M3J9 Submission

Winchester Action on the Climate Crisis

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WinACC

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1 Summary

The applicant has failed to consider ways of tackling congestion at M3 Junction 9 that involve **solutions other than road-building**.. They should have considered:

- Improving railfreight infrastructure
- Improving local rail services
- Creating a good district bus network
- More frequent cross-country rail services.

The **traffic-flow modelling suggests the scheme will bring about only a small increase in traffic volumes and only a small drop in journey times**. The predicted increase in traffic caused by the scheme seems very modest, and calls into question whether such an expensive scheme is worth doing if it brings about so little change. National Highways have modelled how traffic levels if the scheme is built ('Do Something (DS)') will compare with levels if the scheme is not built (Do Minimum (DM)). By 2047, with the scheme, the modelling predicts **traffic will be greater across the whole modelled area by 2.86%, and traffic in central Winchester will reduce by 3%**. Some routes, such as the M3N, will experience a reduction in traffic. Either the predictions are inaccurate, or the project is relatively ineffective. Neither do the predicted journey-time savings offer a justification for the scheme if, by 2047, according to the modelling, there will be **a 7.9% average cut on journeys modelled passing through M3J9**.

The scheme struggles to achieve better than a poor **value for money rating**.

The proposals **do not address the problems of pollution by $PM_{2.5}$**. It now seems that dangerous levels of the particulates are present throughout the M3J9 at levels above the maxima recently proposed by the government. National Highways have agreed to include tables on this, but have not agreed to make any proposals for tackling the problem. $PM_{2.5}$ will pose health issues for people at the roadside and even more for people travelling inside vehicles.

The proposals **do not provide an adequate analysis on greenhouse gas emissions**. Inappropriate data has been used and it is impossible to see how National Highways have done their calculations or how they have reached their conclusions.

Government guidance on greenhouse gas reporting for applications has not been followed. There is no analysis of 'current' emissions across the area covered by the traffic modelling, and the calculations for increased emissions in future years are opaque, and the conclusions untenable.

The application has **no coherent way of allowing for the government's Pathway to Net Zero**. It is not clear what allowance has been made to reflect emissions reduction through electrification of transport, nor what assumptions have been made about the decarbonisation of the electricity supply.

Our own calculations suggest that the applicant's estimate of increased emissions is **too high when compared with the government's carbon reduction plans for 2027 and 2042**. Once full account has been taken of the emissions target reductions set out in the Road to Net Zero, it is clear the calculated increase in emissions caused by the scheme will undermine the Road to Net Zero. It is too far outside the default tolerance suggested in the National Policy Statement for National Networks (NPSNN).

Chapter 14 concludes that the growth in greenhouse emissions caused by the scheme will be negligible. This is because it compares the increase in emissions in the modelled area (Winchester Town) with baseline emissions for an unspecified much larger area. It would be legitimate to compare the increase in emissions nationally (including all current road schemes) with a national baseline, or, alternatively, to compare the increase in emissions across the modelling area with current emissions across the modelling area. It is not legitimate to compare emissions across different areas. **It is not appropriate therefore to conclude that the increase in emissions will be negligible**.

The analysis of emissions associated with construction is far more thorough and accessible than the analysis of end-user emissions. The problem with construction emissions lies elsewhere. The proposals unnecessarily involve **too much demolition of reusable infrastructure**. For example the central J9 roundabout could be adapted to the revised traffic flow rather than demolished and rebuilt.

Chapter 14 section 14.9.5 on **mitigation does not demonstrate the scale of the emissions-reduction it will achieve**. The approaches proposed are marginal to the whole application.

2 Alternatives that are truly likely to reduce both congestion and emissions have not been considered

Para 4.27 of the NPSNN says all projects should be subject to an options appraisal. The appraisal should consider viable modal alternatives and may also consider other options (in light of the paragraphs 3.23 to 3.27 of this NPS).

Section 3.1 of Chapter 3 of the application(Assessment of Alternatives) begins with a recognition of the need to consider alternative approaches:

3.1.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the EIA Regulations) require that an Environmental Statement (ES) should include a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) that have been studied by the developer which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of environmental effects.

3.1.2 Planning Inspectorate Advice Note 7 (2020) identifies that a good ES is one that (inter alia):
'...explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment'

3.1.3 This chapter presents a summary of the alternative options considered.

One alternative, modal shift of freight to rail, is strongly encouraged in the March 2023 draft National National Policy Statement for National Networks :

3.56 Government strongly supports growth in these sectors as they are predicted to have the greatest ability to transfer goods from road to rail, supporting the wider modal shift agenda and decarbonising our transport network. With the correct infrastructure in place, modal shift can be facilitated at pace, unlocking the benefits of rail freight.

Environment

3.96 Supporting the effective development of strategic rail freight interchanges (and other rail freight interchanges) in the right locations as well as other key enablers, will be a critical element of realising the full range of environmental benefits that rail freight can offer.

3.97 As chapter 2 set out, rail is a low-carbon transport mode, comprising only 1% of 2019 domestic greenhouse gas emissions. Rail is also currently the only means of transporting heavy goods in a low-carbon way using existing, proven technology through electrification. However, it is key that the sector fully decarbonises if the UK is to reach its net zero targets.

3.98 Government is also clear on the need to encourage modal shift from road to rail to realise the full environmental benefits and continues to provide funding through the Modal Shift Revenue Support grant to enable goods to be moved by rail where other modes have an economic advantage.

3.99 Strategic Rail Freight Interchange (SRFI) developments will need to be sensitive to, respond to, and contribute to their environmental context. For developments such as SRFIs, it is likely that there will be local impacts in terms of land use and increased road and rail movements. It is important for the environmental impacts to be taken into account when planning a development, by avoiding and mitigating impacts and opportunities for environmental enhancement realised.

3.101 Table 1 second row: Reliance on road-based logististics
Government is committed to modal shift from road to rail, providing both social and economic benefits to the UK, such as decreasing congestion and improving air quality, as well as boosting the economy. A network of both rail and road freight enables a more secure and resilient supply chain, as well as encouraging competition within the freight sector and driving down cost. The government is also committed to growing

> rail freight due to the environmental benefits of the sector, with rail freight emitting approximately 75% less CO2 than equivalent transport by road.

However, none of the alternatives presented by the application look widely enough at the viable possibilities. In order to identify low-carbon alternative ways of reducing congestion at M3J9 National Highways should have considered:

- Improving railway freight capacity between Southampton and the Midlands, and electrifying the route: DP World, operators of Southampton Docks have a target to increase the share of rail transport from and to the docks by 33%. National Highways have produced jointly with Network Rail https://nationalhighways.co.uk/media/rc4bekfn/solent-to-the-midlands-multimodal-freight-strategy.pdf to explore the potential for modal transfer on this route. It is government policy to develop the share of freight carried by rail, and the most effective and technologically viable way of decarbonising long-distance HGVs is to transfer their loads to rail
- Constructing SRFIs close to Portsmouth, in the North Solent Conurbation Area, and close to BCI to reduce logistics traffic on the A34 and M3
- Developing good frequent rail local passenger services between Basingstoke and Southampton
- Developing good active transport, and public transport networks radiating from the railway stations served
- Developing a public transport interchange at Winchester railway station
- Building rail passenger stations where lines serving places in the catchment of M3J9 pass close to large areas of housing e.g. at Springvale, Whiteley, and Welborne
- Developing a frequent low-carbon bus network across Hampshire, especially north of Winchester to Newbury, and,
- Trebling cross-country train services to Oxford bringing them above their pre-covid frequency.

These approaches could reduce local traffic on the M3 between Basingstoke and Southampton, freight traffic from Southampton to the Midlands, and local traffic on the A34 by an extend that would obviate the need for these proposals. These changes alone could reduce emissions in the modelled area well below their current levels even without road vehicle electrification.

We hope the examination will explore why the applicant has failed to explore and appraise these alternatives and consider their potential as solutions.

3 Improbable predictions of low increases in volume and minor reductions in journey time

The modelling maps in document 7.10 Combined Modelling and Appraisal Report compare traffic flow if the project does not go ahead (Do Minimum (DM)) with what will happen if the project goes ahead (Do Something (DS)). The final comparison models what will happen in 2047.

Traffic Volumes

In the table below we have added together both directions for the AM peak, the period between the peaks, and the PM peak.

2047	AM+IP+PM		
	Do Minimum	Do Something	DS/DM%
Andover Road	2,843	2,374	83.50%
Romsey Road	1,077	1,092	101.39%
St Cross Rd	2,028	1,779	87.72%
Chesil Str	2,371	1,873	79.00%
Alresford Rd	2,561	2,501	97.66%
Easton Lane	1,712	2,152	125.70%
Worthy Rd	1,640	1,503	91.65%
Petersfield Road	5,392	5,735	106.36%
Local RoadsTotals	19,624	19,009	97%
A34N	14,810	17,595	118.80%
A33N	1,986	2,183	109.92%
M3N	17,308	17,260	99.72%
M3 Sports Centre	31,704	32,689	103.11%
M3 Twyford Down	37,455	37,670	100.57%
Strategic Roads Totals	**103,263**	**107,397**	**104.00%**
Full total	**122,887**	**126,406**	**102.86%**

There are some roads that will suffer major traffic increases: especially Easton Lane, and the A34 as it passes through King's Worthy. Some roads will benefit from major decreases such as Chesil Street and Andover Road.

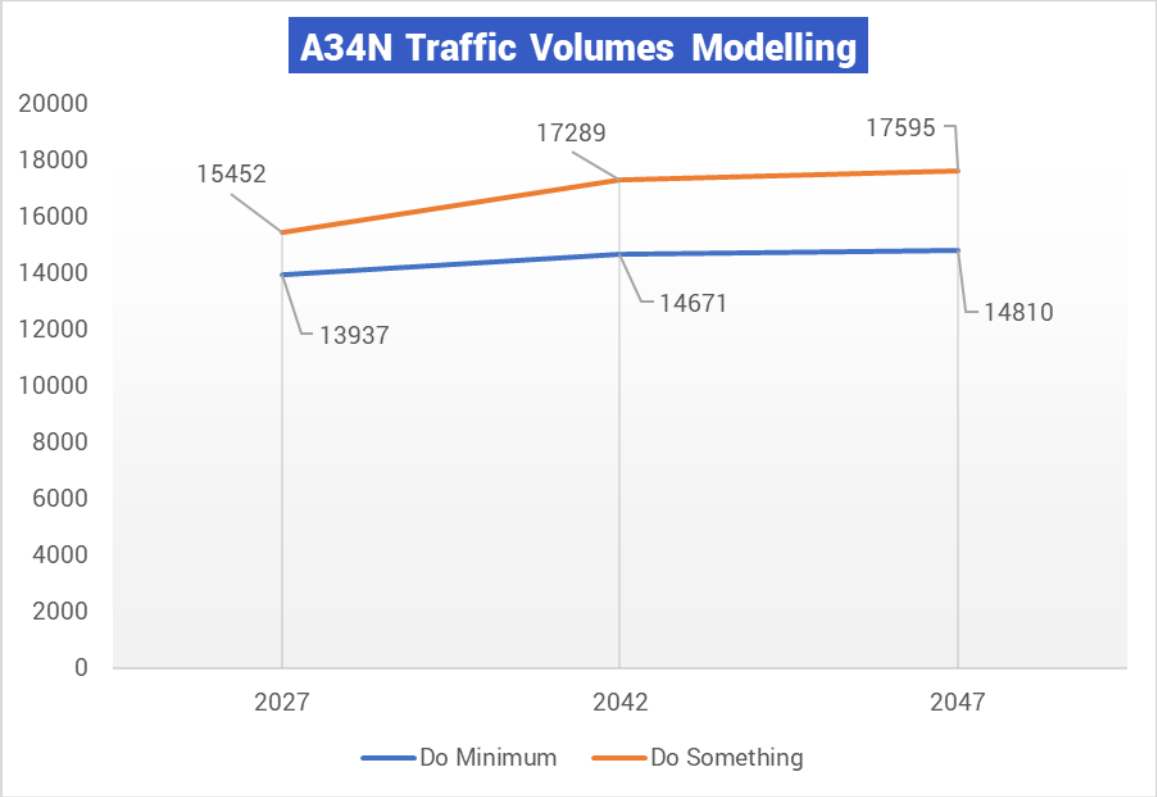
However the overall picture is one of very little change. It is very surprising that the modellers predict a small reduction in traffic along the M3 from Winchester to Basingstoke. It will reduce traffic levels within Winchester Town very little.

There are four possible reactions to this low-impact forecast:

- In the long-term this will not be too detrimental even if it may not achieve much
- It's not worth spending so much money on a project that will have so little impact
- The forecasts have been 'fixed' to get the project through (on the 'Trojan Horse' principle) and traffic volumes could increase far more one the project is built
- Alternative proposals such as rail improvements to encourage more rail freight, good bus services, and frequent local rail services could have more impact for less expenditure.

Even where there will be the highest level of traffic growth, the growth is predicted to be slow. The modelling is at odds with research that shows that road widening encourages additional traffic, to the extent that additional road capacity is soon filled:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762976/latest-evidence-on-induced-travel-demand-an-evidence-review.pdf

The report above accepts that induced demand is a significant phenomenon. In the worst cases, especially where there is traffic congestion, traffic will increase to fill the available space. The applicant proposes doubling (at least) the carriageway width on the route through the junction linking M3S and A34N in both directions. In a situation like this it would not be unknown for traffic to double. This route does show the greatest two-way traffic increase across the 20 year modelling period but the increase of 26% predicted by the modelling understates the likely results of a 100% capacity increase:



Journey Times

The average of predictions on how route journey times will be reduced by the proposals seem similarly underwhelming. For 2027 most time savings across Winchester are less than a minute, and even the greatest time-savings are little over 1 minute 30 seconds. Average % reduction in journey times across Winchester in the modelling area is only 10% and we calculate the **average time saving** on the journeys to be **56 seconds**.

In the Case for the scheme Table 4.3 shows that in 2047 the benefits will be even less. Journey time savings on these journeys across M3J9 will average only **30.3 seconds**, a mere **7.9%** of the DM journey times on the routes in the sample. Worse, the main savings are on those journeys with fewest vehicles, and most of the busiest through journeys (M3S to M3N, M3N to M3S M3S to A34) will actually take longer if the project takes place:

Route	Description	2047		
		Do-Minimum (DM) – Without Scheme	Do-Something (DS) – With Scheme	Difference (DS-DM)
R1	M3S to M3N	08:00	09:09	01:09
R2	M3N to M3S	05:58	06:02	00:04
R3	M3S to A34	10:22	10:45	00:23
R4	A34 to M3S	08:23	07:44	-00:39
R5	A33 to Easton Lane	03:43	04:35	00:52
R6	Easton Lane to A33	06:49	03:07	-03:42
R7	A31 to M3S	03:57	03:53	-00:04
R8	M3S to A31	06:10	07:35	01:25
R9	A31 to Easton Lane	03:46	03:05	-00:41
R10	Easton Lane to A31	07:09	03:19	-03:50

These benefits are insignificant. With scheme costs at £105,022,033 (2010 prices) the price works out at **£3,466,073.70 per second saved** on average cross-M3J9 route journey-time. 2023 prices are about 50% higher.

We hope the examination will ask the applicant to produce additional material to demonstrate that these figures are accurate, to justify the disruption and expenditure they propose, and to clarify that improving other transport modes will not prove a more cost-effective way of tackling the congestion at M3J9. For transparency and to help gauge the full impact of the scheme it would be appropriate for the applicant could release the data of the 2017 traffic-flow baseline they appear to have used to validate the modelling and develop their forecasts.(para 3.5 of 7.10 Combined Modelling and Appraisal.pdf)

Low Benefit : Cost Ratio

These unimpressive forecasts are no doubt factored in to the overall benefit : cost ratio of the scheme. Para 5.6.1 of 7.1 Case for the Scheme says

> With consideration of user benefits plus the effects of delays during construction, accident benefits, indirect taxation benefits, and monetised environmental impacts, the initial Benefit to Cost Ratio (BCR) is 1.44. Inclusion of the wider economic impacts gives an adjusted BCR of 1.81.

Without the wider economic impacts the scheme would have been in the 'poor' category in the government's Value for Money Framework . With a more thorough calculation of the greenhouse gas emissions suggested below the scheme could return to that category.

Box 5.1 Standard Categories

(Transport cost outlays exceed revenues or cost savings)

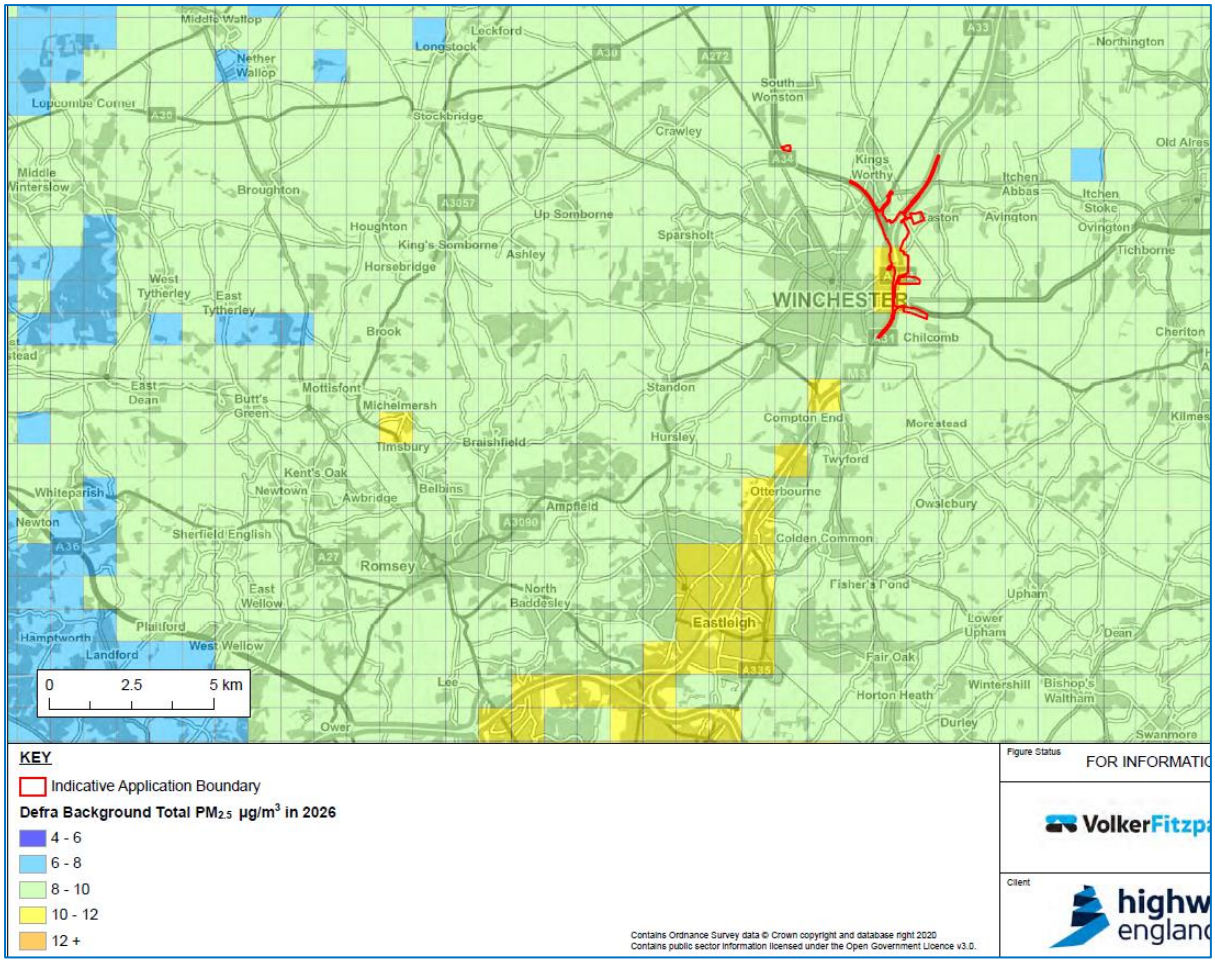
VfM Category	Implied by…*
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 1.5
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

**Relevant indicative monetised and/or non-monetised impacts must also be considered and may result in a final value for money category different to that which is implied solely by the BCR. This chapter provides guidance on how to select the final value for money category.*

4 No proposals to tackle $PM_{2.5}$ pollution

The government has now set air quality standards for $PM_{2.5}$. The new legally determined target is 10 µg/m3 annual mean concentration $PM_{2.5}$ nationwide by 2040, with an interim target of 12 µg/m3 by January 2028

The Preliminary Environmental Information Report Appendix 5.1 – Air Quality Figures (Part 6 of 6) May 2021 includes a map of $PM_{2.5}$ emissions along the M3. The map makes it clear that J9 will be close to non-compliance by 2028, and non-compliant by 2040. The level of $PM_{2.5}$ reported in the PEIR, is 10-12 µg/m^3



The area could well become more polluted by 2040, but no projection has been provided by the applicant.

Failure to address $PM_{2,5}$ pollution is raised in 6.3 Environmental Statement - Appendix 4.2: Scoping Comments and Responses comment IDs 4.2.4 and 4.2.7 but met with little interest from the applicant. They do not appear to address the threat to human health recognised in the recent government guidance and targets (Air quality strategy: framework for local authority delivery - GOV.UK (www.gov.uk)).

We hope the examination will explore proposals to limit $PM_{2.5}$ pollution.

5 Denial of significance of national and local climate change targets

The Environment Statement Chapter 14 states:

14.5.38 It is noted that the CCA 2008 does not impose a legal duty to set carbon budgets at a smaller scale than national i.e. regional, local or sectoral. The Government has not made public any forecasts of carbon emissions from all relevant cumulative

> sources at a scale less than the national level, over a time frame relevant to the assessment of a particular proposed road scheme, which reflects existing government policy to attain the 6th carbon budget and net zero 2050 and which does not include carbon emissions from the proposed road scheme. Therefore, there is no reasonable basis upon which an assessment can be made on the carbon emission impact of the Scheme at a local, regional or sectoral level. The impact assessment has therefore only been undertaken against national level carbon budgets. This approach is in accordance with DRMB LA 114 climate (Highways England, 2021).

Currently there is a national target of net-zero emissions by 2050 with specific intermediate targets set out in the government's net-zero pathway. Only if the government were at a national level to set local carbon budgets would this national set of targets be superseded locally. By default, therefore, the national target of net-zero emissions, and the net-zero pathway will apply to the area covered by this scheme. This will continue to apply until and unless national legislation covering this local area has been passed to amend the law that currently applies nationally in a uniform way.

The national targets have been adopted locally by Hampshire County Council, and taken further by Winchester City Council (ES Chapter 14 para 14.7.6) and aim for a net-zero-carbon district by 2030. Since there are no nationally determined targets specifically affecting the local area that would supersede ones set locally, we submit that the targets set by Winchester City Council are the ones that should be applied to this development.

As an analogy it would be absurd to suggest that even though there is a national speed limit of 70 mph it does not apply to the area proposed for this scheme because no law has been passed nationally confirming that the national speed limit applies here.

6 Greenhouse gas analysis does not comply with guidance

NPSNN

The 2014 NPSNN, despite its expectation that individual road schemes will not affect the government's ability to meet carbon targets, nonetheless requires evidence and an assessment far more rigorous than the applicant has provided. While it may not be necessary to achieve national targets in a single project, the guidance seems to require an analysis to demonstrate how far every scheme relates to national targets:

Applicant's assessment

5.17 Carbon impacts will be considered as part of the appraisal of scheme options (in the business case), prior to the submission of an application for DCO. Where the

development is subject to EIA, any Environmental Statement will need to describe an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive. It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets. However, for road projects applicants should provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets.

In the March 2023 draft this has been strengthened:

5.29 A whole life carbon assessment should be used to measure greenhouse gas emissions at every stage of the proposed development to ensure that emissions are minimised as far as possible as we transition to net zero. This includes the construction, maintenance, operation and use of the asset across its entire lifecycle.

DRNB LA144

Nowhere in DRNB LA 114 is the approach adopted by the applicant advocated, or even allowed for. It does not require there to be local targets before an assessment can be made. It requires that "projects shall use the assessment and design process to demonstrate their contribution to reduced GHG emissions in line with the EIA Directive 2011/92/EU [Ref 1.N] and the Climate Change Act 2008 SI No. 1056 CCA 2008 [Ref 10.N]." and that

"The assessment and reporting shall identify the scale and nature of GHG emissions across the whole project life cycle, taking into account design and mitigation measures already incorporated into the project."
LA 114 Climate Appraisal for Road Schemes

The baseline requirements of LA 114 require an analysis of the likely significant effects on the environment to include a baseline assessment of emissions before the project begins. and estimates of equivalent data at 'key lifecycle stages' for a period after the project is completed. Climate data should be consistent with the study area. In this case this is probably the traffic modelling area.

The application does not comply with these requirements of LA114:

3.1 The scoping assessment shall report on the likely additional and avoided GHG emissions at each life cycle stage of the project, in comparison with current and future baseline GHG emissions.

3.2 The scoping assessment shall report on the nature and scale of GHG emissions (positive, neutral or negative) and the likelihood of significant effects.

Study area

3.8 For construction and operational maintenance, the study area shall comprise GHG emissions associated with project construction related activities/materials and their associated transport.

3.9 For operational road user GHG emissions, the study area shall be consistent with the affected road network defined in a project's traffic model.

Baseline scenario

3.10 The GHG emissions without the project shall be identified for the current and future baseline (do-minimum scenarios).

3.10.1 The boundary of the baseline GHG emissions should include current operational maintenance GHG emissions and operational user GHG emissions.

3.10.2 The baseline GHG emissions should be consistent with the study area outlined for the project.

The application does not provide the emissions data required..

The analysis fails to meet the requirement in LA114 that changes greater than 10% be highlighted.

It appears that Chapter 14 does not wish to distinguish between emissions in this scheme's area and transport emissions across the whole of the southeast of England (undefined):

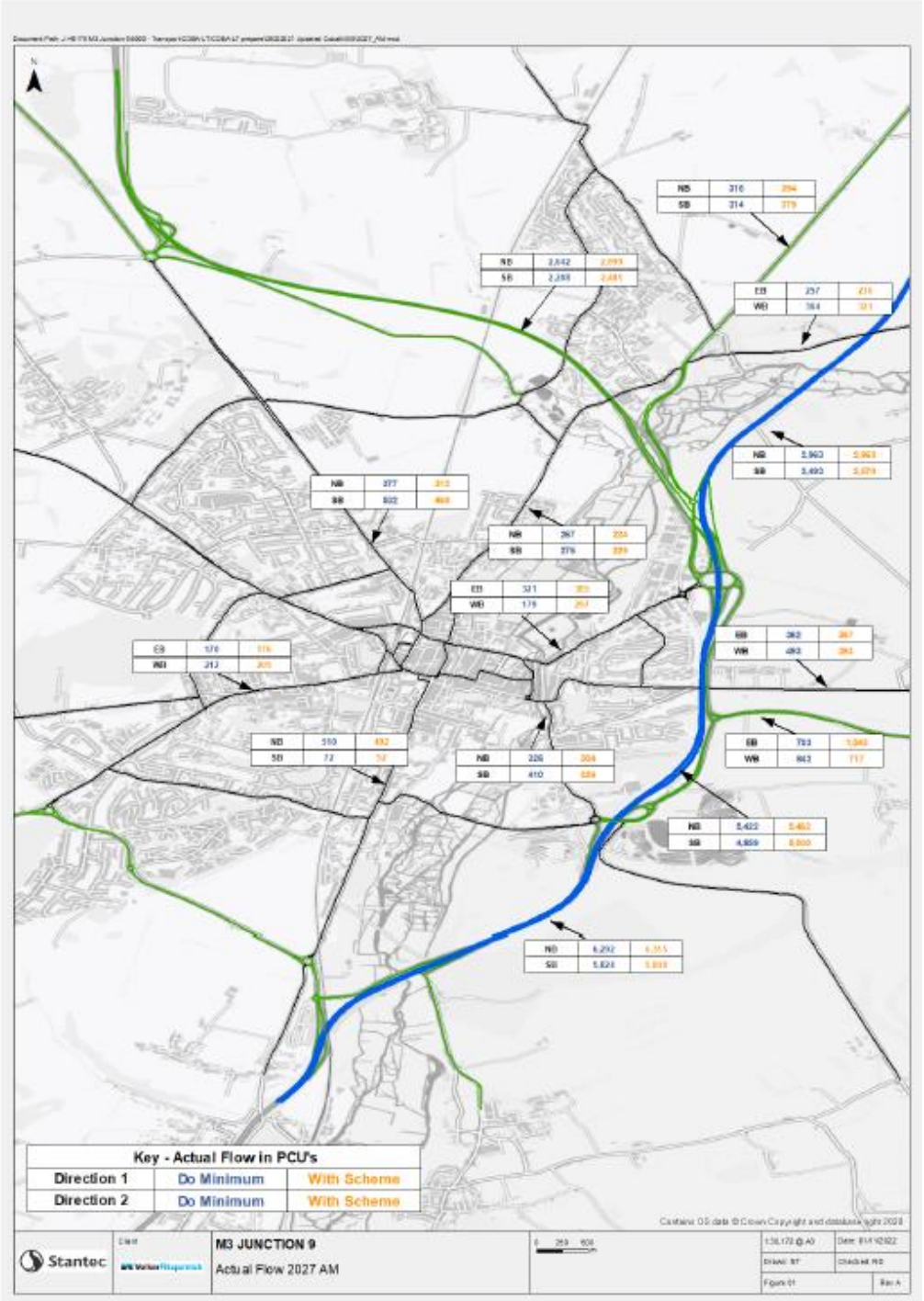
> "The modelling includes the total GHG emissions for all existing traffic using the strategic road network (covered by the traffic model) in the vicinity of the Scheme and its surrounding region (south east England)."

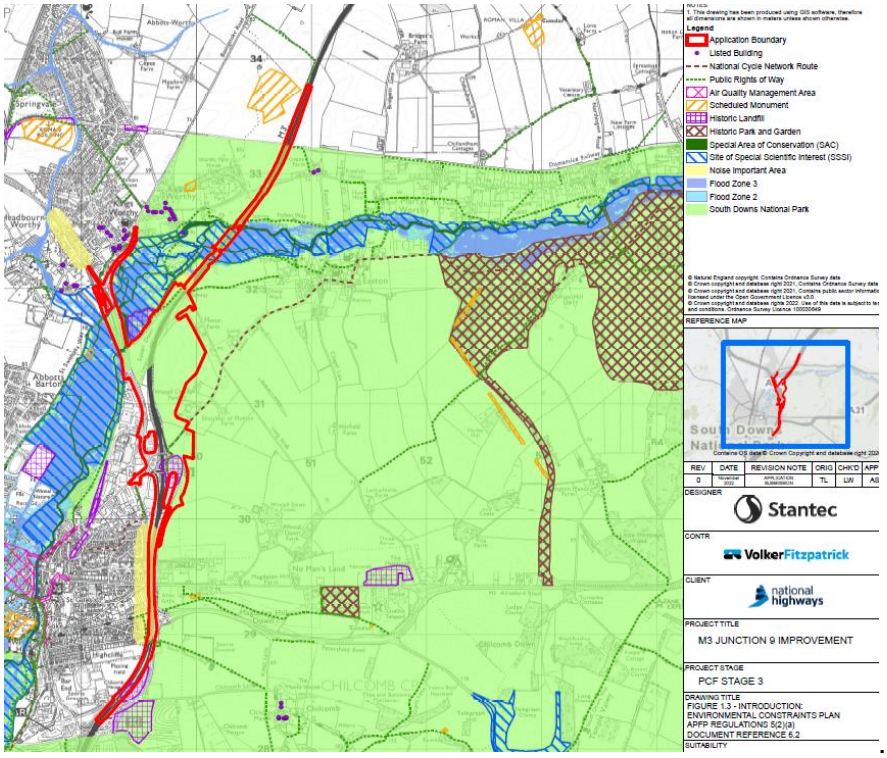
Chapter 14 is wrong to say that this is modelled in accordance with DMRB LA 114 Climate. LA 114 says clearly

The Modelled Area

Para 3.10.2 says the baseline GHG emissions should be consistent with the 'study area' outlined for the project. The most appropriate area for this 'study area' would be the area used for traffic modelling. Data on greenhouse gas emissions and traffic levels and journey times can then be aligned referring to the same dates and geographic area. The modelled area used in the map below and many other modelling maps extends the 'application area' by adding the M3 south to J11, and also adds an area of mostly minor roads across an area of 6.75 sq miles (17.47 km²) covering Winchester Town. Winchester District covers 255.2 square miles (661 km^2) so it is not appropriate to rely on emissions data for the whole district.

Figure 4-3: Core Scenario Flows, 2027 AM Peak, Do-Minimum and Do-Something Scenarios (NB-northbound, SB-southbound, EB-eastbound, WB-westbound)





The following still need to be provided:

- A current greenhouse gas baseline for the modelled area
- Greenhouse gas projections for the modelled area for 'do something' at key stages
- Greenhouse gas projections for the modelled area for 'do minimum' in the same years as the proposed 'key stages'
- A greenhouse gas projectory showing how 'do minimum' assumptions reflect the government's road to net zero.

7 The need for a more rigorous treatment of climate and traffic data

The dates of the traffic modelling do not tie in with the dates used for the climate data. It is not possible to see the relationships between the two sets of figures.

Inconsistency of 'place'

- The applicant has provided baseline emissions monitoring data for the whole South East and for the whole of Winchester District and gives a figure for the emissions in 2027 and 2042 for the whole South East, suggesting wrongly that this is the 'traffic model' area (paras 14.7,15/16). The conclusion is based on a comparison between the figure for national emissions and the projected emissions increase within the modelling area. This is clearly not a valid comparison.

- Traffic modelling focuses on the application area plus Winchester Town for all years modelled.

Inconsistency of 'year'

- Chapter 14 refers to a plethora of dates in its introduction on emissions but makes no comments on the relevance most of these references have to the proposal. Table 14.3 quotes emissions data for 2020 (South East England and Winchester District) as 'baseline.' End-user' emissions data are given for 2027 and 2042.
- Traffic modelling gives 2015 and 2017 as base years, but gives no data, and gives data for forecasts for 2027, 2042, and 2047.

2020 was an atypical year

The **background data** is not clearly presented or well chosen. Chapter 14 (para 14.7.5) refers to DESNeZ (formerly BEIS) data for all transport emissions in Winchester District in 2020 as 356.5 $ktCO_2$.(confusingly referred to as 'Winchester City Council'). The figure reported by DESNeZ was indeed roughly that (actually not for CO_2 but for Greenhouse Gas at 356.51 $ktCO_2e$).

More serious is the decision to use data for 2020. As the first year of Covid-19 it was atypical, and it would have been better to report transport emissions in 2019 as a more accurate predictor of future emissions (at 448.509 $ktCO_2e$ over 25% higher). Initial data for 2021 suggests emissions will return to the previous trajectory at 95% of the 2019 figure.

Towards an emissions baseline figure for the traffic modelling area in 2021

We set out below an initial sketch of what we think the climate change calculations in the application should have looked like, and consider how the results compare with the results provided by the applicant.

First, an estimate of how 2019 figures could turn out in 2021 would need to be made. 2021 is likely to be a far more typical year for emissions than 2020 (chosen as a starting point by the applicant). In 2020 emissions were abnormally low because of Covid-19.

Emissions reported for both motorways and 'A' roads in Winchester District totalled :230.47 $ktCO_2e$ for 2020 and 298.08 $ktCO_2e$ for 2019. For 2021, if we accept indications that it will be 95% of the 2019 figure, this would suggest a possible 2021 figure of **283.18 $ktCO_2e$.** The actual DESNeZ / Ricardo estimate will be published in June 2023.

Emissions reported for minor roads in Winchester District totalled: 141.27 $ktCO_2e$ for 2019 and 118.29 $ktCO_2e$ for 2020. For 2021, if we accept indications that it will be 95% of the 2019 figure, this would suggest a 2021 figure of **134.21 $ktCO_2e$.**

The table below then scales down these 2021 projected figures to emissions within the study area. We have allocated emissions to each 'A' road and the M3, focusing on those stretches inside the scheme boundary as set out in the maps. Where possible we have used the 'DM' traffic volumes from 6.2 Environmental Statement Chapter 1 Introduction – Figures and multiplied them by the length in miles for each stretch of road and apportioned total emissions.

For minor roads in the modelled area it is more difficult to estimate emissions. The modelled area covers only 2.64% of Winchester District. Because of Winchester Town's importance as a traffic focus and the relative density of the traffic network, we have assumed minor roads there handle 10 times the intensity per hectare compared with District average. We have estimated therefore that the modelled area had 26.4% of the district's minor roads emissions, and have expressed that as a proportion of our projected emissions for district minor roads in 2021.

The table below shows the results of these calculations. It is unlikely this is a precise estimate, but it is an initial attempt to provide an illustrative example of the type of calculation the applicant should have made.

We have used this breakdown to calculate an illustrative **'current' baseline** for Motorway and 'A' road emissions and minor roads within the modelled area.

We calculate this to be **152.72 $ktCO_2e$.** No equivalent data is given in Chapter 14. The closest to an equivalent, the figure given in 14.7.16 is **3,214.7 $ktCO_2e$**. This is, inappropriately, for 2027 and is not therefore the 'current' baseline required. The guidance requires an initial 'current' baseline and also a DM baseline for subsequent years.

Road	Traffic Volume at Winchester	Length mls	Apportionment Factor	% of Total Winchester minor road, 'A' road, or motorway Emissions	Volume of transport emissions $ktCO_2e$	Notes
A34 in model	55,537	3.13	173,830.81	22%	27.54	volume from 6.1 chapter 1 - figures p14
A34 outside model	59,983	4.07	244,130.81	30%	38.68	volume from 6.1 chapter 1 - figures p14
A33 inside model	4,307	1.56	6,718.92	1%	1.06	volume from 6.1 chapter 1 - figures p14
A33 outside model	4,307	7.36	31,699.52	4%	5.02	volume from 6.1 chapter 1 - figures p14
A31	13,271	8.71	115,592.85	14%	18.32	
A272 east	6,837	10.98	75,067.19	9%	11.89	Assume split 2 parts A31, one part A272E
A272 east inside model	5,635	1.49	8,396.15	1%	1.33	volume from 6.1 chapter 1 - figures p14
A3090 inside model	11,066	1.35	14,939.10	2%	2.37	volume from 6.1 chapter 1 - figures p14
A3090 outside model	11,066	4.23	46,809.18	6%	7.42	volume from 6.1 chapter 1 - figures p14
A272 North	8,573	2.48	21,261.04	3%	3.37	volume from 6.1 chapter 1 - figures p14
A32	4,307	11.8	50,822.60	6%	8.05	Assume volume same as A33
A334	4,307	4.43	19,080.01	2%	3.02	Assume volume same as A33
'A' road total			808,348.17	100%	128.08	emissions based on DESNeZ Winchester District 2019 projected to 2021
Estimated % of Winchester District				26%	35.50	
Minor Roads total					134.21	emissions based on DESNeZ Winchester District 2019 projected to 2021
M3 inside model N of J9	67,887	2.23	151388.01	10%	15.78	volume from 6.1 chapter 1 - figures p14
M3 in model J9 to J10	121,327	4.08	495014.16	33%	51.60	volume from 6.1 chapter 1 - figures p14
M3 inside model J 10 to J11	143,783	1.17	168226.11	11%	17.53	
M3 North outside model	67,887	6.17	418862.79	28%	43.66	volume from 6.1 chapter 1 - figures p14
M3 South outside model	125,649	3.23	405846.27	27%	42.30	volume from 6.1 chapter 1 - figures p14
Motorway total			1487949.33	100%	155.10	emissions based on DESNeZ Winchester District 2019 projected to 2021
total emissions in area modelled					152.72	

Nothing has been provided to show how the two 'baseline' figures have been arrived at by the applicant. The table in paragraph 14.7.5 gives the DESNeZ figure for all transport emissions in 2020 for the whole government South East Region: **15,538.95 $ktCO_2e$** (for greenhouse gas, not, as labelled, CO_2 only). Paragraph 14.7.16 suggests the baseline emissions will be **3,214.78 ktCO2e** in 2027 and **2,497,84 ktCO2e** in 2042. There is nothing to explain how these two 'baseline' figures were arrived at or what they represent. There are vague references to the government's carbon budgets, but Chapter 14 does not explain how these have been incorporated into the calculations. Neither are we told how the volume of "all the traffic using the strategic network" (4.7.15) was determined or which strategic network the document is referring to.

This is not the approach specified in the guidance referred to above.

Compared with our calculations the applicant's figure given for the 2027 DM is **at least 21 times too high**. It is completely out of alignment with DESNeZ data for Winchester District, and as such is of no value as a monitoring baseline for the change in emissions that will happen as a result of this scheme.

8 Need to reflect Government Net Zero Pathway more completely

Chapter 14 refers only briefly to the government's carbon budgets. More useful and more detailed is the associated government Pathway to Net Zero. The March 2023 draft NPSNN clarifies the government's approach and how this should be followed:

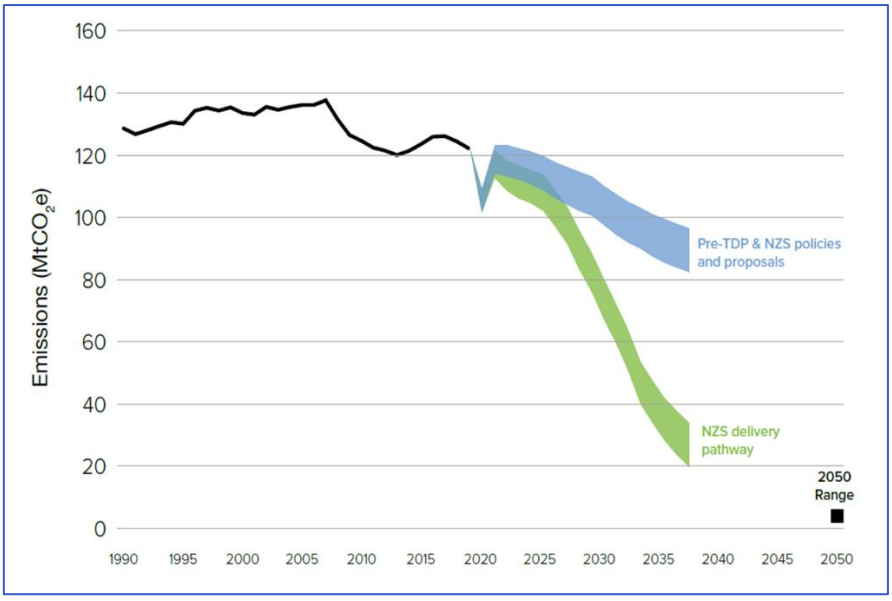
> 2.20 In June 2021, the Government set the sixth carbon budget covering 2033-37, setting a level representing an approximate 77% reduction in greenhouse gas emissions (including international aviation and shipping) compared to 1990. These carbon budgets are set to ensure the UK keeps to a trajectory consistent with meeting its 2050 net zero emissions target as set out in the Climate Change Act 2008 (as amended)
>
> 2.24 Carbon emissions from construction and operation of the strategic road network represented around 2% of the total emissions that year, with the vast majority generated by the vehicles that travel on them. The National Road Traffic Projections 2022 provide a strong analytical basis for understanding the potential evolution of traffic growth, congestion, and emissions under a wide range of plausible future scenarios. In all scenarios carbon dioxide tailpipe emissions are projected to fall significantly due to the anticipated uptake of EVs. This assumption reflects recent developments in the electric car and van market, in particular lower battery prices and a recent acceleration in sales..

This should be treated as a benchmark for what is proposed. This sets out on an annual basis what the government think is required for reducing emissions up to 2037 and for 2050. The net zero pathway suggests norms for percentages by which transport emissions need to be reduced to reach net zero. We have applied the government percentage reductions for transport emissions to the estimated pre-covid baseline in 2019 for the area within the application boundary. We suggest this be the baseline for future years since it is a reliable indication of what needs to happen in the modelled area to make a proportionate contribution to the government's Pathway to Net Zero. Since the current roadmap does not give figures for 2042 or 2047, we have estimated (shaded grey) what that would be on the government-proposed reduction curve.

Where DS predictions exceed these figures we would expect strong justification and identification of compensatory measures, without which this project should not proceed.

Emissions within modelling area projected in accordance with the government's Road to Net Zero (domestic transport)																	
		2019	2021	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	*2042*	*2047*	2050
% 0f 2019	Upper	100%	100%	85%	78%	72%	65%	59%	53%	44%	39%	34%	31%	28%	*19%*	*10%*	5%
	Lower		92%	75%	68%	62%	55%	49%	42%	33%	28%	23%	19%	16%	*11%*	*5%*	2%
M3J9 Estimated Emissions $ktCO_2e$		160.76															
M3J9 Estimated DM Baseline $ktCO_2e$	Upper		152.72	129.24	119.63	110.51	100.02	90.41	80.29	66.81	59.56	52.57	47.20	42.46	*30.47*	*16.25*	3.52
M3J9 Estimated DM Baseline $ktCO_2e$	Lower		140.61	114.26	104.27	94.78	84.04	74.17	63.81	50.07	42.58	35.34	29.72	24.60	*17.24*	*8.58*	1.10

Calculated incorporating the transport emissions pathway data given in Net Zero Strategy: charts and tables (updated 5 April 2022) (publishing.service.gov.uk).



Indicative national domestic transport emissions pathway to 2037

Chapter 14 gives what it calls baselines for 2027 (3215 $ktCO_2e$) and 2042 (2498 $ktCO_2e$) but these are so at odds (**26 to 105 times too high**) with our calculations that we conclude that the whole process is fundamentally flawed. It is misleading to inflate the baseline figures in this way; it has unjustifiably minimised the scale of any changes caused by the works proposed.

9 End User 'Do Something (DS)' Emissions: High % Increases

Chapter 14 paragraph 14.10.13 gives estimates for emissions during the first year (2027) of the proposed scheme. The increase is **2.69 $ktCO_2e$** above the level of emissions that would happen without the scheme but it is not clear what area this increase applies to or what any of the other assumptions are behind this calculation.

It is probably prudent to regard the stated increase as unreliable as the calculation of the baselines. However, if the calculation of the increase were to prove credible, but the baselines were to be abandoned in favour of our baselines, this increase of 2.69 $ktCO_2e$ would add **2.1%** to **2.4%** to the net zero pathway baseline range we have identified for the modelled area. This would still probably be too high and would pose a serious risk to government plans to reach net zero by 2050.

The estimated increase in 2042 is **2.2 $ktCO_2e$**. The government Net Zero pathway does not yet include a range for 2042, but by apportioning the targets for 2037 and 2042 we have estimated the target range for 2042 as between 11% and 19% of 2019 emissions. This would give an increase of **7.25%** to **12.82%** over

the DM baseline necessary to reflect government net zero targets. It is clear from this that by 2042 increased emissions caused by this scheme, even using National Highways estimates, is unacceptable and will undermine the national climate change strategy.

Under LA114 guidance (3.3), increases in traffic volumes of over 10% against the baseline should give rise to 'further assessment.' According to the Introduction maps this applies to A34N, A33N and Easton Lane. There is no evidence that this requirement for further assessment has been met.

10 Unreliable conclusion

The conclusion given in Chapter 14 para 14.10.14 is clearly flawed. It is of little relevance to compare the emissions increase in a small area around Winchester with an indeterminate area that has emissions DM figures at least fourteen times too high for the traffic modelling area. All we are told is that comparative emissions DM figures are for a 'strategic road network' covering an area somewhere between the application area and the whole of the South East of England. In common language, we should not be comparing apples with fruit we do not even have a description of.

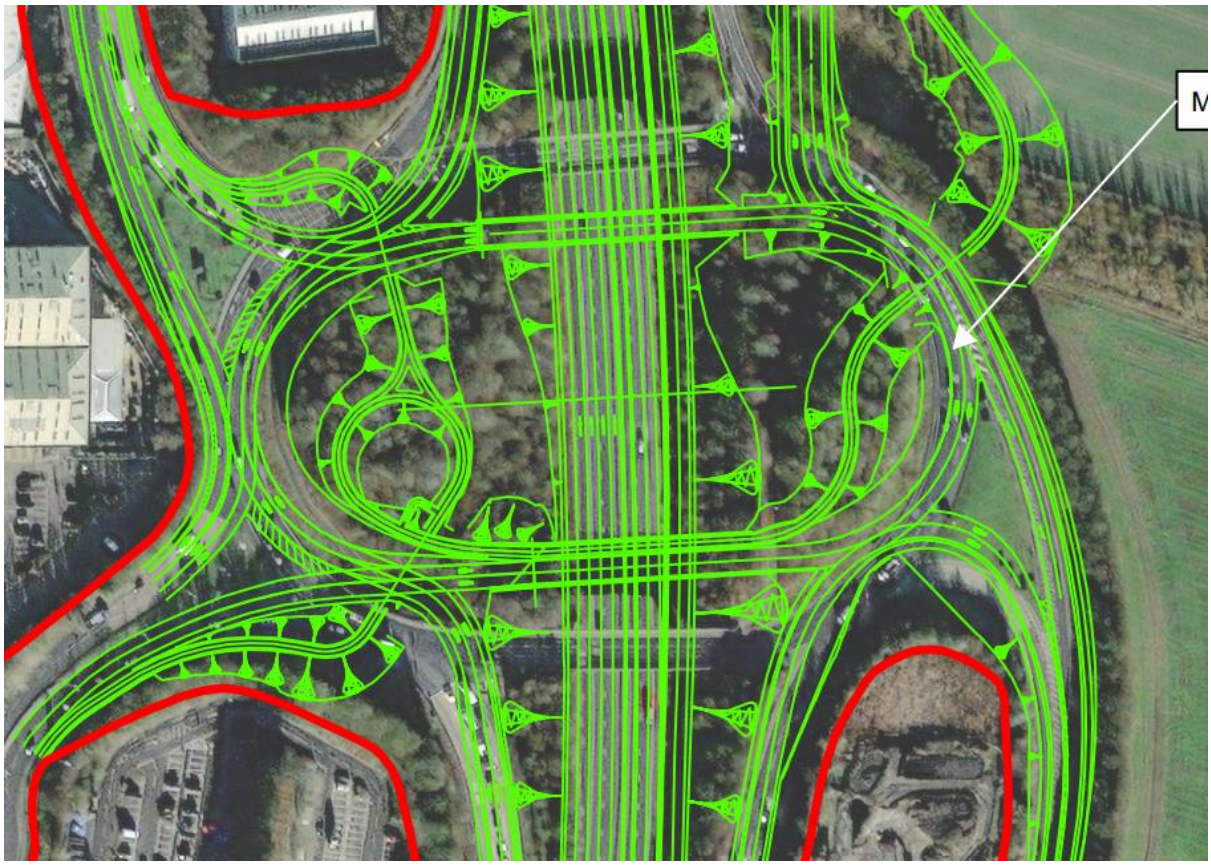
Appendix 14.2 lacks sufficient information for a responsible decision based on its data and conclusions. The poor use of data in determining the baseline suggests close scrutiny is necessary. Before any decision can be made on this application there is an urgent need for more information on assumptions used in the calculations:

- the rate of vehicle electrification
- the traffic generation effect of doubling road capacity at a point of congestion (many studies show quadrupling of traffic in time in such places - a report by WSP in 2018, Latest evidence on induced travel demand: an evidence review (publishing.service.gov.uk), confirmed that induced traffic should be treated as a significant factor)
- how government emissions reduction targets are reflected in the DM calculations
- the availability of green electricity and the mix, source, and carbon content of the electricity supply in the years chosen
- how the greenhouse gas calculations reflected these assumptions.

11 Need to reduce scale of infrastructure replacement to reduce high levels of embedded carbon emissions

Appendix 14.1 lists clearly the emissions associated with construction, and shows the calculations. It demonstrates a thoroughness that is missing in sections on baseline emissions and end user emissions.

Table 14.7 on p 28 of Chapter 14 suggests that construction emissions (37 $ktCO_2e$) will be greater than increased operation emissions (30.6 $ktCO_2e$) between 2027 and 2037 although operation emissions will continue. The use of steel and concrete in new structures is an important part of this. Given the urgency of the climate emergency it does not seem to us right to demolish and then replace so many concrete and steel structures, just to rebuild them slightly differently. For example, it seems extravagant to demolish and replace the main roundabout at J9. The detailed maps show that the existing bridges could be adapted for the proposed scheme. For example in ES Chapter 1 the aerial view of the J9 roundabout with superimposed plans does not demonstrate convincingly the need for replacing the structure.



This application should not be approved without full justification where it is proposed to replace existing infrastructure that could be adapted.

12 Need for numeric detail on mitigation

Chapter 14 section 14.9.5 touches on construction mitigation, but the examples seem marginal compared to the scale of construction proposed.

A number of mitigation proposals are included but by now they should be quantified in terms of the emissions they will save. Examples of sentences that need to be accompanied by **hard quantitative measures** of savings achieved include:

- "Use of warm mix asphalt (WMA) instead of hot mix asphalt on all road surfaces, reducing embodied carbon associated with the production of materials"
- "The provision of a high quality accessible pedestrian and cyclist routes will encourage and enable travel by low-carbon, sustainable modes"
- "The use of Euro 6 compliant vehicles which are more fuel efficient and/or EVs within National Highways fleet used during the construction of the Scheme"
- "Use of materials with lower embedded GHG emissions and water consumption where possible"

There is little to assure us that the results of all these ideas will be more than marginal in an otherwise high emissions project.

Tables 14.4 and 14.5 list emissions, but we are given no sense of how much the mitigation techniques proposed reduce these figures which appear to be undesirably high.