

Appendix EP5 of the Proof of Evidence of Esme Portsmouth

(Climate Change Proof of Evidence prepared by Ian Davies)

Leicestershire County Council (A511
Growth Corridor) (Side Roads) Order
2023

Leicestershire County Council (A511
Growth Corridor) Compulsory Purchase
Order 2023

Proof of Evidence:
Climate Change

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1. Introduction

1.1 Qualifications

- 1.1.1 My name is Ian Davies. I have 22 years' experience working in climate change and sustainability.
- 1.1.2 I hold a Bachelor's Degree with honours in Environmental Studies from the University of Glamorgan in 1997.
- 1.1.3 I am currently a Technical Director at AECOM where I have worked for 17 years.
- 1.1.4 I am a Member of the Institute of Environmental Management Assessment (MIEMA) and a Chartered Environmentalist (CEnv).

1.2 Relevant Experience

- 1.2.1 During my career I have prepared climate impact assessments across a number of sectors including highways, rail, power, aviation and urban regeneration. I have appeared as Expert Witness for climate on behalf of Highways England at the Development Consent Order Examination Hearing for the A38 Derby Junction and the A428 Black Cat to Caxton Gibbet. I was also Expert Witness at the Melton Mowbray Distribution Road Public Inquiry on behalf of Leicestershire County Council who were promoting that proposal.
- 1.2.2 My experience on road schemes includes climate impact assessment on the A303 Stonehenge, A38 Derby Junctions, A428 Blackcat, M42 Junction 6 and the M54 to M6 Link Road.

1.3 Involvement with the Scheme and Contribution Made

- 1.3.1 The Scheme is comprised of a number of changes and alterations to the existing road network as well as the addition of a new section of road to form the Bardon Link Road, which are identified below.
- 1.3.2 I was engaged by the Council in May 2024, as part of a team at AECOM, to consider the impact of the Scheme on the climate because of greenhouse gas emissions arising from the Scheme over its lifetime. Prior to that matters within my area of expertise were dealt with by WSP as the Council's advisers.
- 1.3.3 A Carbon Management Plan for the Scheme was produced by WSP in November (Document SA9 in the List of Documents). I have reviewed this document and I have concluded that the assessment presented within it was consistent with relevant guidance and policy and my evidence builds upon it in a like fashion.

1.4 Scope of Evidence

1.4.1 This Proof of Evidence has been prepared for the purposes of outlining the impacts of the Scheme on the climate as a result of greenhouse gas emissions relating to the construction and operation of:

- The A511 MRN Growth Corridor, a 15km, mainly single carriageway road that extends from the A50 Field Head junction, to the west of the M1 Junction 22, to the A42 Junction 13 near Ashby-de-la-Zouch;
- The Scheme for the A511 MRN Growth Corridor will see improvements made to nine locations between the A42 Junction 13 at Ashby to the Field Head roundabout to the east of Junction 22 of the M1, including upgrading a section of Stephenson Way from a single to a dual carriageway as well as the provision of the new Bardon Link Road.
- Specifically, the nine improvements covered by the Carbon Management Plan include:
 - Hoo Ash Roundabout Improvement;
 - Thornborough Road Roundabout;
 - Stephenson Way Dualling;
 - Whitwick Road Roundabout;
 - Broom Leys road Junction improvement;
 - Bardon Road roundabout / Bardon Link Road;
 - Birch Tree Road Roundabout Improvement;
 - Flying Horse Roundabout Signalisation /Turning Restrictions; and
 - Field Head roundabout Part Time signalisation.

2. Assessment of Scheme Proposals

2.1 Introduction

- 2.1.1 The section summarises the Carbon Management Plan (CMP) produced for Leicestershire County Council to set out the proposed approach to manage carbon emissions from the Scheme. This section also summaries National legislation, Planning Policy and guidance relevant to carbon at the time the CMP was produced.

2.2 Legislation and guidance relevant to the Scheme at the time Planning Permission was granted

- 2.2.1 While the CMP for the Scheme was not prepared in response to a specific planning policy requirement it has become best practice to produce a CMP for infrastructure Schemes. Furthermore, the Department for Transport (DfT) has placed a requirement for the submission of a CMP as part of any Outline Business Case where a Scheme promoter is seeking funding from DfT of one million pounds or more.
- 2.2.2 DfT have requested that Arms Length bodies (ALB's) reporting to them such as National Highways and Network Rail must become certified under Publicly Available Standard (PAS) 2080: 2023 Carbon Management in Buildings and Infrastructure. While this requirement does not directly apply to other public bodies such as County Councils and Local Authorities, the principles of PAS 2080 provide a useful reference point, particularly for the management of carbon and the production of Carbon Management Plans.
- 2.2.3 **Publicly Available Standard (PAS) 2080: 2023 Carbon Management in Buildings and Infrastructure¹ (Document NP9 in the List of Documents).** PAS 2080:2023 is a best practice guidance framework that focuses on managing whole-life carbon in infrastructure. It provides guidance for organisations to effectively reduce carbon emissions, embed industry leadership, and adapt to a low-carbon future. PAS 2080 covers both new projects and the management or upgrade of existing assets. It encourages early collaboration between stakeholders on a project, defines roles and responsibilities for managing carbon and integrates decision making for decarbonisation across the lifecycle of infrastructure.
- 2.2.4 PAS 2080 emphasises the importance for a project to having a robust Carbon Management Plan in place and provides guidance on what a CMP should include. The CMP produced for this Scheme has been prepared to align with the requirements of PAS 2080.
- 2.2.5 **The Climate Change Act 2008 (2050 Target Amendment)² (Document NP10 in the List of Documents).** The Climate Change Act 2008 set a target for the UK achieve a carbon reduction of 80%

¹ <https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-2080-carbon-management-in-infrastructure-and-built-environment/>

² <https://www.legislation.gov.uk/ukdsi/2019/9780111187654>

against a 1990 baseline. It also set a requirement for a series of legally binding, five-year carbon budgets which place a restriction on the total amount of greenhouse gases the UK can emit over a 5-year period. The Climate Change Act was amended in 2019 to legislate for an economy wide target to reach net zero greenhouse gas emissions by 2050. In June 2021 the 6th carbon budget (Document NP13 in the List of Documents)³ was published, the first to align with the net zero target. The following table presents the carbon budgets currently legislated for.

Carbon Budget	Total Budget (MtCO ₂ e)
4 th (2023 to 2027)	2,544
5 th (2028 to 2032)	1,950
6 th (2033 to 2037)	965

- 2.2.6 The Climate Change Act also places a duty on the Secretary of State to provide Parliament with a report every four years containing an assessment of the risks to the UK of current and predicted climate change impacts.
- 2.2.7 **National Policy Statement for National Networks (NPSNN)⁴, Department for Transport (2024) (Document NP11 in the List of Documents).** While the Scheme is not large enough to be considered a Nationally Significant Infrastructure Project (NISIP) and therefore does not fall under the requirements of the requirements of the NPSNN it is worth considering the Scheme in the context of this policy. It should be noted that at the time planning permission was granted for the Scheme the latest version of the NPSNN was that published in 2014. This has been superseded by a revised version published in March 2024 responding to a need to reflect the introduction of net zero and decarbonisation policy since 2014. The fundamental requirement to assess carbon emissions from qualifying road projects, and to put these into context with national policy, has not changed between NPSNN publications.
- 2.2.8 The NPSNN requires that Strategic Road Network Schemes should be put in the context of the national carbon budgets and the impact of a scheme on the UK's ability to meet these. It also states that no individual Scheme is likely to be significant.
- 2.2.9 Paragraph 5.41 of the NPSNN (2024) states, "*Operational carbon emissions from some types of national network infrastructure cannot be totally avoided. Given the range of non-planning policies aimed at decarbonising the transport system, government has determined that a net increase in operational carbon emissions is not, of itself, reason to prohibit the consenting of national network projects or to impose more restrictions on them in the planning policy framework.*"
- 2.2.10 Paragraph 5.42 of the NPSNN states: "*Any carbon assessment will include an assessment of operational carbon emissions, but the policies set out in chapter 2 of this NPS, apply to these emissions. Operational emissions will be addressed in a managed, economywide manner, to ensure consistency with carbon budgets, net zero and our international climate commitments. Therefore, approval of schemes with residual carbon emissions is allowable and can be consistent with meeting net zero.*"

³ <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

⁴ <https://assets.publishing.service.gov.uk/media/65e76aabc8540001c12c41c/national-networks-national-policy-statement-print.pdf>

However, where the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of government to achieve its statutory carbon budgets, the Secretary of State should refuse consent.” The Scheme, the subject of these proposals, will not have such a material impact.

- 2.2.11 **Transport Decarbonisation Plan (TDP)⁵, Department of Transport (2021) (Document NP12 in the List of Documents)**: sets out the government’s response to the need for reducing emissions across all modes of transport in line with the UK’s net zero targets. The TDP presents a pathway to net zero emissions from transport by 2050 and sets out a number of commitments and targets to achieve this including supporting investment in zero emissions buses, promoting a zero emissions fleet of cars, vans, motorcycles and scooters e.g. through the banning of new petrol and diesel cars and vans and encouraging model shift and active travel.
- 2.2.12 **Net Zero Leicestershire Strategy 2023-2045⁶ and Net Zero Carbon Roadmap⁷ (Document LP12 and Document LP10 in the List of Documents)**. The Net Zero Strategy sets out Leicestershire County Council’s target to achieve a net zero target for Leicestershire by 2045. Furthermore, the strategy states that Leicestershire will align with the UK wide targets of a 78% reduction in emissions by 2035 compared to 1990 levels. This equates to a further reduction of 65% between the baseline year of 2019 and 2035 for Leicestershire. The scope of the Net Zero Plan includes greenhouse gas emissions from road transport. The Net Zero Carbon Roadmap presents a number of themes and commitments for achieving the net zero target including reducing road transport and switching fuel types.

2.3 Assessment Methodology

- 2.3.1 The Council commissioned WSP to prepare a Carbon Management Plan (CMP) in respect of the Scheme at Outline Business Case (OBC).
- 2.3.2 The purpose of the CMP is to demonstrate how carbon emissions will be managed throughout the life of the Scheme. The CMP is a live document that will be updated at each future stage in the Scheme delivery. The CMP has been produced in alignment with PAS 2080:2023. PAS 2080 is considered best practice guidance for managing carbon.
- 2.3.3 The CMP assesses the likely carbon impact of the Scheme over its lifecycle. The findings of the whole-life carbon assessment indicate that the net carbon impact of the Scheme over its full life cycle will be a net increase in carbon emissions of 67,826 tCO₂e. This equates to 63,600 tCO₂e from road user emissions and 4,226 tCO₂e from embodied carbon.
- 2.3.4 The CMP presents the following information in line with the requirements of producing a CMP set out in PAS2080:
- The process as to how carbon will be managed during the construction and operation of the Scheme

⁵ <https://assets.publishing.service.gov.uk/media/610d63ffe90e0706d92fa282/decarbonising-transport-a-better-greener-britain.pdf>

⁶ <https://www.leicestershire.gov.uk/sites/default/files/2022-12/net-zero-leicestershire-strategy.pdf>

⁷ <https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2022/4/19/Leicestershire-Net-Zero-Carbon-Roadmap.pdf>

- A carbon emissions baseline
- Carbon reduction targets
- Commitments on decarbonisation of the Scheme
- Opportunities to reduce carbon emissions; and
- Roles and responsibilities for managing carbon.

2.3.5 To calculate whole life carbon emissions from the Scheme WSP adopted their Carbon Zero Appraisal Framework. The Framework consists of a series of tools and methods developed by WSP to appraise and manage climate impacts relating to transport developments. It is noted that the Framework is separate from the Transport Appraisal Guidance (TAG) approach to calculating carbon emissions for inclusion in a business case. As such emissions calculated using the Framework have not been incorporated into the Benefit Cost Ratio Appraisal or Economic Business Case.

2.3.6 The WSP Carbon Zero Appraisal Framework is used to calculate whole-life carbon in accordance with PAS 2080 reporting categories. It combines a quantitative and qualitative approach to assessing carbon emissions based on available data.

Construction carbon emissions

2.3.7 Emissions during the construction of the Scheme have been reported for the following sources:

- Embodied carbon in materials used for the construction of the Scheme
- Transport to works site
- Construction and installation activities
- Embodied carbon associated with future maintenance, repair

A detailed breakdown of carbon emissions by material for each of the Scheme interventions has been provided in Appendix C of the CMP.

A target to reduce emissions from embodied carbon of between 20% and 25% has been proposed in the CMP based on an indicative estimate. This will be measured against the emissions baseline presented in the CMP. It is noted that a typical target for embodied carbon would be 20-40% however due to the advanced stage of the project this would be challenging. This target will be reviewed and fixed at a later stage of the Scheme.

Road user emissions

2.3.8 Road user carbon emissions were calculated over a 60-year appraisal period. Emissions were calculated using Defra's Emissions Factor Toolkit (EFT) version 9 as reported in the Outline Business Case. The EFT model is used to calculate road vehicle pollutant emissions rates for NO_x, PM₁₀, M_{2.5} and CO₂ for a specified year, road type, vehicles speed and fleet composition.

- 2.3.9 The Scheme is forecast to reduce traffic congestion on the A511 however the net decrease in congestion may result in induced demand with a net increase in the number of trips being made, resulting in an overall increase in emissions.
- 2.3.10 A carbon reduction target for road user emissions has not been set. The CMP notes that the Council are committed to decarbonising the transport system.
- 2.3.11 It is noted that setting a Scheme specific target is not necessarily appropriate due to the nature of road user emissions. It is anticipated that road user emissions will ultimately be reduced to net zero in line with the commitments to decarbonise road transportation presented in the government's Transport Decarbonisation Plan (Document NP12 in the List of Documents). When making a decision to award a Development Consent Order on other larger National Highways schemes including the A428 Blackcat to Caxton Gibbet and the A38 Derby Junctions, the Secretary of State has previously relied on the Transport Decarbonisation Plan as the route to decarbonisation of road transportation.

Maintenance, repair, and refurbishment

- 2.3.12 Emissions from embodied carbon associated with the maintenance, repair, replacement and refurbishment of the Scheme over its lifetime have been included.

2.4 Measure to mitigate carbon impacts

- 2.4.1 The CMP sets out the process as to how carbon mitigation measures will be identified and monitored going forward as the Scheme is delivered. It is noted that identification of mitigation measures will be an ongoing process over the duration of the Scheme.
- 2.4.2 Table 6-1 on page 35 of the CMP sets out a range of initial Carbon Management Actions that will be undertaken as next steps. Each action has been assigned a responsible person and a timeline for completion. The measures include but are not limited to ongoing measurement and reporting of carbon, engagement with the supply chain, use of local materials, maximising recycling of materials, use of efficient construction plant etc.

2.5 Contextualising the Scheme within the Council's and the UK Net Zero Ambitions

- 2.5.1 To contextualise carbon emissions from the Scheme Appendix A of the CMP presents the carbon emissions against UK carbon budgets and Leicestershire Net Zero targets. A summary of this table along with a percentage contribution of emissions in each carbon budget period is presented in the table below.

Carbon budget /target	Scheme Emissions (tCO ₂ e)	% contribution to carbon budget	Time period
4 th Carbon budget	7,086	0.3%	2023-2027

5 th Carbon Budget	4,175	0.2%	2028-2032
6 th Carbon Budget	5,114	0.5%	2033-2037
Leicestershire County Council 2045 Net Zero Target	25,455	n/a	2023-2045
National net zero by 2050 target	31,130	n/a	2023-2050

- 2.5.2 It can be seen from the table that the Scheme contributes a very small amount of carbon to the overall carbon budgets. As such it can be concluded that the Scheme does not have a material impact on the UK meeting its carbon reduction targets. It should be noted that the UK carbon budgets and the UK net zero target by 2050 are currently the only legally binding targets.
- 2.5.3 Construction emissions presented in the CMP are anticipated to reduce further as the approach in the CMP is implemented. Opportunities to reduce carbon emissions from construction will be reviewed and updated to align the Scheme with the proposed 20% to 25% embodied carbon reduction target. Construction emissions presented in this CMP are therefore considered to provide a worst-case scenario.
- 2.5.4 It should also be considered that the current method to calculate road user emissions does not fully account for the impact of the government's Transport Decarbonisation Plan where the government has set binding targets for transportation to be net zero by 2050. Road user emissions presented in the CMP are therefore considered a worst-case scenario.

2.6 Conclusion and summary

- 2.6.1 A CMP has been produced by WSP for the Scheme that aligns with best practice guidance set out in PAS 2080. The CMP identifies a whole life carbon emissions baseline for the Scheme and a process for how these emissions will be reviewed and reduced.
- 2.6.2 Carbon emissions presented in CMP for the Scheme demonstrate that the Scheme does not make a material contribution to the UK carbon budgets, nor would it prevent the UK from meeting its net zero carbon target.
- 2.6.3 The emissions presented in the CMP are considered to be a worst-case scenario. Construction emissions will be reduced as the Scheme progresses to achieve a 20-25% reduction over the baseline.
- 2.6.4 Emissions from road users have been calculated in line with best practice at the time the CMP was produced. This does not take into account the commitments made by government in the Transport Decarbonisation Plan to decarbonise transport emissions to net zero by 2050.

3. STATEMENT OF TRUTH AND DECLARATION

3.1 Statement of Truth

- 3.1.1 I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

3.2 Declaration

- 3.2.1 I confirm that my report has drawn attention to all material facts which are relevant and have affected my professional opinion.
- 3.2.2 I confirm that I understand and have complied with my duty to the inquiry as an expert witness which overrides any duty to those instructing or paying me, that I have given my evidence impartially and objectively, and that I will continue to comply with that duty as required.
- 3.2.3 I confirm that I am not instructed under any conditional or other success based fee arrangement.
- 3.2.4 I confirm that I have no conflicts of interest.
- 3.2.5 I confirm that I am aware of and have complied with the requirements of the rules, protocols and directions of the inquiry.

Signed: 

Dated: 17th May 2024

Ian Davies

