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For Deadline **D1**

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By email to

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July 5th 2021

Dear Inspector Hutson

**Further information requested under Rule 17 of the Examination Rules
A47 Blofield to North Burlingham Examination**

I note your Rule 8 letter of June 22nd, 2021, and further information requested from the Applicant under Rule 17 of the Examination Rules and wish to make these comments at this stage.

1. I can only find paragraph 3.21.1 in the latest version of the DMRB LA 104 guidance. Your request for further information also refers to paragraph 3.21.2.

1.1 Cumulative Construction or Embedded Emissions

2. With reference to the Design Manual for Roads and Bridges (DMRB) LA 114 Table 3.11.1, “Construction Stage” emissions are usually calculated solely for the project in question. Therefore these should be simply cumulative, project-by-project, and do not incur the inherent risk of double counting.
3. Under PAS 2080¹, module D includes GHG emissions associated with ongoing land use change/sequestration. Future loss of ability to sequester carbon from habitats lost during construction (over the 60-year assessment period) are included in construction emissions. Emissions from immediate loss/disturbance of habitats, for example, carbon from trees, vegetation and soil carbon lost are also included in construction emissions.
4. The following table gives a simple list of some known projects within the local area and shows the extent of available data for “construction emissions” and “land-use change related emissions”.

¹ BSI (2016) PAS 2080:2016 Carbon Management and Infrastructure

	Promoter	Published construction emissions tCO ₂ e	Published land clearance and loss of land use carbon sequestration	Carbon Budget Period	Norfolk County Council area	Greater Norwich Local Plan Area
A47 Blofield to North Burlingham	HE	25765 ²	No data	4th (2023-2027)	✓	✓
A47 North Tuddenham to Easton	HE	87727 ³	No data	4th (2023-2027)	✓	✓
A47/A11 Thickthorn Junction	HE	25946 ⁴	No data	4th (2023-2027)	✓	✓
Norwich Western Link	NCC	No data	No data	4th (2023-2027)	✓	✓
Long Stratton Bypass	NCC	No data	No data	4th (2023-2027)	✓	✓
A47 Great Yarmouth junctions improvements	HE	No data	No data	4th (2023-2027)	✓	✗
Great Yarmouth Third River Crossing	NCC	No data (historic)	No data (historic)	3rd (2018-2022)	✓	✗

5. I draw your attention to the following points in the above data.

- a. There are more cells with “no data” than currently published data indicating that an accumulative assessment of embedded emissions across these schemes, based on available evidence will be an under-estimate. The under-estimate may be significant for the next two bullet points.
- b. Construction emissions for the Norwich Western Link can be expected to be ‘high’ given the design for this road includes a 700m viaduct.
- c. No data is published for land clearance and loss of land use carbon sequestration for any of the above schemes. The values for these categories on the Norwich Western Link are also expected to be ‘high’ – as the landscape proposed for clearance is woodland and woodland soils which are both rich in carbon (that would be loss through clearance) and an established carbon sink (that would be loss through construction).
- d. Except for the Great Yarmouth Third River Crossing which is already in construction, all the above schemes are timetabled by their promoters for construction during the 4th Carbon budget period, and their cumulative emissions require assessment against available budget for that period. This is a carbon budget for which there is already an identified “policy gap” in delivering the necessary national emission reductions, and it is also a critical carbon budget in making emissions reductions (from 1990 levels) for the

² Section 14.8.3, A47 BLOFIELD TO NORTH BURLINGHAM DUALLING, Environmental Statement Chapter 14 [TR010040/APP/6.1, AS-004]

³ Section 14.8.3, A47 NORTH TUDDENHAM TO EASTON DUALLING, Environmental Statement Chapter 14 Climate [TR010038/APP/6.1, APP-053]

⁴ Section 14.8.3, A47/A11 THICKTHORN JUNCTION, Environmental Statement Chapter 14 Climate [TR010037/APP/6.1, APP-051]

national targets by 2030 (68% reduction in the UK National Determined Contribution under the Paris Agreement⁵) and 2035 (78% reduction by 2035⁶).

- e. Local Authority carbon emission data has been published since 2005 up to 2019⁷ which goes to the level of the roads transport sector (and sub-sectors for A-roads and minor-road emissions) and district council level. From this data is trivial to produce historic transport sector emissions for either the Norfolk County Council area, or for the Greater Norwich Local Plan area (comprising the Norwich, Broadland, and South Norfolk local authority areas). It is therefore trivial, if the data were available, to assess the impacts of the cumulative embedded emissions against recent historic emissions of these areas.
- f. However, to assess the cumulative impacts Construction, or Embedded Emissions, against any study area, significantly more data, yet undetermined, is required as above.

1.2 Cumulative Operational Emissions

6. Operational emissions have been recently reported for four of the schemes as shown in the Table below.

tCO2e	Base Year	Start Year	End Year	DM	DS
A47 Blofield to North Burlingham	2015	2025	2084	59,396,960 ⁸	59,530,297 ⁹
A47 North Tuddenham to Easton	2015	2025	2084	53,142,467 ¹⁰	53,651,530 ¹¹
A47/A11 Thickthorn Junction	2015	2025	2084	53,504,201 ¹²	53,642,006 ¹³
Norwich Western Link	2019	2025	2084	29,361,946 ¹⁴	28,905,512 ¹⁵

7. I draw your attention to the following points on the above data.

- a. They all share the same 60-year appraisal period ie 2025-2084.
- b. The models all use the Norwich Area Transport Strategy (NATS) model.

⁵ 12th December 2020, <https://www.gov.uk/government/publications/the-uks-nationally-determined-contribution-communication-to-the-unfccc>

⁶ <https://www.legislation.gov.uk/ukdsi/2021/9780348222616>

⁷ <https://data.gov.uk/dataset/723c243d-2f1a-4d27-8b61-cdb93e5b10ff/emissions-of-carbon-dioxide-for-local-authority-areas>, latest data release 24th June 2021

⁸ Table 14-9, A47 BLOFIELD TO NORTH BURLINGHAM DUALLING, Environmental Statement Chapter 14 [TR010040/APP/6.1, AS-004]

⁹ Table 14-9, A47 BLOFIELD TO NORTH BURLINGHAM DUALLING, Environmental Statement Chapter 14 [TR010040/APP/6.1, AS-004]

¹⁰ Table 14-10, A47 NORTH TUDDENHAM TO EASTON DUALLING, Environmental Statement Chapter 14 Climate [TR010038/APP/6.1, APP-053]

¹¹ Table 14-10, A47 NORTH TUDDENHAM TO EASTON DUALLING, Environmental Statement Chapter 14 Climate [TR010038/APP/6.1, APP-053]

¹² Table 14-10, A47/A11 THICKTHORN JUNCTION, Environmental Statement Chapter 14 Climate [TR010037/APP/6.1, APP-051]

¹³ Table 14-10, A47/A11 THICKTHORN JUNCTION, Environmental Statement Chapter 14 Climate [TR010037/APP/6.1, APP-051]

¹⁴ Table 4-2, PDF Page 795, Norwich Western Link, Environmental Impact Report within Outline Business Case (OBC), June 2021, https://bit.ly/NCC_NWL_OBC

¹⁵ Section 4.7.2, PDF Page 795, Norwich Western Link, Environmental Impact Report within Outline Business Case (OBC), June 2021, https://bit.ly/NCC_NWL_OBC - 443,429+13,005tCO2e saving over DM

- c. Despite these schemes all being within a 10 miles radius of Norwich, the DM models show different values, indicating that the assumptions and/or study areas for each scheme are different. It is not clear how the study areas overlap, which indicates a risk of not just double counting, as identified by the Applicant, but no way to determine the extent of double counting.
 - d. It also raises other issues of consistency and coherence between modelling approaches including different study areas and assumptions.
 - e. The NWL has been modelled with a different baseline year (2019 rather than 2015). 30% of vehicle kilometres were lost between the NWL model run at 2015¹⁶ and 2019¹⁷. This indicates that the 2015 base year and 2019 base year NATS models have vastly different assumptions, and apparent traffic level outputs.
 - f. It is also not clear what schemes are included in the DM baselines of each of the other scheme's models. For example, whilst the evidence from promoters indicates that the NWL contains the A47 North Tuddenham to Easton in its DM baseline¹⁸, and the A47 North Tuddenham to Easton contains the NWL in its DM baseline¹⁹, the extent to which other schemes are included has not been made clear. Further, in the case of the NWL and the A47 North Tuddenham to Easton schemes, neither of these schemes has been assessed against a model in which **neither** scheme exists (ie the true environmental baseline representing the situation as it **currently** is).
 - g. Overall the existing data is inconsistent and incoherent, and cannot be unravelled easily.
8. The precursor for assessing cumulative operational carbon emissions across these schemes is a coherent and consistent modelling environment. To achieve this, it is necessary:
- a. To choose an appropriate “study area” which covers all the schemes. A rational approach would be to choose the County council area, or the Greater Norwich local plan area, as these areas have well established historical emission data for comparison at the relevant local authority level.
 - b. To set a common base year for the model. As the NATS model is now available at a 2019 base year, then this may be the appropriate year, if the large difference in vehicle km is explained. Currently, a satisfactory explanation has not been given.
 - c. To develop a consistent set of model assumptions to apply.
 - d. To set the DM, at the correct **current** environmental baseline in which none of these schemes exist.

¹⁶ The 2025 DM vehicle kilometres were modelled at 5,950,805km, Table 5.29, PDF Page 112, Norwich Western Link, Option Selection Report, July 2019, http://bit.ly/2019Jul15_NWL_OSR

¹⁷ The 2025 DM vehicle kilometres were modelled at 4,136,000km at Section 3.8.29, PDF Page 151, Outline Business Case (OBC), June 2021, https://bit.ly/NCC_NWL_OBC

¹⁸ Section 2.12.17, PDF Page 127, Norwich Western Link, Outline Business Case (OBC), June 2021, https://bit.ly/NCC_NWL_OBC

¹⁹ Section 4.4.3, page 59, A47 NORTH TUDDENHAM TO EASTON DUALLING, Case for the Scheme [TR010038/APP/7.1]

- e. Model each scheme in isolation, generating the DS for that scheme, which gives the inherent operational emissions without any of the other schemes.
- f. For any particular scheme (eg: A47 Blofield to North Burlingham), then sensitivity test the DS by adding in the other schemes to the modelling – this will produce the cumulative operational emissions of including the other schemes without double counting.
- g. Consistent base years, assumptions and study areas have also been designed-in in the above approach, eliminating other issues that confuse generating an assessment of cumulative operational emissions.

I raise these matters now as they pertain the further information that you have requested under Rule 17 of the Examination Rules from the Applicant.

Yours sincerely



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