

Manchester City Council Report for Information

Report to: Resources and Governance Scrutiny Committee – 10 January 2023

Subject: Decarbonisation of the Operational Estate

Report of: Head of Estates and Facilities

Summary

This report describes the activities and progress to date on the decarbonisation of Manchester City Council's operational estate. It describes the Zero Carbon Estate Programme, including MCC and grant funded retrofit projects delivered under the Public Sector Decarbonisation Scheme, as well as major capital schemes that are delivering energy efficiency and carbon reduction measures. The report also describes projects that are in development. Emissions from the operational estate have reduced by 7,161 Tonnes CO₂ (29.7%) compared to the baseline set by the Council's Climate Change Action Plan 2020-25.

Recommendations

The Committee are recommended to

1. note the activities and progress to date on the decarbonisation of Manchester City Council's operational estate and
 2. note the pipeline of future projects that are in development.
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Wards Affected: All

Environmental Impact Assessment - the impact of the issues addressed in this report on achieving the zero-carbon target for the city

The Council's property assets are a significant area of focus in efforts to achieve the zero-carbon target for the city. In terms of the Council's direct carbon emissions, the operational estate accounts for around three quarters of the Council's total emissions. Emissions from energy use in Council buildings have reduced year on year since 2014/15, and reduced again in 21/22 compared to the previous year. Emissions from the operational estate have reduced by 7,161 Tonnes CO₂ (29.7%) compared to the baseline set by the Council's Climate Change Action Plan 2020-25. This has been driven by the installation of energy efficiency measures and renewable energy generation capacity, and further affected by the decarbonisation of the national grid and the changes to building use caused by new ways of working. This report includes an update on projects underway to deliver carbon reduction activity on the estate.

Equality, Diversity and Inclusion - the impact of the issues addressed in this report in meeting our Public Sector Equality Duty and broader equality commitments

Actions set out in the Climate Change Action Plan 2020-25 recognise the need for just and equal delivery of the climate action plan across the city, focusing on areas such as community engagement, accessible transport, access to green spaces and tackling fuel poverty. The specific actions outlined in this report, detailing the delivery of energy conservation measures across the operational estate, are less directly linked to equality, diversity and inclusion, although all works are carried out with a view to maintaining the accessibility of our operational buildings.

Manchester Strategy outcomes	Summary of how this report aligns to the OMS
A thriving and sustainable city: supporting a diverse and distinctive economy that creates jobs and opportunities	The delivery of carbon reduction activity to the Council's estate in Manchester will support the local construction supply chain and in particular the low carbon sector.
A highly skilled city: world class and home grown talent sustaining the city's economic success	The delivery of carbon reduction activity to the Council's estate in Manchester will support the development of new skills within the Council and supply chain, specifically around heat pump technology.
A progressive and equitable city: making a positive contribution by unlocking the potential of our communities	Everyone has a role to play in tackling climate change, and learning from the Council's carbon reduction activities can be shared to support and inspire other schemes across Manchester's communities.
A liveable and low carbon city: a destination of choice to live, visit, work	The delivery of carbon reduction activity to the Council's estate will directly contribute to reducing carbon emissions in the city.
A connected city: world class infrastructure and connectivity to drive growth	The Civic Quarter Heat Network provides infrastructure to drive green growth in the city centre, and the delivery of the Public Sector Decarbonisation Scheme in Manchester includes delivering battery technology that can support the cities electricity infrastructure to become more sustainable.

Contact Officers:

Name: Richard Munns
 Position: Head of Estates and Facilities
 Telephone: 0161 234 7226
 E-mail: Richard.munns@manchester.gov.uk

Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

Resources and Governance Scrutiny Committee – 20 July 2021: Delivery of the Public Sector Decarbonisation Scheme

Environment and Climate Change Scrutiny Committee - 9 September, CCAP Annual Report 2020-21 and Work Programme 2021-22

Environment and Climate Change Scrutiny Committee – 11 November 2021: Decarbonising the Council Estate

1.0 Introduction

- 1.1 The Council declared a Climate Emergency in July 2019 which recognised the need for the Council, and the city as a whole, to do more to reduce CO₂ emissions and mitigate the negative impacts of climate change. It also demonstrated the Council's commitment to be at the forefront of the global response to climate change and to lead by example. The Council had already adopted a science-based carbon budget for Manchester of 15 million tonnes of CO₂ between 2018 and 2100 following analysis by the Tyndall Centre for Climate Change Research. This also committed the city to become zero carbon by 2038 at the latest.
- 1.2 The Council's Climate Change Action Plan 2020-25 (CCAP 2020-25) was developed to ensure that all aspects of the Climate Emergency Declaration were converted into clear actions with tonnes of CO₂ savings included where applicable. The plan builds on over a decade of previous activity which has seen the Council's direct CO₂ emissions reduce by 54.7% between 2009/10 and 2019/20.
- 1.3 This report describes the activities and progress to date on the decarbonisation of Manchester City Council's operational estate. It briefly describes the nature of the operational estate and sets out the emissions for 2021/22. It describes the work that is being delivered to reduce carbon emissions across the operational estate, both as part of the Zero Carbon Estate Programme, as well as other projects and areas of work that are underway. The report also describes some future projects that are in development.

2.0 Background

- 2.1 The emissions associated with the Council's operational buildings are reported against in the Buildings & Energy section of the CCAP 2020-25. 316 buildings of varying age, condition and function are currently reported against, although this number does vary to account for acquisitions and disposals. These buildings include offices, including the Town Hall Complex, as well as depots, leisure centres, libraries, markets, properties that provide social care services to adults and children, and buildings in parks, including a number of heritage properties such as Heaton Hall and Wythenshawe Hall. It also includes a number of high profile buildings owned by the council but operated by third parties, for example the Bridgewater Hall, the National Cycling Centre, and the National Football Museum. Schools and social housing are not included in the operational estate.
- 2.2 The CCAP 2020-25 requires carbon emissions from the Council's buildings to reduce by a minimum of 4,800 tCO₂ per annum by April 2025. For context, this target is approximately equivalent to the combined total annual emissions of the Town Hall Extension, Manchester Aquatic Centre and Manchester Art Gallery combined.

- 2.3 The Zero Carbon Estate Programme has been established to oversee the delivery of a wide range of energy efficiency and low carbon energy generation measures throughout the estate.

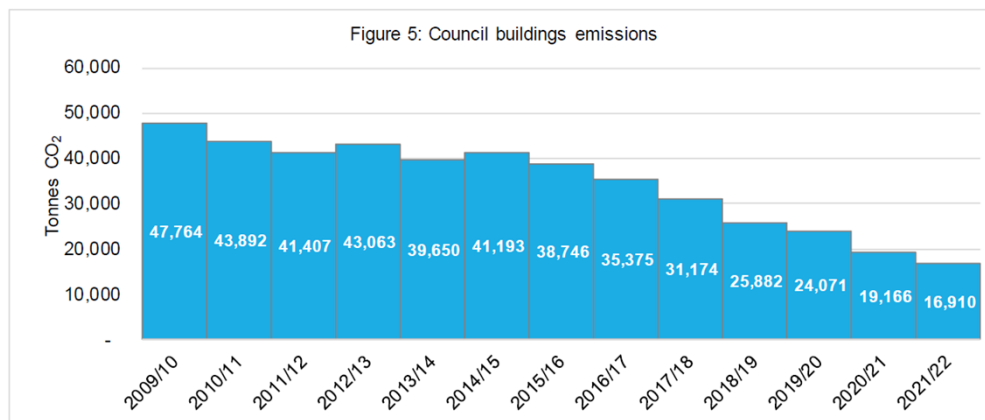


Figure 1: Council Building Emissions from 2009/10 to 2021/22 (source: CCAP Annual Report 21/22, Environment and Climate Change Scrutiny Committee, 8 September 2022)

- 2.4 Figure 1 shows annual building emissions from 2009/10 to 2021/22. The total emissions associated with the operational estate in 2020/21 were 16,910 tCO₂, approximately three quarters of the total emissions from Manchester City Council as a whole. This shows that emissions from energy use in Council buildings in 2021/22 are 11.8% lower than in 2020/21.
- 2.5 The baseline year for the CCAP 2020-25 was 2019/20, when building emissions were 24,071 Tonnes CO₂. Emissions from the operational estate have reduced by 7,161 Tonnes CO₂ (29.7%) to the end of last financial year. This has been driven by the installation of energy efficiency measures and renewable energy generation capacity, and further affected by the decarbonisation of the national grid and the changes to building use caused by new ways of working. This will also be impacted by changes in the operational estate – for example, the closure of the Town Hall for refurbishment, and the recent move of the Northwards area offices into the Operational Estate.

3.0 Carbon Reduction Activity - Completed Projects

- 3.1 The first phase of the Zero Carbon Estate Programme was developed in 2019/20 on a spend to save basis. In total £6.6m of carbon reduction works were identified, with associated carbon saving of circa 1,400 tCO₂ per annum and a payback period in the region of 10 years. Delivery of this initial phase of works was delayed slightly by the first COVID-19 lockdown but works are now complete with the exception of one LED lighting project that was delayed due to the building being designated a vaccination centre.
- 3.2 The programme was delivered in 2020/21 and focused on Leisure Centres, as they are some of our most energy intensive buildings, and eight were upgraded with energy conservation measures: Wythenshawe Forum; East Manchester Leisure Centre; Hough End Leisure Centre; Arcadia Sports Centre; Moss Side Leisure Centre; North City Family and Fitness Centre; Belle Vue Sports Centre; and Manchester Tennis and Football Centre. The

improvements covered a range of measures such as upgrading to LED lighting, improving lighting controls, upgrading Building Management Systems, and installing variable speed drives, as well as solar panel installations at seven of the sites, and an energy efficient combined heat and power plant at the Wythenshawe Forum. In addition to the leisure estate, the lighting in the Town Hall Extension, our largest building, was upgraded to LED, and new controls installed. The large buildings at the Space Project and Sharp Project were also improved, the former with a large solar panel installation, the latter with solar panels, LED lighting and a new building management system. Throughout this phase of work, 2.5MW of renewable energy generation capacity was installed, and 9,000 LED light fittings were installed.

- 3.3 The second phase of the Zero Carbon Estate Programme involved a bid to the national Public Sector Decarbonisation Scheme (PSDS). This scheme is run by the Department for Business, Energy and Industrial Strategy (BEIS) and administered by Salix. The PSDS provides capital grant funding for energy efficiency and heat decarbonisation projects in non-domestic public sector buildings.
- 3.4 Working with partners in the Greater Manchester Combined Authority (GMCA), MCC successfully secured £18.2m of funding from the PSDS to invest in a range of heat decarbonisation, energy efficiency and generation projects with associated savings of 1,700 tCO₂ per annum. Complex projects across 11 buildings were completed in 2021/22, within an extremely tight deadline. Again, Leisure Centres were a key part of the bid as they are some of the council's most energy intensive buildings. The technologies included in this phase of work include air source or ground source heat pumps, solar panels, and battery storage systems. The projects covered Wythenshawe Forum; East Manchester Leisure Centre; Hough End Leisure Centre; Arcadia Sports Centre; Moss Side Leisure Centre; North City Family and Fitness Centre; Manchester Aquatic Centre; The National Cycling Centre; Space Studios; The Sharp Project; and Zion Arts Centre.

4.0 In-Flight Zero Carbon Estate Projects

- 4.1 There are a range of projects from the Zero Carbon Estate Programme that are currently being delivered. MCC are a partner in the Unlocking Clean Energy in Greater Manchester (UCEGM) Project. Through its participation in this project, the Council successfully attracted European Regional Development Funding to deliver a solar car port project on one of the car parks at the National Cycling Centre. The project has been designed and procured and works to install the solar car ports start in late December 22 and are due to complete within the funding deadline (June 23). The total cost of this project is £2.15m, of which £850k is grant funded and £1.3m is MCC funded.
- 4.2 In October 2021, working with GMCA, the Council submitted a bid to PSDS for Round 3a funding. The bid was for £4.47m of grant funding and included heat decarbonisation, energy efficiency and low carbon energy generation for eight buildings, including: Arbeta (Manchester Creative Digital Assets), the National

Football Museum, Harpurhey District Office, Denmark Road Active Lifestyle Centre, Claremont Resource Centre, Didsbury Library, Hall Lane Resource Centre, and The Place at Platt Lane. The total carbon saving associated with the bid was 680 tCO₂ a year. In April 2022 we received confirmation the bid had been successful.

- 4.3 Once the funding was confirmed the programme appointed a contractor to design and deliver the works. During design development it became clear that the practical challenges associated with decarbonising heat at the National Football Museum were too significant to overcome within the short deadline imposed by the funder, as a result this project was removed from scope. As a result the total grant allocation reduced to just under £3.1m and the carbon saving that can be achieved reduced to 512 tCO₂ per annum. All other projects have progressed beyond detailed design and are currently out to tender with sub-contractors. The deadline for funding to be claimed is March 2023. This is a challenging deadline but current spend forecasts show that this can be achieved.

5.0 Future Pipeline Zero Carbon Estate Projects

- 5.1 The Zero Carbon Estate Programme is a long-term investment and commitment to improve the performance of our buildings. The programme is looking to develop a pipeline of projects that will run beyond the 2025 life of the current Climate Change Action Plan. The programme has commissioned 80 Energy Audits to be completed by our partner, Equans. This data is expected to inform the long-term strategy for investment, the total scale of opportunity and key challenges. This will enable us to take a strategic approach to the development of project opportunities and ensure the Authority is well placed to take advantage of suitable external funding opportunities that are expected to continue to become available. This programme of energy audits is underway already and will continue into May 23.
- 5.2 The programme has submitted a third bid for PSDS funding (for Round 3b) and is awaiting a decision currently. This bid was more limited in scope than previous bids in recognition of the challenges associated with delivering PSDS funded projects and the fact this phase would need to be delivered in parallel with the existing PSDS funded programme of works described in Section 4 above. The bid was for a total of £1.2m grant funding (with £1m MCC funding) to support energy efficiency projects at the Town Hall Extension and Woodhouse Park Active Lifestyle Centre. The total carbon saving associated with these works is forecast to be around 650 tCO₂ p.a.
- 5.3 The programme is developing a rolling programme of LED lighting replacements throughout the Corporate Estate. Opportunities to deliver this 'no regrets' energy conservation measure are being explored in all buildings with work being supported by our Public Buildings maintenance provider, Equans. There are circa £200k worth of projects in development currently, with an estimated 36 tCO₂ per annum of savings associated. More projects

will continually be brought forward for consideration on a rolling basis over the coming years,

- 5.4 A programme of work is being developed to expand and improve the use of Building Management Systems across the estate. A building management system (BMS) is a computer-based control system that controls and monitors a building's mechanical and electrical equipment such as ventilation, lighting and power systems. Systems linked to a BMS typically represent 40% of a building's energy usage; if lighting is included, this number approaches to 70%. Therefore, BMS systems are a critical component to managing energy demand.
- 5.5 In addition to these specific projects under the Zero Carbon Estate Programme, other Estates projects provide opportunities to reduce carbon emissions. Some of the larger 'major' projects are described in the following section, but in addition to these, work delivered through the Councils annual capital maintenance programme (AMP) can support carbon reduction activity. Examples of areas where this is applicable include the work across Early Years settings, and some work programmed for next financial year to survey community assets.

6.0 Wider Decarbonisation Works

- 6.1 In addition to the Zero Carbon Estate Programme, there are a number of other projects that are being delivered which are supporting the decarbonisation of the estate.
- 6.2 As part of the overall Estate Strategy, a number of major construction projects are underway. These projects are not part of the Zero Carbon Estate Programme, as they are being delivered to achieve a range of benefits, such as improving customer access to services, rationalising the estate, improving the condition, quality and lifespan of our buildings or meeting new service needs. However, all of the projects include significant opportunities to reduce carbon emissions, over and above the retrofit work carried out by the Zero Carbon Estate Programme, by installing energy efficient systems and energy generation infrastructure. Some of the most energy intensive buildings in the estate have recently been refurbished or are under refurbishment or construction, including the Town Hall, the Hammerstone Road Depot in Gorton, the Abraham Moss Leisure Centre in Crumpsall, the Gorton Hub, the National Cycling Centre and the Manchester Aquatics Centre. Carbon savings achieved by these projects are not specifically included in the targets set out in the in the CCAP 2020/25, so the benefits delivered by these projects will be over and above these targets.
- 6.3 The Town Hall is currently under refurbishment, and is due to reopen in 2025. The refurbishment of the Grade 1 listed building includes a number of measures to reduce carbon emissions, including insulating the roof and all heating pipework; removing and repairing windows to reduce air leakage, and to make best use of natural ventilation to reduce cooling requirements;

connecting to the Civic Quarter Heat Network, and replacing the heating system; fitting LEDs throughout, including heritage luminaires and external lighting; installing a new building management system with zone controls.

- 6.4 Hammerstone Road Depot is currently undergoing a major refurbishment project. The project includes a rationalisation of accommodation across the site, consolidating several inefficient remote buildings into one energy efficient hub. The project includes a range of energy efficiency measures including a new insulated roof, window replacement, wall and cladding insulation, new mechanical and electrical installations including LED lighting, building controls, energy monitoring and expanded electrical vehicle charging infrastructure.
- 6.5 The project to replace Abraham Moss Leisure Centre and Library commenced in early 2021 and is a full demolition and rebuild of a large mixed use leisure centre. The old leisure centre was some 50 years old and whilst it had been refurbished and improved in phases over a number of years many parts of the building fabric and services installation had come to the end of their economically viable life. The new building is designed to meet high levels of energy efficiency and low carbon in use, including efficient building services, high levels of insulation and rooftop solar electrical generation. The demolition aspect of the project includes wherever possible the recycling of metal, timber and plastic elements and in the case of the concrete elements they are being crushed and recycled on site for use as aggregate below the new building and hardstanding areas minimising waste, reducing site traffic and reducing the need for new quarried materials.
- 6.6 The Gorton Hub is a new multi-agency public sector hub which opened in November 2022. The new building is an efficient modern environment designed to consolidate a number of users from older, energy inefficient properties. Whilst the primary aim of the project is to deliver high quality public services, the new purpose built building provides a low carbon operating environment including a well insulated building, modern high efficiency heating systems, LED lighting, high levels of daylighting with associated automation of the artificial lighting installation, rooftop solar electricity generation and a fully zoned and controlled building.
- 6.7 The in-flight refurbishment of the National Cycling Centre seeks to address the mechanical and electrical installations of the velodrome and associated areas along with elements of the building fabric which are now at the end of life. The replacement and updating of heating, lighting and power installation along with improvements to the building fabric will significantly reduce the power use and carbon impacts of this immensely successful venue. As already noted above, the full refurbishment is being carried out in parallel with energy efficiency works carried out as part of the Public Sector Decarbonisation Scheme, and the ERDF funded project to install car ports with solar panels in the car parks. It should be noted that gas has been completely removed from the velodrome part of the cycling centre, a major achievement which sets the building on a clear pathway to becoming Zero Carbon.

6.8 The refurbishment of the Manchester Aquatics Centre is ongoing. The refurbishment includes not only an update of the pool operating features to keep in line with latest competition standards but also measures that will reduce cost in use and the carbon footprint of the building. Using a mixture of MCC and Central Government grant funding the boilers and heating plant and lighting installations will be replaced to meet modern standards and also significantly reduce energy use and carbon emissions. Alongside the updating of existing installations there will be new initiatives including electrically powered air source heat pumps to generate heat without using gas, solar photo voltaic cells to generate renewable electricity from the roof top arrays and battery storage to maximise the use of power on site.

7.0 Forecast Challenges

7.1 The decarbonisation of heat - removing our dependency on carbon intensive gas by installing electrically powered heating solutions - is one of the biggest challenges to overcome on our journey to reduce carbon emissions from the estate. Typical alternatives to gas boilers, for example heat pumps, come with practical restrictions that need to be overcome before mass adoption of low carbon heat can be achieved. These include the need for larger radiators or underfloor heating; building fabric improvements for better thermal performance and air tightness; and external space for bulky equipment. There are also financial issues to overcome, including higher capital costs, and higher revenue costs.

7.2 The programme will continue to work with colleagues and partners to identify and take advantage of any external funding opportunities that may emerge. PSDS funding in particular has been key to bringing forward projects that decarbonise heating in buildings. While this source of government funding is highly valued, PSDS funding also comes with a number of restrictions and challenges. The most significant challenge is the short deadlines imposed for funding to be claimed. This places significant pressure on MCC teams and supply chain to carry out feasibility, design, procurement and delivery activity at pace. As a result of short timescales, the Authority carries a significant amount of financial risk to keep the projects progressing.

7.3 The next phases of activity will be increasingly challenging, as they will increasingly involve a larger set of smaller projects across smaller buildings with varying overall physical conditions. However, building on lessons from the first phases of delivery, and equipped with condition and energy audit data, officers will continue to develop proposals to drive down carbon emissions from the estate.

8.0 Conclusions and Recommendations

8.1 This report sets out the activities and progress to date on the decarbonisation of Manchester City Council's operational estate. Emissions from the operational estate have reduced by 7,161 Tonnes CO₂ (29.7%) compared to the baseline set by the Council's Climate Change Action Plan 2020-25. Officers are in the process of collating data to inform a pipeline of projects that

should run beyond 2025 into the next phase of the Climate Change Action Plan.

- 8.2 The Committee are recommended to note the activities and progress to date on the decarbonisation of Manchester City Council's operational estate; and note the pipeline of future projects that are in development.