

Matlock OBC
Sustainability Report

Revision 01
October 2023

HLM
Architects

Executive Summary

The redevelopment of the County Hall Complex at Matlock presents an opportunity for Derbyshire County Council to deliver upon the sustainability goals contained in its strategies, policies and action plans as well as the wider ambition for the County to become net zero by 2050.

The UK Government has committed to the country being net zero by 2050 and has published Outcome Delivery Plans for each Department to support that goal. In response Derbyshire County Council has published its own Corporate Environment Policy and Carbon Reduction Plan setting out its ambitions to be net zero by 2032 as an organisation and its Climate Change Strategy setting out actions to ensure the County can be net zero in line with the UK Governments target of 2050.

The Corporate Environment Policy sets out the Council's commitments:

- Reducing greenhouse gas emissions to net zero carbon by 2032
- Reducing greenhouse gas emissions to net zero carbon by 2032
- Using water efficiently in the Council's buildings and operations
- Reducing waste
- Minimising pollution
- Protecting the natural and built environment
- Ensure all staff are able to implement the Corporate Environment Policy

Derbyshire County Council's Carbon Reduction Plan sets their net zero target as 2032 with an interim target of reducing emissions by 47% by 2025 (against the 2005 baseline). As well as reducing emissions across the Council other priorities include future proofing homes, improving health and well-being, avoiding flood damage costs, enhancing green spaces, improving air quality, infrastructure and transport and boosting biodiversity.

The Climate Change Strategy sets out key actions the following which are relevant in the context of the County Hall Development:

- Identify buildings for energy efficiency retrofitting and land for installation of renewable energy generation technologies and the development of a net zero design standard for estate development.
- Develop a Sustainable Procurement Framework ensuring environmental and social sustainability is embedded in all contracting and procurement activity.
- Expand electric vehicle sharing programme and install electric vehicle charging points all key Council sites.
- Support the implementation of the Derbyshire Cycling Plan and the Local Cycling and Walking Investment Plan. Support actions for increasing the uptake of active transport to reduce emissions and improve health and well-being for all.
- Identify solutions to increase the diversion of organic waste including food, soiled materials, carpets, organic textiles, etc. from landfill.

The Options

The Outline Business Case consider 4 options for the ongoing provision of the headquarters function currently provided across the County Hall Complex. These are summarised as:

Option 1 – Base Case – Do minimum

The minimum expenditure necessary to make the building fit for purpose in its current use including backlog maintenance, continued operational expenditure and de carbonisation measures.

Option 2 – Third Party Development – Council relocate completely

Derbyshire County Council vacate the site entirely into leased premises elsewhere in the County. The site is developed by one or more third parties for a mixture of hospitality and residential use with the potential of some co-workspace depending on operator preferences.

Option 3 – Mixed Development – Council remain in new offices

Derbyshire County Council retain a Council workspace presence as part of a mixed use masterplan potential and bring in third party operators to help develop other hospitality and residential offerings.

Option 4 – Mixed Development – Some staff remain, others relocate

Some Council workspace on site but some roles are also decentralized to create a smaller workspace demand. Remainder of the site sold to third parties to help develop a mixed use masterplan as in Option 3.

Sustainable Outcomes

The RIBA Sustainable Outcomes provide a framework for understanding the sustainability potential for the provision of the Council's Headquarters facility in each of the options.

Net Zero Operational Carbon

Operational Carbon can be minimised through a robust performance based approach to building design where form factor, orientation, fabric efficiency and quality of construction result in low energy demand and as a consequence low carbon emissions.

Net Zero Embodied Carbon

Embodied Carbon relates to the emissions created in the creation of materials and the assembly of those materials into a building on site. Reuse of buildings and materials as well as careful specification can ensure low embodied carbon of new builds and retrofits.

Whole Life Carbon

The whole life carbon of the asset will consider both the embodied carbon and the operational carbon. This balance can be identified and controlled in owned assets compared to being out with the Council's control and subject to market availability when considering leased accommodation.

Sustainable Water Cycle

A sustainable water cycle results from a focused effort to minimise water use alongside an approach to managing rainwater collection, harvesting, use and discharge reducing the overall water consumption while reducing the quantity and improving the quality of surface water runoff from the site in turn contributing to wider catchment area flood management.

Sustainable Connectivity & Transport

Transport emissions can be reduced through considered approaches to sustainable connectivity and transport by developing green transport plans including digital connectivity to reduce the number of journeys and by providing excellent pedestrian and cycle connectivity to encourage active transport.

Sustainable Land Use & Biodiversity

Any development proposal must consider the ecology and biodiversity value of the site. The starting point should be the protection of existing biodiversity value, supported by enhancement where applicable and increasingly a requirement to improve biodiversity by a minimum of 10% in an effort to reverse wider biodiversity decline.

Good Health & Wellbeing

The health and wellbeing of the Council’s workforce is directly influenced by the quality of the accommodation. New build offers the freedom to optimise design for health and wellbeing while achieving similar outcomes for existing buildings will likely require deep retrofit solutions while also dealing with the constraints of orientation, form factor and historical and cultural restrictions

Sustainable Communities & Social Value

The National Themes, Outcomes and Measures (TOM’s) sets out 5 themes for social value;

- Jobs, focusing on skills and employment
- Growth, focusing on responsible regional business
- Social, focusing on healthier, safer and more resilient communities
- Environment, focusing on de-carbonising and safeguarding our planet
- Innovation, focusing on promoting social innovation

Option Appraisal

The options appraisal concentrates on the accommodation occupied, and to be occupied by, the council rather than the entirety of the redevelopment proposals.

The options can be assessed against the 8 topic areas of the RIBA Sustainable Outcomes giving an overview of how they might perform.

	Option 1 Do Minimum	Option 2 Move to leased Accommodation	Option 3 New Build Office (400-600p) & Third-Party Dev	Option 4 New Build Office (200-400p) plus some relocation & Third-Party Dev
Operational Carbon	Red	Yellow	Green	Yellow
Embodied Carbon	Green	Green	Yellow	Yellow
Sustainable Water Cycle	Yellow	Yellow	Green	Yellow
Sustainable Connectivity & Transport	Green	Yellow	Green	Yellow
Sustainable Land Use & Biodiversity	Green	Green	Yellow	Yellow
Good Health & Wellbeing	Red	Yellow	Green	Green
Sustainable Communities & Social Value	Yellow	Yellow	Green	Green

Option 1 will result in minimal additional embodied carbon but will still retain a relatively high operational energy demand even allowing for the de carbonisation works which are predicted to offer an 10% improvement over the current energy demand. The limited retrofit works would not significantly improve the water usage on the site or provide opportunities for rainwater harvesting and sustainable water management on site. Maintaining the current workforce collocated on site would maintain a status quo in relation to sustainable transport with the opportunity for improving travel plans and proposals to encourage active travel choices. Likewise, this option is not expected to create additional impact on biodiversity but neither does it offer an opportunity to offer biodiversity enhancement. By retaining the existing building, there is limited opportunity to deliver improvements to health and well-being in areas such as thermal comfort, indoor air quality or biophilic design. Option 1 would present limited opportunity to add significant social value through improved facilities or new opportunities to support the wider Matlock community.

Option 2 will remove the control which the Council has in achieving its sustainability goals, assuming a relocation to leased multi-tenanted office accommodation elsewhere. While the Council could set out its sustainability requirements properties which fulfil those requirements may not be readily available in the local area. It is therefore difficult to assess how sustainable this option would be although it is assumed that any property would be no worse than the median DEC rating of D 100. The energy saving for this option will result from the much lower GIA of 75000sqm resulting in an energy reduction of approximately 69%.

Option 3 offers the Council the greatest control over the outcomes, giving the ability to specify performance expectations and procuring a building which will deliver not only on energy efficiency but also on health and wellbeing criteria. Current best practice sets a limit operational energy for office buildings at 55kWh/m2/yr. This along with the area efficiencies achievable through new build giving a GIA of 6750sqm will result in an energy reduction of approximately 91%. New build accommodation will create additional embodied carbon but this can be managed and minimised through performance led design. Best practice would set the limit at 600kg CO2e per sqm. This option will also likely lead to some impact on biodiversity, however this can be managed in the context of the wider site and strategies included to offer a net gain in biodiversity overall. This option through the wider redevelopment of the complex offers a real opportunity to add significant social value for the Matlock community.

Option 4 is a hybrid of Options 2 & 3 and while it offers the same benefits as Option 3 in relation to the new build element it also introduces the uncertainties associated with the leased accommodation of Option 2. The relocation of approximately a half of the workforce will have an impact resulting from increased travelling between locations. This option with similar levels of new build performance to Option 3 and assuming a similar level of leased property performance as per Option 2 could result in an energy reduction of approximately 82%. Once again the New Build should have a limit for embodied carbon at 600kgCO2e/m2.

The following table presents the predicted energy and carbon savings relating to operational carbon for each of the options.

	Energy Use Intensity kWh/m2/y	Operational Energy Use kWh	% reduction over existing	CO2e Emissions kgCO2e (based on 0.2 kg CO2e per kWh)
EXISTING	203	4,367,358	-	873,471.53
Option 1	183	4,013,024	8%	802,604.84
Option 2	179	1,342,500	69%	268,500.00
Option 3	55	371,250	91%	74,250.00
Option 4	117	789,750	82%	157,950.00

Conclusion

Option 3 offers Derbyshire County Council the most efficient footprint for its HQ facility and by following a performance based approach using robust standards and with ambitious limits around energy use and embodied carbon the largest reduction in energy use and emissions over the existing facility. The following limits and requirements should be set for the new build facility in order to ensure the energy and emissions reductions are achieved in practice.

- Operational Energy EUI of 55kWh/m²/y
- Embodied Carbon of 350kg kgCO_{2e}/m²
- Water Usage of 6l/person/day
- Target net zero emissions per person for travel
- Target 10% Biodiversity Net Gain
- Set excellent metrics for occupant health and well-being
- Quantify the social value of the project
- Consider Passivhaus as a robust performance standard
- Consider WELL Building Standard to define and verify the Health & Well-being Metrics

Finally Option 3 provides Derbyshire County Council to influence and help shape the wider sustainability outcomes that can be expected from the wider redevelopment proposals through a series of mechanisms such as:

- The specification of requirements when seeking expressions of interest and offers
- The procurement process at which point the council can weight the sustainable credentials of potential partners and take into account the specific sustainable elements of the proposals
- Preparation of a Design Code to help ensure that sustainability is embedded in the design of any redevelopment proposals
- Investigation of sustainable transport linkages between the site and the town centre and the potential procurement or management of a solution
- Participation in the ongoing 'estate management' for the complex once developed
- Taking an active role in the review, monitoring and reporting on social value benefits and other wider outcomes achieved.

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1.0 Introduction

1.0 Introduction

HLM Architects have been commissioned by Derby County Council (DCC) to prepare a Sustainability Strategy for the future development of the County Hall Complex. DCC wishes to see the estate re-purposed to celebrate its unique heritage and history within the county town of Matlock located on the fringe of the Peak District National Park.

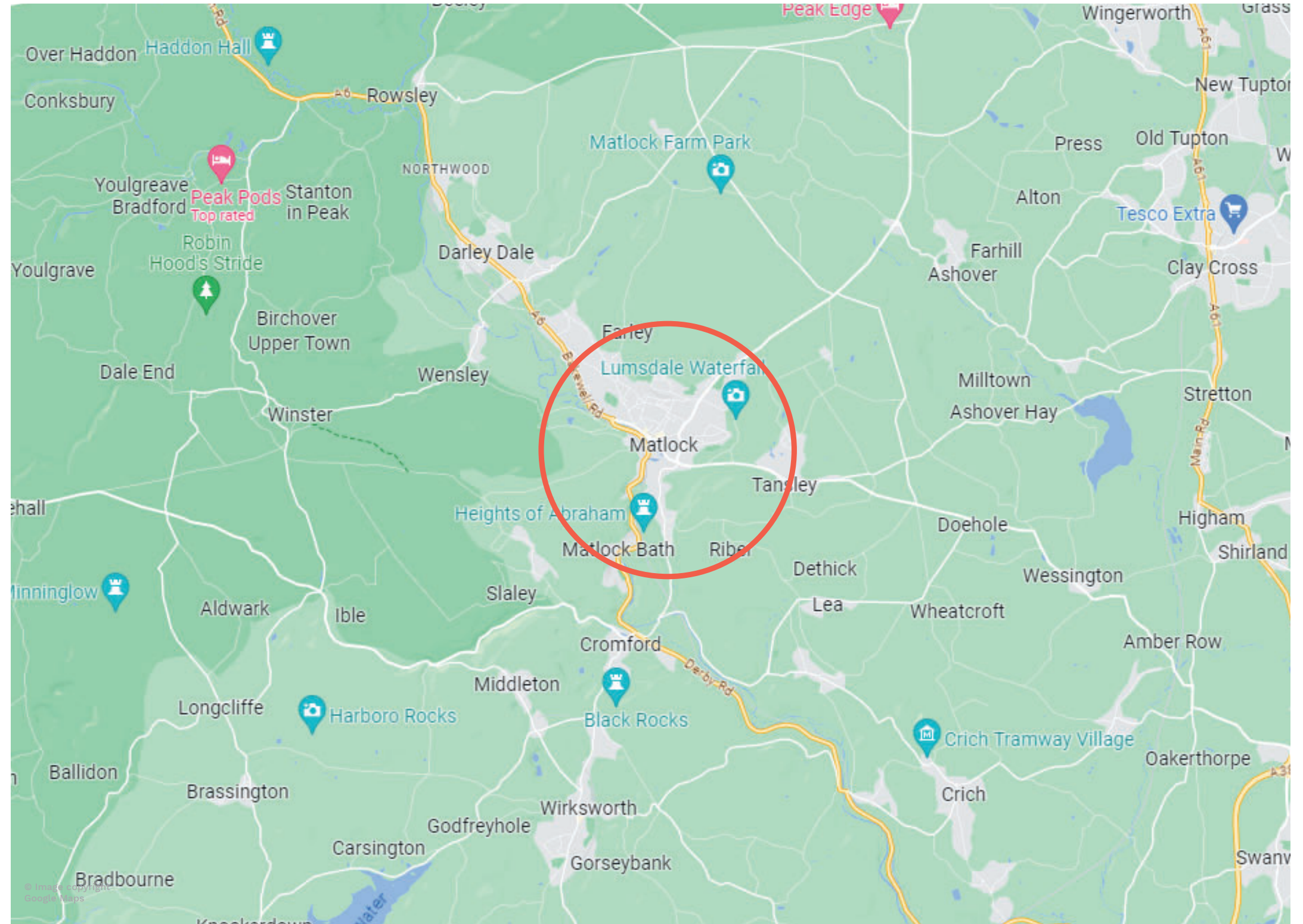
The high-level purpose of this development is to:

- Identify a long-term financially sustainable future for the Council's headquarters operations
- Capitalise on the hidden value of the County Hall complex by attracting private sector investment
- Provide a more efficient and flexible workplace
- Deliver a significant economic impact to Matlock and the surrounding area
- Enable the Council's strategic priorities and objectives to be better supported

The Sustainability Strategy sets out the policy and regulatory context for the development, the sustainability strategy options which could be applied and a recommendation on the strategy to be followed which is aligned to the Council's Sustainability Goals.

1.1 Overview of Project

The Strategic Outline Business Case (SOBC) for County Hall was tasked with assessing the potential to reuse, re-purpose and/or reconfigure the existing Grade II listed County Hall in Matlock which currently functions as the headquarters of Derbyshire County Council. The complex is extensive and, by virtue of its scale and listed status, is very costly to operate and cannot be readily adapted to provide a modern, flexible workspace. The Council therefore tasked the team with identifying future options for the complex including potential workspace opportunities for a modern, flexible Council workspace.

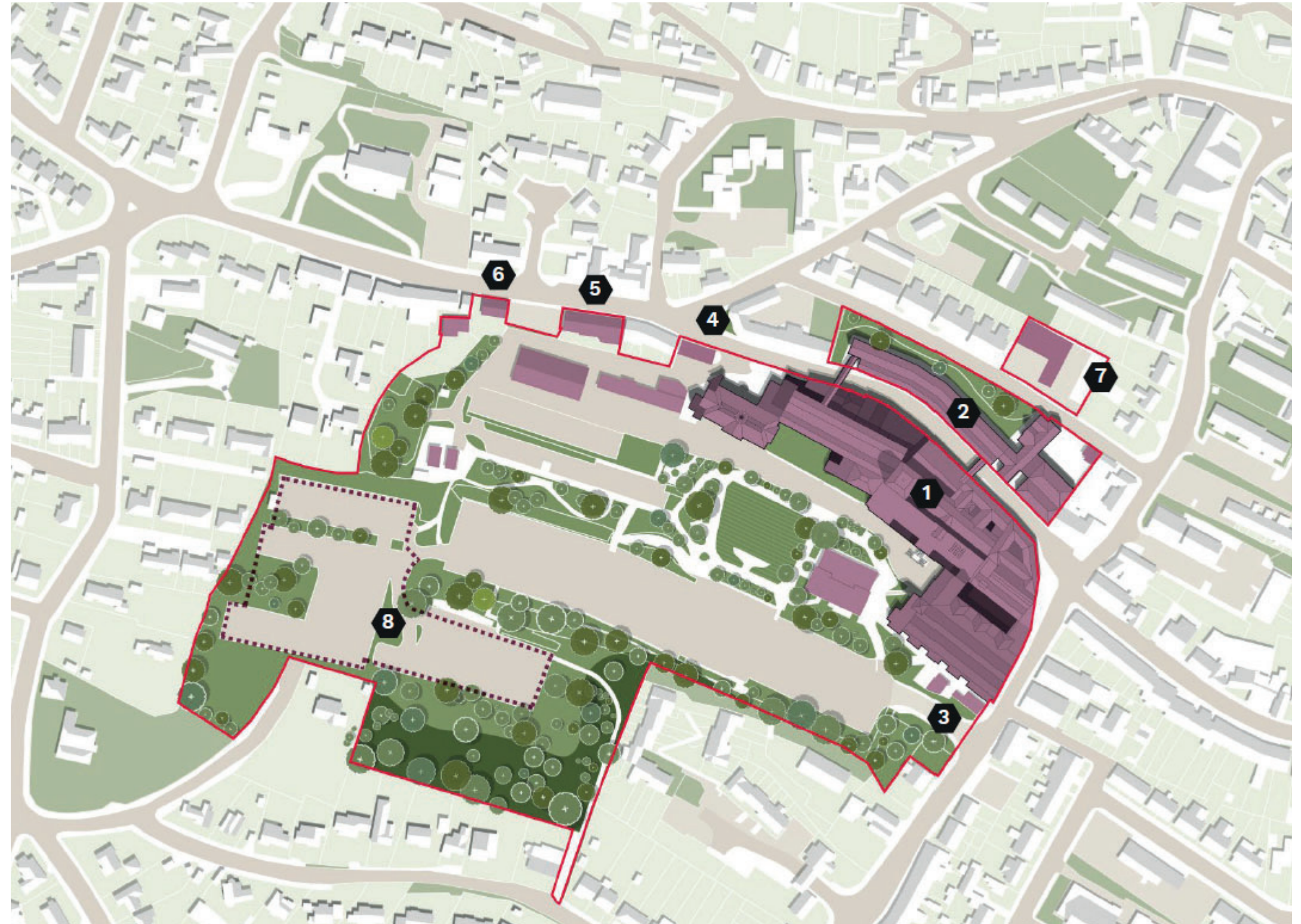


Introduction

1.2 Existing Complex

The existing County Hall complex is located 0.5 miles to the north of Matlock Town Centre within the Matlock Bank Conservation Area. It is bounded by Rutland Street to the East, Hopewell Street to the north, residential development along Woolley Road to the West and Residential development along Edge Road to the south.

The accommodation is laid out on a sloping site with a southerly aspect. The buildings are arranged in the northern part of the site with terraced landscaped grounds and car-parking with mature tree planting in the southerly part of the site.



Introduction

1.3 Proposed Development

The Outline Business Case (OBC) presents several options for the redevelopment including combinations of Workplace accommodation, residential accommodation, a hotel and business units / creative studios arranged in both re-purposed and refurbished existing buildings and some new build accommodation.

These are summarised as:

Option 1 – Base Case – Do minimum

The minimum expenditure necessary to make the building fit for purpose in its current use including backlog maintenance, continued operational expenditure and decarbonisation measures.

Option 2 – Third Party Development – Council relocate completely

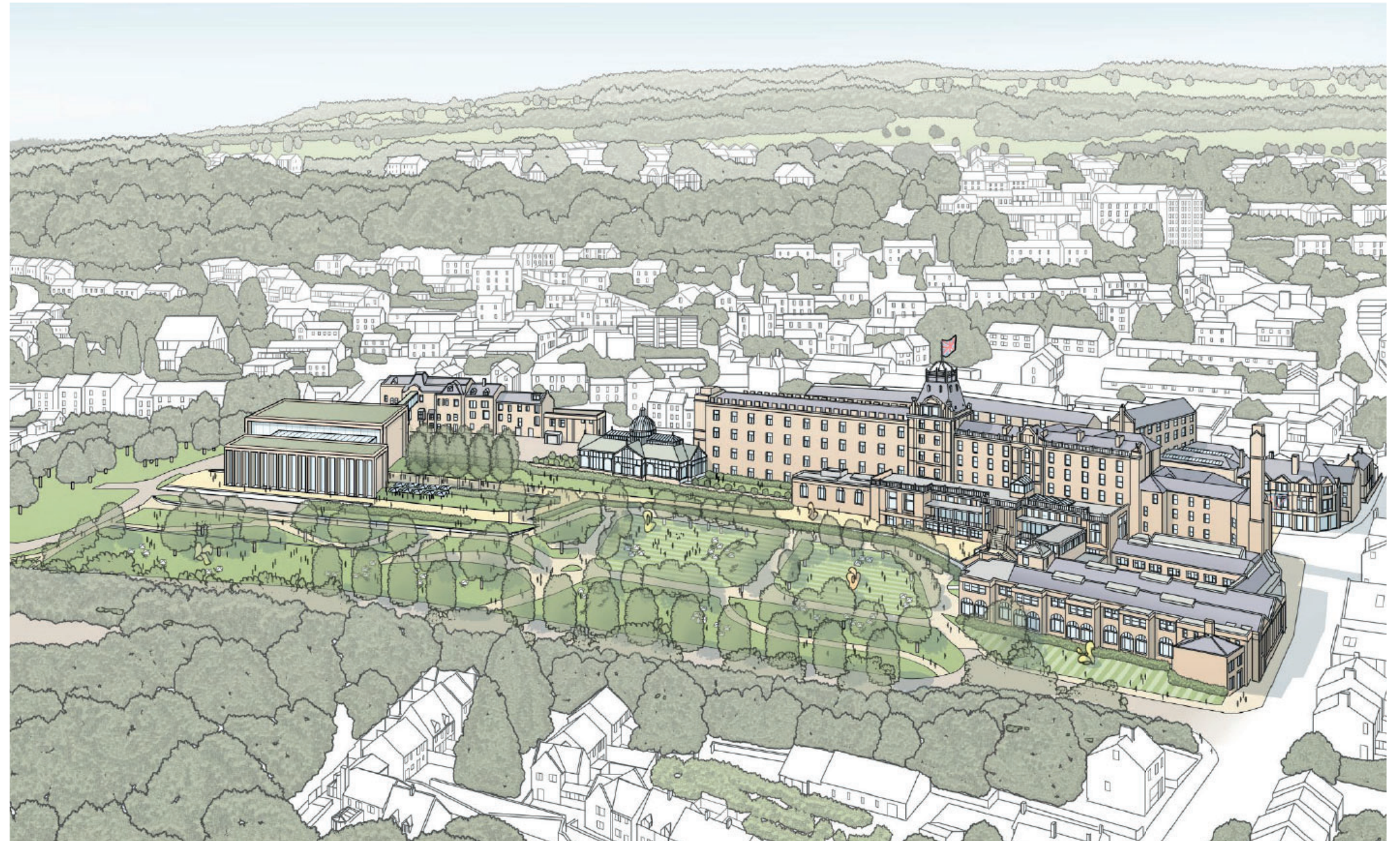
Derbyshire County Council vacate the site entirely into leased premises elsewhere in the County. The site is developed by one or more third parties for a mixture of hospitality and residential use with the potential of some co-workspace depending on operator preferences.

Option 3 – Mixed Development – Council remain in new offices

Derbyshire County Council retain a Council workspace presence as part of a mixed use masterplan potential and bring in third party operators to help develop other hospitality and residential offerings.

Option 4 – Mixed Development – Some staff remain, others relocate

Some Council workspace on site but some roles are also decentralized to create a smaller workspace demand. Remainder of the site sold to third parties to help develop a mixed use masterplan as in Option 3.



This chapter sets out the sustainability context for this project working from a global scale and the response to climate change down to the local policy which the project will need to respond to.

2.0 Sustainability Context

Sustainability Context

2.1 UN Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries – developed and developing – in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The 17 SDG's are as follows, each having its own targets and indicators:

- SDG 1 – No Poverty
- SDG 2 – Zero Hunger
- SDG 3 – Good Health & Well-being
- SDG 4 – Quality Education
- SDG 5 – Gender Equality
- SDG 6 – Clean Water & Sanitation
- SDG 7 – Affordable & Clean Energy
- SDG 8 – Decent Work & Economic Growth
- SDG 9 – Industry, Innovation and Infrastructure
- SDG 10 – Reduced Inequalities
- SDG 11 – Sustainable Cities & Communities
- SDG 12 – Responsible Consumption & Production
- SDG 13 – Climate Action
- SDG 14 – Life Below Water
- SDG 15 – Life on Land
- SDG 16 – Peace, Justice & Strong Institutions
- SDG 17 – Partnerships for the Goals

2.2 UK Government Sustainability Policy

The UK Government has published Agenda 2030: Delivering the Global Goals (2017) which sets out how they will support the delivery of the goals domestically and internationally.

The UK Government has published Outcome Delivery Plans for each Department including plan's for becoming more sustainable and how their work contributes to the UN SDG's

The UK Government has also published Implementing the Sustainable Development Goals which sets out how the Government through its Departments is supporting the delivery of the Sustainable Development Goals.

SUSTAINABLE DEVELOPMENT GOALS

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Sustainability Context

2.3 DCC Climate Change Strategy; Achieving Net Zero (2021-2025)

Derbyshire County Council's Climate Change Strategy : Achieving Net Zero sets out their ambition to be a net zero organisation by 2032 or sooner and what they will do to help the county become net zero by 2050. The strategy recognises that taking action on climate change and reducing emissions can benefit communities in many ways including improving our homes, creating local jobs, reducing fuel poverty, improving health and well-being, avoiding flood damage costs, enhancing green spaces and improving air quality.

The strategy describes the actions they will take over the next four years to set out into five topic areas:

1. The Council's Estate and Operations
2. Low Carbon Economy
3. De-carbonising the Domestic Sector
4. Transport, Travel and Infrastructure
5. Waste

The Council's Estate and Operations

- Identify buildings for energy efficiency retrofitting and land for installation of renewable energy generation technologies and the development of a net zero design standard for estate development.
- Develop a Sustainable Procurement Framework ensuring environmental and social sustainability is embedded in all contracting and procurement activity.
- Ensure Climate Change is embedded across services and partner working.
- Expand electric vehicle sharing programme and install electric vehicle charging points all key Council sites.
- Carry out feasibility study to identify low carbon procurement options.
- Include climate change training in the induction process for all staff and Elected Members.

Low Carbon Economy

- Work with Local Authority Partners to develop a Renewable Energy Strategy for Derbyshire for Renewable Energy Generation, and the de-carbonisation of heating and energy use in homes.

- Through Vision Derbyshire, continue working with the 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.
- 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.
- Deliver the Derbyshire Green Entrepreneurs Fund and provide additional support for reducing environmental impacts, driving innovation, and creating sustainable growth opportunities for smaller businesses.
- Work with the Midlands Energy Hub, D2N2 LEP and universities and colleges to build technical and economic capabilities across the region to deliver renewable energy and low carbon projects.
- Liaise with Western Power Distribution (WPD) and the D2N2 LEP to understand local grid capacity and constraints for future energy generation opportunities.
- Through the COVID Recovery Strategy, identify high carbon commercial industries and support the business community in shifting to and benefiting from the low carbon economy.

De-carbonising the Domestic Sector

- Conduct a feasibility assessment of the low carbon heat and renewable energy opportunities within the county's domestic property sector.
- Work with partner local authorities to adopt a whole-system Local Area Energy Planning approach to increase on-site low-carbon energy generation and reduce the demand for energy.
- Through Vision Derbyshire, continue working with the borough and district councils to develop a Strategic Joint Planning Framework for Derbyshire to ensure that planning measures for net zero domestic buildings are integrated into Local Plans.
- Work with local authority and wider government partners to develop a Regional Skills Strategy that pinpoints priority areas for upskilling of the domestic construction and retrofit sector and creates investor-ready programmes to receive support from the proposed National Skills Fund.
- Through Vision Derbyshire develop and implement an approach to supporting the de-carbonising of homes, recognising the specific opportunities and challenges faced by renters and homeowners and reflecting the need to

particularly support those in fuel poverty.

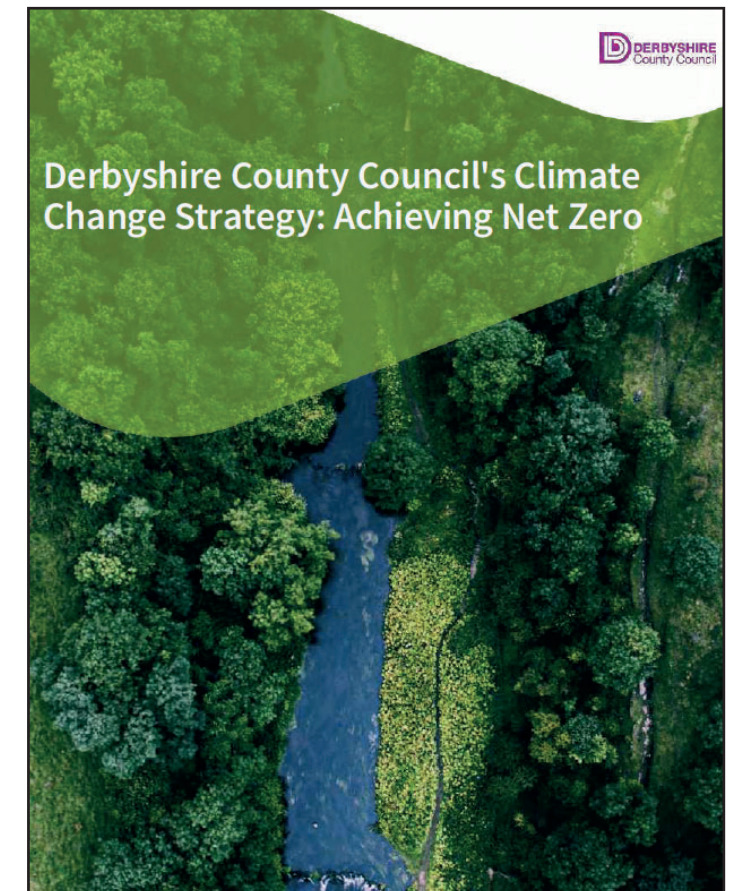
- Develop an information sharing campaign to educate homeowners and renters on how to improve the energy efficiency of their property.

Transport, Travel and Infrastructure

- 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.
- 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.
- 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.
- Support the implementation of the Derbyshire Cycling Plan and the Local Cycling and Walking Investment
- Plan. Support actions for increasing the uptake of active transport to reduce emissions and improve health and well-being for all.
- 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.

Waste

- Identify solutions to increase the diversion of organic waste including food, soiled materials, carpets, organic textiles, etc. from landfill.
- Undertake a cross authority behaviour change campaign to promote reduction in waste and resource consumption in the home and businesses
- Work with local producers and businesses to restrict the use of single use products and support the market for re-manufactured goods.
- Explore the potential for partnering with local charities and organisation to segregate and redistribute good quality products from HWRC.



Sustainability Context

2.4 Vision Derbyshire; Climate Change Strategy (2022-2023)

Derbyshire vision seeks to create a fair society, improve quality of life, health, and wellbeing, exceed climate change targets and to empower communities to drive sustainable change. The key elements of the vision include to live and work sustainably, embedding sustainable and green strategic spatial planning Derbyshire-wide. Which considers Local Authority Estate, Operations and Services as well as Strengthening the Low Carbon Economy.

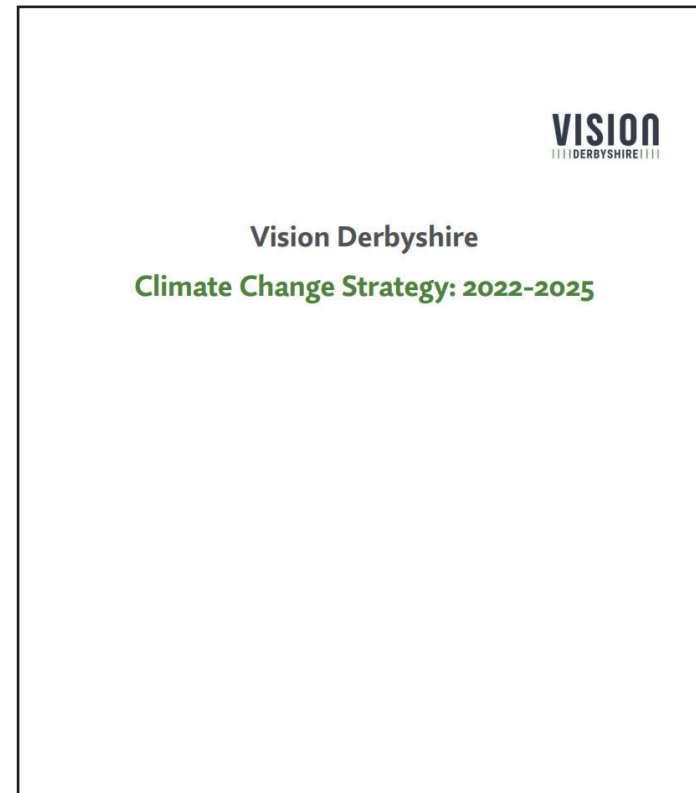
The Air Quality Strategy developed in conjunction with the Health and Well-being Board, sets out how partners will work together to reduce the health impact of poor air quality for the people of Derby and Derbyshire.

The D2N2 Energy Strategy (2019-2030) was developed by the D2N2 Local Enterprise Partnership in collaboration with Midlands Energy Hub. The strategy aims to expand renewable and low carbon energy development and achieve a net zero future. A study was also carried out to identify the renewable energy opportunities in the county, including which technologies are most suitable and where they could be located.

The DCC seeks to promote net zero commercial and industrial building developments and retrofitting. Activities, supporting the adoption of large-scale and small-scale renewable energy generation in suitable locations. Low carbon technologies are encouraged for space and water heating. Planning policies and practices are used to promote net zero and sustainability. LED lighting and energy efficient machinery and technology is promoted.

The Sustainable Transport, Travel and Infrastructure vision aims to deliver an ambitious low-carbon integrated transport system across the county as well as improving air quality, delivering health and well-being benefits. The DCC aims to accelerate the shift to electric vehicles through improving charging points and increase the modal share of active transport (walking and cycling).

The Waste and Resources vision for Derbyshire proposes a sustainable and circular economy-based system of resource management, placing a high value on our natural resources, reducing consumption and generation of resource and waste. An increase in green spaces and tree coverage in urban areas is proposed by the DCC.



2.5 DCC Corporate Environment Policy

DCC's aim of promoting a better quality of life for Derbyshire communities, encouraging sustainable economic regeneration and protecting and enhancing the environment is set out in their Corporate Environment Policy.

**Derbyshire County Council is committed to:
Reducing greenhouse gas emissions to net zero carbon by 2032**

Identifying, adopting and promoting technologies and practices to reduce the emissions of greenhouse gases, including carbon dioxide, from our estate and operations including Council property, street lighting and fleet and employee travel.

Using water efficiently in the Council's buildings and operations

Using water efficiently in our buildings and operations and ensuring improvements are made to the measurement and monitoring of water consumption across our estate to inform water saving practices.

Reducing waste

Eliminating, reducing, reusing, composting and recycling wastes where possible. Managing our remaining wastes in accordance with our Duty of Care obligations.

Minimising pollution

Minimising, with the goal of eliminating, the release of any pollutant which may cause damage to health or the environment whether from air, land or water.

Protecting the natural and built environment

Protecting, conserving and enhancing the environment, habitats, biodiversity and heritage.

Ensure all staff are able to implement the Corporate Environment Policy

Raising awareness, educating and training employees and those working on our behalf to ensure that all staff have the knowledge, skills and understanding to implement the Environmental Policy.

Ensuring that the Council's purchasing power is used positively

Ensuring that the Council's purchasing power is used to reduce negative environmental impacts and to improve the

environmental standards and social value of products and services the Council purchases.

DCC aim to achieve this by:

Partnership Working

Working closely with employees, other organisations, interested groups and individuals, where appropriate, to further the aims of this Policy.

Objective Setting

Continually improving our environmental performance by setting realistic but challenging objectives and targets and regularly reviewing our progress as set out in the Environment Strategy and Action

Legal Compliance

Complying with relevant environmental legislation, Council policies and other commitments and striving to deliver best practice.

Environmental Management Systems

Promoting, operating and extending environmental management systems to control, monitor and enhance our environmental performance and communicating this Policy to all employees and contractors.

Policy Review

Reviewing this Environment Policy every three years in view of changes to the Council's activities and priorities in light of new local, national and international developments.

Sustainability Context

2.6 DCC Carbon Reduction Plan

Derbyshire County Council (DCC) is targeting reducing their own carbon footprint to net zero by 2032 and for the whole of Derbyshire by 2050, through their 'Achieving Net Zero Strategy and Action Plan'. The plan seeks to embody the ambition of the sustainable Development Goals (SDGs). It proposes to reduce emissions by 47% by 2025 (against the 2005 baseline). Their energy strategy seeks to promote renewable and low carbon energy development.

As well as reducing emissions across the Council other priorities include future proofing homes, improving health and well-being, avoiding flood damage costs, enhancing green spaces, improving air quality, infrastructure and transport and boosting biodiversity.

The zero-carbon integrated transport approach of the council for the county involves encouraging the use of active travel, through the implementation of the Derbyshire Cycling Plan and the Local Cycling and Walking Investment Plan. Active travel will be required to aid the achievement of their net zero target. Walking and cycling can reduce emissions for improved air quality, and the improved health and wellbeing of local residents. The County Council seeks to make Derbyshire the most connected and integrated county for cycling in England.

The DCC are undergoing a portfolio-wide upgrade to LED lighting, which should achieve a 60% energy reduction. Also proposed is a net zero waste system, moving towards 100% diversion from landfill, increasing in recycling and reuse of waste.

2.7 DCC Council Plan Refresh 2023-25

Derbyshire County Council in their Council Plan Refresh 2023-25 reflect on the achievements of the past year and set out key commitments for the year ahead. They identify Climate Change in their key challenges and opportunities and make reference to recent damage caused by flooding as a key indicator of changing weather patterns.

Derbyshire County Council reiterates its commitment to reviewing its land and building assets with a view to reducing the greenhouse gas emissions generated by the Council to net zero by 2032 including reducing emissions from travel by encouraging sustainable transport use and use of the councils' electric vehicles.

Derbyshire council (DCC) would like Derbyshire to have resilient and green communities where people are happy, safe and healthy. With great places to live and work with good transport connections. The DCC has Invested over £890,000 on green energy and carbon reduction schemes via their Green Entrepreneurs Fund and has achieved a 64% reduction in carbon emissions from the Council's estate and operations since 2009-10. £250,000 of funding has also been secured for tree planting.

The DCC are working with partners to deliver an East Midlands Combined County Authority and devolution deal which aims to improve the local economy, transport, housing, job opportunities and reduce emissions to net zero. With partners finalising a regional response to an integrated rail plan along with a strategic approach to sustainable travel and transport, which includes the promotion of cycling and walking. A £47 million Bus Service Improvement Plan has been implemented with Derbyshire bus to improve frequency, affordability and usage.

2.8 DCC Local Transport Plan 3

DCC published Local Transport Plan 3 in April 2011. It sets out a transport vision, goals, challenges to be tackled and a strategy covering the period to March 2026.

The vision aims to achieve a transport system that is both fair and efficient, promotes healthier lifestyles, safer communities, safeguards and enhances the natural environment and provides better access to jobs and services. Whilst also improving choice and accessibility of transport and integrating economic, social and environmental needs.

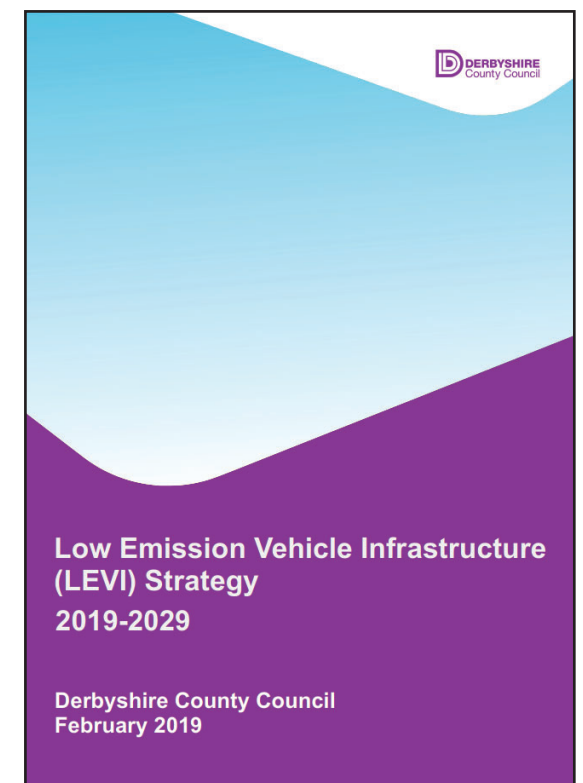
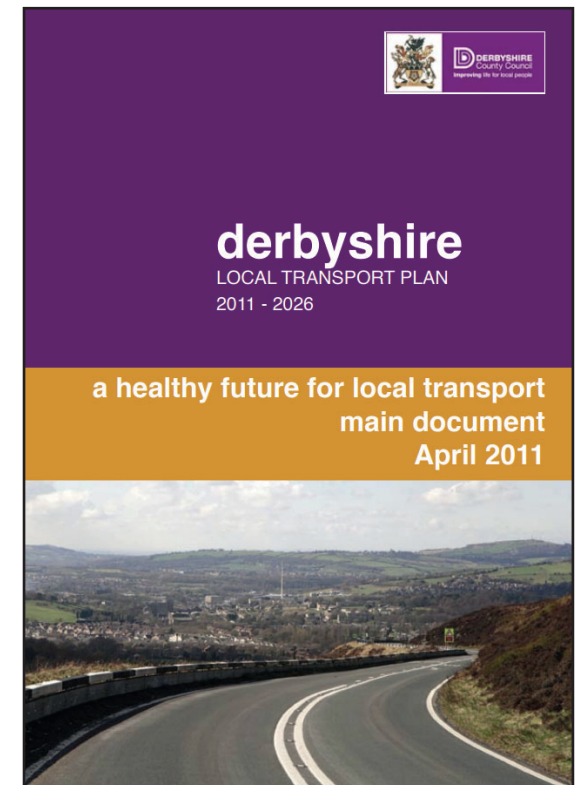
The 5 transport goals are:

- Supporting a resilient local economy.
- Tackling climate change.
- Contributing to better safety, security and health.
- Promoting equality of opportunity.
- Improving quality of life and promoting a healthy natural environment.

2.9 LEVI Strategy 2019-2029

Derbyshire County Council (DCC) will work with partners on the provision and delivery of low emission vehicle infrastructure across the county. The DCC have carried out a consultation to establish the current and future demands for Local electric vehicle infrastructure. They aim to provide a public charging infrastructure which is affordable, consistent, user friendly and accessible. The uptake of low carbon emission vehicle in the commercial sector such as taxi's is supported. There will also be charging available for residents with no off-street parking. It is intended that Derbyshire will be a 'safe haven' for e-bike users.

The DCC have explored a number of innovative and trial opportunities such as e-car clubs, e bike schemes and hydrogen technologies. Soft market testing has been proposed for charging; lamp post charging and rapid charge hubs. There will be an approach to the policies and practice of parking management for EV ChargePoint locations developed. DCC will facilitate the take up of LEV (low emissions vehicles) amongst its employees and provide infrastructure required. The deployment of LEVs within the DCC fleet will be accelerated. Opportunities to support public transport and taxi operators embracing alternative technologies and infrastructure will be maximised.



Sustainability Context

2.10 Derbyshire Cycle Plan 2016-2030

The ambition of the cycle plan is for Derbyshire to be the most connected and integrated county for cycling in England by 2030, recognised as a world class cycling destination for all. More people of all ages and abilities will be cycling regularly for leisure, active travel, commuting and sport. The plan sets out strategic aims:

- **Infrastructure Connectivity:** High quality connected routes, in all cycling environments, supporting all forms of cycling, creating and supporting economic growth.
- **Increased Participation:** Behaviour change approaches and targeted participation programmes at community level will support and enable more people to cycle, closing the gaps in participation and reducing health inequalities.
- **Effective Communication and Marketing:** Excellent, well connected marketing and communications for Derbyshire residents and visitors to the county, helping to change behaviour, increase confidence and get more people cycling regularly.
- **Advocacy:** Cross sector advocacy for policy change and implementation at the highest level

The Plan will be adopted by all key partners through individual authorities' corporate plans, local spatial plans, and Local Transport Partnerships. It will complement and help to shape key strategies and policies now, and in the future. Shared actions will be prioritised within their own organisational business, travel plans and service plans. Cross sector policies will be written in ways that will contribute to the achievement of this vision. Large and small organisations from all sectors will be asked to become partners in the delivery of this plan, making a contribution to getting more people on bikes, and through their own travel plans and business plans.

The Key Cycle Network (KCN) evolved from the Derbyshire Cycling Plan to deliver the infrastructure connectivity with high quality connected routes, supporting all forms of cycling and economic growth, leisure, health and tourism needs. The KCN also supports the Derbyshire Climate and Carbon Reduction Manifesto which includes provisions to 'support and promote the development of low carbon travel'. The KCN project totals 770km with around 420km considered complete and open for use. The remaining 350km is proposed and has been sectioned into 127 individual links of which the County Council has prioritised the delivery of 20 sections in the short to medium term, but delivery is dependent on further funding availability

or other issues.

KCN and seeks to create a 97km circuit connecting the existing popular Tissington, High Peak and Monsal Trails into the market towns of Buxton, Bakewell and Matlock. When complete this attractive route will benefit the local economy and boost tourism.

2.11 Derbyshire Mobility Hub Study

Derbyshire County Council commissioned SYSTRA to investigate the potential for components of a network of Mobility Hubs across Derbyshire.

Mobility Hubs are a public space which provides integration of transport nodes and local amenities and activities. They have the potential to improve transport provision, promotion of a sustainable visitor economy, reducing social isolation, bringing transport connection to jobs and education opportunities, improving access to healthcare and reducing carbon emissions to improve air quality.

83% of the access to Derbyshire is by cars or vans, the growth in the volumes of vehicles is now impacting the local community. For the current transport provision, the coordination between transport nodes is poor and there are no formal hubs at present. In Derbyshire there are several traffic free walking and cycling routes, but these are mainly for leisure activities. Routes for everyday destinations of cycling and walking are much less provided for. Cycle routes are often disjointed and are not direct, which narrow footways discourage walking. Walking zones were identified where destinations within walkable distances are concentrated, allowing improvements to pedestrian routes to be focused. To improve the situation in these areas the Local Cycling and Walking Infrastructure Plan (LCWIP) was adapted which identified infrastructure investment priorities across Derbyshire.

The town of Matlock and its surrounding roads gets congested leading to air quality issues, especially at the weekend with tourists visiting by car. The town attracts a good number of commuters due to the bus and train stations. These two stations are well connected to each other and are on land owned by the council, which could facilitate the development of a mobility hub. The main requirements of a hub would be cycle parking, cycle links and electric vehicle charging points (EVCPs). Matlock is currently the last stop on the railway line and represents a gateway to the Peak district. A cycle hub is planned

to be developed in Matlock as the well-used White Peak Loop Cycle route starts there. Derbyshire has a number of sustainable travel campaigns including; car free initiatives, promotion of public transport and grants and support for business who wish to become cycle friendly.

The East Midlands Railway company proposed to increase the number of cycle hubs at train stations. Northern Trains are also improving several cycle storage hubs at stations, offering bike checks, and looking at introducing bike washes at stations. DfT funding would be required for improved access to paths and cycle trails from train stations, this could increase the number of people using the train for leisure trips.

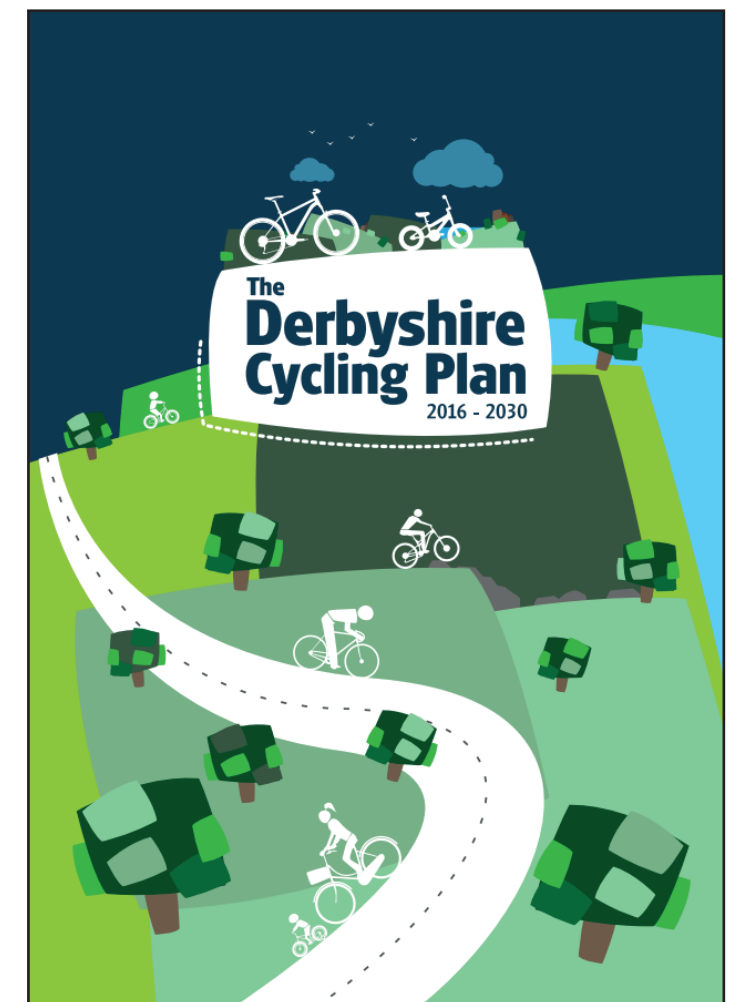
Derbyshire Community Transport suggests that Mobility Hubs should be easily identifiable, provide links to different services and allow easy transfer between different legs of a user's journey. They should be able to provide support to users from public transport operator employees and others. The hubs should also be co-located where there are other facilities such as leisure services, tourism attractions, community halls and health services.

Enterprise MaaS a transport service provider has been appointed to deploy the GO-HI Mobility-as-a-Service (MaaS) platform. The GO-HI app provides access to information on all modes of transport allowing users to plan journeys and pay for them on their mobile. The Toyota Mobility Foundation has received funding for initiatives aimed at tackling community mobility issues, to make communities more physically and socially connected. Kinto Go is a multi-modal mobility app which can be used for car sharing, corporate carpooling and on-demand shuttle services. Midlands Connect is developing a tool aimed at predicting the best locations for hydrogen refuelling sites. This will be useful for the Hub concept in identifying refuelling locations hydrogen powered buses and vehicles. They are also launching an EV infrastructure planning tool aimed at helping local authorities identify locations for EVCPs.

The NHS Derbyshire Trust are preparing a bid for a facility in Matlock which could form part of a mobility hub. eHUBS at dedicated on street locations which offer an alternative to the use of private cars such as; e-bikes, e-scooters or electric cars.

The development of Mobility Hubs has the potential of improving transport provision, providing alternatives to car travel, increased transport connection for jobs and education, improved access to health care, creating a more sustainable visitor economy all while reducing carbon emissions and improving air quality. The public realm surrounding Mobility

Hubs should if possible be step free with safe crossings. A sign or pillar should identify the HUB and provide digital travel and ticketing services. Mobility Hubs can also offer wider services that have community and commercial functions, for increased access to services. These services include a library, office space, toilets, package delivery lockers, fitness/ play area, café, WIFI, covered seating and bike parking and repair. The hub should be integrated into the town with high quality public realm that maximises safety and security. A well-located hub with charging facilities for low/zero emission vehicles could help overcome some of the challenges of people switching to these types of vehicles.



Sustainability Context

2.12 Dealing with Derbyshire's Waste 2013-2026

Derbyshire County Council have published their waste strategy 'Dealing with Derbyshire's Waste' which sets out a vision and a framework for the period 2013 to 2026 including priorities for action over the next 5 years and provides a framework for how the 10 councils will work to:

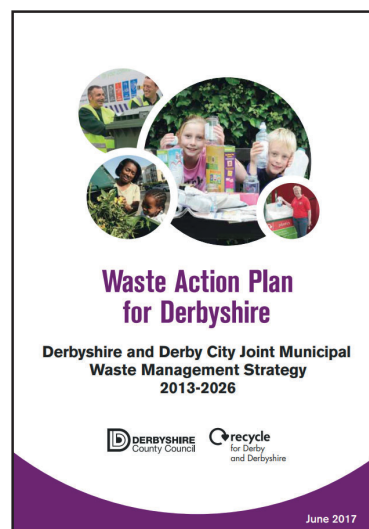
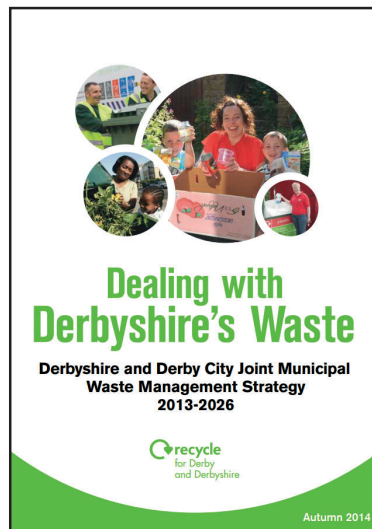
- reduce the amount of waste produced
- reuse, recycle and compost as much material as possible
- find the most sustainable solutions to deal with any waste produced

The waste strategy will also contribute to:

- Improved resource efficiency
- Reduced carbon / climate change impacts
- Protection of natural resources
- The management of non-household waste
- Local self-sufficiency in the management of waste

Derbyshire Dales District Council sets out its waste management services in its Waste Action Plan as follows:

- Waste Prevention and Reuse
- Kerbside Dry Recycling Collection Service (Domestic)
- Kerbside Garden Waste Collection Service (Domestic)
- Kerbside Food Collection Service (Domestic)
- Kerbside General Waste Collection Service (Domestic)
- Bring Sites
- Commercial Waste



2.13 D2N2 Energy Strategy 2019-2030

The D2N2 Energy Strategy (2019-2030) was developed by the D2N2 Local Enterprise Partnership in collaboration with Midlands Energy Hub. The strategy aims to expand renewable and low carbon energy development and achieve a net zero future. The 2030 targets are set out as follows:

T1	100% avoidance of recoverable materials going to landfill
T2	At least a 60% reduction against 1990 carbon emissions per capita and a 15% reduction in per capita energy demand
T3	15% of buildings using low carbon heating and all current building stock be Energy Performance Certificate level C or above where possible
T4	To comply with, and exceed where possible, applicable air quality standards in all locations
T5	100% low carbon energy supply with 60% renewable generation output and increase of 180MW in electricity storage
T6	Increase the provision of smart transport infrastructure to support a target of 70% of vehicle miles to be Ultra Low Emissions
T7	100 new businesses in the Low Carbon and Renewable Energy sector and 1000 new jobs
T8	Decouple carbon from growth through the reduction of carbon intensity ratio of growth by 50%
T9	Secure at least £100m of investment in local energy projects with adequate funding for infrastructure development and resilience
T10	15MW of community energy installed and two industrial sites brought into low-carbon energy generation and innovation

Derbyshire County Council seeks to promote net zero commercial and industrial building developments and retrofitting. Activities, supporting the adoption of large-scale and small-scale renewable energy generation in suitable locations are encouraged as are Low carbon technologies for space and water heating. LED lighting and energy efficient machinery and technology is promoted. Planning policies and practices are used to promote net zero and sustainability.

2.14 Renewable Energy Study for Derbyshire

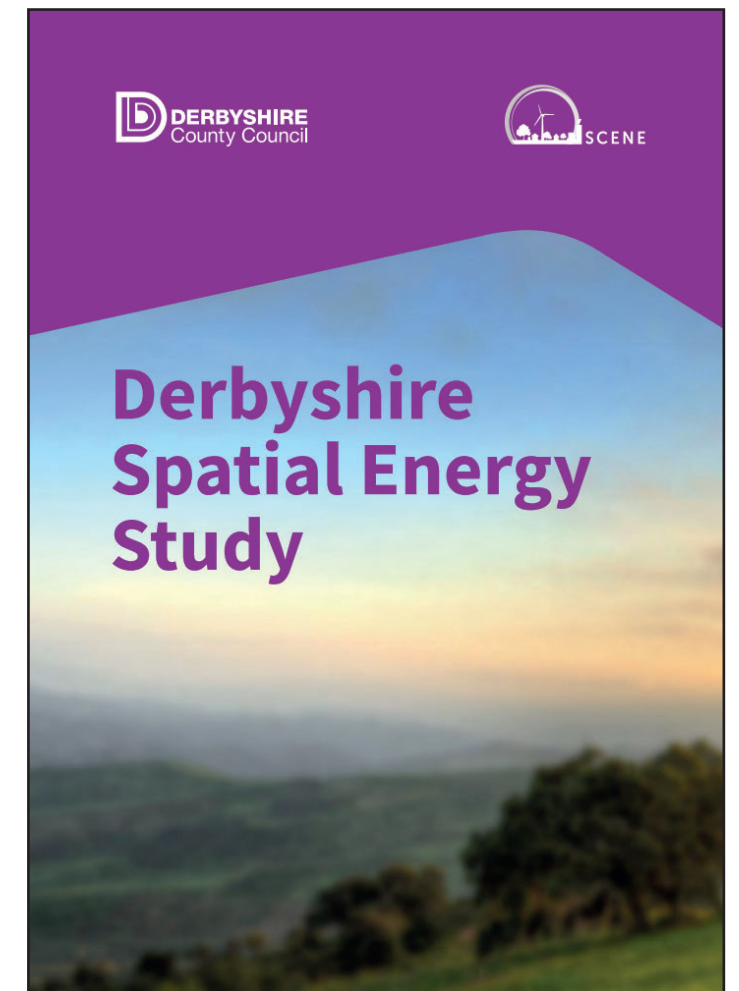
In 2022, Derbyshire's local authorities undertook a spatial energy assessment covering all of Derbyshire to provide an evidence base supporting better integration of energy system planning with the growing need to address and mitigate climate change at local and regional levels in the county. This study has been supported by the Midlands Net Zero Hub and D2N2, and conducted by energy consultancy, Scene Connect.

As of 2022, Derbyshire consumes 10,046 GWh of heat energy and 4,547 GWh of electricity annually. Electricity generated from renewable sources in Derbyshire totalled approximately 270.5 MW in 2021, of which 76.2% was from solar PV's, 10.3% on shore wind and 10% energy from waste. There are a number of planned energy projects within the county which include: - energy from waste, battery storage systems and large-scale ground mounted PV.

Derbyshire has a carbon budget of 38.1 million tonnes of CO₂ equivalent (tCO₂e) up to 2100. Derbyshire's local authority must meet targets of an average carbon emissions reduction of 13.5% a year. Derbyshire's total net carbon emissions totalled 7,224 kilo tCO₂e in 2019. To meet these carbon targets, demand reduction is required which can be achieved by energy efficiency improvements to the heat demand. Projections suggest there maybe 14,000 - 174,000 heat pumps and similar low carbon heating technologies may be deployed by 2040. Heat pump technologies include: - Air-source heat pumps (ASHP), Horizontal Ground-source heat pump (GSHP), Borehole or Vertical Ground-source heat pump (GSHP) and Water-source heat pump (WSHP). It is projected that there will be 50 - 300 MW of low carbon electricity generation in Derbyshire up to 2040 via solar PV, onshore wind, and supporting technologies (e.g., battery storage). Electric Vehicle (EV) is predicted to rise from 7,300 vehicles (2022) to 350,000 - 510,000 by 2040.

There are several energy opportunities within the county such as: rooftop PV which could meet 19% of the electricity demand and solar thermal which could meet 18% of heat demand. 3635 MW of heat pump capacity would meet regional heat demand, leading to an increase of 3500 GWh. District heating has the possibility to meet up to 18% of the county's heating demand, with Matlock identified as a priority area. The improvement of properties up to a rating of 69 or above EPC levels (C) has the potential to reduce annual heat energy demand by approximately 743 GWh. From 2022 the county has 10 MWh of large-scale battery storage with a further 199 MWh planned.

The County council will invest in low carbon vehicles within council owned fleets, promote low carbon alternatives for staff travel to work and public transport will be de-carbonised. It is recommended that Planning applications for new buildings should prioritise low carbon and active transport.



Sustainability Context

2.15 The Air Quality Strategy (2020-2030)

Derbyshire County Council's Air Quality Strategy aims to reduce the health impact of poor air quality for the people of Derbyshire County. It outlines 3 key priorities and their strategic actions as:

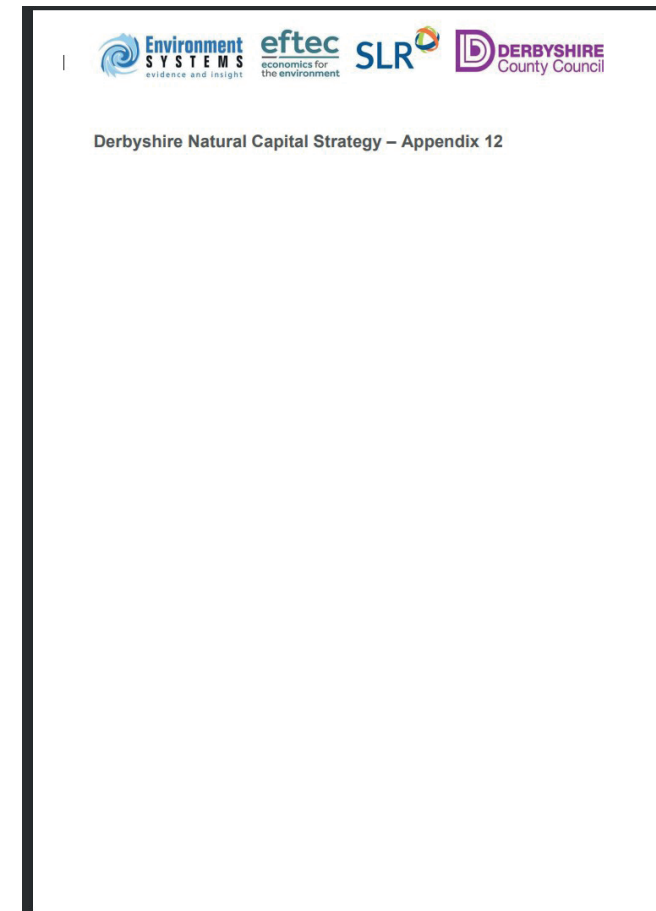
- Facilitate travel behaviour change
- Participate in engagement campaigns
- Facilitate sustainable travel choices for service users and employees
- Utilise policy to promote sustainable travel
- Utilise schemes to support and incentivise sustainable travel
- Reduce sources of air pollution
- Participate in engagement events to promote awareness of the sources of air pollution
- Facilitate the uptake of ULEVs amongst employees and within own fleet
- Utilise policy to reduce sources of pollution including mileage reduction, solid fuel burning and uptake of ULEVs.
- Work collectively to help de-carbonise transport and contribute to a D2 Low Carbon Growth agenda.
- Explore opportunities to promote low-carbon heating options such as district heating schemes or heat exchange pumps
- Mitigate against the health impacts of air pollution
- Monitor air pollution levels locally with particular reference to vulnerable sites
- Utilise policy to reduce exposure to air pollution
- Provide advice to individuals with long term conditions around the impacts of air quality
- Utilise schemes to mitigate the impact or air pollution on health

2.16 Natural Capital & Biodiversity Strategy for Derbyshire

Derbyshire County council have commissioned a Natural Capital And Biodiversity Strategy due to be published in late 2023.

Derbyshire is a diverse county with very contrasting geology, land uses, history and landscapes. These biodiverse landscapes of Derbyshire attract significant numbers of tourist to the county, which makes a considerable contribution to the economy. Also, many industries such as agriculture, forestry and fisheries are dependent on healthy biodiverse environments. Natural Capital is the stock of natural resources including plants, animals, air, water, soils, minerals which in addition to its intrinsic value, delivers benefits to people. The 'ecosystem services' people receive from nature include healthy soil, crops, timber, clean air and water, carbon sequestration, pollination, flood mitigation and more.

The strategy aims to set out the baseline of the ecosystem services which exist in the County and what value the residents get from this Natural Capital and further how they can be improved.



This chapter sets out the Planning Context for the development from national policy to local plan policies and supplementary planning guidance focused on sustainability.

3.0 Planning Context

Planning Context

This chapter sets out the Planning Context for the development from national policy to local plan policies and supplementary planning guidance focused on sustainability.

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.

The NPPF sets out to achieve sustainable development through a plan-making and decision making process with three overarching objectives:

An Economic Objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

A Social Objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

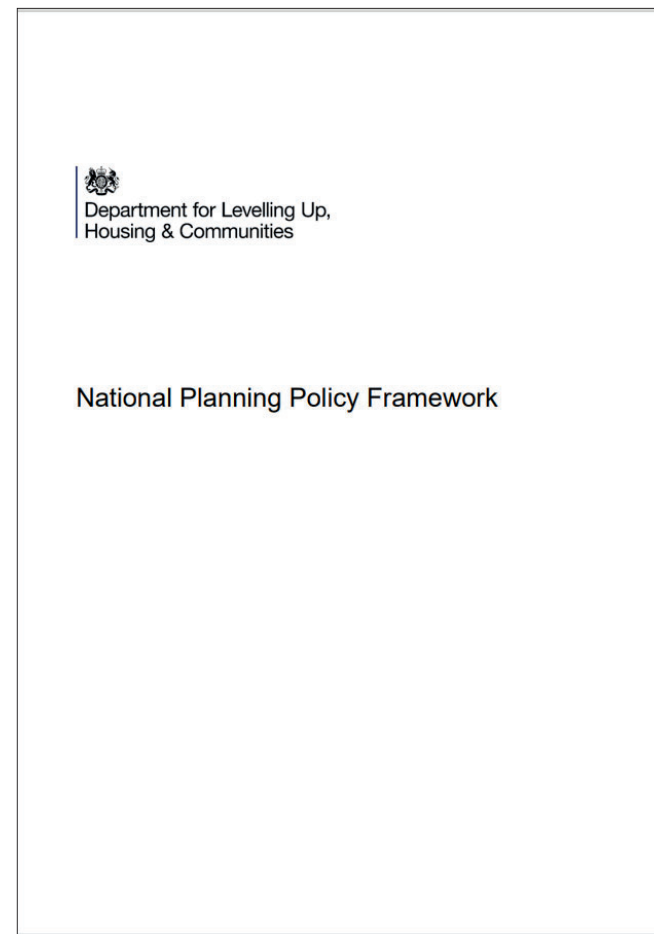
An Environmental Objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

The NPPF has a presumption in favour of sustainable development.

The NPPF sets out requirements against specific policy areas:

- Delivering a Sufficient Supply of Homes
- Building a Strong, Competitive Economy
- Ensuring the Vitality of Town Centres
- Promoting Healthy & Safe Communities

- Promoting Sustainable Transport
- Supporting High Quality Communications
- Making Effective Use of Land
- Achieving Well Designed Places
- Protecting Green Belt Land
- Meeting the Challenge of Climate Change, Flooding and Coastal Change
- Conserving and Enhancing the Natural Environment
- Conserving and Enhancing the Historic Environment
- Facilitating the Sustainable Use of Minerals



3.2 Local Planning Policy requirements

Derbyshire Dales Local Plan

The Derbyshire Dales Local Plan sets out the overall vision, objectives, and policies for the future development of the parts of the Derbyshire Dales that lie outside the Peak District National Park including Matlock Town. The Plan has a 'start' date or baseline of April 2013 and is intended to cover the period 2013 to 2033.

The Plan sets out 18 strategic objectives to tackle the key issues identified for the Local Plan Area arranged under 3 themes:

Protecting Derbyshire Dales' Character

- SO1: To protect and enhance the Green Infrastructure Network.
- SO2: To maintain, enhance and conserve the area's distinct landscape characteristics, biodiversity and cultural and historic environment.
- SO3: To ensure that design of new development is of high quality, promotes local distinctiveness and integrates effectively with its setting.
- SO4: To protect and enhance the character, appearance and setting of the District's towns and villages.
- SO5: To address, mitigate and adapt to the effects of climate change on people, wildlife and places.

Promoting Healthy and Sustainable Communities

- SO7: To meet the objectively assessed housing needs of the District.
- SO8: To ensure that there is an adequate mix of housing types, sizes and tenures to meet the needs of all sectors of the community.
- SO9: To protect and facilitate the necessary infrastructure, connectivity, services and facilities to support the development of the District and connectivity.
- SO10: To support development that minimises risks to safety and health as a result of crime (or fear of crime), flooding, pollution and climate change.
- SO11: To encourage development that increases opportunities for healthy lifestyles

- SO12: To promote the efficient use of suitably located previously developed land and buildings whilst minimising the use of greenfield land.
- SO13: To facilitate low carbon development and energy generation from renewable sources of a type and scale appropriate to its location.
- SO14: To increase the opportunities for travel using sustainable forms of transport by securing improvements to public transport, walking and cycling infrastructure

Supporting the Rural Economy and Enhancing Prosperity

- SO15: To facilitate development that will support the growth of the District's economy, particularly through improving the quality of local employment.
- SO16: To support employment development in locations and of a scale appropriate to the Plan area.
- SO17: To support and develop the District's tourism and cultural offer.
- SO18: To strengthen the vitality and viability of the District's market towns as places for employment, shopping, services, leisure and tourism.

Planning Context

The key policies supporting sustainable development include:

Policy S1 – Sustainable Development Principles

All developments should seek to make a positive contribution towards the achievement of sustainable development by improving the economic, environmental and social conditions of the area wherever possible.

Policy S2 – Settlement Hierarchy

Proposals for new development will be directed towards the most sustainable locations in accordance with the settlement hierarchy, local towns including Matlock as the first tier, local service centres as the second tier and accessible settlements as the third tier. This will ensure that development reduces the need to travel and promotes sustainable communities based on the services and facilities that are available in each settlement. The use of previously developed land and buildings will be encouraged.

POLICY S7: Matlock / Wirksworth / Darley Dale Development Strategy

The District Council will seek to promote the sustainable growth of Matlock, Wirksworth and Darley Dale whilst promoting and maintaining the distinct identity of its settlements, provide an increasing range of employment opportunities, promote the growth of a sustainable tourist economy and meet the housing needs of the local community.

POLICY PD1: Design and Place Making

The District Council will require the layout and design of new development to create well designed, socially integrated, high quality successful places, where people enjoy living and working. All developments should respond positively to both the environment and the challenge of climate change, whilst also contributing to local distinctiveness and sense of place.

POLICY PD2: Protecting The Historic Environment

The District Council will conserve heritage assets in a manner appropriate to their significance. This will take into account the desirability of sustaining and enhancing their significance and will ensure that development proposals contribute positively to the character of the built and historic environment

POLICY PD3: Biodiversity and the Natural Environment

The District Council will seek to protect, manage, and where possible enhance the biodiversity and geological resources of the Plan Area and its surroundings by ensuring that development proposals will not result in harm to biodiversity or geodiversity interests and by taking full account of the following hierarchy of protected sites:

POLICY PD4: Green Infrastructure

The District Council will through partnership working, develop, protect, enhance and secure the long term management of green infrastructure networks.

POLICY PD5: Landscape Character

The District Council will seek to protect, enhance and restore the landscape character of the Plan area recognising its intrinsic beauty and its contribution to the economic, environmental and social well-being of the Plan area.

POLICY PD7: Climate Change

In addressing the move to a low carbon future for the Derbyshire Dales, the District Council will promote a development strategy that seeks to mitigate global warming, adapts to climate change and respects our environmental limits.

POLICY PD8: Flood Risk Management and Water Quality

The District Council will support development proposals that avoid areas of current or future flood risk and which do not increase the risk of flooding elsewhere, where this is viable and compatible with other policies aimed at achieving a sustainable pattern of development.

POLICY HC14: Open Space and Outdoor Recreation Facilities

The District Council will seek to protect, maintain and where possible enhance existing open spaces, sport and recreational buildings and land including playing fields in order to ensure their continued contribution to the health and well-being of local communities.

POLICY HC15: Community Facilities and Services

The District Council will seek to maintain and improve the provision of local community facilities and services.

POLICY HC17: Promoting Sport, Leisure and Recreation

Development proposals involving the provision of new sports, cultural, leisure and recreational facilities, or improvements and extensions to existing facilities will be permitted provided that:

- the proposals are connected to and associated with existing facilities, they are located at a site that relates well to the settlement hierarchy in the District or they are intended to meet specific rural needs that cannot be appropriately met at settlements within the settlement hierarchy;
- it is capable of being accessed by a range of transport modes and by disabled people and those with restricted mobility;
- it would not have an adverse impact on the character and appearance of its surroundings and the immediate or wider landscape;
- it does not create unacceptable problems in terms of the relationship between the proposal and the neighbouring uses beyond the development site

POLICY HC18: Provision of Public Transport Facilities

Development proposals should cater for the needs of bus and taxi operators, where appropriate. Layouts should encourage operational efficiency, maximise likely bus passenger traffic and include ancillary facilities such as shelters and seating for users

POLICY HC19: Accessibility and Transport

The District Council will seek to ensure that development can be safely accessed in a sustainable manner. Proposals should minimise the need to travel, particularly by unsustainable modes of transport and help deliver the priorities of the Derbyshire Local Transport Plan.

POLICY HC20: Managing Travel Demand The District Council, in consultation with the Highways Authority, will adopt a hierarchical approach to ensure the delivery of sustainable transport networks will be adopted which will seek to provide

- site specific and area wide travel demand management (measures to reduce travel by private car and incentives to use walking, cycling and public transport for appropriate journeys; including intensive travel planning);

- improvements to walking and cycling facilities and public transport services that are provided early in the build out period of new developments and that are sufficient to encourage sustainable modes of transport;
- optimisation of the existing highway network to prioritise walking, cycling and public transport that are provided early in the build out period of new developments, such as measures to prioritise the need of pedestrians above the car and improved or new cycle and bus lanes; and
- highway capacity enhancements to deal with residual car demand where the initiatives required under points (a) to (c) above are insufficient to avoid significant additional car journeys.

POLICY EC1: New and Existing Employment Development

The District Council will support proposals for new or expansion of existing business or industrial development in sustainable locations that contribute towards the creation and retention of a wide range of jobs, an increase in higher value employment opportunities and training provision locally in order to enhance the economic base of the Plan area.

POLICY EC6: Town and Local Centres

The District Council will seek to maintain and where possible, enhance the vitality and viability of town centres, district centres and local centres as defined on the Policies Map in accordance with their function, scale and identified development needs.

POLICY EC8: Promoting Peak District Tourism and Culture

The District Council will support the development of Peak District tourism and culture.

POLICY EC11: Protecting and Extending our Cycle Network

The Council will encourage proposals that develop and extend our cycle network. Wherever opportunities exist, development proposals should seek to provide safe and convenient access to established cycle networks

This chapter sets out the Planning Context for the development from national policy to local plan policies and supplementary planning guidance focused on sustainability.

4.0 Sustainability Standards & Guidance

Sustainability Standards & Guidance

This chapter sets out the Planning Context for the development from national policy to local plan policies and supplementary planning guidance focused on sustainability.

4.1 Sustainability Requirements & Standards

Building Regulations

Several of the UK building regulations, have an impact on the energy efficiency and thermal comfort of a building, the main regulation which applies is Approved Document Part L: Conservation of fuel and power, uses carbon emissions as the basis to determine compliance. Part F considers ventilation within the building, Part O considers overheating risks, and the Proposed Document Part Z would consider the Whole life carbon.

Approved Document: Conservation of fuel and power Part L

This regulation considers the limiting of heat gains and losses through setting of requirements for; thermal U values of materials, airtightness, the effects of solar gains, limiting heat losses and gains from building services, Target primary energy rate, Target emission rate, Building primary energy rate, Building emissions, the Consideration of high efficiency alternative systems for heating and cooling and fixed building services energy efficiency and controls and on-site generation of electricity.

Approved Document: Part F Ventilation: Volume 2: Buildings other than dwellings

This regulation ensure that good ventilation is provided which is required for good air quality and a healthy internal environment. Part F considers; ventilation performance and strategies, acoustics, Indoor air quality monitoring and the commissioning of systems.

Approved Document Part O. Building regulation in England setting standards for overheating in new residential buildings.

Overheating in buildings can have a highly negative effect on human health particularly in that of the elderly, with increased death rates in extreme temperatures. Over the last few years there has been an increase instances of very high temperatures, so it is important to design the building accordingly. Part O considers; Limiting solar gains, removing excess heat and strategies for removing overheating risks.

Building Regulations

Several of the UK building regulations, have an impact on the energy efficiency and thermal comfort of a building, the main regulation which applies is Approved Document Part L: Conservation of fuel and power, uses carbon emissions as the

Proposed Document Part Z: Whole life carbon

The Part Z regulation has been proposed and has not yet been approved, it was developed in conjunction with the construction industry.

Z1: Carbon assessment

The Whole life carbon emissions shall be assessed and reported for a building. This intended to normalise the undertaking of whole life carbon assessments and allows ways to reduce the whole life carbon impact of the building to be identified. It was proposed that this part of the regulation would apply to buildings other than dwellings from 1 January 2023 and to dwellings from 1 January 2025.

Z2: Carbon intensity

A reasonable provision should be made for minimising carbon emissions. By setting a good standard of efficiency for the upfront embodied carbon intensity of the building it is intended that unnecessary use of resources will be discouraged. It was proposed that this part of the regulation would apply to all buildings from 1 January 2027.



4.2 Voluntary Standards

RIBA Sustainable Outcomes

The RIBA has developed with other professional UK construction bodies a sustainability framework with voluntary performance targets for operational energy use, water use and embodied carbon which form the basis of their 2030 Climate Challenge. This aims to realise the significant reductions necessary by 2030 to have a realistic prospect of achieving net zero carbon for the whole UK building stock by 2050. The proposed outcomes are:

- Net zero operational carbon
- Net zero embodied carbon
- Sustainable water cycle
- Sustainable connectivity and transport
- Sustainable land use and biodiversity
- Good health and wellbeing
- Sustainable communities and social value
- Sustainable life cycle cost

Net zero operational carbon

Operational energy targets are < 55kWh/m² /year operational energy use for non-domestic buildings and < 35kWh/m²/year operational energy use for domestic buildings by 2030. This is a 60% reduction in operational energy from current business as usual baseline figures. It encourages the maximum use of on-site renewables, the proposed use of low carbon heating such as heat pumps or connections to non-fossil fuel district heat networks by 2025.

Net zero embodied carbon

In order to reduce embodied energy and carbon emissions refurbishment and retrofit of existing buildings should be prioritized where possible. A target for embodied carbon of <750 kgCO₂e/m² for non-domestic office buildings is proposed as defined by a RICS Whole Life Carbon Assessment. Remaining carbon emissions can be offset either through renewable energy projects and/or certified woodland afforestation projects.

Sustainable water cycle

Water use targets of 10l/person/day for non domestic buildings aim to reduce water by optimising building systems, harvesting rainwater as well as recycling and reusing water on-site. The challenge also sets out key health and wellbeing metrics. Enhancing the sites biodiversity is also encouraged.

Sustainable Connectivity and Transport

A target of net zero carbon emissions per person per day is set to reduce the carbon impact of users and visitors travel to and from a building.

Sustainable Land Use and Biodiversity

A target of net positive species impact and 0.3-0.4 urban green factor is set for all new sites with the aim of maintaining, protecting and improving the flora and fauna on site.

Good Health & Wellbeing

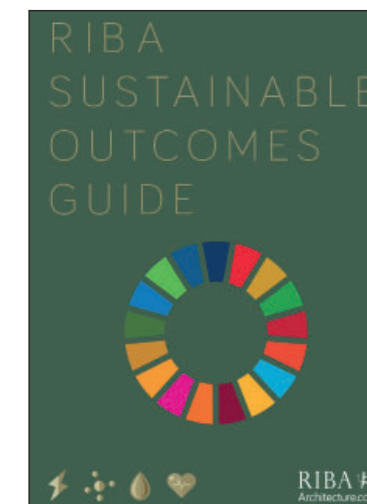
A target of achieving good indoor health metrics including indoor air quality, daylight, overheating, acoustic comfort, responsive controls and physical contact to outside using appropriate standards or processes eg WELL Building Standard or CIBSE Standards.

Sustainable Communities and Social Value

A target to measure the positive impacts of good placemaking on a community as defined by the RIBA Social Value Toolkit 2019

Sustainable Life Cycle Cost

A target to use the Government Soft Landings requirement for measuring the operational cost of buildings.



Sustainability Standards & Guidance

LETI

The LETI organisation is a voluntary network of over 1,000 built environment professionals who are working towards a zero-carbon future for the UK. Originally established in 2017 to support the transition of London's built environment to meet Net Zero Carbon, it has since evolved to support the transition of the UK's built environment to Net Zero Carbon. LETI aims to engage with stakeholders to develop a robust and energy reduction approach, producing solutions to energy security, sustainability, and affordability. They work with local authorities to develop policy alterations, provide technical guidance and encourage collaboration between built environment professionals.

LETI believes that by 2025, 100 percent of new buildings must be designed to deliver net zero carbon. The Whole life carbon of a building is formed by Operational Carbon and Embodied Carbon. The following topics are required to be considered: -

- Operational energy: The energy consumed by a building associated with heating, hot water, cooling, ventilation, and lighting systems etc.
- Embodied carbon: The 'upfront' emissions associated with building construction.
- Future of heat: The de-carbonisation of heating and hot water.
- Demand response: Integrating demand response and energy storage into buildings so they can be flexible with their demand on the grid.
- Data disclosure: Understanding buildings in use performance, though post occupancy evaluation. Addressing the 'performance gap' between estimated and actual in use performance.

BREEAM New Construction & BREEAM Refurbishment & Fitout

Energy

The BREEAM UK standards encourage projects to reduce operational energy demand, primary energy consumption and carbon emissions. Low carbon design can be achieved by design measures which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems. To ensure optimum performance and energy savings in operation building's unregulated energy load should be reduced through the use of energy efficient equipment.

Water

Reductions in the consumption of potable water for sanitary use can be achieved through the use of water efficient components, water leak detection and water recycling systems. To aid this reduction in water consumption greywater and rainwater systems can be used. Water monitoring of usage helps aid use reductions.

Materials

The materials specified within a building have an environmental impact, over their lifespan which we should seek to reduce. Environmental Product Declarations (EPD) of materials encourage the use of robust and comparable data on the impacts of the products. Responsible sourcing of materials and timber-based products is encouraged. The embodied energy of insulation materials should be low where possible. Materials should be specified in an efficient way within the building and procuring materials that are durable, resilient and have higher levels of recycled content is encouraged.

Pollution

Low emission heat sources in the building can aid the reduction of NOx emission levels. The reduction of unnecessary nighttime light pollution, can reduce energy consumption and nuisance to neighbouring properties. The discharge of rainfall into public sewers and water courses should be avoided or reduced to minimise flooding and watercourse pollution. Noise pollution should be minimised in any development.

Health and Wellbeing

The BREEAM standard encourages the provision of good daylighting and visual comfort; also considering glare, views out and both internal and external lighting. Good indoor air quality is promoted by healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes. Thermal comfort is important in the building and how adoption can take place for a projected climate change scenario. Good acoustic performance in the building effects both productivity and health. To reduce risks of crime to people and property measures which provide an appropriate level of security to the site are encouraged.

Waste

Building waste can be reduced by effective management and reduction of refurbishment and fit-out waste and the reuse and direct recycling of materials. Also reducing waste by designing for changing functional demands of the building, avoiding unnecessary material use and maximising the ability to reclaim materials.

Transport

The provision of cyclist facilities such as showers, lockers and changing facilities can encourage the use of cycles as a mode of transport, helping to reduce transport-related pollution and congestion. Reduced reliance on cars is promoted along with the provision of electric car charging stations.

Land Use and Ecology

The development of a building site offers the opportunity to enhance the ecological value of the site.

Management

To ensure sustainability objectives are realized it is encouraged to have management practises in place during the construction, commissioning, handover and aftercare of the building.



Home Quality Mark

The Home Quality Mark (HQM) is a trusted standard for new homes in the UK. Developed by the Building Research Establishment (BRE), the same trusted organisation behind BREEAM, HQM serves as a beacon of quality and sustainability for housebuilders, and the mark of assurance for homeowners and tenants.

Home Quality Mark (HQM) is a certification scheme for new homes which covers a wide range of ESG indicators, from energy efficiency and biodiversity to health and wellbeing, providing a holistic view of a home's sustainability and social impact. The areas covered include; transport and movement, the outdoors, safety and resilience, comfort, energy, materials, space, water, quality Assurance, construction Impacts and customer experience.

The HQM encourages resilience to climate change, considering future risks such as flooding resilience and overheating. Biodiversity is encouraged through the protection and enhancement of local ecosystems which contributes to healthier and more sustainable communities. The HQM considers public and sustainable transport options and local amenities. Availability of local services and facilities, walking, public transport and cycling routes are all encouraged. The accessibility and quality of outdoor spaces associated with the home is considered as well as the home's impact on local biodiversity.

Comfort in the home is considered including daylight, noise, air quality, and thermal comfort. The homes energy performance is considered including its energy efficiency and use of renewable energy. The lifecycle performance of the materials within the home are evaluated as is the use of responsibly sourced materials. The water-efficient fittings and appliances and the provision of water recycling systems is considered. The environmental impact of the home's construction process is evaluated.

The HQM offers a number of economic benefits to homeowners and developers, these include; lower running costs, a healthier living environment and a home which holds its value. In addition HQM homes can open up opportunities for green finance and attract socially conscious buyers.

Sustainability Standards & Guidance

WELL Building Standard

The WELL Building standard is a health and wellbeing standard which was developed 10 years ago by the International WELL Building Institute (IWBI). It is backed by the latest scientific research evidence, codes and best practises. The aim is to improve human health through design, operational protocols, and policies. Scientific data has proved a connection between our physical health and the building environment we inhabit. It is a performance-based third party verified standard. Following COVID 19 the health and wellbeing of the building occupants has become of increased importance.

We spend 90% of our time indoors so a buildings design and operations have a great effect on our health and wellbeing. Research has shown that a well-designed building environment can also increase the productivity of its occupants. The standard considers the following categories: Air, water, nourishment, light, movement, thermal comfort, sound, materials, mind, community, and innovations. Onsite testing is undertaken for water and air quality, and for sound and light. The inclusion and access to nature-based elements can have a restorative effect on the building's occupants. Sedentary behaviour has several negative health effects, the WELL standard seeks to increase movement within spaces, using features such as attractive circulation spaces ergonomic workstations. Air quality has a large effect on the building occupant's health and can lead to respiratory issues and sick building syndrome.

Air quality

Indoor air quality that contributes to the health and well-being of building users. An increased risk of respiratory and cardiovascular diseases can be caused by exposure to air pollutants, such as Volatile Organic Compounds (VOCs), ozone, particulate matter, carbon monoxide. Headaches, dry throat, eye irritation, runny nose and in more extreme cases asthma attacks and cancer are possible symptoms are a result of Inhaling pollutants. Good indoor air quality aims the minimisation of health risks. To achieve this a well-ventilated space either mechanical or naturally ventilated will contribute to the reduction of negative health symptoms. These can include headache, fatigue, dizziness, nausea, cough, sneezing, shortness of breath and eye, nose, throat and skin irritation which are collectively referred to as sick building syndrome (SBS). Increased rates of employee absences, higher operational costs for businesses and decreased productivity in students have all been linked to poor ventilation.

Indoor air quality monitoring can be used to assess the quality of a building inform the building occupants. Air filtration reduces indoor and outdoor airborne contaminants within the air ventilation system. There are negative health outcomes though the exposure to particulate matter (PM) . A range of respiratory-related conditions are caused by exposure to PM10, with PM2.5 poses even greater health risks including heart disease and other cardiovascular complications.

Risks from indoor contamination and pollution sources, such as infectious disease particles and volatile organic compounds (VOC) can be reduced through the use of carbon filters, media filters and/or Ultraviolet Germicidal Irradiation (UVGI).

To reduce Mould and bacteria growth within the building mechanical system it is recommended that UVGI systems be used and/or regular inspections on components are conducted. Mould development in cooling coils may cause particles to be spread into the building's indoor air and trigger asthma, headaches, allergies, respiratory system disorders, hypersensitivity pneumonitis, allergic rhinitis, bronchitis, lung tumour development, eczema and toxic mould syndrome.

Water quality

Access to good clean water, sanitation and hygiene are required for good public health. This requires well-designed and equipped bathrooms, supporting appropriate hand washing to reduce risks of acquiring diseases associated with poor hygiene practices. Measures include; Testing for water quality, drinking water promotion, Moisture management and Hygiene support; bathroom support-hands free design, sinks and handwashing supplies for improved hygiene and hand washing.

Nourishment

There are health benefits relating to mindful eating, this can be aided by the creation of dedicated eating spaces within the buildings.

Light

Circadian rhythms are the 24-hour cycle which humans function with. The main driver of the cycle is light which controls body processes, such as digestion, the release of certain hormones, body temperature and sleep. The reduced exposure to daylight has been linked to depression and impairment of cognitive function in individuals. Exposure of light during the day has been linked to increases in productivity and sleep quality, as well as reduction in symptoms of depression in individuals.

Good lighting designs provides the building occupants with visual comfort with the appropriate illuminances on work planes required for tasks to be performed in the space. Circadian Lighting Design supports circadian and psychological health through indoor daylight exposure and outdoor views. To maintain circadian health and aligning the circadian rhythm with the day-night cycle. Good visual comfort is aided by the controlling of glare in the electric lighting and minimising flicker of the lighting. Exposure to daylight through design can be achieved by ensuring workstations are within 7.5m of windows, visual light transmission of glazing at least 40%, the integration of solar shading. Customizable lighting environments with occupant Control aid the creation of a visually comfortable lighting environment.

Movement

Design within the building can be used to encourage physical activity. The design aesthetic of staircases, which are highly visible and have stair signage can increase the possibility of their use. A building which is within a 200 m walk distance of an existing cycling network and contains bike parking, showers and lockers, can encourage the building occupants to use a healthier form of transport. Pedestrian-friendly streets with continuous pavements both sides of the road can encourage walking as can being within a 400m walk distance of physical activity spaces' such as parks, playgrounds and recreational fields.

Thermal comfort

Thermal comfort within a building can be enhanced by different thermal zones and controls. Radiant heating and cooling via radiant ceilings, walls or floors can increase comfort.

Sound

Acoustical comfort of a space can be quantified by the overall level of satisfaction of an occupant in a given environment. Exposure to noise sources, such as traffic and transportation have been shown to hinder the health and well-being. The effects of exterior noise from transportation or industrial sources have been linked to sleep disturbance and hypertension. HVAC equipment, appliances and other occupants create sound which hinders productivity, focus, memory retention. Inappropriate reverberation times and background sound levels in a space can impede speech intelligibility. Sound reducing surfaces can minimize the buildup of speech or other unwanted sound. Sound barriers increase the level of sound isolation and speech privacy between enclosed spaces.

Materials

Chemicals within building products and finishes may impact health during the construction, remodelling, furnishing and operation of buildings. respiratory health and cancer risks maybe affected by Volatile organic compounds (VOCs), which is a group of chemicals which are abundant in indoor environments due to various source materials, including insulation, paints, coatings, adhesives, furniture and furnishings, composite wood products and flooring materials.

Indoor air quality (IAQ) and health are affected by VOC emissions occurring inside the building. The WELL building standard limits VOC emissions in interior products, it requires that products with disclosed materials that are officially certified in terms of materials and their effect on health.

Mind

Mental health is a fundamental component of human health, and the built environment can contribute to improved mental wellbeing. This can be achieved though incorporating the natural environment within the interior of the building and access to nature nearby. Also, the creation of restorative spaces that support access to spaces that promote restoration and relief from mental fatigue or stress.

Community

Civic and stakeholder engagement encourages individuals to become actively involved in and connected to the surrounding community through volunteerism, public spaces and community programming

Sustainability Standards & Guidance

Passivhaus & Enerphit

The Passivhaus standard was developed in Germany and is the world's leading standard in energy efficient construction. It is a tried and tested building solution which has over 30 years of international evidence. Passivhaus buildings are highly energy efficient, create high occupant comfort and require very little energy for heating and cooling.

A Passivhaus building has a highly efficient and airtight building fabric, with a very low primary energy demand, space heating and cooling demand. Airtightness in a building is important as heat loss through an inefficient 'leaky' building fabric greatly affect the energy use of a building. The ventilation system within a Passivhaus, reduces energy loss through heat exchange and is responsible creating good air quality.

When retrofitting and renovating existing buildings the full Passivhaus standard may be challenging to achieve due to the existing architecture, making the same level of airtightness may not be feasible to be achieved. The EnerPHit standard is a Passive House standard intended for refurbishment projects and is less stringent compared to the traditional standard to accommodate retrofitting challenges, but still achieves much reduced energy use and internal comfort.

Criteria for Buildings
Passive House – EnerPHit – PHI Low Energy Building
Version 10c | January 2023 | valid with PHPP 10
Compact version + extended version

Passive House Institute logo and various certification logos (PHI, EnerPHit, etc.)

AECB Building Standard

The AECB (Association for Environment Conscious Building) has various green building standards for both retrofit and new build projects. There are also additional standards for water, daylight and airtightness.

- The AECB CarbonLite Retrofit Standards Level 1 requires the lowest capital cost of the levels. It has requirements for Limiting thermal bridges, airtightness, requires a continuous MEV or MVHR to be installed, changing an existing fossil fuel system to a heat pump and there are also recommendations based on over heating risks.
- The AECB CarbonLite Retrofit Standards Level 2 is for a deeper retrofit project. It has requirements determining the delivered space heating and cooling, Continuous MEV or MVHR must be installed, an improved air tightness requirement further than Level 1, thermal bridges are improved, the existing heating systems can be retained but practical plan to allow for future low carbon heating supply must be in place and there are also recommendations based on overheating risks.
- The AECB CarbonLite Building Standard Level 3 is for new buildings only. The standard reduces overall CO2 emissions by 70% compared to the UK average for buildings. Compared to the retrofit options; a lower delivered space heating and cooling is required, continuous MEV or MVHR must be installed, improved airtightness and thermal bridges, install non fossil fuel system and recommendations based on overheating risks.
- AECB Water standard is for new homes, the refurbishment of existing dwellings and also to non-domestic buildings. The Standard sits alongside the CarbonLite Energy Standards. The standard has requirements for appliance limits, Min and Max flow limits, emphasis on demand reduction, carbon saving prioritised, cost effectiveness considered, peak demand considered and good initial plumbing design encouraged.

- AECB Daylight guidance complements the main AECB Building Standard. Daylight Standard requires that adequate daylight is provided between 9am and 5pm for 70% of the year and there is acceptable daylight 80% of the year between 10am and 2pm. Also considered is the Daylight Uniformity within a room, satisfactory Daylight Uniformity is achieved when more the 80% of a habitable room receives natural daylight. Daylight Factor is the proportion of daylight within the room relative to outdoor conditions and this is considered. Both the Daylight Uniformity and the Daylight Factor must be calculated in accordance with BS 8206-2.
- The AECB Airtightness guidance complements the main AECB Building Standard. Air leakage increases heat loss making buildings colder and less energy efficient. This can lead to condensation and mould occurring which can affect the building occupant's health and incur increased costs for heating. Moisture in the air moves through walls or roofs then this water is deposited in the building fabric, often giving rise to major damage and shortening a building's life.

AECB Water Standards
Delivering buildings with excellent water and energy performance
VOLUME 1: THE WATER STANDARDS

AECB Daylight Assessment
The standard is part of a suite of additional AECB standards that complement the main AECB Building Standard. These are:
- AECB Building Standard
- AECB Daylight Standard
- AECB Airtightness Standard

Criteria	AECB Standards certification criteria		
	Level 1	Level 2	Building Standard Level 3
Performed water heating and cooling (kWh/m ²)	Not applicable	Not applicable	Not applicable
Primary Energy (kWh/m ²)	Not applicable	Not applicable	Not applicable
Renewable (kWh/m ²)	Not applicable	Not applicable	Not applicable
Primary Energy (kWh/m ²)	Not applicable	Not applicable	Not applicable
Thermal Bridges	Not applicable	Not applicable	Not applicable
Surface Condensation (PM) assessed	Not applicable	Not applicable	Not applicable
Heating System	Not applicable	Not applicable	Not applicable
Thermal Comfort	Not applicable	Not applicable	Not applicable
Energy Model using PHPP, showing:			
Where a heat pump is installed			

HOME QUALITY MARK
Version 6.0
Technical Manual – SD259

Image of a modern building with people walking in front.

THE WELL BUILDING STANDARD

4.3 Emerging Standards

UK Net Zero Carbon Building Standard

In 2022 a steering group representing stakeholders from across the built environment develop a Standard for verifying UK buildings as Net Zero Carbon (NZC). The UK Net Zero Carbon Buildings Standard was set up to enable built assets to be verified as Net Zero Carbon, delivering a Net Zero Carbon UK by 2050, with a 78% reduction by 2035. Providing clear definitions, easy to use, driving market transformation through industry engagement and uptake and aligning with the system-level changes needed for a NZC UK. The standard sets out requirements in the areas below to achieve a Net Zero building:

- **Operational Energy Limits:** Which will set the required operational energy performance of the building which is demonstrated in operation.
- **Upfront Embodied Carbon:** Limits set, defining a building's required embodied carbon performance in kgCO₂e/m² GIA.
- **Lifecycle embodied carbon emissions:** Required to be reported, kgCO₂e/m² GIA over the building's Reference Study Period (default being 60 years).
- **Fossil fuel free:** New with onsite plant are required to be fossil fuel free, with the end goal of this for existing buildings also.
- **Demand management:** There are no targets for demand management, but reporting of peak demand and the time of it is required.
- **Onsite renewables:** Renewable electricity generated onsite should be reported, how much used and the amount exported kgCO₂e/kWp. For new buildings there is a target for onsite renewables, measured in kWh/m² of building footprint/yr.
- **Renewable procurement & offsetting:** The UKGBC sets out the requirements in their renewable procurement and offsetting guidance.
- **Refrigerant & Leakage:** Refrigerant emissions from the building are accounted for within embodied carbon of the building. A Global Warming Potential (GWP) will have limits set that align with F gas regulations and EU taxonomy. Refrigerant leak detection will be required to be installed.

Future Homes Standard

The Future Homes Standard (FHS) has been developed by the Ministry of Housing, Communities and Local Government. From 2025 the Future Homes Standard will deliver homes that are zero-carbon, with new homes being built with no fossil fuel heating. New homes will be required to produce 75-80% less carbon emissions than under the current Building Regulations. The standard refers to the Part L building regulations (Conservation of fuel and power), the Part F building regulations for ventilation and airtightness. The standard focuses on improving heating, hot water systems, and reducing heat waste, with the use of low-carbon alternatives and future proofing homes.



Department for Levelling Up,
Housing & Communities

The Future Buildings Standard: 2021 Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for non-domestic buildings and dwellings; and overheating in new residential buildings

Summary of responses received and Government response

December 2021
Department for Levelling Up, Housing & Communities

Sustainability Standards & Guidance

4.4 Sustainability Standards Matrix

The matrix shows a comparison of industry standards for sustainability and wellbeing and the scope they cover, please refer to the tables in the Appendices for a more detailed table.

	RIBA 2030 Climate Challenge-2030	LETI	BREEAM UK New construction	WELL Building Standard	Passivhaus & EnerPHit	AECB Building Standard :Carbonlite standard 3 (New build)
Operational Energy	Included	Included	Included			
Embodied Carbon	Included	Included	Included			
Potable Water Use Litres/person/day	Included	Included	Included			Included
Overheating/ Thermal comfort	Included	Included	Included	Included	Included	Included
Daylighting	Included	Included	Included	Included		Included
Indoor air quality (including emissions from construction products)	Included	Included	Included	Included		
Biodiversity	Included		Included			
Air tightness		Included	Included		Included	Included
Thermal bridging		Included	Included		Included	Included
Heating/ cooling system	Included	Included			Included	Included
Domestic hot water peak		Included				
Renewable Primary Energy Demand		Included			Included	Included
Fabric U-values (W/m2)		Included			Included	
Windows		Included		Included	Included	
Renewables		Included	Included		Included	
Form factor		Included			Included	
Lighting power density		Included				
Glare: electric lighting				Included		

5.0 Economic Sustainability

Economic Sustainability

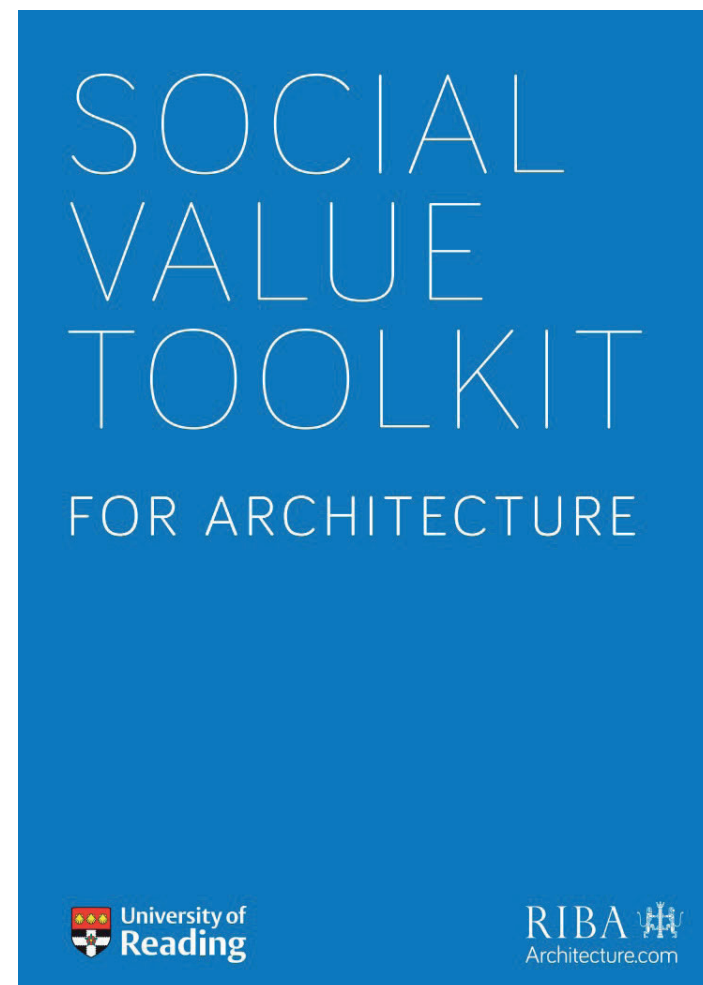
5.1 Social Value

Social value forms one of the core themes of the RIBA sustainable outcomes guidance and refers to the additional benefits that an organisation can bring to society. Social value is defined as the 'economic, social and environmental wellbeing that is created by a development or service as defined by the Public Services (Social Value) Act 2012. In the relationship between public and private sectors social value is at the centre of procurement decision making, the publication of Policy Procurement Note PPN06/20 and the Construction Playbook added further weight to the Social Value Act 2012. In 2021 the Government updated guidance requiring all major procurements to evaluate social value.

Social value principles can be considered in real estate development from the design stage to the in-use occupation of a building. At design stage plans are developed which can affect community activities and add value, create local jobs by getting involved in community outreach programmes. The development brings empty sites alive creating social value. During the buildings construction social value conditions are captured within Section 106 agreements there can be requirements such as the use of local labour and spending. Within the property management of the building security staff, cleaning and maintenance are required. Upon occupation of the building there is potential social value through engaging with the local community, providing employment and training opportunities and engaging in local supply chains.

The key reasons social value is included in the delivery or new and existing buildings:

- Community engagement: To empower communities and serve as a vehicle for developing solutions.
- Societal value: Developers understand and respond to local needs.
- Supply chain engagement: Engaging local suppliers, building local capabilities.
- Social investors: A growing awareness that investments also have a beneficial impact on society.



5.2 Economic Impact on Local Communities

The Social Value Toolkit for Architecture developed by the RIBA and is based on holistic social, environmental and economic benefits to society, the triple bottom line of sustainability. This is the method by which UK government assesses cost benefits.

For the National Social Value Measurement Framework (National TOMs) each activity is allocated a value which reflects, the value for the individual, value for the government e.g., the fiscal savings and the economic benefits to the local community.

- There are five themes for the TOMs.
- Jobs: The promotion of local skills and employment.
- Growth: Providing local business with the skills to compete and work as part of business and public sector supply chains.
- Social: Healthier more resilient communities.
- Environment: Decarbonising, providing greener places for people to work and live.
- Innovation: Promoting innovative solutions to old problems.

Derbyshire county council in their Economic development policy (www.derbyshire.gov.uk, 2023) states that they are committed to improving the county's economy through sustainable development working in partnership with the Derbyshire Economic Partnership and local enterprise partnerships. The DCC works with these organisations to help secure external funding to help develop locally based economic growth in particularly in areas of economic disadvantage and high unemployment. This involves supporting local business, maximising external funding, creating jobs for local people, enhancing the quality of life of local communities and creating the conditions for investment. DCC are aiming to strengthen the local economy and tackle deprivation.

Economic Sustainability

5.3 Circular economy

According to the United Nations extraction and processing of materials, fuels and food make up approximately 50% of the total greenhouse gas (GHG) emissions, with resource extraction and processing causing 90% of water stress and biodiversity loss. The built environment uses almost half of the world's extracted materials, with the growth in resource use projected to increase 40 billion tonnes to roughly 90 billion tonnes by 2050.

Building design often just considers the current use of the building, without thinking about the future of the building and its materials. With raw materials becoming harder to extract not considering the future of existing materials is a missed opportunity. Rather than a linear economy of manufacturing and throwing away we need to move towards a circular economy where resources retain their value, prioritising refurbishment and retention over demolish and rebuilding. Adoption and deconstruction of buildings can extend their life, allowing materials and components to be salvaged for re use or recycling.

“A circular economy is an industrial system that is restorative or regenerative by intention and design.” Ellen MacArthur Foundation.

To apply these circular principles to building design components should be designed to allow disassembly and reuse. Some salvaged elements such as Belfast sinks or chimneypots are valuable components. For other elements materials are able to be recycled back into the manufacturing process. Incineration of waste should be avoided as the recourse is lost from the circular economy. Ideally when a building reaches the end of its useful life, it would be disassembled into modules with could be reassembled in a new configuration or location.

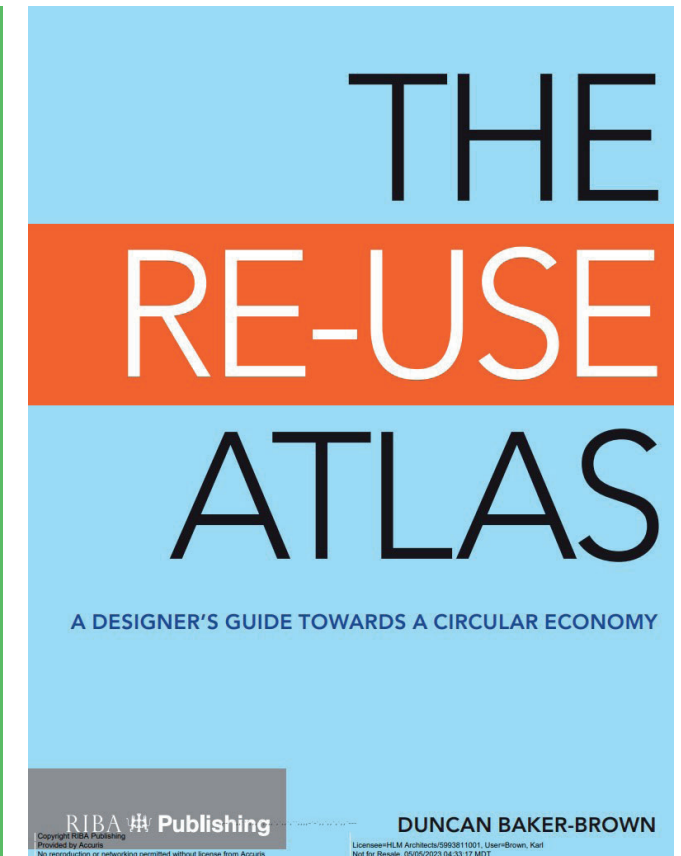
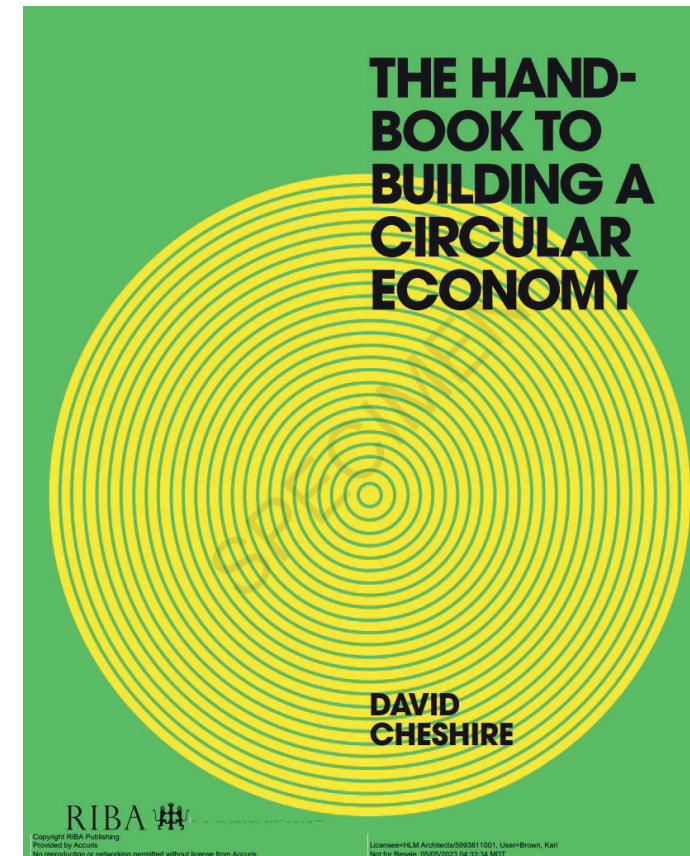
The Ellen MacArthur Foundation estimates that with the introduction of a circular built environment there could be a reduction in global carbon dioxide emissions from building materials by 38% or 2 billion tonnes in 2050, due to a reduced demand for raw materials.

Circular economy principles cannot be applied wholesale over a building as products have very different lifespans and demands. To tackle this difficulty components can be considered in layers using different rules e.g., the structure and building fabric be made adaptable over their lifespan, whilst internal elements be made reusable or compostable. By keeping each layer independent this allows for the structure to be retained when upgrading the fabric of the building. The layers of the building include;

- Shell: flexible space with long spans, good floor-to-ceiling heights and flexible/ spacious cores and Risers.
- Services: Accessible, demountable, modular systems allowing upgrade, lease arrangements (e.g., lighting).
- Scenery: Re-locatable partitions, Modular components and system furniture.
- Settings: Consumable components made for recycling/composting, Design for reconfiguration of space and also leasing furniture and equipment.

When designing to consider any changes in the future use of the building over engineering the structure or foundations to accommodate expansion to the building could be considered, exploring different building footprints. How internal spaces could be reconfigured is considered, scenario modelling to consider different use types of the building, generous floor-to-ceiling heights with abundant levels of daylight to allow greater flexibility of use and the principles of disassembly to make the building more adaptable.

Certain principles when undertaking the construction can make it easier to disassemble such as; having mechanical and reversible (e.g., not chemical) connections which are easily accessed, independent and easily separable elements of the building and not using resins or adhesive coatings on the elements. Designing for disassembly allows materials to be reclaimed intact during demolition or renovation.



6.0 Sustainability Development Considerations

Sustainability Development Considerations

6.1 Operational Energy & Carbon

Relevant standards: BREEAM New construction, BREEAM UK Refurbishment and Fit out, BRE Home quantity mark, LETI, Nabers UK, Passivhaus & Enerphit, AECB Building Standard (Carbonlite Retrofit standard 2), Future Homes Standard

Best practices:

The redevelopment of the County Hall Complex has the opportunity to significantly reduce the operational energy of the facility through retrofit of existing buildings to standards like Enerphit, or by new build to higher performance standards such as Passivhaus. The relocation to leased premises with an EPC rating of C or better may deliver a reduction in operational energy, however this is subject to the availability of properties in the market and the quality of the construction of those buildings.

Reductions in energy use will be achieved by improved fabric performance focusing on insulation, air tightness and reduction or omission of thermal bridges. The use of the most efficient lighting and equipment along with efficient systems for ventilation, space heating, domestic hot water and if required cooling will reduce the demand for energy and in tandem reduce carbon emissions.

The opportunity exists to develop on site renewable energy generation through roof, ground or canopy mounted solar PV panels.

The table shows the achievable energy use for the Councils proposed accommodation under each option.

Standard	EUI kWh/m2/yr	Option 1 : Do Minimum 21967sqm Energy Use (kWh/m2/yr)	Option 2 : Move to leased Accommodation 7500sqm Energy Use (kWh/m2/yr)	Option 3: New Build Office (400-600p) & Third Party Dev 6750sqm Energy Use (kWh/m2/yr)	Option 4 :New Build Office (200-400p) plus some relocation & Third- Party Dev 3375sqm New Build & 3375sqm Lease Energy Use (kWh/m2/yr)
Existing	203	4,367,358			
Shallow Retrofit	182	4,013,024			
Enerphit Retrofit	60	1,322,975			
RIBA / LETI New Build	55	1,212,727		371,250	185,625
Passivhaus New Build	60	1,322,975		405,000	202,500
Leased Accommodation DEC 100	179		1,342,500		604,125

6.2 Embodied Carbon

Relevant standards: BREEAM New construction, BRE Home quantity mark, LETI, Nabers UK, Passivhaus & Enerphit, AECB Building Standard (Carbonlite Retrofit standard 3), Future Homes Standard, WELL

The redevelopment of the County Hall Complex presents an opportunity for the extensive retrofit of the existing building stock supporting general objectives and guidance to make retention and retrofit of buildings a priority over new build. While any retrofit of buildings will result in new embodied carbon its generally accepted that this will still be less than even the lowest embodied carbon new builds. This does need to be balanced against operational carbon and so a whole life carbon approach should be taken.

For the Council's office accommodation an embodied carbon limit of 350kgCO₂e/sqm should be set in line with LETI's 2030 targets supporting the UK transition to net zero.

Derbyshire County council places high value on reducing consumption and waste of natural resources. The use of recycled or reclaimed materials, aids the reduction of embodied carbon. To support a circular economy a requirement to use 50% recycled materials and for 80% of all materials to be reuseable should be set for all new construction.

6.3 Sustainable Water Usage

Relevant standards: BREEAM New construction, BRE Home quantity mark, LETI, Nabers UK, Passivhaus & Enerphit, AECB Building Standard (Carbonlite Retrofit standard 3), Future Homes Standard, WELL

The redevelopment of the County Hall Complex presents the opportunity to significantly reduce water usage through carefully chosen fittings and the use of rainwater harvesting. At the same time surface water runoff could be managed more sustainably through water sensitive design and sustainable urban drainage systems with the ultimate aim of restoring groundwater and reducing the risk of downstream flooding.

The redevelopment should set water usage limits of 6l/ person/day and require a sustainable urban drainage scheme sensitively integrated into the wider landscape design.

Sustainability Development Considerations

6.4 Sustainable Transport Opportunities

The location of the County Hall Complex at the top of the hill presents challenges to promoting health and green transport choices, however any redevelopment must support Derbyshire District Council's sustainable transport goals through provision of appropriate facilities within the development and indeed through collaboration with other service providers and agencies such as local public transport providers.

The development could support Derbyshire County Council's key priority of encouraging active transport and Derbyshire Dales district council, Adopted Derbyshire Dales Local Plan "Improved accessibility to community services and facilities by sustainable means such as walking and cycling or via public transport through:

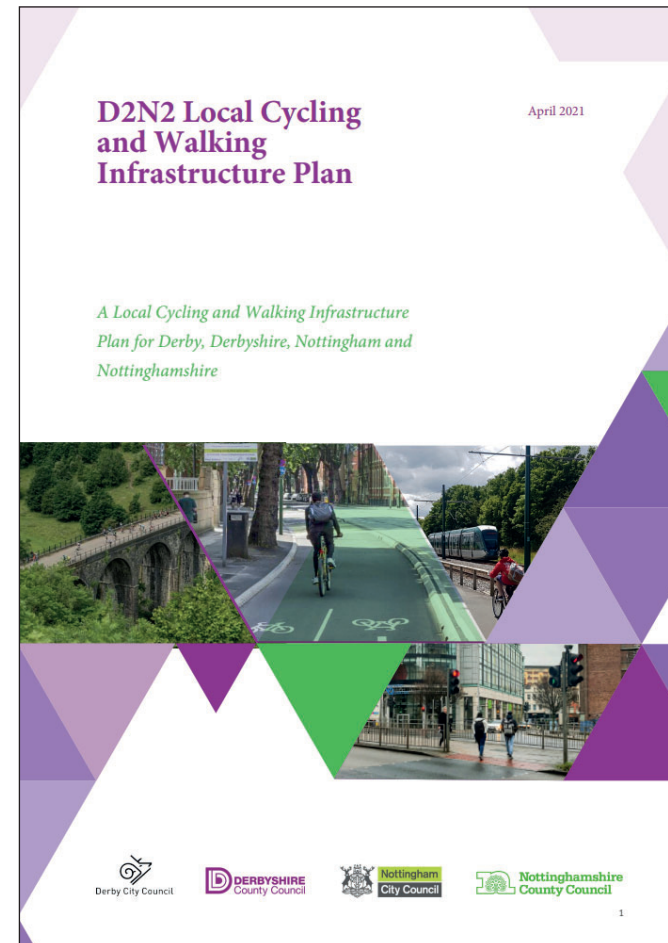
- Provision of excellent connections to the wider pedestrian and cycle network
- Provision of facilities for cycle parking and charging of e-bikes
- Provision of cyclist facilities including showers, lockers, changing rooms and basic maintenance space

The development could support Derbyshire Vision's aims to deliver an ambitious low-carbon integrated transport system through:

- Creation of a travel plan encouraging the use of local public transport solutions
- Supporting multi modal active travel / public transport choices
- Supporting ambitions for an EV Shuttle linking the development to a potential mobility hub

The development could support Derbyshire County Council's aim to accelerate the shift to electric vehicles through:

- Provision of destination and / or rapid charging points / bays
- Encouraging use of electric vehicles within supply chains.



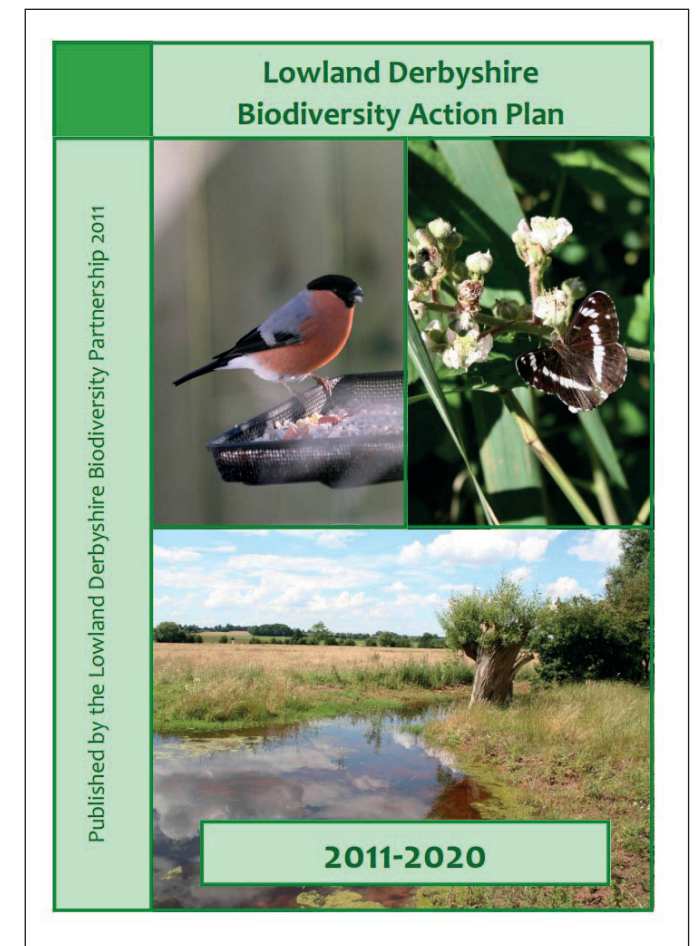
6.5 Environment and Habitat - Enhancing Site Ecology / Biodiversity Net Gain / Natural Capital

The County Hall Complex with its mature landscape setting close to the centre of Matlock is a valuable asset not only for the people of Matlock but also as an environmental resource supporting local wildlife and biodiversity.

The Biodiversity of the site should be surveyed and valued using appropriate methodologies aligned to the new Biodiversity Net Gain Legislation.

The redevelopment of the complex should seek to protect and retain the existing biodiversity value and in line with future legislation seek to offer a biodiversity net gain of 10% preferably within the development site. This could be achieved through:

- Protection of existing mature trees
- New tree planting
- Protection and enhancement of existing habitats
- Rebalancing of land use for biodiversity rather than carparking
- Use of biodiverse planting mixes in lieu of amenity planting supporting local wildlife species
- Use of biodiverse green roofs / walls
- Multifunctional landscape – water management techniques
- Inclusion of species specific elements, eg bird and bat boxes.
- Proactive maintenance and management of the landscape for long term biodiversity
- Opportunities for people to engage with nature fostering connection and ownership, for example walking trails, allotments, wildlife areas.



Sustainability Development Considerations

6.6 Health and Wellbeing

Relevant standards: BRE Home quantity mark, BREEAM New construction, BREEAM UK Refurbishment and Fit out 2014, BRE Home quantity mark, LETI, Nabers UK, Passivhaus & Enerphit, AECB Building Standard (Carbonlite Retrofit standard 2&3), AECB Water Standard, AECB Daylighting Guidance, WELL, Future Homes Standard, Passivhaus & Enerphit.

The proposed redevelopment of County Hall presents the opportunity to provide workspace and other facilities which support the health and wellbeing of the people who use them through excellent indoor air quality, water quality, healthy eating, exercise, thermal comfort, acoustic comfort and mental wellbeing. Excellence can be achieved by requiring buildings to be delivered to standards focused on health and wellbeing for example the WELL Building Standard

Indoor Air Quality

Indoor air quality is one of the most important elements of the indoor environment as it can greatly effect health and wellbeing. When air quality is poor there is the possibility of low productivity, sick building syndrome and poor health effects. Appropriate ventilation, ideally with heat recovery, is key to ensuring the indoor air quality remains high.

Volatile organic compounds (VOCs) are a group of chemicals which are found in indoor environments from various sources including insulation, paints, coatings, adhesives, furniture and furnishings, composite wood products and flooring materials. These chemicals can cause a number of negative health effects such as: - nose, eye and throat irritation, headaches and nausea to liver, kidney and central nervous system damage. Other chemicals found within the building also have negative health effects.

The WELL building standard places restrictions and limits on chemicals within building products such as :- Halogenated flame retardants, PFAS, lead, Cadmium, Mercury, Asbestos, PCBs, chromated copper arsenate (CCA), VOC Restrictions. WELL has options to consider the material transparency of materials which are certified in relation to the health effects of the products e.g. A Health Product Declaration (HPD).

In BREEAM levels of TVOC and Formaldehyde are considered for the materials contained within the building

Water

Water hygiene is encouraged, through sensor activated faucets, and having an adequate water column from the taps and sinks that are of large enough size. Water quality can be maintained through appropriate testing.

Protection of moisture sensitive building materials and finishes which are likely to be exposed to water should be considered in order to prevent degradation and the growth of mould etc.

Nourishment

The workplace should promote nourishment and healthy eating. This is achieved by offering healthy foods within the building and in vending machines. Dedicated eating spaces within the building which promote health benefits relating to mindful eating should be considered. Access to Drinking water should be promoted through positioning of water coolers spread out at regular intervals around the workspaces.

Light

Light is the main driver of our bodies circadian system, which effects our sleep-wake cycle. There are several negative health effects such as obesity, diabetes and depression which are associated with poor lighting. Glare especially in the workplace can lead to visual fatigue and glare-induced headaches, when glare is present you may also sit in an uncomfortable position which can lead to back and neck ache. A view to the outside has several mental health and physical advantages, in studies of hospital patients having a view to nature has shown an improvement in recovery time.

The BREEAM recommends glare control, minimum daylight levels, glazing to floor area ratio, view out, lighting zoning/ occupant control, room depths/ window head heights and view of sky/no-skyline.

The LETI Climate Emergency Design Guide provides guidance on window to wall ratio for avoiding overheating and providing the required daylight levels. AECB have a Daylighting Guidance add on to their main standard. This considers daylight factor daylight levels and daylight uniformity.

The WELL building standard considers several metrics for lighting and health these include; Light exposure in indoor environments, visual lighting design- illuminances on work planes, Circadian Lighting Design, Electric Light Glare Control, Daylight Design Strategies, Visual Balance- environments that enhance visual comfort, Electric Light Quality- visual comfort and minimize flicker for electric light and Occupant Lighting Control- customizable lighting environments. Any changes to the floor plan layout would consider views and have workstations which are within 7.5m of the windows to ensure exposure to daylight, with a visual light transmission of glazing of at least 40%. Glare and visual comfort will be considered in the design. There will be good quality electric lighting design, minimising flicker, customizable lighting environments with occupant Control to aid the creation of a visually comfortable lighting environment. Depending on the building and floor plan there could be any opportunities to introduce light wells to improve the daylight levels further into the building plan. For the interior design reflective surfaces applied to the ceiling could encourage light reflectance further into the buildings plan where required.

Movement

The design of the building can be used to encourage movement within it. There are a number of poor health outcomes associated with sedentary behaviour which include obesity, type II diabetes, cardiovascular risks and premature mortality. The Derbyshire County council have strategies to encourage people to be active and healthy.

Consideration should be given to active workstations and providing gym facilities within the building to encourage physical activity. Also, the provision of showers, bike storage and lockers for cyclists, which ties in with the Derbyshire County council desire to increase cycling as a form of transport. For movement within the building staircase design and signage can be used to encourage staircase use rather than lift usage. This can be achieved by aesthetically pleasing staircases with elements such as; being well lit, with views, natural elements, artwork or music.



Sustainability Development Considerations

Comfort

The WELL building standard has a number of strategies relating to thermal comfort which include, thermal Performance, ensuring that a substantial majority of building users (above 80%) perceive their environment as thermally acceptable, thermal zoning, individual thermal control- personal heating and cooling options, radiant thermal comfort, thermal comfort monitoring, humidity control, operable windows and outdoor thermal comfort.

Thermal Zoning within the building can enhance thermal control of building occupants allowing them to sit in different areas which suit their thermal requirements. Outdoor Thermal Comfort considers, outdoor shading, temperature modelling and computational fluid dynamic modelling for winds. External shading, trees and awnings can improve the outdoor thermal comfort. Heat stress counter measures can include the addition of landscape/ greenery and water features.

Thermal comfort is considered in the LETI Climate Emergency Design Guide. The BREEAM seeks to reduce the risks of high temperatures occurring in the current and projected future climate scenarios. BREEAM also considers thermal zoning and controls. For the AECB standards overheating risks are considered. For the Future Homes Standard Part O for overheating is referenced which offers strategies for reducing over heating risks.

Passivhaus projects create good indoor comfort environments; draught free internal spaces, with consistent indoor surface temperatures and temperature limits to avoid overheating.

Sound

Noise such as traffic noise or from industrial sources has been shown to have negative effects on health and wellbeing, such as sleep disturbance, hypertension, and the reduction of mental arithmetic skills. Internally generated noise from sources such as HVAC equipment, appliances and other occupants can affect, focus, memory retention and productivity.

The WELL building standard has a number of acoustic parameters which it considers these include: - production of an acoustic design plan, maximum noise levels within different spaces, design for sound isolation, reverberation times, sound reducing surfaces, sound masking, noise reducing flooring and enhanced audio devices. Sound reducing surfaces can minimize the buildup of speech or other unwanted sound. Sound barriers increase the level of sound isolation and speech privacy between enclosed spaces.

BREEAM considers the acoustic performance within the building, minimising noise transmission between spaces and providing an appropriate acoustic environment for different functions and spaces.

Mind

The design of a building has the potential to have a positive effect on the mental health of the occupants. We are increasing living in environments with limited access to nature. Decreased levels of depression and anxiety, better recovery from job stress and illness, increased pain tolerance and increased psychological well-being have been linked with access to natural elements such as daylight and plants.

The well building standard promotes access to nature in spaces using: - natural patterns, plants (e.g., green walls), water features and nature views. The integration of art and culture within the interiors is recommended to improve mental wellbeing. Restorative Spaces and naps spaces are included within the standard. The creation of spaces that promote restoration and relief from mental fatigue or stress may contain: - adjustable lighting, thermal controls, nature elements, thermal control, and visual privacy.

BREEAM has several requirements for mental wellbeing such as visual comfort, security - which supports physical and mental wellbeing of the building users and the promotion of safe and healthy surroundings. The ecological value of a site is considered but this also offers an opportunity for benefits to wellbeing and the inclusion of recreational spaces.



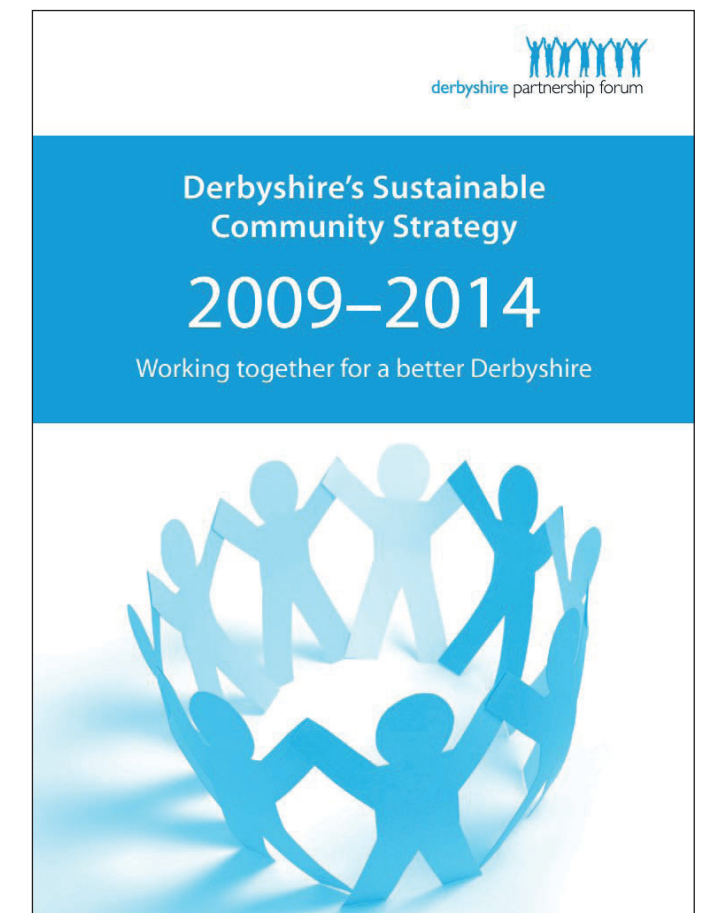
6.7 Sustainable Communities

Relevant standards: WELL, BRE Home quantity mark, BREEAM New construction, BREEAM UK Refurbishment and Fit out

The redevelopment of the County Hall complex presents the opportunity to both retain existing community facilities and services within the town and also to create new facilities and services to support the sustainability of Matlock Town as a community.

The new development should identify the economic and social requirements of the residents and aim to meet these. Proposals should also consider future needs of the community and how flexibility could be built in to the design to allow future adaptability.

The new development should have good access to other nearby services and amenities, ideally within walking or cycling distance or via public transport. The development also has the opportunity to provide access for local residents to green open space having a positive effect on mental health and wellbeing.



7.0 Conclusions and Recommendations

7.0 Conclusions and Recommendations

The redevelopment of the County Hall Complex at Matlock presents an exciting opportunity for Derbyshire County Council to deliver upon the vision for the county but also the sustainability goals contained in its policies and action plans. The following are some recommendations for the project aligned to the 8 RIBA Sustainable Outcomes.

Net Zero Operational Carbon

- Set Operational Energy limits for each building typology
- Consider industry best practice standards such as Passivhaus for new builds and Enerphit for retrofit as a proven, building physics based standard to deliver Net Zero Operational Carbon
- Employ accurate energy modelling using Passivhaus Planning Package (PHPP) or dynamic modelling aligned to CIBSE TM54 including both regulated and unregulated energy use.
- Maximise fabric performance to minimise energy demand
- Aim for EPC 'C' as a minimum on Retrofit
- Employ appropriate generation technologies on site to further reduce energy demand from the grid
- Employ sub metering and monitoring to accurately understand energy use across the development
- Exclude use of fossil fuels

Net Zero Embodied Carbon

- Prioritise reuse of existing buildings over new build
- Set Embodied Carbon limits for each building typology based on industry best practice
- Promote the use of low embodied carbon materials and construction methods
- Utilise modern methods of construction on new builds to minimise waste
- Minimise the size and complexity of heating / cooling systems through intelligent fabric design
- Facilitate a circular economy by setting targets for reuse and re-usability.

Sustainable water cycle

- Set water use limits for each building typology
- Reduce the existing surface water discharge from the site through sustainable drainage design.
- Minimise water demand through low flow fittings and appliances
- Minimise water demand through resilient planting design
- Employ rain and grey water harvesting to minimise water demand from the network

Sustainable connectivity and transport

- Develop a clear travel plan promoting active public transport choices
- Provide excellent cycle and pedestrian infrastructure within the development
- Provide facilities for cyclists including shelters, parking, showers, changing and maintenance facilities
- Connect with local public transport providers regarding transport stops and routes.
- Connect with local car share / pool providers
- Promote electric vehicle use through provision of destination and / or rapid chargers

Sustainable land use and bio-diversity

- Protect existing mature trees, hedgerows and habitats
- Enhance existing habitats and support locally established species using appropriate features for example bird or bat boxes integrated into the development
- Provide appropriate new tree planting and vegetation to support biodiversity
- Target a 10% net gain in biodiversity value.

Good health and wellbeing

- Provide comfortable buildings – thermal, acoustic, lighting
- Provide healthy buildings – air quality, VOC's, water quality
- Support active and healthy lifestyles
- Provide facilities to support good mental health
- Provide connections to nature through biophilic design

Sustainable communities and social value

- Respond to the needs of the local community
- Deliver economic value to the locality through jobs and supply chain services
- Create employment opportunities for local people
- Create opportunities for disadvantaged people
- Deliver improved skills
- Minimise waste in operation by facilitating recycling and green waste composting

Sustainable life cycle cost

- Consider Capital Cost alongside Operational Cost
- Consider Environmental and Societal costs and benefits

8.0 References

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9.0 Appendices

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Table part 1

	RIBA 2030 Climate Challenge-2030 Targets	LETI	BREEAM UK New construction	WELL Building stanard	Passivhaus & Enerphit	AECB Building Standard :Carbonlite standard 3 (New build)
Operational Energy	< 55 kWh/m ² /y DEC B (40) and/or NABERS Base build 6	< 55 kWh/m ² /y Aligned with RIBA 2030: 2025 target aligned with LETI band C & 2030 target aligned with LETI band B.	Energy Performance Ratio for New Construction (EPR NC) compared to benchmarks: 0.4-0.5 Excellent, 0.6-0.8 Outstanding, 0.9 + zero net regulated CO ₂ -eq.		Space Heating Energy Demand specified.	Delivered space heating and cooling.
Embodied Carbon	< 750 kgCO ₂ e/m ²	2030 Best practice <350 kgCO ₂ Area in GIA/m ²	Comparison of the building with the BREEAM LCA benchmark for an office or Third party verification.			
Potable Water Use Litres/person/day	< 10 l/p/day	Green' Euro Water Label for hot water outlets (e.g certified 6 L/ min shower head not using flow restrictors).	Water consumption (litres/person/day)for building is compared against a baseline performance: 65% improvement exemplary.	Not measured but points for access to water coolers, to encourage drinking water.		AECB Water standard: Wc's 6/4 litres dual flush or 4 .5 litres single flush, showers 8-10 litres max, Sink taps 6-8 litres/ min, baths 180 litres max.
Overheating/ Thermal comfort	25-28 °C maximum for 1% of occupied hours	Ensure risk of overheating assessed & mitigated	Thermal modelling using software in accordance CIBSE AM11.Design to limit risk of overheating to CIBSE TM52.	Thermal Comfort Satisfaction Thresholds: 80% of regular occupants OR 90% of regular occupants.	Thermal comfort not more than 10 % of the hours in a given year over 25 °C.	Thermal comfort: PHPP modelled overheating risk, <10% acceptable. 5% good practice, 3% best practice.
Daylighting	> 2% av. daylight factor, 0.4 uniformity	Window to wall ratio <35% overheating avoidance & daylight.	Average daylight factor 2% (over 80% or area).	Average sDA300,50%, Target illuminance of 300 lux for >50% of regularly occupied areas throughout 50% of daylight hours OR Average sDA300,50% for > 75% of regularly occupied floor area, Target illuminance of 300 lux for >50% of total area & average illuminance 100 lux for >95% of total area throughout 50% of daylight hours.		AECB Daylight Standard: adequate daylight 9am- 5pm for 70% of the year & acceptable daylight 80% year between 10am-2pm. Satisfactory Daylight Uniformity when > 80% habitable room receives natural daylight. Daylight factors: AECB: >3 atrium,>2 occupied spaces.
Indoor air quality (including emissions from construction products)	Co ₂ < 900 ppm, Total VOCs< 0.3 mg/m ³ , Formaldehyde, < 0.1 mg/m ³	Temperature, relative humidity and CO ₂ / VOCs / NO _x monitoring	Occupied spaces CO ₂ / air quality sensors in accordance with Building Regulations, ≤ 1.0 mg/m ³ Total VOCs , ≤ 0.06 mg/m ³ Formaldehyde.	Co ₂ <900 ppm, Total VOCs: 500 µg/m ³ or lower. , Formaldehyde: Formaldehyde (CAS 50-00-0): 50 µg/m ³ or lower, PM _{2.5} : 15 µg/m ³ or lower, PM ₁₀ : 50 µg/m ³ or lower.	No set requirements, but the air is filtered so there is good indoor air quality.	

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Table part 2

	RIBA 2030 Climate Challenge-2030 Targets	LETI	BREEAM UK New construction	WELL Building stanard	Passivhaus & Enerphit	AECB Building Standard :Carbonlite standard 3 (New build)
Biodiversity	Enhance site's biodiversity net gain and green cover compared to pre-development levels.		Determining existing ecological value, risks/ opportunities for ecological protection & enhancement, limit negative ecological impacts & enhance ecological value associated with the site.	There are no requirements for this but points for access to green spaces, nature & biophilia.		
Air tightness		<1 (m3 /h.m2@50Pa)	Airtightness testing: professionals with membership of Air Tightness Testing & Measurement Association (ATTMA).		Passive Houses must be airtight with air change rates being limited to n50 = 0.6/h (1 for Enerphit).	Airtightness (q50) <or = 1.5 m3/m2.h
Thermal bridging		0.04 (γ-value)	Complete post-construction testing of building fabric.		Thermal bridge free design	Thermal bridges assumed less than 0.01w/mk
Heating/ cooling system	Low carbon heating e.g. heat pumps	<ul style="list-style-type: none"> •MVHR 90% (efficiency) ≤2m (duct length from unit to external wall) •Space heating demand: <15 kWh/m2 •Space heating peak: 10 W/m2 Equiv. to 6 kWh/m2.yr renewable electricity from grid. 			<ul style="list-style-type: none"> •At least 75% of the heat from the exhaust air is transferred to the fresh air again by means of a heat exchanger. •Space Heating Energy Demand is not exceed 15 kWh per m2 net living space (treated floor area) per year (25 kWh/ m2.a Enerphit) or 10 W per square meter peak demand. 	Delivered space heating and cooling <or = 40kWh/m2.a
Domestic hot water peak		Domestic hot water peak 6 W/m2 Equiv. to 9 kWh/m2 .yr renewable electricity from the grid.				
Renewable Primary Energy Demand					Renewable Primary Energy Demand (PER, according to PHI method), total energy to be used for all domestic applications (heating, hot water and domestic electricity) must not exceed 60 kWh per m2 treated floor area per year for Passive House Classic.	Renewable PER <or = 75kWh/m2.a

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Table part 3

	RIBA 2030 Climate Challenge-2030 Targets	LETI	BREEAM UK New construction	WELL Building stanard	Passivhaus & Enerphit	AECB Building Standard :Carbonlite standard 3 (New build)
Fabric U-values (W/m2		0.12 - 0.15 Walls, 0.10 - 0.12 Floors, 0.10 - 0.12 Roof, 1.2 Doors			For most cool-temperate climates, this means a heat transfer coefficient (U-value) of 0.15 W/(m ² K)	
Windows		U-values (W/m2: 1.0 (triple glazing) 1.2 (double glazing). 0.4 - 0.3 g value of glass.		Envelope glazing area no less than 7% of floor area per level. Floor plate no less than 20 m between opposite walls. Visible light transmittance (VLT) of windows > 40%	Cool-temperate climates, this means a U-value of 0.80 W/(m ² K) or less, with g-values around 50% (g-value= total solar transmittance, proportion of the solar energy available for the room).	
Renewables		Generate annual energy requirement for at least two floors of development on-site.	Low & zero carbon feasibility study, Energy generation from/ near-site LZC sources sufficient offset 100% of carbon emissions from regulated energy use + % emissions from unregulated energy use, exemplary performance 'Beyond zero net regulated carbon % of carbon emissions from unregulated energy use that is offset by LZC sources.		Renewable energy generation required for Premium and Plus level PH. •Premium: >or+120 kWh per/(m2 ground.a) •Plus: >or+60 KWH kWh per/(m2 ground.a)	
Form factor		1-2 Offices			A form factor of under 3.0 is considered ideal for a passive house.	
Lighting power density		4.5 (W/m2 peak NIA)		Not in terms of energy but quality: Enhance Colour Rendering Quality, flicker & glare.		
Glare: electric lighting				100% light emitted above the horizontal plane, Unified Glare Rating (UGR) of 16 or lower/ Luminance does not exceed 6,000 cd/m2at any angle between 45 and 90 degrees from nadir or Unified Glare Rating (UGR) of 16 or lower.		

