



**FOR PUBLICATION**

**DERBYSHIRE COUNTY COUNCIL**

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

**MONDAY, 5 FEBRUARY 2024**

**Report of the Director - Commissioning & Transformation**

**REVIEW OF PROGRESS BEING MADE ON DE-CARBONISING  
THE COUNCIL'S CORPORATE ESTATE AND THE FORWARD PLAN OF  
ACTIVITIES**

**1. Purpose**

- 1.1 To report progress on the plans to decarbonise the council's estate and achieve Net Zero by 2032 or sooner.
- 1.2 To endorse the updated targets as noted in the proposed Carbon Reduction Strategy
- 1.3 To note the impact of the exceptional budget / cost control measures which will defer the delivery of carbon reduction and energy efficiency projects.
- 1.4 To endorse the proposal to progress the proposed solar farm at Williamthorpe.

**2. Information and Analysis**

**2.1 Executive Summary**

The Council has an objective to achieve Net Zero for the Corporate estate by 2032. This requires:

- a reduction in energy use;
- enhancing the energy efficiency of buildings;
- transitioning from fossil fuels to renewable energy, especially for heating
- measures to offset residual energy use and the associated carbon emissions by 2032.

Since 2022 the energy use associated with the corporate estate has been reduced **by 14%** or 6.1 million kWh (from 45 million kWh to 38.9 million kWh).

Carbon emissions are reduced by 1700 tonnes CO<sub>2</sub>e since 2021.  
(From 9171 to 7475 tonnes CO<sub>2</sub>e).

80% of this reduction is due to property rationalisation. 20% is due to other measures: energy management and planned projects to improve the energy efficiency of buildings.

Targets for future energy saving and carbon reduction have been reviewed as planned on an annual basis. **The target is to achieve a further 36% reduction in energy use / carbon emissions by 2032. (An total reduction of 50% from 2021)**

The strategic plan for reducing energy use includes property rationalisation as a priority measure. The scope of asset challenge is extensive and is a moving target.

Action plans to decarbonise the retained buildings focus upon microgeneration, energy management and retrofit projects.

Microgeneration by photo-voltaic panel. on roofs reduces energy demand at source. Energy management relies on day-to-day monitoring and corrective action. A pilot project to install remote monitoring for energy management is one of the measures which has been included within proposed project programmes. Retrofit projects may be small scale interventions or major refurbishments. Both measures, are included within proposed project programmes. Retrofit projects also include proposals to change heating systems from fossil fuels to alternative technologies using renewable fuels.

Proposed decarbonisation project programmes are submitted annually for potential funding award. Due to the current expenditure freeze all carbon reduction capital projects are on hold.

Offsetting requires major projects for renewable energy generation. The council has assessed the potential for solar farm and wind power. The project to develop the first solar farm is active. Funding is allocated and further progress is possible. The recommendation is to progress to submit for planning approval.

Targets have been reviewed and updated. The scope for reducing energy use by property rationalisation is increased. The scope to improve energy efficiency by delivery of projects is impacted by the current financial situation. The target for microgeneration by p.v. is reduced due to the expenditure freeze and further reviews of medium-term commitment to buildings. Targets are unchanged for energy management and retrofit projects, but this will require project funding. Using capital receipts to fund p.v. installations is a proposed initiative.

Further details of all of the above are as follows:

## 2.2 2020-23 Energy Consumption Data for Corporate Buildings

	kWh	tonnesCO <sub>2</sub> e
2020-2021	45,169,293	9,171

2021-2022	44,963,103	8,861
2022-2023	38,860,609	7,475

Energy use associated with corporate buildings in 2023 is 38.86 million kWh. This is equivalent to 7,475 tonnes of CO2 emissions.

### 2022-23 Energy Use by Service department

2022-23	kWh
Adult Care	13,706,003
Childrens Services (Non-Schools)	9,992,729
Chief Executives	7,726,121
Culture and Community Services	3,871,595
Place	3,564,161
<b>Total</b>	<b>38,860,609</b>

## 2.3 Property Rationalisation

The scope of the asset challenge and subsequent property rationalisation and disposal has increased since 2021.

It is assessed that Property Rationalisation will reduce energy consumption by 8.67 million kWh between 2022 and 2024. (1700 tonnes CO2e)

5.1 million kWh of savings were achieved by April 2023.

3.5 million kWh of further savings will be achieved by April 2024

	2023	2024
John Hadfield House	135,403	281,670
Chatsworth Hall	237,672	1,002,855
Long Close	450,878	80,326
HOPs	3,576,502	1,511,672
Other	709,785	687,048
<b>Total</b>	<b>5,110,240</b>	<b>3,563,572</b>

This further savings by 2024 will be equivalent to 685 tonnes CO2e.

Additional energy savings will result from the Chesterfield Area property rationalisation. Further energy savings will be confirmed when energy consumption in the new office can be assessed. The estimated future saving is 510,000 kWh which is equivalent to 100 tonnes CO2e.

## 2.4 Carbon Reduction Capital Project Programmes

Due to current financial pressures all carbon reduction capital projects are currently on hold. There is an expenditure freeze on non-essential expenditure. There is currently no access to funding for the programme of carbon reduction capital projects.

The 2022-23 £6m carbon reduction priority project programme identified priority projects to deliver 2.2m kWh of energy savings, with an overall payback of 12 years. Projects are subject to a prior review with Asset Management to ensure that buildings to be retained are prioritised. The relevant business case is submitted with the funding bid.

Funding was approved in February 2023 but it was approved based on the 'Invest to Save' funding model. Future financial savings resulting from improved energy efficiency would need to generate an annual budget saving to fund the cost of the project. However, whilst the shift from fossil fuels to renewable technologies will reduce carbon emissions, it is unlikely to generate a cost saving due to the increased use of electricity. Financial pressures may mean that future budgets will not be sustainable at levels which will generate a saving. The cost of energy is increasing. It would be simpler to fund projects by borrowing or capital receipts recognising that revenue savings will accrue, but without having to redistribute financial savings across hundreds of individual projects. The benefit of the energy efficiency measures will be to mitigate higher energy costs in the future.

Funding for the 2022-23 proposed £6m carbon reduction project programme funded by borrowing was approved in February 2023, but it was not possible to access the funding for more than eight projects. Access was placed on hold pending consideration of the above issue. Subsequently all projects were placed on hold as noted.

Funding for the 2023-24 proposed £2m carbon reduction project programme of further projects funded by borrowing was not approved. In 2023 the Council submitted bids to the Public Sector De-Carbonisation Scheme to seek alternative funding. These two bids were unsuccessful. The scheme is heavily over-subscribed.

To be successful projects ideally need to be 'shovel ready' with prior funding for design and procurement, and scheme has progressed to procurement stage. Any grant funding award will therefore only be contribution to a project not a substitute for council funding. There is also a significant cost to develop and submit bids.

It is proposed to submit a business case to use some capital receipts to fund p.v. projects with the paybacks of 7-10 years as noted below.

## **2.5 Remote Energy Monitoring and Energy Management**

As a result of the above funding issues the pilot project to develop an Energy Management system by the installation of remote monitoring sensors in selected buildings could not be progressed as planned.

Installations of remote monitoring kit were completed in three buildings in 2023, and the development of the software energy management tool is in progress. However - in the context of financial pressure - it is now unlikely that the further roll out of this programme will be possible for the foreseeable future. The effectiveness of the measure will be assessed based for these three buildings.

An alternative strategy including day-to-day monitoring of energy use using existing half-hourly energy consumption data, and the creation of Energy Champions within service departments is in hand to deliver managed improvements and to encourage behavioural change.

Improvements in the energy efficiency of corporate buildings will be demonstrated by improved Energy Efficiency Ratings across the estate.

Three existing major refurbishment projects within residential care homes were completed in 2023. There has been a 30% reduction in energy consumption across the three sites. The improvement is confirmed by improved Display Energy Certificate (DEC) ratings in those buildings which have been reassessed so far.

These buildings are now 20-25% more efficient than the CIBSE benchmark.

	Nov 21	Nov 22	Nov-Dec 23
New Bassett House HOP	E 106	D 92	C 75
Briar Close HOP	E 112	D 81	D 78

Existing strategies to reduce energy consumption and carbon emissions include the installation of low-cost de-aeration equipment to improve the efficiency of existing heating systems in 20 buildings – targeting another 500,000 kWh of energy savings across the estate. 15 installations have been undertaken so far. Three more installations are in progress. The plan to extend this project to upgrade a further 20 buildings is currently on hold. The existing revenue funding allocation for small scale interventions has been withdrawn. There is a request for

The profile of Display Energy Certificate ratings indicates positive progress.

It is assessed that energy management and retrofitting projects have reduced energy consumption by 1 million kWh by April 2023. (195 tonnes CO2).

## **2.6 Installation of Photo-Voltaic Panels on buildings.**

Action to reduce energy consumption and carbon emissions for existing buildings by the installation of photo-voltaic panels is a priority measure. Micro-generation of renewable energy on site may reduce the demand on the grid, reduce energy bills and provide green energy at source. The payback calculated on the most recent schemes to be designed is within 7-10 years.

As a result of the funding situation, the planned programme to install photo-voltaic on council buildings could not be progressed as planned. Plans to install pv installations in five residential care homes were placed on hold. Design development work was progressed sufficiently to establish that the proposed installations would generate at least 350,000 kWh of renewable energy.

Two small p.v. installations were completed as variation to the refurbishment of two residential care homes. Automatic metering is provided as part of this installation. It is estimated that these p.v. installations will deliver 20,000 kWh of renewable energy: 10% of the current Climate Change Strategy Target.

Feasibility assessments for 20 further potential installations have been undertaken. This will inform a new business case to be submitted for approval requesting allocation of project funding for priority projects from capital receipts resulting from property rationalisation. It is hoped that by the quicker return on investment of p.v. will be more attractive financially than a mixed programme of projects.

The disposal of larger buildings - including seven residential care homes –means that there is now less scope to install p.v.than was envisaged last year. Achieving the 200,000kWh target is viable. Exceeding this target is possible. Achieving 500k kWh is possible. Achieving1 million kWh is unlikely. Proposed project programmes will feature more smaller p.v. projects.

The Council has maintained dialogue with private sector companies looking to install p.v. panels on council buildings at their own cost in exchange for a Power Purchase Agreement (PPA) for the direct supply of the generated energy. This option only applies to larger buildings which exceed a specified electricity demand with a commitment to retain the building for at least 15 years. Schools may offer the most potential for implementation of this measure. Discussions are on-going.

It is not yet possible to automatically meter the energy generated from existing p.v. installations at this time. A current proposal to install meters on all existing arrays is subject to a current request for allocation of funding from the Climate Change Earmarked Reserve.

## 2.7 2023 Targets for Carbon Reduction / Energy Saving

The plans for future savings by priority measures are as follows.

	millions kWh
Projected Baseline 2023-24	35.0
<b>Future Energy Savings Targets</b>	
Further Property Rationalisation by 2032	8.00
Microgeneration / p.v.	0.50
Energy management / Retrofit	4.00
<b>Target savings</b>	<b>12.5</b>
<b>Projected Residual Energy Use 2032</b>	<b>22.5</b>

An estimation of the potential energy savings associated with assets currently under review informs a reasonable estimate of further potential savings from future rationalisation projects. It is reasonable to assume a further saving of 8 million kWh by 2032.

The future target for savings by microgeneration / p.v. is 500,000kWh. The future target for savings by energy management / retrofit is 4 million kWh. The projected future residual energy use for the corporate estate is 22.5 million kWh.

## **2.8 Proposed Measures to Offset Residual Energy Use.**

The UK is committed to reducing greenhouse gas emissions in accordance with COP26 commitment and the Climate Change Act 2008.

The Council is committed to achieving Net Zero for the corporate estate by 2032 or sooner. To achieve Net Zero for carbon emissions associated with property it will be necessary to match the residual energy use and carbon emissions with equivalent offsetting measures.

The current target for residual energy use by 2032 is 22.5 million kWh with a shift towards more renewable and sustainable technologies for heating buildings. It is anticipated that by 2032 grid energy will carry much reduced carbon emissions due to further progress in switching from fossil fuels to renewables. Measures are required to offset the remaining carbon emissions.

It is planned that proposed offsetting measures will include the development of solar farms and wind power. The proposed offsetting value will be measured in kWh rather than tonnes CO<sub>2</sub>e. The target for renewable energy generation is 12 million kWh by 2032 in order to offset carbon emissions associated with property. These projects will also generate future income.

The Council will require additional offsetting capacity to offset other operational energy uses. The Council continues to review the potential for solar farm and wind power development. Funding has been secured for the first solar farm project – see below. Further capital allocation was declined for a second mini-solar farm due to the current financial position.

Preliminary feasibility studies have been progressed in 2023 to assess the potential of wind power developments. Two sites have been identified as being potentially suitable. 5 large wind turbines on two sites have the potential to generate 60 million kWh of renewable energy (subject to grid connectivity). A current proposal the next stage of feasibility assessment is subject to approval of allocation from the Climate Change Earmarked Reserve.

## **2.9 Proposed Solar Farm**

The Climate Change Strategy includes the requirement to identify council land for the potential development of renewable energy generation facilities.

The 2022 feasibility review of sites for potential development as solar farms reviewed identified four preferred sites. One site at Williamthorpe Country Park was given priority status for development.

Planning permission for a proposed solar farm development at Williamthorpe was previously obtained in 2015. This approval has now lapsed, and a new planning application is required if this project is to progress. This site has the benefit of a secured grid connection. The project was allocated capital funding in April 2023.

The availability of funding was subsequently reviewed due to the current financial pressures.

This development will generate income to payback the cost of development. The preliminary business case was approved by Finance in December 2022. It is currently proposed to export energy to the grid. There be a further option to supply adjacent factories via private wire.

Subject to planning consent, the viability will be reassessed prior to any significant expenditure. Future negotiations will confirm the income tariff for exported energy. Procurement action will confirm the cost of the development.

Subject to approval to proceed, the development will generate 3.2 million kWh of renewable energy per annum. This may provide 25% of the offsetting capacity required for carbon emissions associated with property.

Further progress is limited in the context of emergency cost control measures. There is a recommendation to submit for planning approval. Planning consultants have been appointed. The necessary planning reports have been commissioned. There is no additional external expenditure required at present to submit for planning approval.

The development proposal is fundamentally unchanged from that previously approved in 2015. The council has taken measures to respond to any potential concerns regarding visual impact, and biodiversity loss. The perimeter will benefit from additional planting. Ecology consultants have calculated a Biodiversity Net Gain of 27.42%. The current proposal will have less visual impact than the scheme previously approved in 2015.

The application will be subject to site notices and neighbour notifications as part of the normal process. There will be additional prior notification to immediate neighbours and other stakeholders.

The Climate Change and Environment Board have endorsed the recommendation to proceed. Consultations with members are now planned. Progress thereafter will be dependent upon approval to expend allocated funding to place additional orders with consultants to enable the appropriate procurement of a contractor.

## 2.10 **Achieving Net Zero by 2032**

Achieving Net Zero for the Corporate Estate requires allocation of capital funding to enable the necessary projects to progress. If existing financial pressures are likely to endure then the Council may need to consider options to defer the 2032 target to achieve Net Zero. The current scientific advice is that action to reduce the impact of carbon emissions needs to happen in the next eight years.

## 3. **Consultation**

This report is informed by consultations with:

- the Climate Change group



- the Climate Change and Environment Board
- The Planning department
- Legal Services
- Finance comments received.
- HR

#### **4. Alternative Options Considered**

4.1 as described in the report.

#### **5. Implications**

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

#### **6. Background Papers**

6.1 none

#### **7. Appendices**

7.1 Appendix 1 – Implications

#### **8. Recommendation(s)**

That the Improvement and Scrutiny Committee:

- 1) Notes progress on the plans to decarbonise the council's estate and achieve Net Zero by 2032 or sooner.
- 2) Endorse the updated targets as noted in the proposed Carbon Reduction Strategy
- 3) Note the impact of the exceptional budget / cost control measures which will defer the delivery of carbon reduction and energy efficiency projects.
- 4) Endorse the proposal to progress the proposed solar farm at Williamthorpe.

#### **9. Reasons for Recommendation(s)**

9.1 To support the strategy and action to achieve Net Zero for the Corporate Estate

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**Implications**

**Financial**

- 1.1 The current expenditure freeze places will restrict the ability to progress proposed carbon reduction projects.
- 1.2 The Director of Finance has confirmed the existing allocation of capital funding for the proposed solar farm.

**Legal**

- 2.1 The Director of Legal and Democratic Services will provide advice as necessary on a project specific basis.

**Human Resources**

- 3.1 HR provide input regarding any proposed building closures and any impact on human resources.

**Information Technology**

- 4.1 no issues

**Equalities Impact**

- 5.1 no issues

**Corporate objectives and priorities for change**

- 6.1 The corporate policy is to achieve Net Zero for the corporate buildings by 2032 or sooner.

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

- 7.1 n/a

## Appendix 2: Update on Corporate Targets within the Climate Change Strategy.

	Target	Note
	To achieve a 47% reduction in carbon emissions from 2005 to 2025 for <u>county wide emissions</u> .	Property contribution:  Carbon emissions 2010 for property = 15,666 tonnes CO <sub>2</sub> e  Carbon emissions 2023 for property = 7475 tonnes CO <sub>2</sub> e  <b>The 47% reduction target for Property is achieved.</b>
T2	The Council will switch its existing electricity tariff to a 100% renewable electricity tariff by 2023 with an optional buy-in for schools.	Subject to annual assessment.
T3	Reduce emissions from heating buildings to less than 700tCO <sub>2</sub> e by 2032	A residual energy use for heating equivalent to 700 tCO <sub>2</sub> or 3.5 million kWh is not possible.
		The residual energy use for heating buildings is estimated to be @12million kWh in 2032  The carbon emission to be offset by renewable energy generation.
T4	Quadruple existing microgeneration of renewable energy on Derbyshire County Council's estate to 200 MWh by 2032. (Equivalent to 200,000 kWh of renewable energy)	Target may be achieved subject to allocation of funding.  Funding withdrawn for projects to deliver 460,000 kWh of microgeneration by p.v.  Propose Business Case to fund projects by capital receipts.

### Appendix 3: Update on Property Targets from 2022

	Target	Note
CP01	2022: To deliver 1 million kWh of renewable energy by local microgeneration on site.  2023: Reduce target to 500,000 kWh	The target is reduced.  There is potential to install 450,000 kWh of pv on buildings currently under review. Estimated cost £1m.  The is potential to install 350,000 kWh of pv capacity on 16 other buildings. Estimated cost £800k.
CP02	2022: To reduce use of fossil fuel for heating by 5 million kWh	Carbon Reduction Projects on hold. No capital funding currently allocated.
CP03	2022: To achieve a minimum energy efficiency rating for each asset of 85 D A 15% improvement over CIBSE benchmark	As above.

#### Project funding

Allocation of approved funding for projects was placed on hold in 2023 pending a review of the funding mechanism. The 'Invest to Save' model for the approved £6m project programme requires future energy budgets to be maintained at levels which will permit a saving / surplus to be generated. Due to financial pressures this cannot be achieved. The £6m 2022 -23 project programme approved in Feb 2023 therefore cannot progress. Additional challenges pertain to the shift from cheaper fossil fuels to cleaner higher tariff fuels, and the rising cost of energy. The benefit of the energy efficiency measures may be lower, higher future costs.

A capital bid submitted in July 2023 for a proposed £2m carbon reduction project programme based on borrowing was unsuccessful due to the existing financial pressures.

There is currently no allocated or approved funding for capital projects for carbon reduction associated with property.