan will be regularly reviewed and updated.

Derbyshire County Council will:

(i) Lead by example

- Embed the SUP policy into other key Council strategies, policies and plans and support officers to:
    - Understand the acceptable price differential when procuring alternatives to SUPs by providing guidance on the value of sustainability when procuring alternatives
    - Recognise and avoid buying and using SUPs across Council buildings and services
    - Seek more sustainable alternatives to SUPs
    - Ensure that SUPs which are procured have a recycled content of at least 30% and / or can themselves be recycled.

(ii) Work with our suppliers and contractors

- Highlight the avoidance of SUPs in the Council's Sustainable Procurement Policy
- Request that suppliers have a SUP policy in place or can demonstrate that they are working to minimise the use of SUP's in their organisation and are finding sustainable alternatives (where appropriate)
- Embed requirements for the reduction of SUP in procurement and tender processes for the Council.

(iii) Support the avoidance of SUPs across Derbyshire

- Work with event organisers to reduce and eliminate where possible SUPs across all Derbyshire events held on Council land and property and share guidance for this more widely
- Raise awareness of the importance of disposing of SUP's properly to reduce the negative impact on wildlife, the environment and health
- Continue to support local communities and businesses by sharing best practice, supporting and promoting positive initiatives, campaigns and actions for reducing waste.

This policy will be reviewed annually.

Policy approved: 14 October 2021

Derbyshire County Council

Single Use Plastics Action Plan 2022-23

Key actions	Lead Theme Team	Supporting Theme Team	Timeframe	Success criteria
SUP1 Develop and seek approval for a corporate Single Use Plastics Policy	Climate Change	Procurement Waste	Completed 14 October 2021	SUPs Policy approved by Cabinet
SUP2 Produce a qualitative baseline by engaging with teams and departments to continue to identify SUPs used by the Council adding to the list in the Appendix to this plan	Climate Change	Internal engagement & training, Waste, Procurement	On-going	SUPs list updated and reviewed annually Identify where alternatives to SUPS can be introduced Identify which SUPs are no longer procured and have been removed from list & alternatives sourced
SUP 3 Produce annual monitoring report	Climate Change	Waste, Procurement, Communications	November Annually	Annual report produced as part of the overarching Climate Change Strategy annual progress report
SUP 4 Include a clause in large contracts requesting baseline and annual reports monitoring SUPs to demonstrate a year on year reduction in SUPS	Procurement	Climate Change Waste	August 2022	Clause is included in contracts as part of the actions to implement the Sustainable Procurement Policy

Key actions	Lead Theme Team	Supporting Theme Team	Timeframe	Success criteria
SUP5 Develop an agreed approach to monitoring waste and recycling from the Council estate	Climate Change	Waste, Property	November 2022	Approach agreed based on sampling Resources identified to implement
SUP6 Establish Scope 3 emissions from waste produced from the Council estate	Climate Change	Waste, Procurement	March 2023	Emissions from all DCC waste calculated (where possible) & included in Scope 3 emissions data
SUP7 Produce a Staff Guide on SUPs to be made available to all staff through the website	Climate Change	Internal engagement & training	Launch October 2022	Staff guide produced and made available to all staff on website Staff guide reviewed annually
SUP8 Deliver training and conduct an internal communications campaign about the Staff Guide to promote implementation of the SUP Policy	Internal engagement & training	Climate change, procurement, Waste	Launch October 2022	Internal campaign delivered Training programme started Reduction in SUP items used Increase in use of sustainable SUP alternatives
SUP9 Work with Facilities Management to reduce waste and improve recycling	Climate Change	Property and Estate	March 2023	Facilities Management engaged and programme of initiatives agreed

Key actions	Lead Theme Team	Supporting Theme Team	Timeframe	Success criteria
SUP10 Develop Procurement guidance, template documents and qualitative and quantitative measures to use in Council procurement and commissioning	Procurement		Complete by September 2022	Documentation is amended to review SUP in all procurements. SUP considerations integrated into implementation of Sustainable Procurement Policy. SUP within contracts is reduced.
SUP11 Work with departments to support the review and implementation of actions to reduce SUPs in current DCC Contracts	Procurement	Climate Change	August 2022 onwards	Council's use of SUP is reduced.
SUP12 Engage with special-interest community groups e.g. Plastic-free Community Groups, to share approaches and increase awareness and understanding of the issues	Climate Change	Communications	November 2021 onwards	Hold 3 meetings per year
SUP13 Explore opportunity to promote a reduction in SUPs across the County e.g. become an accredited Plastic-Free County Council	Climate Change	Procurement, Waste, Internal engagement & training	December 2022	Three actions to promote a reduction of SUPs across the County agreed
SUP14 Work with local producers and businesses to	Low Carbon Economy	Procurement, Waste	October 2022	Highlighted the opportunities for reducing SUPs, particularly packaging,

Key actions	Lead Theme Team	Supporting Theme Team	Timeframe	Success criteria
restrict the use of single use products and support the market for remanufactured goods				through the business start-up programme Inserted a question about reducing SUPs in the business start-up application form

Single Use Plastics used by Derbyshire County Council

What is a single use plastic?
Plastic designed to be used just once and/or for a short period of time before being disposed of such as:

Office Plastics
Laminating Sheets
Bubble envelopes
Windowed envelopes
Bubble film bags
Adhesive tape

Drink and Food Plastics
Drinks bottles and cartons
Milk pods
Yoghurts in plastic pots
Stirrers
Wrapping around outers of drinks
Disposable cups
Food and Sandwich wrappers
Disposable plates
Coffee machine pods packaging
Disposable cup lids

Cleaning Plastics
Cleaning Product bottles
Cleaning Product packaging
Bin bags

Health and Hygiene Plastics
Latex cleaning gloves
Sample bottles
Plastic aprons
Clinical wash bags
Disposable aprons
Laundry bags
Disposable gloves
Sanitary hygiene bags
Wipes
Plasters
Air freshener packaging
Sickness bags
Food probe wipes
Antiseptic wipes
Covid-19 related products

Other plastics
Vinyl banners
Workwear packaging
Hazard tape

Packaging
The packaging that surrounds almost everything we buy. Beware – some packaging will be essential to provide longevity to the product and / or protect the product whilst in transit. But do challenge if it needs to be made of plastic.

Single Use Plastics Policy and Action Plan

Improvement and Scrutiny Committee – Climate Change, Biodiversity and Carbon Reduction

22 May 2023

Background

- The Council's **Corporate Environment Policy** commits the Council to:
  - minimising waste by the best practicable environmental option by eliminating, reducing, reusing, composting and recycling
  - ensuring that its purchasing power is used to reduce negative environmental impacts and to improve the environmental standards of products and services the Council purchases
- The Council's **Climate Change Strategy: Achieving Net Zero (2021-2025)** includes ambitions for the Council to:
  - reduce its consumption and generation of resources and waste
  - embed environmental requirements and into all contracts.

Background

- SUP Policy developed by the Council and approved by Cabinet on 14 October 2021.
- An Action Plan to achieve the goals and objectives set out in the SUP Policy was developed and approved by the Corporate Management Team on 26 July 2022.
- The Council's Sustainable Procurement Policy was approved by Cabinet on 16 June 2022.

Progress Update – Measurement and Reporting

Action	Update
Produce a qualitative baseline	SUPs list reviewed annually. Reducing the use of SUPs is included within the Sustainable Procurement Policy.
Annual monitoring report	Incorporated into the annual report on delivery of the Council's Climate Change Strategy and Programme.
Include a clause in large contracts requesting baseline and annual reports monitoring	Opportunities are assessed and implemented within procurement activities on a contract-by-contract basis. Embedding these requirements will enable baseline figures to be established and monitoring to be undertaken.

Progress Update – Sustainable Procurement

Action	Update
Develop Procurement guidance, template documents and qualitative and quantitative measures to use in Council procurement and commissioning	SUPs are an integral part of the Sustainable Procurement Policy. Opportunities to include appropriate wording and measures to reduce the use of SUPs are assessed and implemented on a contract-by-contract basis.
Work with departments to support the review and implementation of actions to reduce SUPs in current contracts	Through implementation of the Sustainable Procurement Policy the Council is seeking to reduce SUPs in new procurement activities and the ongoing management of existing contracts. Good examples of services taking steps to replace the use of plastics with sustainable alternatives – e.g. Children's Services and Highways.

Progress update – Waste and Recycling

Action	Update
Develop an agreed approach to monitoring waste and recycling from the Council estate	Mapping of corporate waste contracts and processes across the Council and identifying opportunities for standardising corporate approaches and measurement.
Establish Scope 3 emissions from waste produced from the Council estate	Part of wider baselining of the Council's Scope 3 emissions by the end of 2023. Scope 3 emission reduction targets to be set for 2024-25 onwards.
Work with Facilities Management to reduce waste and improve recycling	Work being carried out to enable consistency in the provision of bins and signage across the corporate estate. This includes an audit of waste facilities carried out at County Hall in January 2023.

Progress Update – Internal Engagement

Action	Update
Produce a Staff Guide on SUPs to be made available to all staff through the website	Staff Guide to be finalised once the mapping of the Council's corporate waste contracts and processes has been carried out and consistency in the provision of bins and signage is achieved. Staff Guide to be launched with wider communication on the Sustainable Procurement Policy.
Deliver training and conduct an internal communications campaign about the Staff Guide to promote implementation of the SUP Policy	An internal comms campaign planned for the launch of the Staff Guide. Reducing the use of SUPs is included within a 2-hour climate change training module available to all staff. To be promoted at a staff engagement event at County Hall on 15 June 2023.

Progress update – External Engagement

Action	Update
Engage with special-interest community groups	Engagement with a range of community groups and charities. Positive feedback received and an appetite for collaborative working.
Explore opportunity to promote a reduction in SUPs across the county	Plastic Free County Council accreditation explored. Engagement with district and borough councils. Increased recycling and reuse part of the Council's new Household Waste Recycling Centre (HWRC) contracts.
Work with local producers and businesses to restrict the use of single use products and support the market for remanufactured goods	Sustainable Procurement Policy helping to embed requirements within the supply chain. The Council actively supports the county's network of Repair Cafés and relevant community groups and charities.

Next Steps

- Measurement and Reporting
- Sustainable Procurement
- Waste and Recycling
- Internal Engagement
- External Engagement

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FOR PUBLICATION

DERBYSHIRE COUNTY COUNCIL

IMPROVEMENT AND SCRUTINY COMMITTEE – CLIMATE CHANGE, BIODIVERSITY AND CARBON REDUCTION

MONDAY, 22 MAY 2023

Report of the Executive Director - Place

Development and Publication of the Spatial Renewable Energy Study, Climate Change Planning Guidance Document and an Associated Assessment Tool, Progress Update

1. Purpose

1.1 To inform the Committee of progress in the collaborative working relating to the Derbyshire Renewable Energy Spatial Study, Climate Change Planning Guidance and associated assessment tool (metric).

2. Information and Analysis

2.1 The Council has a long history of successful collaboration on strategic planning matters, plan and policy making. Local planning authorities (LPAs) are required by law to prepare local plans and, in principle, planning applications for developments that accord with the policies of an adopted local plan should generally be approved.

2.2 The Council plays an important role in co-ordinating strategic planning across the County, working with all the LPAs, including Derby City and the Peak District National Park Authority. This role continues and is now more important than ever. At the heart of this is the Council's ability to help make a long-term difference to their areas by helping facilitate 'good growth' in the County and in Derby City, helping ensure low carbon and climate change objectives are met.

2.3 Climate change is now the greatest challenge facing society. The scientific evidence of climate change is overwhelming and the global impacts of climate change will be severe. The UK has a statutory commitment to bring greenhouse gas emissions to net zero by 2050 with a minimum 78% reduction from 1990 levels by 2035.

2.4 LPAs are bound by the requirement in Section 19 of the Planning and Compulsory Purchase Act 2004, as amended by the Planning Act 2008, for development plan documents (taken as a whole) to include policies designed to secure that the development and use of land in the LPA's area contributes to the mitigation of, and adaptation to, climate change. At a local level, the County needs to play its part in this by improving resilience, reducing emissions and increasing renewable energy generation. Spatial planning plays a central role in the transition to a low-carbon society, by shaping new and existing developments in ways that reduce carbon dioxide emissions, and in the consideration of renewable energy proposals.

2.5 This is particularly important as Derbyshire (outside the National Park) continues to be an area of planned growth up to around 2035, as provided by the relevant local development plans under the 2004 Act. These plans provide a good understanding of how this current growth agenda is expected to distribute the delivery of homes, economic development and key infrastructure within Derbyshire over the next 15 years. It is therefore timely for a range of planning policies to be developed that will help Derbyshire meet the necessary carbon reduction targets, but also will be embedded in helping deliver 'good growth' within the County.

2.6 The Planning Guidance has been drafted i by the officer working group which includes representatives from the majority of Derbyshire LPAs, including Derby City and the Peak District National Park Authority. It addresses current Derbyshire local plan climate change-related policies and considers good practice from across the UK. It also assists in the development of local planning policy at all levels, including neighbourhood plans. However, it does not suggest draft policies, as these are to be made in light of local circumstances and priorities. The document does, though, introduce the idea of a county-wide 'net zero ambition' and identifies a number of climate-related issues or design considerations that should be taken into account in the design and implementation of development proposals and that can be included in development plan policies.

2.7 To support the Guidance, an innovative climate change metric has been produced which at planning application stage, quantifies the degree to

which a development contributes to climate change mitigation, adaptation and resilience. The metric does not give an indication of tonnes of greenhouse gas saved through reduced emissions but is intended to identify whether or not a number of issues or design considerations have been included in the development design process and whether they have been included for implementation in the final proposal.

2.8 Each of the design considerations is weighted in the metric based on its potential to implement carbon savings and contribute to addressing climate change. The metric highlights potential deficiencies in an application, providing the opportunity for both developers and planning officers to consider revisions and therefore assess the degree to which climate change has been considered in the design of a planning proposal. As such, the Guidance and metric are intended as a web-based resource and have been published on the Council's website in the Planning Policy pages.

2.9 In addition, there have been presentations to wider officer working groups including the Derbyshire Planning Policy Officer Group (DPPOG), the national Information Planning Advisory Group (IPAG), the Central Local Information Partnership of the Local Government Association (CLIP), Derbyshire Development Management Heads and Derbyshire Heads of Planning groups.

2.10 Both the Guidance and metric are now being used in the revision and drafting of new local plans and in the development management process across the County. As a result of publication and presentations to IPAG and CLIP, both the Guidance and metric have also been taken up by authorities outside Derbyshire, including Staffordshire Moorlands District Council and Wokingham Borough Council (unitary authority).

2.11 In addition, the Council has commissioned the Derbyshire Spatial Energy Study to help understand current energy usage, future usage scenarios and the potential opportunities for the delivery of renewable energy technologies in the County. Derbyshire is an area of high quality, natural and built heritage and these special qualities have been factored into the Study, identifying and mapping constraints to broadly identify the areas which are 'less constrained' for each of the various types of renewable energy generation.

2.12 The planning system has a crucial role to play in delivering effective action on climate change. Local plans need to contribute meaningfully towards reducing emissions and improving resilience. The Derbyshire Spatial Energy Study evidence will help LPAs to shape policies to

contribute to the transition to a net zero carbon society. A key element of the Study has been to develop a reproducible methodology to enable comparable studies to be replicated in other local authority areas. This was a condition of the Midlands Net Zero Hub funding support which also contributed to a number of local authority workshops to promote the Study and methodology.

2.13 It is important to stress that the Derbyshire Spatial Energy Study is a high-level study seeking to define more or less constrained areas for the various renewable energy technologies and does not mean automatic approval of any scheme. Where an application is made for planning permission for a renewable energy scheme, all relevant matters are required by law to be considered through the planning decision process.

2.13 All three elements of the Planning and Climate Change work stream are now published in the Planning pages of the Council's website.

3. Consultation

3.1 The Study, Guidance and metric do not require formal consultation. They have been developed through engagement with Council officers and planning/climate change officers from Derbyshire's Borough and District Councils, the Peak District National Park Authority and Derby City Council. The Guidance and metric were sent for comment to the Town and Country Planning Association (TCPA) which co-authored the publication, 'The Climate Crisis: A Guide for Local Authorities on Planning for Climate Change' with the Royal Town Planning Institute; and to the Tyndall Centre for Climate Change Research (a partnership of universities). Current indications are that both consultees like the approach.

4. Alternative Options Considered

4.1 In developing this collaborative approach, alternative approaches to climate change planning policy were considered. The preferred approach remains to continue working closely with all the Derbyshire LPA partners, which is considered achievable within the Council's planning statutory duties. The study, guidance and metric have been published, withdrawal is considered untenable.

5. Implications

5.1 Appendix 1 sets out the relevant implications considered in the preparation of the report.

6. Background Papers

6.1 The Derbyshire Spatial Energy Study, 2022

6.2 Climate Change and Planning Guidance, 2023

6.3 Climate Change Assessment Tool, 2023

6.4 All documents published in the Planning Policy pages of the Council's website.

7. Appendices

7.1 Appendix 1 – Implications

8. Recommendation

That the Committee:

a) Resolves to acknowledge the progress in the collaborative working, relating to the Derbyshire Renewable Energy Spatial Study, and the Climate Change Planning Guidance and associated assessment tool, that is summarised in this report.

9. Reasons for Recommendation

9.1 This work is within the Climate Change theme work streams of Vision Derbyshire and the priority actions of the Council' Climate Change Strategy. The Planning Guidance, assessment metric and the Renewable Spatial Energy Study provide important strategic evidence to support development of consistent local planning policies on climate change and contribute to delivery of the Climate Change Strategy. The metric, its ongoing development and refinement, has the potential to make a significant contribution to the development management process across Derbyshire and beyond.

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Appendix 1

Implications

Financial

1.1 The delivery of the work streams has been shared across the local planning authority (LPA) partners and has no financial implications for the Council. Successful grant submissions were made to the Midlands Energy Hub, Derby and Derbyshire (D2) Energy Board and Business Rate Funding, to raise £50,000 funding, which has enabled the Renewable Energy Study to be delivered.

Legal

2.1 The Council, by powers contained in the Local Government Act 2000, Local Government and Public Involvement in Health Act 2007, the Sustainable Communities Act 2007 and the Localism Act 2011, is empowered to engage with other agencies and stakeholders for helping to mitigate and adapt to climate change.

2.3 LPAs are bound by the requirement set out in Section 19 of the Planning and Compulsory Purchase Act 2004, as amended by the Planning Act 2008, for development plan documents (taken as a whole) to include policies designed to secure that the development and use of land in the LPA's area contribute to the mitigation of, and adaptation to, climate change.

Human Resources

3.1 This collaborative working is undertaken as part of core business by Council officers.

Information Technology

4.1 None of significance.

Equalities Impact

5.1 In this respect, children and younger people therefore have greater potential than older generations to benefit directly over their lifetimes from the operation of any development plans and policies that are effective in climate change mitigation, and/or appropriate adaptation. Nevertheless, since older people tend to be more at risk from excessive air temperature and humidity, any appropriate measures for more immediate adaption to periods of very hot weather (such as the record-

braking heat over the UK in July 2022), which may already be less uncommon and /or more intense due to climate change, could be most directly relevant to the most senior age groups.

Corporate objectives and priorities for change

6.1 The collaboration with other LPAs supports the Council's ambition to be a net zero organisation by 2032, or sooner, and for the County to be net zero by 2050 and informs the action that needs to be taken to achieve these ambitions.

Other (for example, Health and Safety, Environmental, Sustainability, Property and Asset Management, Risk Management and Safeguarding)

7.1 None.

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FOR PUBLICATION

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IMPROVEMENT AND SCRUTINY COMMITTEE – CLIMATE CHANGE, BIODIVERSITY AND CARBON REDUCTION

MONDAY, 22 MAY 2023

Report of the Executive Director - Place

Climate Change Performance Reporting - 2022-2023 Q4

1. Purpose

1.1 The purpose of this report is to present the Climate Change Programme Dashboard for Quarter 4 2022-2023. The Dashboard has been developed to provide details on performance against delivery of the Council's Climate Change Strategy: Achieving Net Zero (2021-2025) (the 'Strategy').

2. Information and Analysis

2.1 The Council's approach to monitoring and reporting on performance against the delivery of the Strategy and overarching carbon reduction targets was presented at a meeting of the Improvement and Scrutiny Committee for Climate Change, Biodiversity and Carbon Reduction held on 7 February 2022.

2.2 As set out in the report of 7 February 2022, a core mechanism for monitoring and reporting on performance is regular performance reporting to the Climate Change and Environment Programme Board (CCEPB). On a quarterly basis, a Climate Change Programme Dashboard is presented to the CCEPB providing details on performance against delivery of actions within the Strategy.

2.3 The Dashboard is designed in the same format and structure as the Council's Strategic Dashboard, which is used to report on performance against delivery of the Council Plan.

2.4 The Dashboard includes:

- A narrative on which actions are not on track, why, the potential impact, and the mitigations being carried out to get the actions back on track.
- A narrative on overall performance of the Long List actions by 2025 that are likely to have the biggest positive impact on emissions reduction, and those which require the most immediate action and implementation.

3. Consultation

3.1 Details of the mechanisms for monitoring and reporting on performance against delivery of the Strategy were presented to the Improvement and Scrutiny Committee for Climate Change, Biodiversity and Carbon Reduction on 7 February 2022. The Committee then resolved (inter alia) to note and support the mechanisms for reporting on progress of the delivery of the Strategy and the overarching carbon reduction targets, as set out in the report then before it (Minute No. 6/22 refers).

4. Alternative Options Considered

4.1 Not operating these established mechanisms for monitoring and reporting of performance, including the reporting to the CCEPB and this committee, would be contrary to the resolution of support mentioned at 3.1 above.

5. Implications

5.1 Appendix 1 sets out the relevant implications considered in the preparation of the report.

6. Background Papers

6.1 Not applicable.

7. Appendices

7.1 Appendix 1 – Implications.

7.2 7.2 Appendix 2 - Climate Change Programme Dashboard 2022-23, Q4.

8. Recommendation

That the Committee:

a) Notes the content of the Climate Change Programme Dashboard detailed in Appendix 2.

9. Reason for Recommendation

9.1 To ensure that monitoring and reporting of performance against delivery of the Strategy and the overarching carbon reduction targets is carried out in an appropriate, meaningful, and effective manner, and help towards ensuring that the Strategy and actions remain on track and are delivered.

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Appendix 1

Implications

Financial

1.1 The delivery of the actions within the Strategy will have financial implications for the Council. These will be considered on a project-by-project basis.

1.2 The Place Department holds a £4.000m revenue reserve for projects approved for delivery under the Climate Change Strategy.

Legal

2.1 Some of the projects required to deliver the actions within the Strategy may have legal implications. These will be considered on a project-by-project basis.

Human Resources

3.1 Some of the projects required to deliver the actions within the Strategy may have Human Resource implications. These will be considered on a project-by-project basis.

Information Technology

4.1 Some of the projects required to deliver the actions within the Strategy may have Information Technology implications. These will be considered on a project-by-project basis.

Equalities Impact

5.1 Some of the projects required to deliver the actions within the Strategy may have Equalities Impact implications. These will be considered on a project-by-project basis.

Corporate objectives and priorities for change

6.1 Delivery of the Strategy will improve the environmental sustainability of the Council and the county and in particular will reduce greenhouse gas emissions.

Other (for example, Health and Safety, Environmental, Sustainability, Property and Asset Management, Risk Management and Safeguarding)

7.1 Some of the projects required to deliver the actions within the Strategy may have other implications. These will be considered on a project-by-project basis.

Appendix 2

Climate Change Programme Dashboard 2022-23, Q3

Overview

Strategy Theme	Good	Review	Action
Council Estate and Operations	6	3	0
Low Carbon Economy	2	5	0
Decarbonising the Domestic Sector	3	3	0
Transport, Travel and Infrastructure	4	2	0
Waste	2	2	0
Total	**17**	**15**	**0**

Delivery Theme	Theme Lead	Good	Review	Action
Council Property and Estate	David Beard	3	2	0
Procurement	Stuart Etchells	2	0	0
Highways	Neill Bennett	0	0	0
Fleet	Richard Bright	0	1	0
Schools	TBC	0	0	0
External Transport and Travel	Mathew Bonomi	4	2	0
Low Carbon Economy	Karl Apps	1	4	0
Planning	David Arnold	2	3	0
Internal Engagement and Training	Sally Pearson	1	0	0
External Engagement	Chris Burton	0	0	0
Natural Capital	Adam Lathbury	0	0	0
Waste	Ruth Robinson	2	2	0
Climate Change Team	Caroline Toplis	2	1	0
Total		**17**	**15**	**0**

- Good — On track or complete with outcomes in line with expectations
- Review — Some risk to achieving timetable and/or outcomes
- Action — Unlikely to achieve timetable and/or to deliver required outcome

Summary

Overall performance of the 32 priority actions within the Derbyshire County Council Climate Change Strategy: Achieving Net Zero (2021-2025) is presented in the table below. The overall position has remained unchanged from the previous quarter.

- No priority actions have been allocated an **Action** rating in this quarter.
- 17 priority actions (53%) have been allocated a **Good** rating, meaning that they are on track or complete with outcomes in line with expectations.
- 15 priority actions (47%) have been allocated a **Review** rating, meaning that there is some risk to achieving timetable and/or outcomes.

Of those actions allocated a Review rating, the actions that potentially have the biggest negative impact on achieving net zero targets if not achieved are:

Council Estate and Operations:

- (Ref 5) Roll out a Council wide electric vehicle sharing programme and electric vehicle charging points at all key Council sites, coupled with a behaviour change campaign and evaluation of working practices to facilitate a zero-emission fleet.

Low Carbon Economy:

- (Ref 15) Work with local academic institutions, trade unions, and regional Chamber of Commerce to identify geographical areas for low carbon industry growth, as well as assessing and develop the capabilities and skills of the region in supplying those industries.
- (Ref 16) In line with Vision Derbyshire, continue working with borough and district councils to develop a Strategic Joint Planning Framework for Derbyshire to ensure that planning measures for net zero commercial buildings are integrated into Local Plans.

Decarbonising the Domestic Sector:

- (Ref 17) Conduct an updated feasibility assessment on the low carbon heat and renewable energy opportunities within the county.
- (Ref 21) Work with local authority and wider government partners to develop a Regional Skills Strategy that identify areas of upskilling within the house building and retrofit sectors, and creates investor-ready training programmes to receive support from the proposed National Skills Fund.

Transport, Travel and Infrastructure:

- (Ref 24) Support the new Enhanced Bus Partnership arrangements being introduced in Derbyshire as part of the new National Bus Strategy. This will involve Derbyshire County Council and the bus operators investing in new service provision, improved roadside bus infrastructure, mobility as a service, integrated ticketing systems, and upgraded information availability to provide an improved public transport offering to Derbyshire residents.

Details on mitigation measures for these actions are set out in the table below, with close monitoring of progress going forward recommended.

PRIORITY ACTIONS – Summary

Council Estate and Operations							
Ref	**Priority Action**	**Lead Theme**	**Target date for completion**	**Success Measure**	**Status (and change since previous Q)**	**Impact on net zero targets if not achieved**	**Summary of progress**
1	Identify land for renewable energy generation and carry out pre-feasibility assessments to identify whole life project costs.	Property and Estate	2023	At least one feasibility study conducted per year leading to a proposal for capital work.	✅ (no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** Corporate Property has developed a draft Net Zero Strategy for the Council's corporate estate, which identifies the requirement for major projects for renewable energy generation. A review of opportunities for the development of solar farms has been completed with consultant input from APSE Energy. 15 sites have been identified and reviewed for ground mounted solar PV. One site at Williamthorpe Country Park has been given priority status for development as a solar farm with an estimated annual output of power equivalent to 3.25 million kWh. This is equivalent to the annual energy use at the Council's seven highest energy using buildings. Other sites offer potential for future solar farm development subject to the availability of grid connection. The availability of capacity within the grid is being monitored. This site at Williamthorpe was previously granted outline planning permission for a ground mounted solar PV scheme. The Council's Countryside Service has provided verbal support for the project. The existing tenant has vacated the site. Funding has been secured to support further project development work for the site, as necessary.
2	Develop a design standard for future estate development which sets the requirement to develop net zero	Property and Estate	2023	Design standards developed and approved, and incorporated into formal council	✅ (no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** Corporate Property has now completed the development of proposed design standards for all new build and refurbishment projects. This work has been endorsed by the Climate Change and Environment Programme and the proposed targets were also presented to the Improvement and

	enabled buildings which can be net zero but also resilient to future climatic changes.			policy. Design standards applied on all relevant projects once approved.			Scrutiny Committee for Climate Change, Biodiversity and Carbon Reduction in February 2023. Subject to agreement by the Property Senior Management Team during Q1 of 2023-24, the standards are now ready for implementation.
3	Deliver Public Sector Decarbonisation Schemes and evaluate to inform further work.	Property and Estate	2023	Development of a Heat Decarbonisation Plan incorporating the poorest performing buildings to allow a growing programme of work for PSDS and other funding streams.	 (no change)	Moderate	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to difficulties experienced in installing planned low carbon heat technologies, resulting in funding being withdrawn. Further funding is required for feasibility studies to inform future funding bids to the Public Sector Decarbonisation Scheme.** A £1.891m grant was awarded to the Council through the government's Public Sector Decarbonisation Scheme (PSDS) in 2020. This grant was for carrying out low carbon heat schemes at three sites identified through feasibility studies. Applications to the fund are typically based on preliminary feasibilities and therefore carry risk. Two of the three schemes subsequently encountered delays which meant that projects could no longer meet the strict funding deadline requirements and PSDS grant funding was withdrawn. This issue occurred quite frequently across the country, such that the PSDS grant conditions have since been revised. The project at Buxton Junior School is currently complete pending technical audit. The Council submitted a bid to PSDS Phase 3b for the installation of an Air Source Heat Pump at Alice's View Children's Centre. Salix, who administer funds on behalf of the Department for Energy Security and Net Zero, have advised that the that the fund was oversubscribed, and that the Council's bid was unsuccessful, but will be providing feedback to the Council with a view to re-submission at the next available opportunity. **Mitigation: Corporate Property is analysing potential future PSDS funding bid opportunities and have secured necessary feasibility, design and procurement funding for 2023-24. Energy audits are currently underway at five sites to complete the necessary preliminary work necessary for future PSDS bids.**
4	Identify buildings to be retained and	Property and Estate	2023	Identification of which buildings provide the		High	**GOOD: On track or complete with outcomes in line with expectations**

	undergo energy efficiency retrofit.			greatest opportunity for retrofitting and a high-level analysis of opportunities, costs and benefits carried out.	(no change)		The Asset Management Strategy for the corporate estate has been reviewed to identify buildings to be retained, buildings for disposal, and buildings under review. Corporate Property has identified three proposed energy reduction measures in addition to property rationalisation and disposal: 1. Installation of solar PV on rooftops (30 priority schemes identified) 2. Active energy monitoring through the installation of remote monitoring equipment (30 priority schemes identified) 3. Improvements to thermal performance and energy efficiency (30 priority schemes identified) Capital funding for the proposed carbon reduction programme for 2023-24, which includes the measures listed above, was approved by Cabinet in February 2023. Projects to install PV in two Homes for Older People (HOPs) undergoing refurbishment are underway, with orders now placed to commence the installation of remote monitoring equipment in three HOPs (with five further sites being scoped), to enable the development of a pilot Energy Management System.
5	Roll out a Council wide electric vehicle sharing programme and electric vehicle charging points at all key Council sites, coupled with a behaviour change campaign and evaluation of working practices to facilitate a zero-emission fleet.	External Travel and Transport (proposed transfer to Property and Estate)	2025	Targets for EV pool car use and fleet vehicle decarbonisation set out in the Place Service Plan met.	(no change)	**High**	**REVIEW: Some risk to achieving timetable and/or outcomes. Council fleet EV usage has greatly increased post pandemic, further growth is constricted by the limited number of EV charge points on the Council estate at present.** Departmental grey fleet emissions reduction targets have been established and approved by CMT. These are included in Service Plans for 2023-24. Mechanisms for increasing the use of EVs for business travel are being developed and are likely to include: behaviour change campaigns; the provision of dedicated EVs for services, teams and/or individuals; and a forthcoming staff salary sacrifice scheme for the purchase of EVs and hybrid vehicles. A co-ordinated working group has been established between Sustainable Travel, Fleet Services and Corporate Property to establish a joint action plan to coordinate the work on EV charging infrastructure across the

							Council estate. The new design standards (Priority Action 2) support EV charge point installation. **Mitigation: Ongoing collaboration between relevant services to deliver pilot EV charging infrastructure installation project and the wider roll out programme across the Council's estate.**
6	Develop a Sustainable Procurement Framework using the UK government's green procurement guidance to embed environmental requirements and Social Value into all contracts.	Procurement	2022	Sustainable procurement policy developed and approved by Cabinet and outcomes from its implementation monitored and reported.	(no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** Cabinet approved the Sustainable Procurement Policy in October 2021 and work is being done to communicate this to staff and make it accessible on the Council website. As part of the Council's use of the Social Value Portal, the National TOMs (Themes, Outcomes and Measures) Framework will be incorporated into Council procurement contracts with the aim of achieving more sustainable value from procurements. The first contract to apply the approach was piloted in Autumn 2022 with the Social Value aspect of the tendering process worth 10% of the overall evaluation of the bid. Following evaluation of this contracting activity, the approach is now being applied on additional contracts.
7	Review the commissioning principles across all teams to ensure that climate change is embedded across our services and partner working.	Procurement	2022	Sustainable procurement policy developed and approved by Cabinet and outcomes from its implementation monitored and reported.	(no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** The Sustainable Procurement Policy will embed sustainable procurement principles and practice into all procurements and commissioning carried out across the Council.
8	Carry out a feasibility study to identify low carbon energy procurement options.	Property and Estate	2023	Feasibility study completed on an annual basis, with findings used to inform procurement and emissions	(no change)	**Moderate**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to price and supply issues in the UK energy market as well the benefits being limited when based on good practice carbon measurement and reporting.** Discussions held with the Council's energy supplier in September 2022 indicated that the procurement of a renewable energy tariff for 2023/24 is only available from mixed energy suppliers with a Renewable Energy

				reduction impact quantified.			Certificate. This would not guarantee that the energy purchased is from renewable sources and would not lead to a reduction in the Council's reported emissions from electricity use when following reporting good practice. The procurement of a renewable energy tariff is therefore not currently recommended on this basis. **Mitigation: Corporate Property's Energy Team will continue to explore options for the alternative procurement of renewable energy ahead of the 2024-25 financial year.**
9	Include climate change training as part of the induction process for all Elected Members and staff to strengthen knowledge of carbon emissions, climate resilience and net zero development.	Internal Engagement and Training	2022	All new staff to have undertaken mandatory e-learning module. Six 1.5-2 hour training sessions held over each 12-month period. Capture any follow-up positive actions reported by staff participating.	✔ (no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** Following approval from the CMT, a comprehensive climate change training programme for employees and Elected Members continues to be developed and rolled out. A fully updated online climate change training module (a mandatory part of the induction process for new employees), including an introductory video from Cllr Barry Lewis, is due to be launched. Existing staff who have not taken other training will also be encouraged to complete the module. Two-hour "Climate Change – Everybody's Business" training sessions are delivered every two months, which alternate between being held online and in person. All online versions are fully booked, and four teams have requested bespoke sessions following promotion of these sessions in Our Derbyshire. More sessions are likely to be developed in the future and a 'climate change for managers' course has been identified as a priority. Full eight-hour Carbon Literacy training has been delivered to some Elected Members and Senior Officers, senior Childrens Services staff and a range of officers and Elected Members from across the county.

Low Carbon Economy							
Ref	**Priority Action**	**Lead Theme**	**Target date for completion**	**Success Measure**	**Status (and change since previous Q)**	**Impact on net zero targets if not achieved**	**Summary of progress**
10	Develop a Renewable Energy Strategy for the county including an energy resource assessment that identifies opportunities for renewable energy generation as well as decarbonisation of heating and energy use in homes.	Planning	2022	Derbyshire Spatial Energy Studycomplete and being referenced and incorporated in Local Plans and planning activities across the county.	(no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** Funding was secured from D2N2, Midlands Energy Hub and the Derbyshire Economic Prosperity Committee and the project was commissioned in December 2021. The final version of the Derbyshire Spatial Energy Study was reported to CMT Cabinet in February 2023 and is now published on the Council's website. This study provides important evidence in Local Plan preparation across Derbyshire and the City. It also provides the basis of formulating wider local policy on renewable energy.

11	Work with the Midlands Energy Hub, D2N2 LEP and universities and colleges to build technical and economic capabilities to deliver renewable energy and low carbon heating projects.	Low Carbon Economy	2025	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	(no change)	Moderate	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to much control and influence sitting outside of the Council.** The Council's Economic and Regeneration Service attend and input into relevant D2N2 and Midlands Net Zero Hub groups and the Midlands Energy Growth Board to deliver objectives as set out in the Midlands Engine Ten Point Plan for Green Growth as well as wider ambitions around skills and training. Plans for collaborative projects are beginning to emerge. A Hydrogen Skills Academy is proposed at the East Midlands Freeport, which will help consolidate the approach to building specific skills in hydrogen technologies over the medium term (2+ years). **Mitigation: The Theme Lead for Low Carbon Economy is increasingly fostering collaborative working with partners to accelerate this area of work.**
12	Liaise with DNOs and D2N2 LEP to understand grid capacity / constraints for generation opportunities.	Low Carbon Economy	2025	Ongoing dialogue established with relevant stakeholders and DCC's responsibilities and role clearly defined. Action Plan developed to address constraints.	(no change)	Low	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to much control and influence sitting outside of the Council.** The Derbyshire Spatial Energy Study explores some of these issues, however, further focussed work is needed in this area. A Strategic Framework for Council action to deliver Net Zero energy in Derbyshire is in development, with one of the policy objectives being to make better use of existing, and creating new, energy grid capacity in Derbyshire. The Council is also working with the county's minerals products industry to engage with National Grid on grid capacity issues to ultimately enable a growth in renewable energy generation across the industry. **Mitigation: The Theme Lead for Low Carbon Economy and the Climate Change Team are exploring and delivering on opportunities to accelerate delivery of this action.**

13	Deliver the Derbyshire Green Entrepreneurs scheme and provide additional support for reducing environmental impacts, driving innovation, and curating sustainable growth for smaller businesses.	Low Carbon Economy	2021	The success criteria of the GEF has been met or exceeded	(no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** Strong progress made across the Green Entrepreneurs Programme. Funding position at the end of March 2023: • Small grants fund: £301,030 awarded to date and £54,051 being contracted • Demonstrator grants: £653,273 awarded to date. • Scholarship Grants: £38,214 awarded to date
14	Take forward the COVID Recovery Strategy to identify high carbon commercial industries, and support the business community in shifting to and benefiting from the low carbon economy through collaboration with climate change and carbon experts.	Low Carbon Economy	2021	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	(no change)	Moderate	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to much control and influence sitting outside of the Council.** The DE-Carbonise programme has now concluded. Work is being undertaken to develop a successor to the DE-Carbonise scheme with the six participating district and borough councils using their funding through the UK Shared Prosperity Fund (UKSPF). The scheme will include energy audits for businesses and some grant allocation. Options to incorporate this within the Green Entrepreneurs Fund are also being explored. Working through the D2N2 Growth Hub and Midlands Engine, which the Council is fully engaged with, tangible collaborative projects are beginning to emerge. A Strategic Framework for Council action to deliver Net Zero energy in Derbyshire is in development. **Mitigation: The Theme Lead for Low Carbon Economy and the Climate Change Team are exploring opportunities to accelerate delivery of this action.**

15	Work with local academic institutions, trade unions, and regional Chamber of Commerce to identify geographical areas for low carbon industry growth, as well as assessing and develop the capabilities and skills of the region in supplying those industries.	Low Carbon Economy	2025	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	 (no change)	**High**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to much control and influence sitting outside of the Council.** The Council's lead for skills and employment supports this work through relevant D2N2 groups and the Chamber of Commerce. However, more action is required within the county and region in order to meet ambitions around skills and employment. A Strategic Framework for Council action to deliver Net Zero energy in Derbyshire is in development. **Mitigation: The Theme Lead for Low Carbon Economy is increasingly fostering collaborative working with partners to accelerate this area of work. Potential for work in this area to be accelerated through a planned review of D2 Economic Strategy and emerging work on the Combined Authority.**

16	In line with Vision Derbyshire, continue working with borough and district councils to develop a Strategic Joint Planning Framework for Derbyshire to ensure that planning measures for net zero commercial buildings are integrated into Local Plans.	Planning	2022	Strategic Joint Planning Framework developed in collaboration with local authority partners. Referenced and incorporated in Local Plans and planning activities across the county.	 (no change)	**High**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to other areas of focus taking precedent within planning working groups, and clear guidance from central government is awaited.** This area of work has been paused while collaborative working with the district and borough councils has focussed on the development of a Climate Change Planning Guidance document. Options are being explored within the Vision Derbyshire Planning and Climate Change Subgroup for the development of a Strategic Joint Planning Framework in light of the publication of the Planning White Paper. However, despite the pause on the Strategic Joint Planning Framework, the Vision Derbyshire Climate Change and Planning sub-group has confirmed its priority projects for the next phase of the work programme, these being: • Climate Change Design Guide/Code for Derbyshire • Biodiversity Net Gain Guidance These projects will enable net zero and wider sustainability considerations to be fully embedded within Local Plans and related planning activities and policies. **Mitigation: The Theme Lead for Planning is leading discussions on this action and coordinating the delivery of the confirmed priority projects for the next phase of the work programme with the district and borough councils.**

Decarbonising the Domestic Sector							
Ref	**Priority Action**	**Lead Theme**	**Target date for completion**	**Success Measure**	**Status (and change since previous Q)**	**Impact on net zero targets if not achieved**	**Summary of progress**
17	Conduct an updated feasibility assessment on the low carbon heat and renewable energy opportunities within the county.	Climate Change Team	2023	At least one feasibility study conducted per year leading to a proposal for capital work.	 (no change)	**High**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to other areas of focus taking precedent within relevant working groups, and clear guidance from central government is awaited.** The completed Derbyshire Spatial Energy Study explores this and identifies broad opportunities. This is also being explored through a heat network opportunity at Clay Cross and wider renewable energy opportunities. A Strategic Framework for Council action to deliver Net Zero energy in Derbyshire is in development, as well as a proposed D2N2 Local Area Energy Plan. **Mitigation: This area of work is being progressed through the development of the Council's Strategic Framework for Council action to deliver Net Zero Energy in Derbyshire, and wider opportunities are being explored collaboratively with the district and borough councils through relevant working groups.**

18	Use outputs of the Renewable Energy Strategy to work with partner local authorities to adopt a whole-system Local Area Energy Planning approach to increase onsite low-carbon energy generation and reduce the demand for energy.	Climate Change Team	2025	Derbyshire Spatial Energy Study complete and being incorporated in planning activities across the county. Renewable energy growth across the county and carbon savings resulting from projects captured where possible.	 (no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** The completed Derbyshire Spatial Energy Study explores this and identify opportunities for increasing renewable energy generation across the county. Local Plan reviews are happening over the next few years, providing the Council with the opportunities to influence this as well as wider low carbon planning and development. A Strategic Framework for Council action to deliver Net Zero energy in Derbyshire is in development, as well as a proposed D2N2 Local Area Energy Plan.

19	Through the Vision Derbyshire process agree the approach to supporting the decarbonising of homes recognising the specific opportunities and challenges faced by renters and homeowners and reflecting the need to particularly support those in fuel poverty.	Climate Change Team	2023	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	 (no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** The Council continues to work with the district and borough councils through the Local Authority Energy Partnership (LAEP) to identify and develop projects to tackle fuel poverty across the county. The Derbyshire Healthy Home programme also continues to replace inefficient and carbon intensive domestic heating systems with modern gas boilers and provide insulation for eligible households. Following the engagement programme which took place across the county a draft Action Plan for consultation has been produced based on the feedback received. The draft has been sent out to communities and other stakeholders for further comment and agreement as, not only is the action plan co-designed, it will also be co-delivered by multiple partners including communities themselves. An options paper exploring options to deliver an energy advice and support service has also been drafted. It is intended that outcomes will be presented to CMT in late Spring 2023. The Vision Derbyshire Living and Working Sustainably Theme is providing governance and oversight to the work. The Council has also worked with partners in the D2N2 region on a joint bid to the Midlands Net Zero Hub Local Energy Advice Demonstrator grant fund, which would provide funding for two years to deliver a face-to-face energy advice and support service to homeowners. The outcome of this bid is expected in May 2023.

20	Planning work with the districts and boroughs to develop a Strategic Joint Planning Framework for Derbyshire to ensure achievement of minimum energy standards and net zero housing development.	Planning	2022	Strategic Joint Planning Framework developed in collaboration with local authority partners. Referenced and incorporated in Local Plans and planning activities across the county.	 (no change)	**High**	See Action 16

21	Work with local authority and wider government partners to develop a Regional Skills Strategy that identify areas of upskilling within the house building and retrofit sectors, and creates investor-ready training programmes to receive support from the proposed National Skills Fund.	Climate Change Team	2023	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	 (no change)	**High**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to much control and influence sitting outside of the Council.** The Council's Economic Regeneration Team attend and input into relevant D2N2 groups and the Midlands Energy Growth Board to deliver objectives as set out in the Midlands Engine Ten Point Plan for Green Growth as well as wider ambitions around skills and training. Tangible collaborative projects are beginning to emerge. Liaison with Midlands Net Zero Hub (MNZH) on the theme of retrofitting housing is continuing. MNZH is supporting borough and district councils to retrofit social housing and privately owned homes where the owner is vulnerable and in fuel poverty. MNZH has also appointed 18 training providers across the Midlands to deliver retrofit training courses through the Home Decarbonisation Skills Training Competition. This work will support the development of the supply chain in Derbyshire. An article has been drafted for the Trusted Trader e-newsletter to highlight the opportunity to existing traders. **Mitigation: The Theme Lead for Low Carbon Economy and the Climate Change Team are increasingly fostering collaborative working with partners to accelerate this area of work. The emerging skills strategy for Combined Authority presents a significant opportunity for consolidating this work.**

22	Develop an information sharing campaign to educate homeowners and renters on how to improve the energy efficiency of their property	Climate Change Team	2023	Campaign developed and rolled out, in collaboration with local authority partners. Carbon savings resulting from projects captured where possible.	 (no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** Following the community engagement work (see item 19) a draft action plan and options paper have been produced setting out actions for delivering a campaign on energy efficiency which can be co-delivered by community groups and councils across the county. As a first step to this work, The Council is working with other members of the Local Authority Energy Partnership to agree a revision of the 'Everybody's Talking About Climate Change' website and move to a new platform to provide location-specific information on retrofit which will complement that available nationally. The Council has also worked with partners in the D2N2 region on a joint bid to the Midlands Net Zero Hub Local Energy Advice Demonstrator grant fund, which would provide funding for two years to deliver a face-to-face energy advice and support service to homeowners. The outcome of this bid is expected in May 2023.

Transport, Travel and Infrastructure							
Ref	**Priority Action**	**Lead Theme**	**Target date for completion**	**Success Measure**	**Status (and change since previous Q)**	**Impact on net zero targets if not achieved**	**Summary of progress**
23	Promote integrated, and place-based development in transport planning as part of Derbyshire's COVID recovery and economic revival of market towns, to reduce emissions from first and last mile journeys and provide an economic boost to local retail and businesses.	External Transport and Travel,	2025	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	(no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** This action is being progressed through various areas of activity. This includes the market town programme workstream, which includes sustainable transport and travel within its remit. Projects being led by the planning team (such as the development of the Climate Change Planning Guidance) and the sustainable transport team (such as work around active travel and EV charging infrastructure) are also contributing to this. The Local Transport Plan, which is under development, will include climate change considerations and new Guidance anticipated to require a quantifiable carbon reduction assessment and plan for Derbyshire's transport sector. The Government has provided grant funding to assist with plan preparation.

24	Support the new Enhanced Bus Partnership arrangements being introduced in Derbyshire as part of the new National Bus Strategy. This will involve Derbyshire County Council and the bus operators investing in new service provision, improved roadside bus infrastructure, mobility as a service, integrated ticketing systems, and upgraded information availability to provide an improved public transport offering to Derbyshire residents.	External Transport and Travel	2022	BSIP delivered, monitored and evaluated in line with the established aims and objectives.	 (no change)	**High**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to a reduced level of funding secured for the BSIP and delays in the release of funding from DfT.** The Council's Bus Service Improvement Plan (BSIP) submission was approved by Cabinet on 14 October 2021 and submitted to DfT. The Council was successful in securing £47m of funding, around half of the original bid. The first year of BSIP funding was received from the DfT in November 2022. As this has arrived eight months later than originally anticipated some of the schemes proposed for 2022/23 are now going to be delivered later in the programme. However, schemes progressed during this quarter include: • fares discount for young people between 16-18 and unemployed people • the first phase of the bus priority measures at some traffic signals • the introduction of some new and enhanced bus services Work on the Enhanced Bus Partnership continues. A countywide Transport Hub study has been completed by SYSTRA. The work incorporates considerations for connectivity to/from other modes and sustainable travel and is linked to the BSIP. **Mitigation: Now that funding has been confirmed and the first year of funding received, the full programme of work is being confirmed and timetabled, with recruitment and commissioning activities being carried out to enable implementation of projects.**

25	Support the implementation of the Derbyshire Cycling Plan and the Local Cycling and Walking Infrastructure Plan.	External Transport and Travel	2022	Key Cycle Network information updated and priorty work carried out (subject to DfT funding).	✔ (no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** Work to adopt a D2N2 Local Cycling and Walking Infrastructure Plan (LCWIP) continues. The LCWIP contains the strategic Derbyshire Key Cycle Network proposals. Key Cycle Network information being updated. White Peak Loop is a priority with feasibility studies underway. Active Travel Tranche 2 funding secured. The Council has received an allocation of £0.285m from Active Travel England's Capability Fund to build capacity and develop business cases for more complex active travel schemes in market towns.
26	Support actions for increasing the uptake of active transport to reduce emissions particularly within marginalised groups, and improve health and wellbeing for all.	External Transport and Travel	2022	Relevant schemes carried out successfully and in line with their specific objectives. DfT Capability Fund funded work completed and findings implemented. Carbon savings resulting from projects captured where possible.	✔ (no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** Various areas of work relevant to this action are being progressed. This includes a potential GP referral scheme with Public Health, which would include targeting marginalised groups, such as people in deprived areas with high levels of health inequality. Smart Rider cycle safety schemes for school children and adult cycle training are delivered by the Council's road safety team. The Council has secured funding from Round 1 of the DfT Capability Fund to undertake a range of feasibility studies supporting the D2N2's Local Cycle and Walking Infrastructure Plan. Rural Action Derbyshire's Wheels to Work programme provides moped and bike information, training and loans to help people access work training or education. Revenue and Capital funding for this programme is confirmed until March 2024.

27	Continue to support the above average growth of zero emissions vehicle ownership in the country by establishing public private investment partnerships to develop a network of mixed speed public charging and hydrogen infrastructure, which is affordable, consistent, accessible and user friendly for residents and visitors.	External Transport and Travel	2022	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. EV numbers tracked against target. Carbon savings resulting from projects captured where possible.	✔ (no change)	**High**	**GOOD: On track or complete with outcomes in line with expectations** EV charge point work is ongoing with the strategic outline approach adopted by Cabinet in March 2023. A full time Low Emissions Vehicle Infrastructure (LEVI) Project Officer is in post to coordinate this work. A consultant has completed a study into potential demand across the county and to assess the preferred locations and types of charge points needed to meet this demand. A detailed procurement exercise to appoint appropriate charge point suppliers to install both residential and destination charge points across the county is now being carried out, which includes a contract to install upwards of 200 lamp column charge points for overnight residential use. A resident engagement exercise is also underway to help identify sites that are in most demand to prioritise the roll out. The Council is currently working with a consortium, led by CENEX and including Karshare and Co-Charger looking at shared EV and EV Chargepoint ownership in a rural setting, concentrating on Buxton and Hope communities. Low Carbon Mobility Task Force (through D2N2) is looking at hydrogen fuel and technology opportunities, which the Council is involved in.

28	Evaluate the use of smart technologies and alternative fuels to reduce the emissions associated with commercial and freight transports e.g. consolidation hubs, hydrogen sub-stations, transport mobility hubs, mobility as a service etc.	External Transport and Travel	2023	Projects and schemes tracked and reported, along with carbon reduction impact, where possible.	 (no change)	**Low**	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to limited capacity and higher priority areas within the relevant teams, as well as complexities around external funding for these areas of work.** This action is being progressed through various areas of activity. This includes a feasibility study for two transport hubs in the county, exploring opportunities around Mobility as a Service, and opportunities for developing a portal for all transport information in the county. This also has strong links with the BSIP which includes funding for transport mobility hubs. **Mitigation: A Mobility Hub strategy is to be developed. The Vision Derbyshire economic group is currently developing the scope of its next project around smart counties, which will also help to deliver this area of work.**

Waste							
Ref	**Priority Action**	**Lead Theme**	**Target date for completion**	**Success Measure**	**Status (and change since previous Q)**	**Impact on net zero targets if not achieved**	**Summary of progress**
29	Identify solutions to increase the diversion of organic waste including food, soiled materials, carpets, organic textiles, etc. from landfill.	Waste	2023	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	✔ (no change)	Moderate	**GOOD: On track or complete with outcomes in line with expectations** The Council is predominantly responsible for the disposal of residual municipal waste. It facilitates the increased diversion of the identified materials through its waste disposal/treatment contracts which encourage the disposal of materials via new technologies rather than landfill. The Council promotes home composting, reduction of food waste through Love Food Hate waste, for example. A consistency consultation paper is still under review by DEFRA. The Council and the Waste Collection Authorities (WCAs) are currently reviewing the potential impacts and opportunities to services and contracts, and the opportunities for collaboration, creating competitive tendering within the business environment and Value for Money for stakeholders and public services. The delivery plan continues to be progressed with relevant stakeholders. The Waste Management Service is reviewing Household Waste Recycling Centres performance to explore the potential opportunities for increased recycling and diversion.

30	Undertake a cross authority behaviour change campaign to promote reduction in waste and resource consumption in the home and businesses.	Waste	2022	Campaigns developed and rolled out, in collaboration with local authority partners, with success monitored and reported.	(no change)	Moderate	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to limited capacity at present in the waste management team, and due to the Council's limited direct control in this area.** The Council as Waste Disposal Authority runs campaigns and where possible does so in partnership with WCAs. The campaigns focus on residual municipal waste (not business waste), as the Council only has a remit for the disposal of Household Waste arisings. Waste reduction messages are communicated where resources allow. The Council uses social media messages as much as possible. Videos are currently being promoted to encourage food waste reduction with plans to promote more messages when resources permit. Smaller campaigns are being rolled out, to align with the Household Waste Recycling Centre performance review and operational health and safety concerns i.e., sorting your waste campaign at the HWRCs. The Service will continue to be promoted through social media where possible. Videos produced for publication on WCA websites. **Mitigation: The Theme Lead for Waste is continuing to work closely with WCAs in this area.**

31	Work with local producers and businesses to restrict the use of single use products and support the market for remanufactured goods.	Waste	2024	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	(no change)	Moderate	**REVIEW: Some risk to achieving timetable and/or outcomes. This is due to limited capacity at present in the relevant teams, and due to the Council's limited direct control in this area.** The Sustainable Procurement Policy will help to ensure that, when procuring contracts, departments look to source products with recycled content and reduce single use plastics. This is to be supported by the Council's' Single Use Plastics (SUP) policy. Further engagement with producers and businesses is planned but not yet carried out due to capacity issues in relevant teams. Continue to promote sustainable procurement policy when procuring new contracts. **Mitigation: The Theme Leads for Waste and Procurement are exploring opportunities to increase capacity to deliver this action.**
32	Explore the potential for partnering with local charities and organisation to segregate and redistribute good quality products from HWRC	Waste	2025	Delivery plan in place and being progressed in line with established targets and objectives, with DCC responsibilities and role clearly defined. Carbon savings resulting from projects captured where possible.	(no change)	Low	**GOOD: On track or complete with outcomes in line with expectations** The new Household Waste Recycling Centre contracts address Social Value and encourage working with the Third Sector to deliver a service where reuse and recycling opportunities are maximised. The new Household Waste Recycling Centre contract (currently in the mobilisation phase) has a requirement to redistribute good quality products from HWRCs. Two initial sites have been identified as Bolsover and Raynesway HWRCs, and the second phase will include Darley Dale and Ashbourne. The scope and timeline are currently in discussion.

LONG-LIST ACTIONS – Summary

In addition to the 32 priority actions listed above, the Strategy includes a series of 120 'Long List' supplementary actions, initiatives and projects, which it is anticipated the County Council will either lead or support. As part of the annual review of delivery of the Strategy carried out in Autumn 2022, the Long List has been reviewed and rationalised, with a new Long List of 30 actions established. A summary of performance for these 30 actions is provided below.

The overall position has remained unchanged from the previous quarter. 13 long list actions (43%) are scored as being **Good** (on track or complete with outcomes in line with expectations) with 15 actions (50%) requiring **Review** (some risk to achieving timetable and/or outcomes).

Two actions are identified as requiring **Action** (unlikely to achieve timetable and/or to deliver required outcome), a summary of the actions being taken to rectify the relevant issues and bring the actions back on track, are detailed below:

- **LL15 – Grid Capacity and Demand:**
    - Making better use of existing, and creating new, energy grid capacity in Derbyshire' is one of six Policy Objectives for the Council in the Strategic Framework for Council action to deliver Net Zero energy in Derbyshire. This Strategic Framework is due to be presented to Cabinet for approval in May/June 2023. Through delivery of the Strategic Framework, the Council will continue to engage and work more closely with National Grid and other partners (including community energy groups) to understand and address issues around grid constraints and future demand models and scenarios. Through expanded capacity and connection, and the move to a more decentralised energy system, a growth in renewable energy generation, a growth in viable community energy projects, and greater capacity across the grid for an expansion of Electric Vehicle charging infrastructure in the county will be enabled.
    - Through a new Memorandum of Understanding, the Council is collaborating with the Derbyshire Minerals Product Industry to ensure net zero is achieved for the industry and for the county by 2050. This includes engaging with National Grid to identify opportunities to resolve issues concerning the condition and capacity of the electricity grid, which is preventing large-scale investment in renewable energy generation by the industry. A roundtable discussion between the Council, the Minerals Product Industry and other relevant stakeholders in May 2023 will also explore this issue further.
    - A proposed Local Area Energy Plan for the D2N2 region, being coordinated by Midlands Net Zero Hub, will deliver a fully costed, spatial plan that identifies the change needed to the local energy system and built environment, to ensure a net zero energy system by 2050 is achieved. This will enable future energy generation and demand opportunities and new ways to balance the grid more effectively to be understood.
    - As part of the Council's Asset Management Strategy and programme of Electric Vehicle charging infrastructure installation across the corporate estate, the Council is engaging with National Grid to ensure the necessary grid connection and supply is available to support these projects.

- **LL21 – Funding Support:**
    - Through the Local Climate Engagement Programme the Council has been working with the borough and district councils to engage with residents to understand what support they need to enable them to retrofit their own homes and to co-design and co-deliver a programme

of activities which will support homeowners to make their homes fit for the future. A draft Action Plan has been developed and has been shared with relevant groups for feedback by 5 May 2023. A key action will be to explore options for delivering an impartial energy advice and support service ranging from a simple advice service to a service managing and co-ordinating homeowners retrofit. Although financial support to residents is not expected to be part of any support provided, guidance on, and signposting to, wider central government financial support will be included in any information sharing mechanism and campaigns.

- The draft Action Plan also includes the Council working closely with the district and borough councils to explore options (by September 2023) for bulk buying of solar panels and insulation materials to enable homeowners to take advantage of reduced costs.
- The Council is working with other members of the Local Authority Energy Partnership to agree a revision of the 'Everybody's Talking About Climate Change' website and move to a new platform to provide location-specific information on retrofitting, which will include the provision of up-to-date information about finance and grants available for energy efficiency measures. The website will be updated and relaunched by the end of 2023.
- The Council has worked with partners in the D2N2 region on a joint bid to the Midlands Net Zero Hub Local Energy Advice Demonstrator grant fund, which would provide funding for two years to deliver a face-to-face energy advice and support service to homeowners. The outcome of this bid is expected in May 2023.

COUNCIL ESTATE AND OPERATIONS		
Ref	**Action**	**Status**
LL1	**Decarbonising Schools:** Undertake a baselining exercise with all schools in Derbyshire to identify their existing emissions and ongoing work to reduce energy consumption. For all schools within the Derbyshire County Council Portfolio agree a target date to reduce emissions to net zero, between 2030 and 2040.	✔
LL2	**Policy Review:** Review all relevant existing Derbyshire County Council policies and update, where required, to ensure they consider carbon reduction and climate resilience and do not contradict our Climate Change Strategy and direction.	✔
LL3	**Renewable Energy Generation:** Maximise opportunities for renewable energy generation on Council property and work with partners, such as Midlands Net Zero Hub, to deliver collaborative projects and access funding streams.	○
LL4	**Efficient Buildings:** Install lighting and heating controls, as well as water efficiency measures, across the estate to improve energy and water efficiency and continue to embrace the use of new technology to create a more agile, flexible, and mobile workforce.	○
LL5	**Behaviour Change (Internal):** Undertake awareness raising and behaviour change campaigns to ensure all staff know how to make energy efficient choices in the home and workplace. Include climate-conscious behaviour into Job Descriptions, Employment Terms and Conditions and as part of the staff annual performance review.	○
LL6	**Behaviour Change (External):** Provide ongoing up-to-date information on activities to reduce energy us and on taking wider action to tackle climate change on the Derbyshire County Council website. Work with communities to co-design and co-deliver specific actions within the Climate Change Strategy.	✔
LL7	**Council Fleet Vehicles:** Review core fleet requirements in each department to understand the current and potential future use of the core and grey fleet considering company EVs; hire vehicles; inter-departmental sharing of core vehicles, use of VMS. Deliver a programme to replace Derbyshire County Council's HGVs in 2024 with Clean Air Zone (CAZ) compliant vehicles combined with use of satellite navigation, awareness of driver style and use of a Vehicle Management System. Use the collective purchasing power of Derbyshire's councils when purchasing fleet vehicles.	✔
LL8	**Scope 3 emissions:** Map the Council's level of influence against different levels of emitters to prioritise and focus action, and estimate emissions from 'Working at home'.	✔
LL9	**Project Scoping and Impact Assessments:** Carry out Climate Impact Assessments on all Derbyshire County Council infrastructure projects from 2022 identifying the whole carbon lifecycle and resilience to climate change. Ensure low carbon and resilient options are embedded in scope of works for new developments for client partners.	○
LL10	**Procurement:** Consider opportunities for a joint procurement approach across local authorities in Derbyshire to purchase low carbon services including electric vehicle charging infrastructure, and building upgrades.	○
LOW CARBON ECONOMY		
Ref	**Action**	**Status**
LL11	**Low Carbon Heat:** Work with industrial partners to identify opportunities for waste heat recovery to serve low-carbon heating schemes, and to explore opportunities for the electrification of heat and heat pump technologies in non-residential buildings.	○
LL12	**Planning:** Work with local authority partners and developers to better understand the integration of whole life carbon assessment into non-residential new developments, and to identify focus areas for energy efficiency improvements and renewable energy generation installations in the county's existing non-residential building stock.	✔
LL13	**Minerals Industry:** Work with the minerals industry to identify partnership projects for the transition to a low carbon sector.	✔

LL14	**Community Energy:** Work with community groups to develop community energy schemes and help secure funding from the Local Enterprise Partnership (LEP) for local energy projects.	
LL15	**Grid Capacity and Demand:** Work with the DNOs and other partners to identify priority zones for low carbon development, to support the energy transition, and to reduce additional stresses placed on power networks due to increased electrification (transport, heat etc.) and increased penetration of renewables.	
LL16	**Business Support:** Continue investing in the Derbyshire Green Entrepreneurs Fund, explore other mechanisms (such as a revolving fund) and secure external funding where relevant, to support Derbyshire businesses in improving the carbon and energy consumption in operational performance and to drive innovation and curate sustainable growth.	
LL17	**Skills and Training:** Develop a comprehensive apprentice training programme developed in conjunction with University Partners, kick-started by placing requirements on directly commissioned works.	
DECARBONISING THE DOMESTIC SECTOR		
Ref	**Action**	**Status**
LL18	**Retrofitting Project Pipeline:** Work with the district and borough councils, Midlands Net Zero Hub and the D2N2 LEP to identify a programme of 'shovel ready' projects and partnership frameworks for retrofitting domestic properties and to enable a more rapid, collaborative and timely response to funding opportunities.	
LL19	**Planning:** Continue to work with the borough and district councils and developers to explore increasing requirements within Local Plans and wider planning policies for zero carbon homes and so that new housing developments are resilient a changing climate.	
LL20	**Domestic Retrofit Skills, Employment and Training:** Carry out analysis to understand the capacity of the construction and retrofit sectors to retrofit all homes across Derbyshire to EPC rating C or above by 2035. Work with local authority and academic partners, as well as industry, to continue to strengthen and develop local skills, capacity, frameworks and expertise in domestic energy efficiency retrofitting, and develop a Regional Energy Skills Strategy to inform investor-ready programmes to receive support from the National Skills Fund.	
LL21	**Funding Support:** Support residents in responding quickly to government financial support for home improvement, and explore the feasibility of a council-managed local green homes fund to provide access to homeowners for financial support with energy efficiency improvements, as well as passing on savings from bulk retrofit contracts.	
TRANSPORT, TRAVEL AND INFRASTRUCTURE		
Ref	**Action**	**Status**
LL22	**Active Travel:** Develop partnerships and seek funding for training and support to increase number of young people who can cycle confidently and cycle regularly. Ensure cycle proofing is embedded in design of future infrastructure developments and increase the use of active travel (cycling and walking) for first and last mile transport use by utilising a more connected approach across different service offerings.	
LL23	**Bus Services and Infrastructure:** Through delivery of the Bus Service Improvement Plan and working with local and regional partners, such as Midlands Connect, work collaboratively to: • Introduce measures to present the bus services in Derbyshire as a singular coordinated network. • Install electronic real time information signs and LED lighting at all key bus stops and interchanges. • Implement targeted punctuality improvement infrastructure measures to make bus journeys quicker and more reliable. • Continue investment in new buses to improve vehicle emissions standards and introduce low carbon buses such as electric or hydrogen.	

LL24	**Planning:** Reinvigorate travel planning and behavioural change activities linked to new housing and commercial developments, and ensure public transport routes and gateways are developed to access rural areas, including the Peak District National Park.	
LL25	**Taxi Operators:** Support taxi operators in embracing alternative technologies and infrastructure by support applications for grant funding and expanding the public charging network.	
LL26	**Technology:** Track developments in transport technology to ensure rapid deployment of low carbon solutions.	
LL27	**EV Charging Infrastructure:** Work with partners to accelerate the shift to electric vehicles through improving charging point infrastructure and promoting the uptake in these vehicles, with a particular focus on facilitating a growth in charging infrastructure in areas where there is little or no commercial viability (such as on-street charging).	
WASTE		
Ref	**Action**	**Status**
LL28	**Strategy Development and Implementation:** In the development of the new Derbyshire Waste Strategy integrate circular economy principles and set ambitious targets for increased reuse and recycling.	
LL29	**Council Waste and Resources:** Establish task groups within each Department to promote good waste reduction, recycling and recovery practices within service delivery and contracting activities. Produce six monthly reports on waste produced across the estate and make this available to all staff to enable better understand of the impact of waste reduction measures.	
LL30	**Partnership Working:** Continue to work with local, regional and national partners on improving levels of waste diversion through effective public engagement and behaviour change. Work with local businesses to explore embedding circular economy practices within operations and explore opportunities for collaboration with research groups and universities.	

Climate Change Performance Reporting: 2022-2023 Q4

Improvement and Scrutiny Committee – Climate Change, Biodiversity and Carbon Reduction

22 May 2023

Key points

- Dashboard for 2022-23 Q4 (January – March 2023)
- No change from the previous quarter
- 17 priority actions (53%) have been allocated a **Good** rating
- 15 priority actions (47%) have been allocated a **Review** rating
- No priority actions have been allocated an **Action** rating

Priority Actions - Overview

Strategy Theme	Good	Review	Action
Council Estate and Operations	6	3	0
Low Carbon Economy	2	5	0
Decarbonising the Domestic Sector	3	3	0
Transport, Travel and Infrastructure	4	2	0
Waste	2	2	0
Total	**17**	**15**	**0**

Steps being taken to bring the 15 **Review** rated actions back on track, particularly those that have the potentially biggest negative impact on achieving net zero targets if not achieved.

Focus Areas

- **Council Estate and Operations:**
  - Corporate Property decarbonisation
  - Staff training
  - EV fleet and charging infrastructure
- **Low Carbon Economy:**
  - Skills, employment and training
  - Planning guidance and policy
- **Decarbonising the Domestic Sector:**
  - Support to homeowners
  - Skills, employment and training
- **Transport, Travel and Infrastructure:**
  - Bus Service Improvement Plan
  - Local Cycle and Walking Infrastructure Plan
  - EV charging infrastructure
- **Waste:**
  - Diversion and reduction in waste

Long-list actions

- 30 long-list actions
- No change from the previous quarter
- 13 long-list actions (43%) have been allocated a **Good** rating
- 15 long-list actions (50%) have been allocated a **Review** rating
- Two long-list actions are identified as requiring **Action** (unlikely to achieve timetable and/or to deliver required outcome):
  - Grid Capacity and Demand
  - Funding Support

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Climate Change, Biodiversity and Carbon Reduction I & S Committee

2022/23 Work Programme

Confirmed items:

Monday 3 July 2023			
Topic	**Lead Officers**	**Purpose**	**Portfolio Holder**
Climate Change Portfolio Update	Cllr B Lewis	To update the Committee on the climate change work of the portfolio holder	Cllr Barry Lewis
Alignment of waste policies with carbon reduction ambitions	Claire Brailsford / Daniel Ayrton	To consider and review how the Council's and county's waste management policies and procedures are aligned with and supporting climate change targets and ambitions	Cllr Carolyn Renwick
Sustainable Procurement	Head of Finance / Stuart Etchells	To review the implementation and impact of the Council's new sustainable procurement policy	Cllr Simon Spencer

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