

# Appendix B

## **CARBON MANAGEMENT PLAN**

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# **North & East Melton Mowbray Distributor Road**

Full Business Case

Carbon Management Plan

Leicestershire County Council

November 2022

## Quality information

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# 1. Introduction

## 1.1 Context

- 1.2.1 With the national commitment to net zero greenhouse gas (GHG) emissions by 2050; it is recognised that the consideration of GHG emissions associated with major infrastructure projects is an important part of project planning. As part of the refreshed FBC submissions to the DfT for the development of a road scheme “North and East Melton Mowbray Distributor Road” a Carbon Management Plan (CMP) is required to describe how greenhouse gas emissions (GHGs or ‘carbon’) will be managed and reduced at each stage of the project lifecycle. This CMP has been prepared for Leicestershire County Council to meet this requirement for the proposed scheme.
- 1.2.2 The North and East Melton Mowbray Distributor Road scheme includes a 7.1 km standard 7.3 m width single carriageway road, north and east of Melton Mowbray. The proposed scheme would be sited outside the town’s urban realm and surrounding towns/villages and will create new junctions with the radials along its route. A more detailed description of the scheme is provided in section 1.4 - Project Description.
- 1.2.3 DfT requirements have guided the development of this CMP, the principles of which are set out in the UK Government’s Infrastructure Carbon Review and the publicly available specification, PAS 2080:2016 on Carbon Management in Infrastructure<sup>1</sup>. PAS 2080:2016 provides a framework that allows all parties involved in the development of an infrastructure project to work together to optimise the project’s overall carbon impact. The PAS 2080 lifecycle stages are outlined in Annex A.
- 1.2.4 Throughout this document, the term ‘carbon’ is used as a shorthand to describe the seven Kyoto greenhouse gases<sup>2</sup>, in line with common terminology and best practice. Emissions of greenhouse gases are expressed in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), or the mass of CO<sub>2</sub> that would result in equivalent levels of global warming.

The CMP is a ‘live’ document that will evolve as the project progresses throughout its lifecycle.

## 1.3

- 1.3.1 The purpose of this CMP is to detail the updated GHG baseline and provide the carbon management commitments that have been made for the project. It also presents the processes that will be put in place to reduce and manage carbon emissions associated with the North and East Melton Mowbray Distributor Road development.
- 1.3.2 The CMP is guided by PAS 2080, as defined in the DfT’s “Carbon Management Guidance” and as presented below in Table 1. As a CMP was not included at Strategic Outline Business Case (SOBC), the approach for developing the CMP for the North and East Melton Mowbray Distributor Road has included all the cumulative requirements up to and including FBC (i.e., including those for the SOBC).

<sup>1</sup> BSI (2016) PAS 2080 *Carbon Management in Infrastructure Verification*. <https://www.bsigroup.com/en-GB/our-services/product-certification/product-certification-schemes/pas-2080-carbon-management-in-infrastructure-verification/>

<sup>2</sup> There are seven main GHGs that contribute to climate change, as covered by the Kyoto Protocol: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>).

**Table 1: Suggested CMP content per business case stage (extracted from DfT Guidance<sup>3</sup>)**

BC Stage	Carbon Management Activities
SOBC	<p>Set carbon reductions targets against baselines:</p> <ol style="list-style-type: none"> <li>I. Establish the frequency of carbon emissions quantification during delivery so that quantification sufficiently informs decision-making in reducing whole life carbon impacts.</li> <li>II. Set targets relative to a baseline value, e.g., a proportion of the baseline set, which will need to be quantified. Targets can reflect individual assets/programmes and then aggregated to provide an overall reduction target for DfT/ALBs as a whole.</li> <li>III. Set carbon reduction targets that promote carbon and cost reduction in infrastructure delivery on a whole life basis. The project/programme can choose to set separate targets for Capital, Operational or User Carbon, or a single Whole Life Carbon target.</li> <li>IV. Carbon reduction targets can reflect the total emissions of an asset/programme of work, i.e., 50% reduction in total whole life carbon or construction emissions from a baseline, or a carbon intensity figure, e.g., tCO<sub>2</sub>e Capital carbon/ £'000.</li> </ol>
OBC, FBC, in construction, and project closure	Assess and report emissions against baseline to track progress against the reduction target. If the project is not on course to meet this target, review and expand strategies to address this. Review the project's general carbon management policy and strategy and amend if this is not providing the necessary accountabilities, controls, reporting functions, communication, and skills to meet targets.

## 1.4 Project Description

- 1.4.1 The scheme comprises of a new single carriageway road to the east and north of Melton Mowbray, extending from the A606 Nottingham Road to the A606 Burton Road, crossing Scalford Road, Melton Spinney Road, A607 Thorpe Road and B676 Saxby Road. It crosses six watercourses, the flood plain of the River Eye and the Leicester to Peterborough railway line.
- 1.4.2 Open span structures will be required at Scalford Brook crossing, Thorpe Brook crossing, the River Eye crossing (including the river's floodplain) and the railway line crossing. Culverts will be required for the crossings of the other three watercourses. Furthermore, six at-grade roundabouts will be required at the intersection with the following roads: A606 Nottingham Road, Scalford Road, Melton Spinney Road, A607 Melton Road, B676 Saxby Road and A606 Burton Road. There will be a proposed at grade priority junction with Lag Lane. Access to A606 Burton Road from the Sawgate Road will be terminated and the traffic will be diverted through Cross Lane.
- 1.4.3 The proposed layout of the scheme is presented in Figure 1.

<sup>3</sup> DfT - Carbon Management Guidance – Management Case.

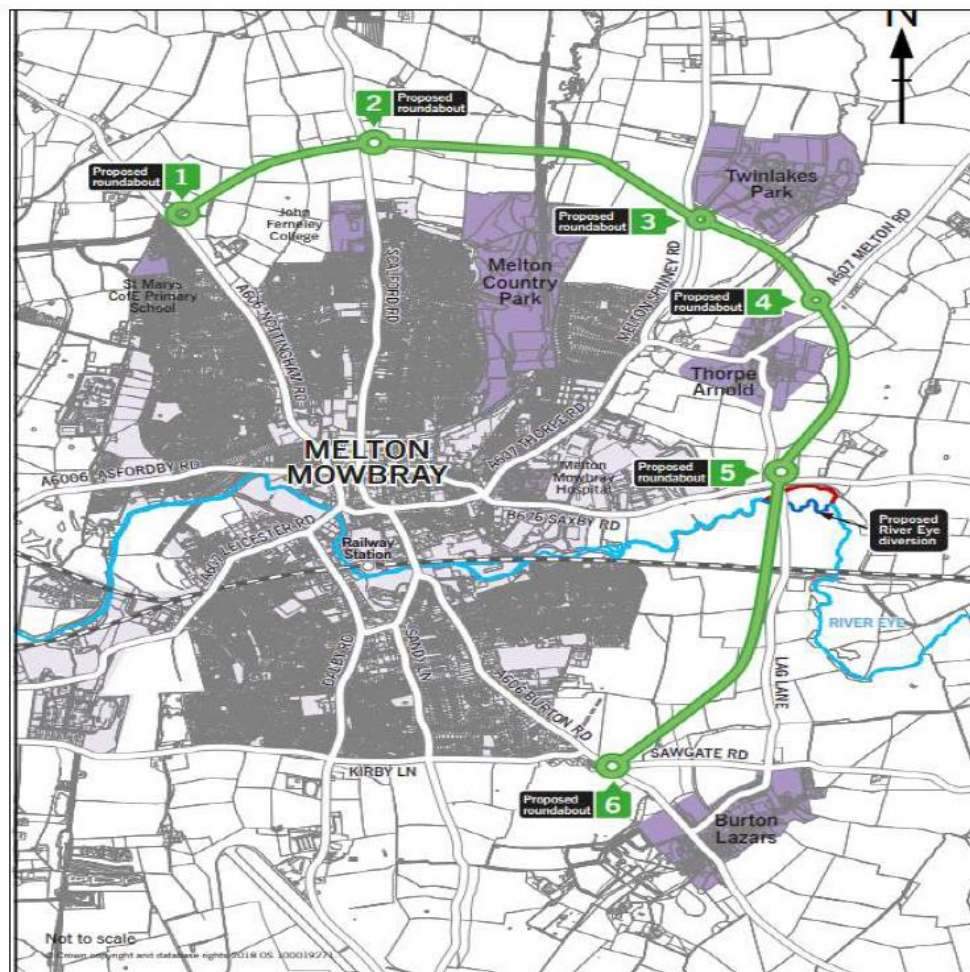


Figure 1: Proposed scheme layout

## 1.5 Project Need

1.5.1 Leicestershire County Council's Network Management Policy & Strategy recognises that a strategic distributor road across the county is required to ease congestion, improve journey times and facilitate the level of development planned by the county. The project need is described in Leicestershire's County Council's OBC<sup>4</sup> submission to the DfT (December 2017), which outlines how the proposed development aligns with the strategic objectives of Leicestershire County Council; DfT and the Melton Mowbray Transport Strategy. In summary, the OBC states that the scheme is required to:

- Relieve congestion on already at or over-capacity roads.
- Significantly reduce HGV movements through Melton Mowbray town centre.
- Open a series of core sites for housing and employment development, providing the necessary network capacity to support growth projections identified within the Melton Mowbray Local Plan. The scheme also supports the Leicester and Leicestershire Strategic Growth Plan to 2050.
- Deliver a range of additional benefits including capitalising on the economic benefits the additional network capacity the North and East Melton Mowbray Distributor Road will bring.

1.5.2 The OBC further states that the scheme includes infrastructure that separates pedestrians and cyclists from the carriage way, and will facilitate public transport improvements on

<sup>4</sup> Leicestershire County Council (2017). *Melton Mowbray Distributor Road Outline Business Case*. <https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2018/1/12/Melton-Mowbray-Distributor-Road-Outline-Business-Case.pdf>



existing corridors, encourage modal shift, and provide an alternative route for through-traffic and HGVs.

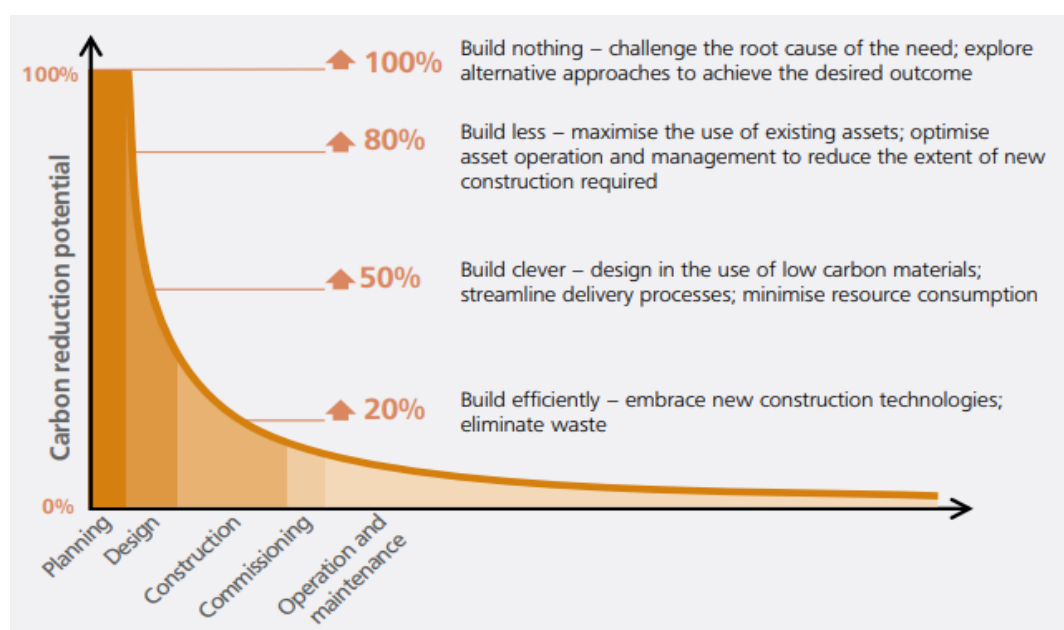
1.5.3 Following this introduction, the CMP is structured as follows:

- Chapter 2 sets out the benefits of having a CMP;
- Chapter 3 presents the key policies and commitments in relation to carbon management, including alignment with the DfT's strategic priorities;
- Chapter 4 documents the overarching carbon management approach for the scheme;
- Chapter 5 documents the governance, roles and responsibilities for carbon management;
- Chapter 6 sets out the carbon baseline;
- Chapter 7 sets out the process for the identification and prioritisation of carbon reduction opportunities throughout the investment lifecycle;
- Chapter 8 sets carbon reduction targets that promote carbon and cost reduction in infrastructure delivery on a whole life basis;
- Chapter 9 presents the steps to support implementation with respect to commercial arrangements with the preferred contractor(s);
- Chapter 10 summarises monitoring and reporting requirements with reference to carbon management; and
- Chapter 11 summarises next steps for communication, education and empowerment to support the CMP process for the North and East Melton Mowbray Distributor Road scheme.

## 2. Benefits of a CMP

- 2.1.1 Developing a CMP can help to effectively manage carbon throughout the project lifecycle by encouraging early consideration of associated carbon emissions and creating associated governance structures and processes.
- 2.1.2 The carbon impacts of the North and East Melton Mowbray Distributor Road development were measured and reported as part of the 2018 Environmental Statement for the Proposed Development. GHG emissions arising from workforce commuting and HGV movements have been reviewed by the construction contractor as part of the development of this CMP to incorporate actual locations and the volume of key materials.
- 2.1.3 Figure 2 from the Infrastructure Carbon Review<sup>5</sup> is a generic example of how carbon can be reduced on an infrastructure project over its lifetime. It is an industry accepted representation of the opportunities to reduce the carbon emissions associated with an infrastructure project.

**Figure 2: Infrastructure Carbon Review - Carbon reduction curve**



(HM Treasury, Infrastructure Carbon Review, 2013)

- 2.1.4 The greatest carbon emissions savings are achievable during the planning, design and construction phases. During the early stages of a project, it is possible to implement more fundamental and transformative measures such as building less or building nothing at all in some cases. As a project moves through to the construction and operation phases, it is generally possible to reduce carbon emissions by making processes more efficient. However, while there is less scope for high-impact reduction measures at the later stages, it is still important to consider reduction measures across all relevant lifecycle stages.
- 2.1.5 It is important to note that this CMP was developed when the Melton Mowbray Distributor Road is at the stage when 'build clever' and 'build efficiently' are the carbon reduction opportunities that should be considered.
- 2.1.6 In addition to mitigating climate change, effective carbon management also provides the following benefits:
- Increasing employee and contractor engagement;
  - Unlocking innovation and driving better solutions;
  - Assisting with commercial goals through cost savings through increased efficiency, design and procurement choices;

- Meeting stakeholder and consumer desires through more ambitious climate and sustainability action; and
- Supporting wider sustainability goals.

## 3. Policy and Commitments

- 3.1.1 This section outlines key policies and commitments in relation to achieving carbon emission reductions over the lifetime of the North and East Melton Mowbray Distributor Road development, summarised in Table 2.

**Table 2: Policy review**

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### International

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#### The Paris Agreement<sup>6</sup>

Published by the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement is a framework for facilitating a global response to the threat of climate change and keeping global temperature rise this century well below 2°C above pre-industrial levels. A more ambitious aim within the Paris Agreement includes limiting the temperature increase even further to 1.5°C.

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### National

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#### The Climate Change Act 2008 (2050 Target Amendment) Order 2019

In June 2019, the UK Government adopted the Climate Change Act 2008 (2050 Target Amendment) Order 2019<sup>7</sup>. This amended the Climate Change Act 2008<sup>8</sup> that set the target for the UK to achieve an 80% reduction of greenhouse gas (GHG) emissions by 2050 (compared to 1990 levels). It also, more ambitiously, revised the target with a goal of achieving a reduction of 100% (net zero carbon) target by 2050.

Achieving the revised net zero carbon target, will require future GHG emissions to fall within the sixth carbon budget ceiling established by Government (i.e., either avoided or offset). The Sixth Carbon Budget, required under the Climate Change Act, will provide Ministers with advice on the volume of GHGs the UK can emit during the period 2033-2037. The sixth budget is imposed by The Carbon Budget Order 2021<sup>9</sup> setting the budget for the same budgetary period at 965 million tonnes of carbon dioxide equivalent (MtCO<sub>2e</sub>).

These carbon budgets set a cap on the maximum level of net carbon produced by the UK for a five-year budgetary period. This will set the path to the UK's net zero emissions target in 2050, as the first carbon budget to be set into law following that commitment.

The Committee on Climate Change (CCC) recently stated that<sup>10</sup>, "[It]... will revise its assessment of the appropriate path for emissions over the period to 2050 as part of its advice next year on the sixth carbon budget." Whilst some tightening of the current carbon budgets is likely to occur when they are reviewed and revised later this year, to reflect the recent commitment to a net zero carbon economy by 2050, the CCC has indicated that the trajectory will be steeper over time; therefore, it is the later carbon budgets rather than near term ones which will see more stringent reductions.

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#### Decarbonising Transport: A Better, Greener Britain<sup>11</sup>

This plan sets out the Department for Transport's commitments and the actions needed to decarbonise UK transport to net zero by 2050. Key road-network elements of the department's decarbonisation plan related to the scheme include:

- Increasing cycling and walking.
- Phased removal of all emissions from road transport (cars, vans, motorcycles and scooters). This includes All new cars and vans being zero emission at tailpipe by 2035 and ending the sale of non-zero emission HGVs by 2040.
- Investing in local transport systems to allow local authorities to invest in local road priorities including those relating to reducing congestion and improving air quality.
- Driving local level transport decarbonisation by making carbon reductions a fundamental part of local transport planning and funding.

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<sup>6</sup> United Nations Framework Convention on Climate Change (UNFCCC; 2015). *The Paris Agreement*: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>7</sup> HMSO (2019) *The Climate Change Act 2008 (2050 Target Amendment) Order 2019*: [The Climate Change Act 2008 \(2050 Target Amendment\) Order 2019 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2008/27/contents)

<sup>8</sup> HMSO (2008) *Climate Change Act 2008*. <https://www.legislation.gov.uk/ukpga/2008/27/contents>

<sup>9</sup> The Carbon Budget Order 2021. S2021/750. [The Carbon Budget Order 2021 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2021/750/contents)

<sup>10</sup> Committee on Climate Change (2020) *Sixth Carbon Budget*. <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

<sup>11</sup> HM Government (2021). *Decarbonising Transport: A Better, Greener Britain*.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf)

## DfT Operational Sustainability Strategy 2021 – 2025<sup>12</sup>

Sets out the internal actions the DfT will take to improve operational sustainability performance over the next four years. It states that 'For any major projects that require funding decisions, business cases will be produced to assess the cost benefit across all three pillars of sustainability (economic, social, and environmental). All business cases will follow HMT's Green Book guidance and will use the methodology outlined for valuing the financial cost of carbon emissions to help present the environmental benefit in an easily comparable format. Business cases will be presented to senior management for approval before project implementation'.

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## Regional

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### Leicestershire County Council Environment Strategy 2018-2030: delivering a better future<sup>13</sup>

Leicestershire County Council has declared a climate emergency and made a commitment to achieve carbon neutrality by 2030 from our own operations and for Leicestershire by 2045 or before<sup>14</sup>.

One of the key objectives of the strategy is to reduce the impact of the Council's environmental and climate impact of its own operations, including a reduction in the GHG emissions from transport. Priorities include:

- Reducing Leicestershire County Council's own greenhouse gas emissions and across the county where it has influence.
- Reducing the environmental impacts of travel and transport.
- Supporting actions for the development of a low carbon circular economy.

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### Leicestershire County Council Environment Strategy Action Plan 2020-24<sup>15</sup>

The Action Plan contains current and planned actions being carried out by LCC and its partners that contribute to the delivery of the aims and objectives of the Environment Strategy 2018-2030. Key actions of the Plan that will help reduce greenhouse gas emissions include:

- Promoting Electric Vehicles (EV) and public charging infrastructure.
- Identify opportunities to support a low carbon circular economy through the delivery and procurement of council goods and services.
- Developing and delivering programme of carbon and environmental awareness training.
- Trialling and reviewing different approaches to management of roadside verges.
- Publishing annual Environmental Performance and Greenhouse Gas Reports.

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### Leicestershire Net Zero Carbon Roadmap<sup>16</sup>

In November 2021 Leicestershire County Council released a study that explored emissions associated with activities across Leicestershire, and the possible impact of different decarbonisation interventions. The roadmap made clear that a material reduction in GHG emissions from road transport is necessary to reach Leicestershire County Council's 2045 county wide net zero target. The roadmap will support phasing out of conventional Petrol and Diesel cars in favour EVs and promote active travel as an alternative to vehicle usage.

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## Local

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### Melton Borough Council Corporate Strategy 2020-2024<sup>17</sup>

Melton Borough Council declared a Climate Emergency in 2019. Priority 4 of the Strategy sets out the council's ambition for own operations and functions to be carbon neutral by 2030, and to promote sustainability within the borough, with the aim that the borough will be carbon neutral by 2045.

<sup>12</sup> Department for Transport (2021). *DfT Operational Sustainability Strategy 2021-2025*.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1033587/dft-operational-sustainability-strategy.pdf.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033587/dft-operational-sustainability-strategy.pdf.pdf)

<sup>13</sup> Leicestershire County Council (2020) *Environment Strategy 2018 – 2030: delivering a better future*.

<https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2020/7/13/Environment-Strategy-2018-2030-delivering-a-better-future.pdf>

<sup>14</sup> The net zero carbon by 2050 as per the Environment Strategy was amended by Leicestershire County Council to 2045 in December 2020

<https://www.leicestershire.gov.uk/news/leicestershire-makes-ambitious-net-zero-pledge>

<sup>15</sup> Leicestershire County Council (2021) *Leicestershire County Council Environment Strategy Action Plan 2020-2024*.

<https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2021/10/27/Environment-Strategy-Action-Plan-2020-24.pdf>

<sup>16</sup> Leicestershire County Council (2021) *Leicestershire Net Zero Carbon Roadmap*.

<https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2022/4/19/Leicestershire-Net-Zero-Carbon-Roadmap.pdf>

<sup>17</sup> Melton Mowbray Council (2021) *The Corporate Strategy 2020-2024*. <https://www.melton.gov.uk/strategies/corporate-plans/corporate-strategy-2020-2024/>

**Melton Local Plan 2011-2036<sup>18</sup>**

The Plan was adopted in October 2018. It sets out the council's policies for the use and development of land across the whole of the Borough. It includes an objective to mitigate the borough's greenhouse gas emissions and adapt to the impacts of climate and adapt to the impacts of climate change.

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**Melton Borough Climate Change Context and Challenges<sup>19</sup>**

Published in January 2022 the document provides information on the council's current emissions and highlights key challenges that the Melton borough will face when tackling climate change and becoming a net zero borough.

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<sup>18</sup> Melton Mowbray Council (2018). *Melton Local Plan*. <https://www.meltonplan.co.uk/>

<sup>19</sup> Melton Mowbray Council (2022) *Melton Mowbray Climate Context and Challenges*. <https://www.melton.gov.uk/environmental-issues/climate-change/melton-borough-climate-change-issues/>

# 4. Carbon Management Plan

## 4.1 CMP Objectives

- 4.1.1 The aim of this document is to describe how carbon emissions associated with the scheme will be minimised, in line with Leicestershire County Council's commitment for the county to be net zero carbon by 2045. The plan describes how carbon reduction opportunities will be considered during each stage of infrastructure delivery. The objectives of this CMP are to:
- Describe carbon management governance, roles and responsibilities;
  - Provide a baseline assessment of the North and East Melton Mowbray Distributor Road, carbon emissions;
  - Facilitate early identification of carbon opportunities;
  - Present carbon reduction target(s); and
  - Describe the process for ongoing carbon management, monitoring, reporting and review.

## 4.2 Consideration of carbon in scheme concept and options assessment

- 4.2.1 For the North and East Melton Mowbray Distributor Road, carbon impacts have been considered in the scheme development, the appraisal of the scheme and planning of the construction activities.
- 4.2.2 In developing the scheme, traffic modelling for the affected road network has been undertaken to test scheme impacts during operation and challenge the case for intervention. The GHG modelling estimates a net increase in operational emissions of approximately 3,200 tCO<sub>2</sub>e annually. Operational emissions include vehicle emissions from users, energy use and road maintenance. The increase from the 'do nothing' baseline is attributable to higher traffic emissions based on an assessment of the impact of the proposed scheme on the associated road links within the defined traffic model area.
- 4.2.3 The operational GHG emissions represent a worst case scenario which may be improved by existing and forthcoming national policy plans and initiatives to electrify road transport and decarbonise the national electricity grid.

## 4.3 What is covered by this CMP?

- 4.3.1 The CMP covers the proposed scheme detailed in Section 1.4, as well as the wider associated carbon impacts, such as traffic flow and modal shifts in and around Melton Mowbray, as covered within the traffic model.
- 4.3.2 The CMP only covers the proposal to build The North and East Melton Mowbray Distributor Road. If further funding becomes available for additional sections of the scheme, the CMP will be expanded to reflect these increases in scheme size/boundary.
- 4.3.3 The timescale and boundary of the CMP includes all activities associated with the PAS 2080 lifecycle stages that lead to carbon emissions, whether direct (Scope 1) or indirect (Scope 2 & 3).
- 4.3.4 The focus of the CMP's carbon reduction opportunities will be on identified 'hotspots', i.e., key emissions sources.
- 4.3.5 Due to the unpredictability of the decommissioning lifecycle stage this lifecycle stage has been scoped out of this CMP. However, it is recognised that carbon reduction opportunities adopted during the design stage may reduce emissions associated with decommissioning.
- 4.3.6 Sources of carbon emissions associated with the whole lifecycle of the North and East Melton Mowbray Distributor Road are listed in Table 3. Carbon management and reduction measures will be considered for all emission sources across all lifecycle stages of the scheme.

**Table 3: Carbon emissions sources considered within the scope of the CMP**

<b>PAS 2080 lifecycle stage</b>	<b>Emission source</b>	<b>Carbon reduction considerations already incorporated into scheme and planning baseline</b>
Before Use Stage	Preconstruction Stage (A0) Land Clearance: Loss of the biological capacity to absorb and process carbon stock loss	Promote net gain biodiversity by enhancing current habitats and creating new habitats. Explore opportunities for carbon sequestration.
	Product Stage: Raw materials supply, transport and manufacture (A1 – A3) Fuel consumption and energy use during extraction, transportation and manufacturing of the materials to be used in the scheme	Value engineering exercise has been undertaken to reduce required materials quantities (e.g., reduced pipe chamber sizes, replacing brick headwalls with precast concrete equivalents, removal of settlement piles).
	Construction Process stage: Transport to works site; construction process (A4 – A5) Fuel consumption used to transport plant and machinery to site Fuel consumption for transportation of construction staff to site Energy (electricity, fuel, etc.) consumption of plant, machinery, vehicles and generators etc. on site Energy required for the supply of potable water, and the disposal and treatment of wastewater Energy consumption required for the transport and disposal of waste (including construction material waste and spoil)	Use of low emissions/ hybrid plant machinery where possible. Use LED lighting in site accommodation and site wide lighting where possible. Provision of EV charge points, use of crew cab vans, double cabin or kombi vans will be encouraged for site workers commuting to site and moving within site. Use local labour and suppliers wherever possible. Explore opportunities to maximise route optimisation and construction programme to efficiently manage material logistics to reduce wastage. Source materials locally where possible. Use efficient site traffic management to prevent onsite or delivery vehicles from leaving engines idling. Use a Site Waste Management Plan business template to regularly undertake resource efficiency audits and monitoring/ tracking to generate less waste throughout the project. Maximise the use of recycled concrete aggregate (RCA) and the use of cement products in concrete mixes where practicable without risk to buildability and durability. Avoid over-ordering of construction materials i.e., material waste allowance rates should be kept at c.5%.
Use Stage	Use (B1) and Operational energy use (B6) Emissions associated with operation of infrastructure associated with the scheme, such as lighting and signage	Use of LED lighting during operation where appropriate. Use of solar powered road traffic sign lighting where appropriate.
	Maintenance, repair, replacement, refurbishment (B2 – B5) Emissions associated with repair and replacement of assets during the project lifetime (including embodied carbon in materials, energy required for operation of machinery, and transport)	Design based on standard design standards, these include use of materials with longer in-use life, reducing the need for replacement. Use of ultra-low emission/ zero carbon maintenance fleet wherever possible.



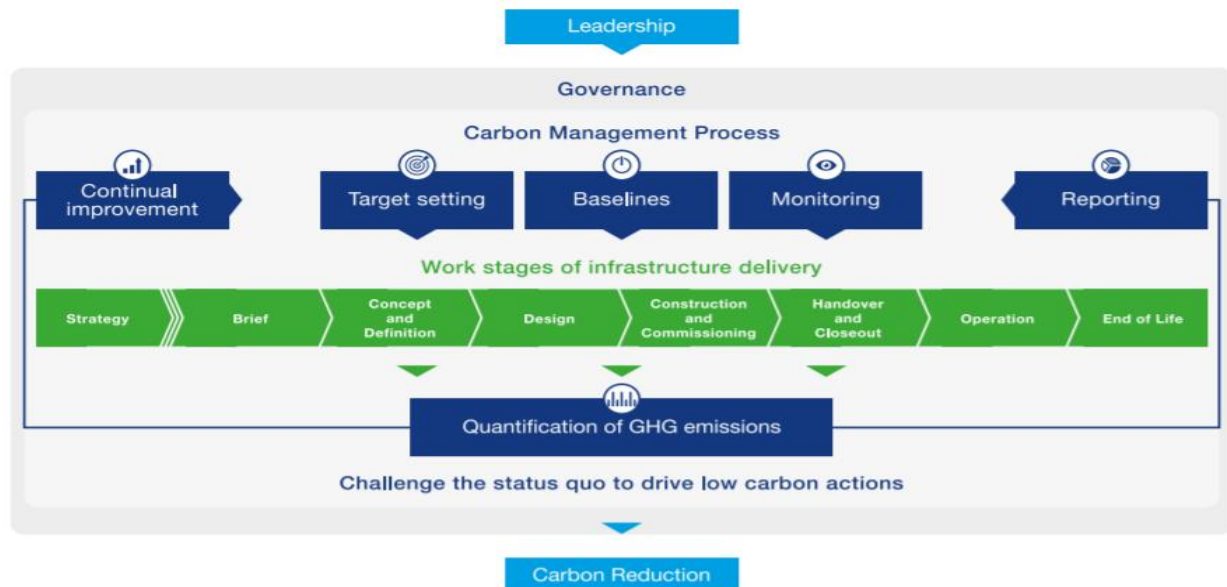
PAS 2080 lifecycle stage	Emission source	Carbon reduction considerations already incorporated into scheme and planning baseline
Users' utilisation of infrastructure (B9)	Emissions associated with fuel and energy consumed by road users	The scheme includes fully segregated cycling and walking infrastructure, and will facilitate public transport improvements on existing corridors, encourage modal shift, and provide an alternative route for through-traffic and HGVs.  Leicestershire's Net Zero Carbon Roadmap will support to phase out conventional petrol and diesel cars in favour EVs.
End of Life Stage	Deconstruction, transport, waste processing for recovery and disposal (C1 – C4)	Out of scope of the CMP, although indicative figures are presented

## 4.4 Carbon Management Process

- 4.4.1 This section describes the key elements of the carbon management process which provide a framework for integrating programme specific carbon reduction priorities into all lifecycle stages, so that the carbon management process for the proposed development complies with DfT's requirements.
- 4.4.2 The key elements of the Carbon Management Process comprise:
- Carbon Baseline – based on information available at the FBC stage of scheme development updated to include actual locations for workers commuting and materials transport provided by the construction contractor, this provides expected lifecycle carbon emissions associated with the FBC stage concept. For the purposes of this CMP, the baseline outcomes (in tCO<sub>2</sub>e) already account for the carbon reduction measures presented in FBC stage concept;
  - Carbon Workshop – held in collaboration with Leicestershire County Council, AECOM (the designer) and Galliford Try (the construction contractor), to set the carbon targets and identify carbon reduction opportunities;
  - Carbon Opportunities Register (COR) – a register used to record carbon reduction opportunities identified during discussions with the wider project team. The COR is a live document and should be updated as further opportunities are identified or as the status of opportunities change during the project lifecycle;
  - Target Delivery Tracker (TDT) – a framework mechanism that can be used to track carbon performance throughout the project lifecycle and evidencing progress to meet targets. The TDT is integrated into the COR; and
  - Carbon Management Plan (CMP) – this document, developed to support the delivery of carbon reduction opportunities and targets across the project lifecycle.
- 4.4.3 Aligned to PAS 2080, Figure 3 outlines the carbon management process to be implemented by Leicestershire County Council. The process incorporates the following components:
- Quantification of GHG emissions;
  - Target setting, baselines and monitoring;
  - Reporting; and
  - Continual improvement.

The process will focus on those elements of the project where carbon reduction opportunities can be implemented where practicable.

Figure 3: PAS 2080:2016 carbon management process



(British Standards (2016) PAS 2080:2016 Carbon Management in Infrastructure)

- 4.4.4 The carbon management process is a continual, ongoing process whereby carbon reduction opportunities are identified, prioritised, investigated and, where feasible, implemented. The Carbon Opportunities Register will be owned by Leicestershire County Council and will be reviewed quarterly as part of an ongoing review process.
- 4.4.5 Leicestershire County Council will provide this CMP to its appointed contractor and communicate its requirements through the current contractual mechanisms in place for the delivery of the project.
- 4.4.6 The contractor shall develop its own Carbon Action Plan, which aligns with its own corporate and contractual carbon reduction targets. The Carbon Action Plan shall include actions outlined in this CMP and the Carbon Opportunities Register (Annex B) to achieve a low carbon outcome for the project. The contractor will review and update its Carbon Action Plan quarterly.
- 4.4.7 As part of delivery the contractor will reviews its supply chain to identify the 'carbon hotspots' within the construction value chain. The contractor shall then adopt proportionate management actions to reduce carbon in the value chain. For suppliers with a larger carbon impact this will involve implementing specific measures to reduce carbon. For suppliers with a lower carbon impact, activities will include education and awareness raising as well as identifying innovation to reduce carbon.
- 4.4.8 The contractor will implement carbon reporting requirements in line with the currently specified monthly reporting cycles. Calculations of carbon reductions shall be carried out using appropriate carbon accounting tools such as the National Highways carbon calculator or equivalent tools.
- 4.4.9 Carbon reporting will include the identification and publication of lessons learned, best practice and innovation case studies to develop future low carbon construction projects. Lessons learned will be formally reviewed during the quarterly design management team meetings already in place on the project.

## 5. Governance, Roles and Responsibilities

- 5.1.1 Leicestershire County Council is committed to embed good governance in all processes of the project and providing the resources required to make sure there is effective implementation of those good governance practices.
- 5.1.2 With respect to carbon, the Cabinet has ultimate accountability for Leicestershire County Council's commitment to be carbon neutral by 2030 (as set out in the Leicestershire Net Zero Carbon Roadmap). Leicestershire County Council's Project Manager will be responsible for reporting progress towards the targets as set in the CMP to the Policy holders for Environment and the Green Agenda and Highways, Transportation and Flooding on the Council Cabinet.
- 5.1.3 To expand upon the high-level governance set out above, a RACI matrix has been developed to set out CMP implementation responsibilities at various implementation stages (Table 4):

**Table 4: RACI requirements for CMP implementation**

	Preconstruction and Design	Construction	Operation	Decommissioning
Responsible <sup>20</sup>	Design Manager	Leicestershire County Council Contractor Project Lead	Leicestershire County Council Project Manager	Leicestershire County Council Project Manager
Accountable <sup>21</sup>	Leicestershire County Council Project Manager	Leicestershire County Project Manager	Leicestershire County Project Manager	Leicestershire County Project Manager
Consulted <sup>22</sup>	Leicestershire County Council Climate/ Sustainability/ Energy Manager  Climate/Carbon Specialist  Construction Manager  Melton Mowbray Council  Department for Transport	Leicestershire County Council Climate/ Sustainability/ Energy Manager  Climate/Carbon Specialist  Melton Mowbray Council	Leicestershire County Council Climate/ Sustainability/ Energy Manager	Leicestershire County Council Climate/ Sustainability/ Energy Manager
Informed <sup>23</sup>	Department for Transport	Department for Transport	Department for Transport	Department for Transport

- 5.1.4 Furthermore, specific responsibilities of key roles identified in the RACI matrix are shown in Table 5.

<sup>20</sup> Several people can be jointly responsible

<sup>21</sup> Success requires one person from each identified stakeholder group to be accountable to deliver all elements of this plan

<sup>22</sup> They are 'in the loop' and active participants

<sup>23</sup> Do not contribute directly to the task or decision

**Table 5: Role responsibilities within the RACI matrix**

<b>Role</b>	<b>Organisation</b>	<b>Responsibilities</b>
Project Manager	Leicestershire County Council	<ul style="list-style-type: none"> <li>Overall responsibility for implementation of CMP throughout project lifecycle</li> <li>Oversee CMP implementation and review during use stage (i.e., after project completion)</li> <li>Setting and monitoring carbon targets</li> <li>Liaise with the Department for Transport as required</li> </ul>
Climate/ Sustainability/ Energy Manager	Leicestershire County Council	<ul style="list-style-type: none"> <li>Day-to-day oversight of CMP throughout the project lifecycle</li> <li>Lead on ongoing review, feasibility assessment, monitoring and implementation of carbon opportunities during the operational phase</li> <li>Manage review and update of all opportunities recorded within the COR throughout the project lifecycle consulting with the 'owners' assigned to each opportunity (i.e., design and construction teams) as required</li> <li>Lead carbon quantifications and carbon reduction opportunities during operational stage</li> <li>Review performance against the carbon reduction targets at the end of each project stage for inclusion in progress reporting to the LLM Project Board (led by LCC's Project Manager)</li> <li>Support liaison with the DfT (as required)</li> </ul>
Climate Specialist	Design Consultant	<ul style="list-style-type: none"> <li>Lead the initial development of CMP</li> <li>Developing of carbon baseline for the CMP and for inclusion in the climate change chapter of the Environmental Impact Assessment.</li> <li>Lead the initial development of COR</li> <li>Facilitate engagement with Leicestershire County Council, design and construction teams, including workshops as appropriate</li> <li>Quantify carbon savings from implemented changes in the design as the result of the value engineering exercises undertaken</li> </ul>
Design Manager	Design Consultant	<ul style="list-style-type: none"> <li>Lead on the identification and delivery of carbon opportunities during design phase</li> <li>Lead on CMP implementation during the design phase</li> <li>Innovation/ liaison with contractor</li> </ul>
Construction Manager	Principal Contractor	<ul style="list-style-type: none"> <li>Re-quantification of carbon emissions ahead of construction commencing</li> <li>Update of the COR to reflect the opportunities that have been identified by the contractor team during delivery</li> <li>Updating the CMP implementation during construction to reflect progress and any changes in programme or construction methodology</li> <li>Lead the identification and implementation of carbon opportunities during construction phase</li> <li>Reporting of carbon emissions throughout the construction phase</li> </ul>

- 5.1.5 Following the appointment of a construction contractor, the formal monthly meetings currently in place for project governance shall be expanded to include carbon as an agenda item. This will include a routine review of construction data such as fuel and electricity usage as well as transport distance and will also include a progress review of the carbon baseline and other carbon issues as they arise.
- 5.1.6 CEMAR will be used for all project correspondence and project/ document management relating to carbon, outlined in volume 2 of the existing contract.
- 5.1.7 Projectwise shall be used by the designer to communicate and formally issue any design changes with the contractor. Any design changes that have significant implications for the contractor shall be notified via CEMAR along with appropriate carbon estimates.
- 5.1.8 The contractor will conduct regular assurance checks and audits of the carbon management plan in line with the existing requirements as described in its Environmental Management System.

## 6. Carbon Baseline

### 6.1 Approach

- 6.1.1 The DfT requires CMPs to include targets set against an established baseline<sup>24</sup>. PAS2080 notes that depending on the work stage at which quantification is made, either part or all the quantification may be based on data which is predictive in nature (i.e., something that is forecast or planned to occur), rather than actual activity data (e.g., recorded amounts of consumption).
- 6.1.2 The carbon baseline for this CMP was reported as part of the 2018 Environmental Statement for the Proposed Development and was based on the limited activity data available when the baseline was calculated. For the purposes of this CMP, the construction contractor has re-quantified construction carbon emissions. GHG emissions arising from workforce commuting and HGV movements have been updated to incorporate actual travel with actual locations and the volume of key materials for permanent and temporary works.
- 6.1.3 Emissions associated with the End-of-Life Stage (PAS2080 Module C1-C4) were scoped out in the 2018 Environmental Statement in line with common carbon calculation practice. The reasons for its omission include the practical observation that road assets, particularly Local Authority roads, are rarely decommissioned – they are commonly updated with most of the materials remaining within the asset. Roads typically have a 60-year design life, and it is problematic to predict the types of demolition plant and their associated emissions, which will be used for decommissioning.
- 6.1.4 The carbon baseline allows Leicestershire County Council to understand which stages or activities associated with North and East Melton Mowbray Distributor Road are the major sources of carbon emissions and provides a basis against which carbon reduction measures and future carbon quantifications can be compared.

### 6.2 Carbon Baseline and Hotspots

- 6.2.1 Carbon baseline for the North and East Melton Mowbray Distributor Road was undertaken as part of the Environment Statement submitted to Leicestershire County Council in September 2018.
- 6.2.2 Table 6 presents the breakdown of baseline GHG emissions in line with PAS:2080.

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<sup>24</sup> DfT - *Carbon Management Guidance – Management Case*.

**Table 6: Carbon baseline and hotspots**

**PAS 2080 lifecycle stage** **Project baseline (tCO<sub>2e</sub>)**  
**(Whole life – 60 years)**

Before Use Stage <sup>25</sup>	Preconstruction stage (A0)	2,617
	Product Stage: Raw Materials supply, transport and manufacture (A1-A3)	32,390
	Construction Process stage: Transport to works site; construction process (A4-A5)	6,885
Use Stage <sup>26</sup>	Use (B1) and Operational energy use (B6)	7,642
	Maintenance, Repair, Replacement, Refurbishment (B2-B5)	1,034
	Users' utilisation of infrastructure (B9) (Change in CO <sub>2e</sub> emissions over 60-year life cycle, between 'with scheme' and 'without scheme' scenarios)	187,446
End of Life Stage	Deconstruction, Transport, Waste processing for recovery and Disposal (C1-C4)	Scoped out

6.2.3 In line with a request from the DfT, carbon emissions associated with the End of Life stage have been estimated at 78 tCO<sub>2e</sub>. This represents the carbon emissions associated waste collection, transportation and waste processing emissions associated with the materials specified for this project.

## 6.3 Baseline Data Assumptions

- 6.3.1 The assessment of the GHG emissions for the 2018 Environmental Statement was carried out using existing site conditions and assumptions supplemented with available information for enabling works, construction activity, expected energy usage and vehicle use during the operation of the road.
- 6.3.2 The assumptions made in the Baseline are listed in Section 13.8 of the Environment Statement. The Environment Statement can be found here: <http://leicestershire.planning-register.co.uk/Planning/Display?applicationNumber=2018%2FReg3Ma%2F0182%2FLCC>
- 6.3.3 For the 2018 Environmental Statement, GHG emissions arising from workforce commuting and HGV movements were calculated using data which also informed the noise assessment. Assumptions from the noise assessment have been updated in this CMP by the construction contractor to include actual locations and volumes of key materials used in the permanent and temporary, with minor adjustments to cover those items not measured in the baseline at the time (e.g., emissions from temporary works vehicles).
- 6.3.4 For the estimation of End of Life emissions, the following assumptions were included:
- Emissions factors from the 2022 BEIS Emission Factor database were used in the absence of future emissions scenarios from the transportation and waste processing industries.

A reasonable worst-case scenario was adopted where 70% of the Steel and Concrete used in the scheme were recycled, and the remaining 30% was sent to landfill.

<sup>25</sup> Embodied carbon from materials associated with the temporary works have not been included in the baseline and will be assessed by the contractor on appointment.

<sup>26</sup> Assumes a 60-year expected operational phase

# 7. Carbon Reduction Opportunities

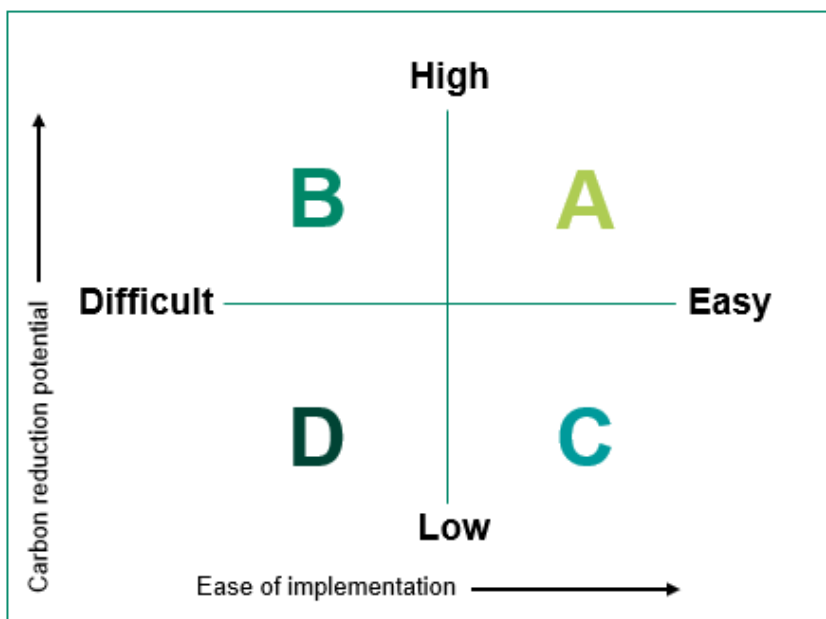
## 7.1 Identification of Carbon Reduction Opportunities

- 7.1.1 Opportunities for reduction of carbon emissions are identified in the Carbon Opportunities Register (COR) (Annex B) and focus on reducing carbon from key emissions sources.
- 7.1.2 Opportunities are categorised under the following four headings:
- Strategy and Governance;
  - Innovative Design;
  - Lower Carbon Products; and
  - Lean Construction Techniques.
- 7.1.3 These categories extend across the project lifecycle, from planning through design to delivery. By identifying and developing carbon reduction opportunities within these categories, all aspects of the project will be considered, including management processes, procurement and company culture as well as technical solutions. The categories are also broadly aligned with the three key areas identified within the UK Government's Infrastructure Carbon Review as being crucial to achieving meaningful organisational carbon reductions: leadership, innovation and procurement.
- 7.1.4 The initial list of carbon reduction opportunities was developed by means of a carbon management workshop. Annex B contains the carbon workshop outputs.
- 7.1.5 The COR is a live document, which should be continually updated throughout the scheme lifecycle as further opportunities and actions are identified, as decisions are made in relation to their feasibility, and as such opportunities are implemented.
- 7.1.6 Many of the carbon reduction measures identified so far are also captured within the 'Value Engineering Opportunities Log (VEOL)'. Leicestershire County Council will ensure the VEOL and COR are aligned and updated consistently.

## 7.2 Prioritisation of Opportunities

- 7.2.1 To understand the potential value of carbon reduction opportunities identified for the project, these will be assigned ratings based on their carbon reduction effectiveness and ease of implementation using the matrix shown in Figure 4. It is important to note that many of the opportunities have already been implemented.

Figure 4: Carbon reduction opportunity prioritisation matrix





#### 7.2.2 Carbon reduction potential assessment criteria:

- Additional to those that are part of business as usual (decarbonisation policy and market drivers)
- Minimising negative carbon impacts;
- Maximising carbon benefits; and
- Level of confidence in the effect.

#### 7.2.3 Ease of implementation assessment criteria:

- Cost implications – positive or negative;
- Resource capacity and capability;
- Technological impacts – enablers or constraints;
- Legislation – drivers or restrictions;
- Time limitations;
- Whether the opportunity fits with existing priorities and commitments; and
- Wider sustainability impacts – as enablers or constraints.

7.2.4 The ratings assigned to each opportunity should be seen only as an initial screening and should be reviewed periodically following further discussions and feasibility analysis as the project progresses. Prioritisation ratings will also be assigned to any further measures identified and recorded within the COR. This will be the responsibility of Leicestershire County Council's Major Projects Team.

7.2.5 Within the COR, owners and key actions will be identified for each of the opportunities throughout the project lifecycle. This will ensure responsibilities are assigned to the evolving organisational structure for the project, noting requirement for procurement of a contractor and design team, should the FBC receive a successful funding decision. The actions listed, and any further feasibility analysis, are the responsibility of the owner assigned to each measure. Any opportunities without an assigned owner, will rest with the Leicestershire County Council's Major Projects Team until such time as an owner is identified.

## 8. Targets

- 8.1.1 To drive the implementation of carbon reduction opportunities, targets have been developed and are presented in in Table 7. Example initiatives have been provided for each lifecycle stage as an indication of the activities required to meet the targets.
- 8.1.2 Leicestershire County Council has the greatest ability to control and influence capital and operational GHG emissions through construction and ongoing maintenance and operating procedures. Therefore, this is the focus of the targets presented in this chapter.
- 8.1.3 The Council does not have control over user carbon emissions; therefore, no targets have been set for this aspect within the CMP. Wider scheme monitoring and evaluation activities will be undertaken in accordance with DfT requirements (see Monitoring and Evaluation Plan) which will capture considerations regarding scheme use and the schemes performance against the short-, medium- and long-term impacts as reported in the investment logic map.
- 8.1.4 Target implementation will be driven by the COR. It is the responsibility of Leicestershire County Council's Major Projects Team, in collaboration with the Construction Partner to update the COR throughout the project lifecycle to capture the carbon reduction opportunities relevant to the scheme. Each opportunity within the COR will be given a rating in terms of its effectiveness vs ease of implementation and predicted capital cost vs ongoing savings. The progress of each opportunity will be reflected by the status provided which will differentiate the opportunities which have been implemented, those which are under consideration and need to be further explored and those which will not be taken forward.
- 8.1.5 A Target Delivery Tracker (TDT) will be prepared at the next stage to accompany this CMP, assigning responsibility of the targets to the client, designer, contractor, or a combination of these, alongside suggested guidance/ actions to support their delivery. It is intended that further/ additional carbon opportunities will be identified at appropriate points during the project lifecycle.
- 8.1.6 The scheme's overarching carbon objective is to facilitate Leicestershire County Council's commitment to achieve net zero carbon by 2045. The purpose of all targets set per lifecycle stage is to contribute towards achieving this overarching objective.
- 8.1.7 **Capital Emissions Targets:** Given the maturity of the design and engagement with the appointed construction contractor, Leicestershire County Council has committed to following three targets to reduce capital carbon emissions from the 2018 baseline as set out in Table 6, these are:
- a. Reduce embodied carbon from construction materials (permanent works) by up to 23%.
  - b. Reduce the embodied carbon from construction materials (temporary works) by up to 5%.
  - c. Reduce the carbon emissions associated with fuel use for construction activities by up to 5%.
- 8.1.8 Carbon opportunities to achieve this target have been investigated, focusing on key product contributors (asphalt, concrete, steel) and key activity contributors (energy requirements of HGVs, plant machinery, transport).
- 8.1.9 **Operational Emissions Target:** To align with Leicestershire County Council's Net Zero 2045 commitment, a target of net zero operational emissions by 2030 has been set for this lifecycle phase. Key contributors to this stage comprise energy requirements for the operation of the road, such as lighting, signage, repair and maintenance. Carbon opportunities to achieve this target will be investigated, focusing on the feasibility of alternative energy and product options.
- 8.1.10 Table 7 lists the targets stated above and provides possible initiatives to support target success.

**Table 7: Carbon reduction targets**

<b>Emissions Category<sup>27</sup></b>	<b>Key Emissions Sources</b>	<b>Ref no.</b>	<b>Carbon Reduction Targets</b>	<b>Examples of possible initiatives to support target success</b>
Capital GHG emissions	Embodied carbon in construction materials	1.1.1	To achieve a target of 23% reduction in embodied carbon	<ul style="list-style-type: none"> <li>• Reuse of material from enabling works</li> <li>• Use of low carbon concrete</li> <li>• Low carbon materials specifications included within into contracts</li> </ul>
		1.1.2	Reduce emissions associated with temporary works materials by up to 5%	<ul style="list-style-type: none"> <li>• Reuse site fencing and excavation shoring materials</li> <li>• Reduce material use in temporary access road construction.</li> <li>• Reduce earthworks on site.</li> </ul>
	Fuel and energy consumption from HGVs, plant and machinery and worker transport for enabling works and construction	1.2.1	Reduce emissions associated with construction operation (fuel, deliverables, commuting to/from and on-site) by up to 5%	<ul style="list-style-type: none"> <li>• Electrified/ hydrogen or hybrid vehicles</li> <li>• Route optimisation and efficient logistics</li> <li>• Apply warm surfacing technique (reducing the energy requirements for heating of asphalt)</li> <li>• Electrified/ hydrogen or hybrid plant or high efficiency plant as available on the market</li> <li>• Machine controls: reduce machine idling</li> <li>• Reduce length of construction programme</li> <li>• Site compound – solar energy</li> <li>• Employ local labour where possible</li> </ul>
	All Before use stage capital GHG emissions	1.3.1	Investigate offsetting residual emissions to achieve the set target for capital GHG emissions (Before Use stage)	<ul style="list-style-type: none"> <li>• Maximise carbon sinks within the scheme in line with biodiversity targets</li> <li>• Offsets delivered as part of wider Leicestershire Council commitments through: <ul style="list-style-type: none"> <li>– Partnerships with local woodland regeneration or wildlife projects as informal qualitative carbon offsets</li> <li>– Formal quantitative offsetting through certified carbon offset schemes</li> </ul> </li> </ul>
Operational GHG emissions	Energy associated with road lighting	2.1.1	Low energy road lighting and electronic signage	<ul style="list-style-type: none"> <li>• Contractual specifications for zero carbon lighting</li> <li>• Purchase renewable energy as part of a wider LCC decarbonisation strategy</li> </ul>
	Energy and embodied carbon associated with	2.2.1	Apply embodied carbon targets (1.1.1) to maintenance materials. Maintenance fleet net zero tailpipe emissions by 2030	<ul style="list-style-type: none"> <li>• Maintenance and resurfacing initiatives would reflect those for construction activities in terms of embodied carbon, and energy consumption</li> </ul>

<sup>27</sup> PAS 2080 emissions categories

Emissions Category <sup>27</sup>	Key Emissions Sources	Ref no.	Carbon Reduction Targets	Examples of possible initiatives to support target success
	road repair and resurfacing (maintenance)	2.2.2	Investigate offsetting residual emissions associated with the road operational phase	<ul style="list-style-type: none"> <li>• Maximise carbon sinks within the scheme in line with biodiversity targets</li> <li>• Offsets delivered as part of wider Leicestershire County Council commitments through: <ul style="list-style-type: none"> <li>– Partnerships with local woodland regeneration or wildlife projects as informal qualitative carbon offsets</li> <li>– Formal quantitative offsetting through certified carbon offset schemes</li> </ul> </li> </ul>

## 9. Implementation

- 9.1.1 Responsibilities necessary for the implementation of the CMP will be discussed and agreed with suppliers and service providers upon appointment and where appropriate.
- 9.1.2 Reporting progress against the agreed carbon targets will be agreed with those responsible for delivery.
- 9.1.3 Where performance against a particular target is challenging, a collaborative approach between all involved in target delivery will be necessary to identify additional/ alternative actions to meet the target and/ or identify a more appropriate target to reflect factors outside of the project's control e.g., policy changes.

# 10. Monitoring and Reporting

## 10.1 Monitoring and Update of the CMP

- 10.1.1 Future monitoring and evaluation activities are central to the North and East Melton Mowbray Distributor Road scheme delivering as expected and has the intended impacts aligned to the objectives and investment logic map prepared – see the FBC for further details.
- 10.1.2 To support monitoring and review activities, the CMP will be 'owned' by Leicestershire County Council's Major Projects Team and reviewed and refreshed at appropriate points during the project lifecycle, for example programme milestones, completion of lifecycle stages or significant events e.g., changes to external policy or major performance issues/improvements. The council will be supported during/ at the end of the design and planning stage by the scheme's Design Consultant, and during the construction stage by the Principal Contractor.
- 10.1.3 With specific regard to carbon, the monitoring and review activities necessary for the successful implementation of the CMP include:
- 10.1.4 **Review and update of Carbon Opportunities Register at quarterly intervals:**
- Review progress of carbon reduction opportunities implementation;
  - Identify new carbon reduction opportunities;
  - Assess feasibility of carbon reduction opportunities; and
  - Incorporate feasible carbon reduction opportunities into design and construction plans and procurement
- 10.1.5 **Quantification of carbon emissions: at the end of each lifecycle stage or more frequently as appropriate**
- Update GHG emissions calculations associated with the scheme, to reflect changes related to more accurate activity data and implementation of carbon opportunities
- 10.1.6 **Assess progress against targets: at the end of each lifecycle stage or more frequently as appropriate**
- Review and update the Target Delivery Tracker
- 10.1.7 **Review CMP: at the end of each lifecycle stage or more frequently as appropriate**
- Review the CMP so that it remains fit for purpose, and revise where appropriate

## 10.2 Reporting

- 10.2.1 The contractor will agree the use of an appropriate carbon accounting tool with Leicestershire County Council. The tool should provide adequate transparency of the carbon accounting approach, be proportional, be aligned to PAS 2080 and fit within the contractor's existing Environmental Management Systems approach.
- 10.2.2 A formal review and report of carbon will be provided on a quarterly basis to allow for the receipt and assurance of supply chain data. The supplier data to be included will be proportional to the scope of the contact and its relative impact on the carbon baseline.
- 10.2.3 The contractor will supply evidence to support compensation events that could have a positive or negative impact on the carbon baseline for consideration by Leicestershire County Council.
- 10.2.4 The contractor will provide a carbon close out report upon completion of the project. this report shall compare the project outturn against the estimated baseline and include commentary for any differences alongside any lessons learned.
- 10.2.5 All carbon information from the project will, in turn, be communicated to the project board and through the existing arrangements on the MHA framework.

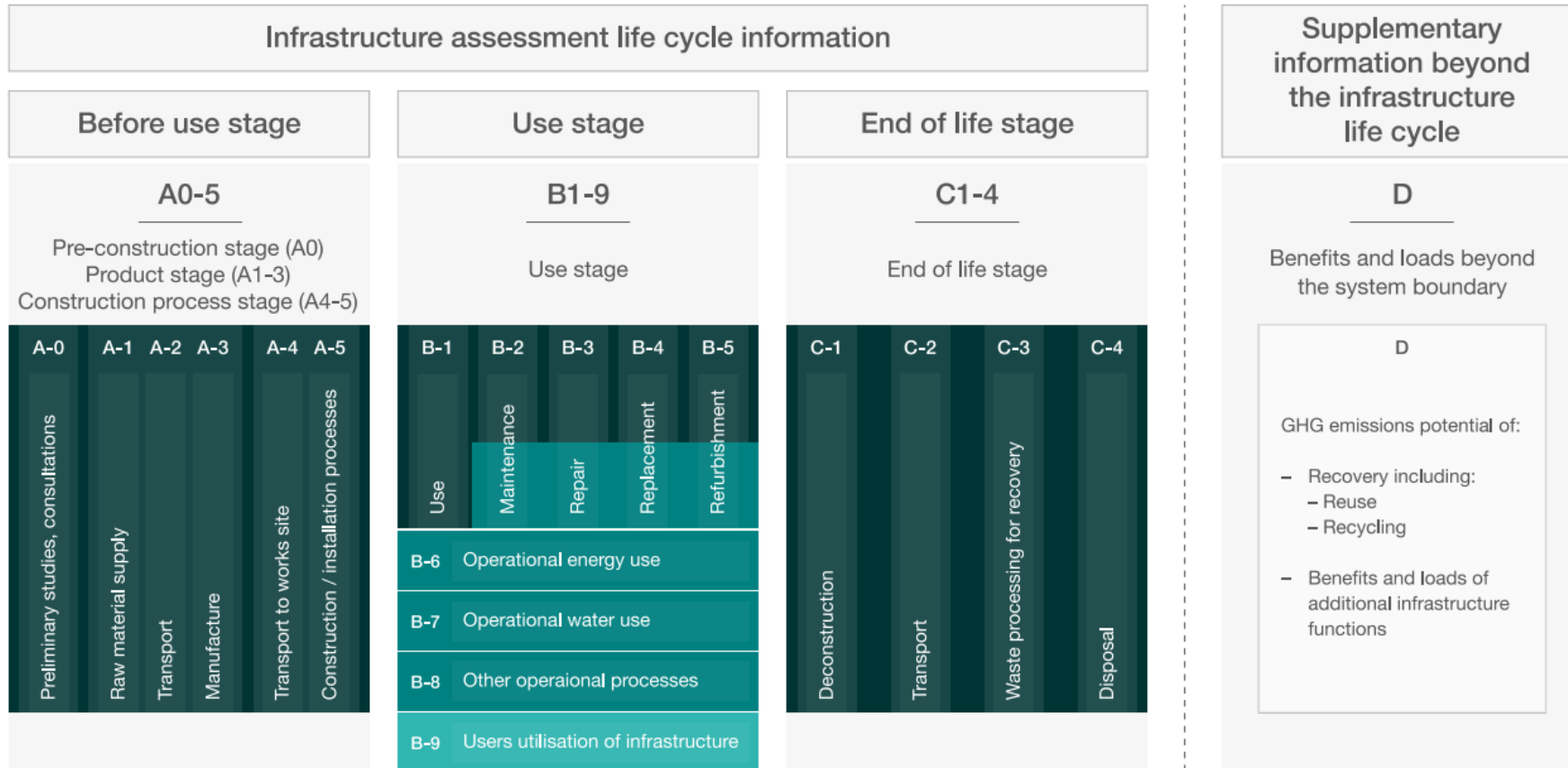
- 10.2.6 Leicestershire County Council shall report emissions from the project in line with its internal corporate reporting of Scope 3 emissions as appropriate and in line with existing reporting requirements.
- 10.2.7 Leicestershire County Council will report carbon emissions to the DfT in line with the reporting requirements outlined in the project execution plan and the monitoring and evaluation plan.

# 11. Communication, Education and Empowerment

- 11.1.1 To support this CMP, a Target Delivery Tracker (TDT) (integrated into the COR) will be developed, including a dashboard to support communication and progress reporting. This will be used to track performance throughout design, construction and operation and support evidencing of progress towards fulfilling the carbon targets.
- 11.1.2 The CMP will be communicated and all relevant stakeholders, and awareness training will be provided when this is identified as necessary to the successful implementation thereof.
- 11.1.3 The CMP will be shared and communicated with key stakeholders (i.e., Leicestershire County Council, Design Consultant and Principal Contractor) throughout the project lifecycle via the project steering group and board.
- 11.1.4 The Leicestershire County Council project team shall undertake necessary training to enable them to manage carbon on this project. Existing training courses are provided through the MHA SIG and other groups.
- 11.1.5 The contractor shall implement a training programme with aligns with the Supply Chain Sustainability School recommended training. All supply chain staff will be expected to undertake the following training modules:
- Introduction to Climate Change and Carbon
  - Introduction to Sustainable Construction
- 11.1.6 Toolbox Talks will be provided to all operatives on site to assist with the identification and implementation of specific task-related carbon reduction opportunities during construction delivery.
- 11.1.7 The person responsible for carbon with the contractor shall be sufficiently trained to manage and report on carbon and shall maintain appropriate continuing personal development (CPD) for the role. This is expected to include the following Supply Chain Sustainability School training modules:
- Carbon Foot printing and Measurement
  - Carbon Reduction Offsetting and Net Zero
  - Carbon Management in Infrastructure for SME's
- 11.1.8 Additional training needs will be identified through ongoing training needs analysis and implemented as appropriate.



# Annex A – PAS 2080:2016 Lifecycle Stages



- Capital GHG emissions
- Operational GHG emissions
- User GHG emissions

# Annex B – Carbon Opportunities Register

See supporting spreadsheet titled **MMDR Carbon Tracker**.

# Annex C – Risk Register

Risk	Description	Likelihood	Severity	Mitigation Measures
<b>Staff, Management and Reporting</b>				
Carbon Management (Leicestershire County Council) Competence	Availability of staff that have adequate training and understanding of carbon management processes for infrastructure projects	Low	Medium	<ul style="list-style-type: none"> <li>• Early identification of staff. Identifying training or CPD programs to build internal skills.</li> <li>• Procurement of supporting resources as required</li> </ul>
Carbon Management (Contractor) Competence	Appoint staff that have adequate training and understanding of carbon management processes for infrastructure projects	Low	Medium	<ul style="list-style-type: none"> <li>• Contractor to provide adequately trained supervisory and management staff</li> <li>• Contractor to provide carbon training as part of its training programme, Supply Chain Sustainability School recommendations and through regular Toolbox Talks</li> <li>• Appropriate resourcing levels to manage carbon to be included as part of ongoing contractual performance discussions</li> </ul>
Staff Availability	Staff involved in carbon management from the client, contractor, and design consultant are absent due to illness, leave or turnover.	Medium	Low	<ul style="list-style-type: none"> <li>• Identify additional resources in the organizational charts from the client, contractor and design consultant familiar with carbon management.</li> <li>• Secure additional resources through contract partners if necessary</li> </ul>
Project Management	Site management plans, carbon trackers, delivery trackers and carbon management plan, among other documents require regular updates for changes and to capture progress	Medium	Medium	<ul style="list-style-type: none"> <li>• Appoint a single point of contact to update all management plan that are presented during the monthly/ quarterly management meetings.</li> <li>• Additional resources to be allocated and included in any changes to scope.</li> <li>• Additional resources from the wider MHA+ alliance to be used where necessary</li> </ul>

### Construction Materials and Methodology

Low carbon material availability	Availability of low carbon materials due to competing projects, cost inflation or supply chain issues.	High	Medium	<ul style="list-style-type: none"> <li>Contractor verification of the material management plan</li> <li>Identify alternative sources of materials</li> <li>Update to the carbon footprint to reflect the availability of low carbon materials</li> <li>Contractor to Issue Early Warnings for cost inflation of materials for LCC consideration</li> </ul>
Design and/or material change	Design changes during the construction stage of the project could have implications for the carbon forecast. This includes materials, method of construction, programme, etc.	Medium	Low	<ul style="list-style-type: none"> <li>Carbon implications discussed with client, contractor and design consultant at earliest convenience. As a minimum these should be discussed in Quarterly Design Management Team Meetings</li> <li>Any design and/or material changes are to be approved by client following an assessment of the carbon implications of the change.</li> <li>Carbon model and targets shall be updated in line with change.</li> </ul>
Environmental Product Declaration (EPDs_	EPDs to verify environmental credentials of specified materials may not be available for all products to provide a more accurate carbon footprint.	Medium	Low	<ul style="list-style-type: none"> <li>Products with EPDs should be favoured over those without and the certificates should be provided by the contractor</li> <li>Where EPDs are not available, proxy carbon databases should be used for calculations in agreement with LCC</li> </ul>
Transportation Distances	Lack of product availability may lead to excessive transportation distances.	Low	Low	<ul style="list-style-type: none"> <li>Products should be sourced from local suppliers where possible</li> <li>Consideration of supply distance and efficient logistics should be considered for all material streams.</li> <li>Where long transport distances are involved, logistics shall be optimised, and consideration shall be given to the types of vehicles used.</li> </ul>
Recycling of materials	As noted in the carbon tracker that material reuse is not appropriate for this project. There is a need to ensure that appropriate recycling facilities are available, and that known disposal location are well captured in the site management plan, including transportation times.	Low	Low	<ul style="list-style-type: none"> <li>Development of a waste disposal plan that identifies sources of materials that can be recycled and associated facilities.</li> <li>Updates to carbon forecast if unfavourable ground conditions are encountered leading to greater disposal of materials</li> </ul>

**Plant and Construction Equipment**

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Plant equipment	Availability of low/ zero carbon plant to meet construction phase requirements	Medium	Medium	<ul style="list-style-type: none"> <li>• Contractor to identify plant to meet the requirements, including emissions profile of the project.</li> <li>• Where there is a shortage of a particular type of equipment then consideration to cut emissions from other plant should be prioritised</li> <li>• Use of a carbon calculator to estimate where other savings can be made</li> </ul>
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