

M7 Osberstown Interchange & R407 Sallins Bypass Scheme

Air Quality and Climate

Brief of Evidence

by

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1. Introduction

- 1.1 My name is Sinead Whyte. I am an Associate with Arup. I hold an honours degree of Bachelor of Science in Experimental Physics from University College Dublin (UCD) (1993) and a Master's Degree in Atmospheric Physics from UCD (1996). I am a Chartered Member of the Institute of Water and Environmental Management (CIWEM).
- 1.2 I have been active in the field of air quality and climate for over fourteen years as an Environmental Consultant. I have prepared impact assessments and presented expert evidence at oral hearings for numerous schemes including; the DART Underground, M20 Cork to Limerick Motorway Scheme, the Dublin Airport Hotel and Multi-Storey Car Park, the N9/N10 Powerstown to Waterford Road Scheme and the M8/N8 Castletown to Cullahill Road Scheme.
- 1.3 I have been directly responsible for the completion of the air quality and climate impact assessment of the M7 Osberstown Interchange and R407 Sallins Bypass throughout the EIS process.

2. Executive Summary

- 2.1 An assessment of air quality and climate impacts due to the proposed M7 Osberstown Interchange and R407 Sallins Bypass was carried out. The assessment concluded that during the operational phase of the development, all predicted pollutant concentrations would be in compliance with air quality standards for the protection of human health. Pollutant concentrations are predicted to decrease in some locations due to the diversion of traffic and reduction in congestion. These locations are generally those where populations are densest. Impacts during the construction phase are minimised through the implementation of dust mitigation measures and the provision of dust deposition monitoring.
- 2.2 The proposed road development is predicted to have a negative impact on CO₂ levels with a maximum of 0.008% increase of CO₂ relative to Ireland's commitments under the EU Climate Change and Renewable Energy Package predicted to occur due to the proposed scheme. The Department of Transport, Tourism and Sport published in December 2013 an Issues Paper for Consultation outlining climate change mitigation in the preparation of Low-carbon Roadmap for Transport. This document states that the main contributor to dramatic reductions in greenhouse gas emissions from transport will be improvements in the efficiency of motorised transport mainly through fuel and vehicle technology.

3. Air Quality Impact Assessment Methodology

- 3.1 Refer to Section 12.2 of the EIS.

4. Air Quality Existing Environment

- 4.1 Refer to Section 12.3 of the EIS.

5. Air Quality Impact Assessment

Construction Phase

- 5.1 In general, the proposed road development is considered to be of a major scale with the potential for significant soiling within 100m of the works with PM₁₀ and vegetation effects occurring within 25m with standard mitigation in place, as described by NRA guidance.
- 5.2 Construction traffic generated as a result of the M7 Osberstown Interchange and R407 Sallins Bypass combined with construction traffic from the M7 Naas to Newbridge By-Pass Upgrade Scheme was assessed. As no significant increase (>10%) occurred in AADT flows, no further assessment is required, as outlined in the NRA guidance.

Operational Phase

- 5.3 The impact on air quality was assessed for the opening year (2015) and design year (2030) under the "Do Minimum" (DM) and "Do Something" (DS) scenarios. All predicted pollutant concentrations comply with the relevant limit values at all affected worst-case receptors selected for both 2015 and 2030.
- 5.4 A number of locations were identified where air quality will improve, as a result of decreases in AADT. The reduction in traffic will result in a localised improvement of air quality in these regions, which will be particularly evident where sensitive receptors are adjacent to roadways and traffic reductions are substantial.
- 5.5 The potential impact of traffic emissions on NO_x levels at the Grand Canal pNHA was also assessed. Modelling was carried out where the Sallins Bypass crosses the Grand Canal pNHA. The annual average NO_x concentration at the Grand Canal pNHA complies with the limit value of 30 µg/m³ for the DM scenario in 2015 and 2030. For the DS scenario the limit values are predicted to be exceeded in 2015 and complied with in 2030.
- 5.6 The impact of the proposed scheme results in an increase in NO_x concentrations of a maximum of 6.10µg/m³ at the Grand Canal pNHA. The NRA guidelines state in Appendix 9 that where the Scheme is expected to cause an increase of more than 2µg/m³ and the predicted concentrations (including background) are close to, or exceed the standard, then the sensitivity of the habitat to NO_x should be assessed by the project ecologist. The potential impact of NO_x emissions on the habitat has been considered in the ecological impact assessment.

6. Air Quality Mitigation Measures

- 6.1 Emissions to air will occur during earthmoving and construction, although the prevailing weather, the size of the site and its distance from sensitive receptors determine the extent of impacts. The focus of the control procedures will therefore be to reduce the generation of airborne material.
- 6.2 The following measures will be implemented to minimise the generation of pollution during the construction phase, refer to Section 12.5 of the EIS.

These measures will form part of the Construction and Demolition Waste Management Plan prepared and discussed earlier by my colleague Eileen McCarthy and circulated to this Oral Hearing:

- Spraying of exposed earthwork activities and site haul roads during dry weather.
 - Provision of wheel washes at exit points.
 - Control of vehicle speeds and speed restrictions.
 - Sweeping of hard surface roads.
 - Provision of hoarding of 2 m high at a minimum where works occur in proximity to sensitive receptors and at the river crossing points.
 - Covering of stockpiles and locating stockpiles away from sensitive receptors.
 - Locating plant away from sensitive receptors.
- 6.3 Dust deposition monitoring will be conducted at a number of locations in the vicinity of the proposed road development. These locations will be determined in consultation with the local residents and the roads authority. At a minimum, monitoring will be carried out at the two nearest sensitive receptors at the interchange construction site, at the nearest sensitive receptors to the river bridge crossings and at the crossing of the Grand Canal. Monitoring will be carried out using the Bergerhoff method, i.e. analysis of dust collecting jars left on-site (German Standard VDI 2119, 1972). Results will be compared to the TA Luft guideline of 350mg/m²/day.
- 6.4 As it is predicted that all air quality standards for the protection of human health will be complied with, no specific mitigation measures are required for the operational phase. The assessment of the potential impact of NO_x emissions at the Grand Canal pNHA is contained in the ecological impact assessment.

7. Air Quality Residual Impacts

7.1 The residual impact on air quality as a result of the proposed scheme will not be significant following the implementation of mitigation measures outlined.

8. Climate Impact Assessment Methodology

8.1 Refer to Section 13.2 of the EIS.

9. Climate Existing Environment

9.1 Refer to Section 13.3 of the EIS.

10. Climate Impact Assessment

- 10.1 During the construction phase of the development, 55,880 tonnes of CO₂ eq are estimated to be generated. This constitutes 0.14% of Ireland's 2020 non-ETS obligation under the EU Climate Change and Renewable Energy Package.
- 10.2 A maximum increase of 0.008% in CO₂ relative to Ireland's commitments under the EU Climate Change and Renewable Energy Package is predicted to occur due to the proposed scheme in 2015. The DMRB modelling assessment used to calculate the impact on CO₂ emissions includes only for average speeds on the existing and proposed roads and does not consider the existing congestion and low speeds through Sallins, for example. High emission rates of CO₂ are due to very high and very low speeds. Low emission rates occur at moderate speeds of approximately 65 to 95 km/hr. Therefore, the level of CO₂ emissions has been under-estimated in the do-minimum scenario. The reduction in journey times, smoothing of the stop-and-start pattern of traffic and the decrease in congestion due to the proposed scheme has not been included in the CO₂ calculations. It is likely that the inclusion of these factors would significantly reduce the impact of CO₂ emissions due to the proposed scheme.

11. Climate Mitigation Measures

- 11.1 The Issues Paper for Consultation for the Preparation of Low-Carbon Roadmap for Transport prepared by the Department of Transport, Tourism and Sport in December 2013, states that *'our transport system needs to support economic growth and this will remain a key policy goal for transport. We also need to ensure that the movement of goods can continue to be cost competitive in an international context. Furthermore, it is vital that our transport system can support social inclusion by ensuring access to transport for all the population'*. In terms of mitigating the impact of transport on greenhouse gases (GHG), the paper states that the main contributor to dramatic reductions will be improvements in fuel and vehicle and fuel technology.
- 11.2 The EPA publication 'Ireland's Greenhouse Gas Emissions Projections 2013-2020 (EPA, 2013) outlines the measures which will be taken to mitigate greenhouse gas emissions from the transport sector. These measures include:
- The improvements to the fuel economy of private cars
 - More efficient road traffic movements and public transport efficiencies
- 11.3 The proposed scheme will help in the objective of achieving more efficient road traffic movements in line with the EPA publication.
- 11.4 It should also be noted that the provision of cycling paths and improved access to existing park and ride facilities at Sallins Rail Station as part of the proposed scheme will encourage a modal shift in line with Smarter Travel - A Sustainable Transport Future, A New Transport Policy for Ireland 2009 – 2020. This shift has the potential to reduce greenhouse gas emissions in the future.

12. Climate Residual Impacts

- 12.1 In general, the generation of CO₂ due to construction activities and operational traffic volumes is not considered significant in terms of Ireland's commitment under the EU Climate Change and Renewable Energy Package.

Future measures implemented by government as part of the Low-carbon Roadmap for Transport will be required to ensure compliance with climatic obligations.

13. Response to Submissions

- 13.1 Response to submission by Mr Alan Lloyd on pollution from the proposed Sallins Road roundabout:
The air modelling assessment has shown that predicted emissions from the proposed road scheme are in compliance with all relevant air quality standards.
- 13.2 Response to submission by Mr. Desmond Ward and family on the generation of dust and mud during the construction phase of the development:
Measures are proposed to minimise dust generated from the construction site and to minimise the transfer of mud onto the local road network.
- 13.3 Response to submission by Mr Pat O'Brien on the generation of dust and mud during the construction phase of the development:
Measures are proposed to minimise dust generated from the construction site and to minimise the transfer of mud onto the local road network.
- 13.4 Response to submission from An Taisce on Ireland's greenhouse gas emission targets:
The climate impact assessment shows that a maximum of 0.008% increase of CO₂ relative to Ireland's commitments under the EU Climate Change and Renewable Energy Package is predicted to occur due to the proposed scheme. However, as outlined above, this is likely to be over-estimated as the modelling does not consider the existing congestion that currently exists and which will be significantly improved by the proposed scheme. The Issues Paper for Consultation for the Preparation of Low-Carbon Roadmap for Transport prepared by the Department of Transport, Tourism and Sport in December 2013, states that *'our transport system needs to support economic growth and this will remain a key policy goal for transport. We also need to ensure that the movement of goods can continue to be cost competitive in an international context. Furthermore, it is vital that our transport system can support social inclusion by ensuring access to transport for all the population'*. In terms of mitigating the impact of transport on greenhouse gases (GHG), the paper states that the main contributor to dramatic reductions will be improvements in fuel and vehicle and fuel technology.
- 13.5 Response to submission from Mr. Patrick Garvey in relation to dust impacts:
Measures are proposed to minimise dust generated from construction works. Dust deposition monitoring will be carried out to ensure compliance with limit values.
- 13.6 Response to submission from Castlesize residents on air pollution:
The air modelling assessment has shown that predicted emissions from the proposed road scheme are in compliance with air quality standards.