Appendix VI
Air Quality Assessment

Contents

1. Introduction

This report has been prepared to consider potential air quality impacts as they relate to European sites and is included as an appendix to the Natura Impact Statement for the Clongriffin to City Centre Core Bus Corridor Scheme (hereinafter referred to as the Proposed Scheme). The study considers the Construction and Operational Phases of the Proposed Scheme.

2. Air quality standards and limits

In order to reduce the risk of poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values are set for the protection of human health and ecosystems. Refer to Table 2.1 below.

The Air Quality Standards Regulations (AQS) 2011 (S.I. No. 180 of 2011) came into force and EU Directive 2008/50/EC (hereinafter referred to as the CAFE Directive) was transposed into Irish law. These standards were introduced to avoid, prevent or reduce harmful effects on human health and the environment as a whole.

Table 2.1: Air Quality Regulations (based on the CAFE Directive)

Pollutant	Regulation*	Limit Type	Value**
NO_2	S.I. 180 of 2011	Hourly limit for protection of human health - not to be exceeded more than 18 times / year	200µg/m^3 NO_2
		Annual limit for protection of human health	40µg/m^3 NO_2
Nitrogen Oxides ($NO + NO_2$)		Critical limit for the protection of vegetation and natural ecosystems	30µg/m^3 $NO + NO_2$
Lead	S.I. 180 of 2011	Annual limit for protection of human health	0.5µg/m^3
SO_2	S.I. 180 of 2011	Hourly limit for protection of human health - not to be exceeded more than 24 times / year	350µg/m^3
		Daily limit for protection of human health - not to be exceeded more than three times / year	125µg/m^3
		Critical limit for the protection of vegetation and natural ecosystems (calendar year and winter)	20µg/m^3
PM (as PM_{10})	S.I. 180 of 2011	24-hour limit for protection of human health - not to be exceeded more than 35 times / year	50µg/m^3
		Annual limit for protection of human health	40µg/m^3
PM (as $PM_{2.5}$)	S.I. 180 of 2011	Annual limit for protection of human health	25µg/m^3
Benzene	S.I. 180 of 2011	Annual limit for protection of human health	5µg/m^3
CO	S.I. 180 of 2011	8-hour limit (on a rolling basis) for protection of human health	10mg/m^3

* CAFE Directive replaces the previous Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management and daughter directives, Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air and Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air

** µg/m^3 (micrograms per cubic metre); mg/m^3 (milligrams per cubic metre)

The TII Ecological Guidelines (TII 2009) and the Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHLG 2010) provide details regarding the legal protection of designated conservation areas. Further guidance can also be found in the IAQM document A Guide to The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (IAQM 2020) and in the DMRB guidance LA105 Air Quality (UKHA 2019), both of which describe NO_X emissions as the most likely source of significant impacts from road traffic on ecological sites. Pollutants such as CO_2, CO, SO_2, ammonia and volatile organic compounds are not considered in these guidance and have been scoped out of detailed assessment.

The Air Quality Regulations outline an annual critical level for NO_X for the protection of vegetation and natural ecosystems in general. The CAFE Directive defines 'Critical Levels' as '*a level fixed on the basis of scientific knowledge, above which direct adverse effects may occur on some receptors, such as trees, other plants or natural ecosystems but not on humans*'.

The TII Ecological Guidelines reference the United Nations Economic Commission for Europe (UNECE) Critical Loads for Nitrogen where a '*Critical Load*' is defined by the UNECE as a '*a quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge*' (UNECE 2003). The guidance states that where the predicted environmental concentration (PEC) is less than 70% of the long-term critical level / load, the process contribution (PC) is likely to be insignificant.

The TII Ecological Guidelines outline a methodology to derive the road contribution to dry deposition and thereafter to compare with the published critical loads for the appropriate habitat.

The UNECE critical loads were subsequently updated in the 2010 Review and Revision of Empirical Critical Loads and Dose-Response Relationships (UNECE 2010). As the South Dublin Bay and River Tolka Estuary SPA is designated for the protection of a multitude of habitats, a number of UNECE Critical Loads could be selected for assessment. The most stringent of these is for inland and surface water habitats (5-10 Kg(N)/ha/yr.) is therefore this is used in this assessment.

In order to calculate the nitrogen deposition, the NO_2 / NO_X concentration determined through modelling including the background concentration must be converted firstly into a dry deposition flux using the equation below which is taken from UK Environment Agency publication 'AGTAG06 – Technical Guidance On Detailed Modelling Approach For An Appropriate Assessment For Emissions To Air' (EA 2014):

Dry deposition flux (µg m^{-2} s^{-1}) = ground-level concentration (µg/m^3) x deposition velocity (m/s)

Deposition velocities are provided in both the TII (TII 2011) and IAQM Guidance document (IAQM 2020) for NO_2 in grassland and forestry. Once the dry deposition flux (µg m^{-2} s^{-1}) is calculated it must then be converted to nitrogen equivalent acidification flux (k_{eq} ha^{-1} $year^{-1}$) for comparison with critical loads.

In order to convert the dry deposition flux from units of µg m^{-2} s^{-1} to units of kg ha^{-1} $year^{-1}$ the dry deposition flux is multiplied by the conversion factors. For NO_2 this factor is 96. In order to convert kg ha^{-1} $year^{-1}$ to k_{eq} ha^{-1} $year^{-1}$, where k_{eq} is a unit of equivalents (a measure of how acidifying the chemical species can be), the deposition flux in units of kg ha^{-1} $year^{-1}$ is multiplied by the conversion factor (taken from AQTAG06 (EA 2014)). The conversion factor for nitrogen is 0.072. LA 105 Air Quality (UKHA 2019) states that if the change in N deposition is greater than 0.4kgN/ha/yr or 1% of the critical level / load consultation with the consultation should occur.

3. Methodology

3.1 Relevant Guidance

An appraisal has been carried out to assess the risk to the South Dublin Bay and River Tolka Estuary SPA as a result of construction dust emissions due to the Construction Phase in accordance with the IAQM's Guidance on the Assessment of Dust from Demolition and Construction (IAQM 2014).

The road traffic impacts of the Proposed Scheme on the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) (Site Code: 004024) during the construction and operational phases have been assessed based on UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) guidance.

For routes which pass within 2km of a designated area of conservation (either Irish or European designation) the TII Air Quality Guidelines (TII 2011) requires the air quality specialist to consult with the project ecologist. However, in practice the potential for impact on an ecological site is highest within 200m of the Proposed Scheme and within 200m of roads where significant changes in AADT occur (CERC 2020).

In 2019 the UKHA DMRB air quality guidance was revised with the publication of LA 105 Air Quality (UKHA 2019) replacing a number of historical guidance documents (HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15). LA 105 Air Quality states that the following scoping criteria shall be used to determine whether the air quality impacts of a project can be scoped out or require an assessment based on the changes between the Do Something traffic (with the Proposed Scheme) compared to the Do Minimum traffic (without the Proposed Scheme):

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- A change in speed band; and
- A change in carriageway alignment by 5m or greater.

The above scoping criteria have been used in the current assessment to determine the road links required for inclusion in the modelling assessment of NO_x.

The following assessment criteria, in accordance with TII guidance, is used to determine whether an assessment for nitrogen deposition should be conducted:

- There is a designated area of conservation within 200m of the Proposed Scheme; and
- There is a significant change in AADT flows (as per LA 105 Air Quality).

In circumstances where the above criteria are met, there is the potential for impacts on ecology as a result of nitrogen deposition and thus an assessment should be undertaken. For road transport sources within 200m of a designated habitat, individual ecological receptors along a transect at 10m intervals are modelled. Ecological receptors are modelled up to a maximum distance of 200m regardless of whether the habitat extends beyond 200m. It is considered that the greatest impacts will have occurred in proximity to the road. LA 105 notes that only sites that are sensitive to nitrogen deposition need to be included in the assessment, it is not necessary to include sites for example that have been designated as a geological feature or water course.

3.2 ADMS-Roads Dispersion Model

Vehicle-derived air emissions for areas impacted by significant changes in AADT were modelled using the detailed ADMS-Roads dispersion model (Version 5.1) which has been developed by Cambridge Environmental Research Consultants (CERC) (CERC 2020). The model is a steady-state Gaussian plume model used to assess ambient pollutant concentrations associated with road sources.

The ADMS-Roads dispersion model (Version 5.1) has been used to predict the ground level concentrations (GLC) of NO_X and NO_2 in the vicinity of the impacted areas for the peak construction year of 2024 and the opening and design years of 2028 and 2043 respectively.

The modelling incorporated the following features:

- Hourly-sequenced meteorological information for Casement Aerodrome in 2019 has been used in the model (see Diagram 3.1) (Met Éireann 2020). The selection of the appropriate meteorological data has followed the guidance issued by the LAQM (TG16) (DEFRA 2018). A primary requirement is that the data used should have a data capture of greater than 90% for all parameters; and
- Transect of 200m, with specific receptors at 10m intervals starting at 0m from the nearest road were also mapped into the model. Receptor heights were input at 0m.

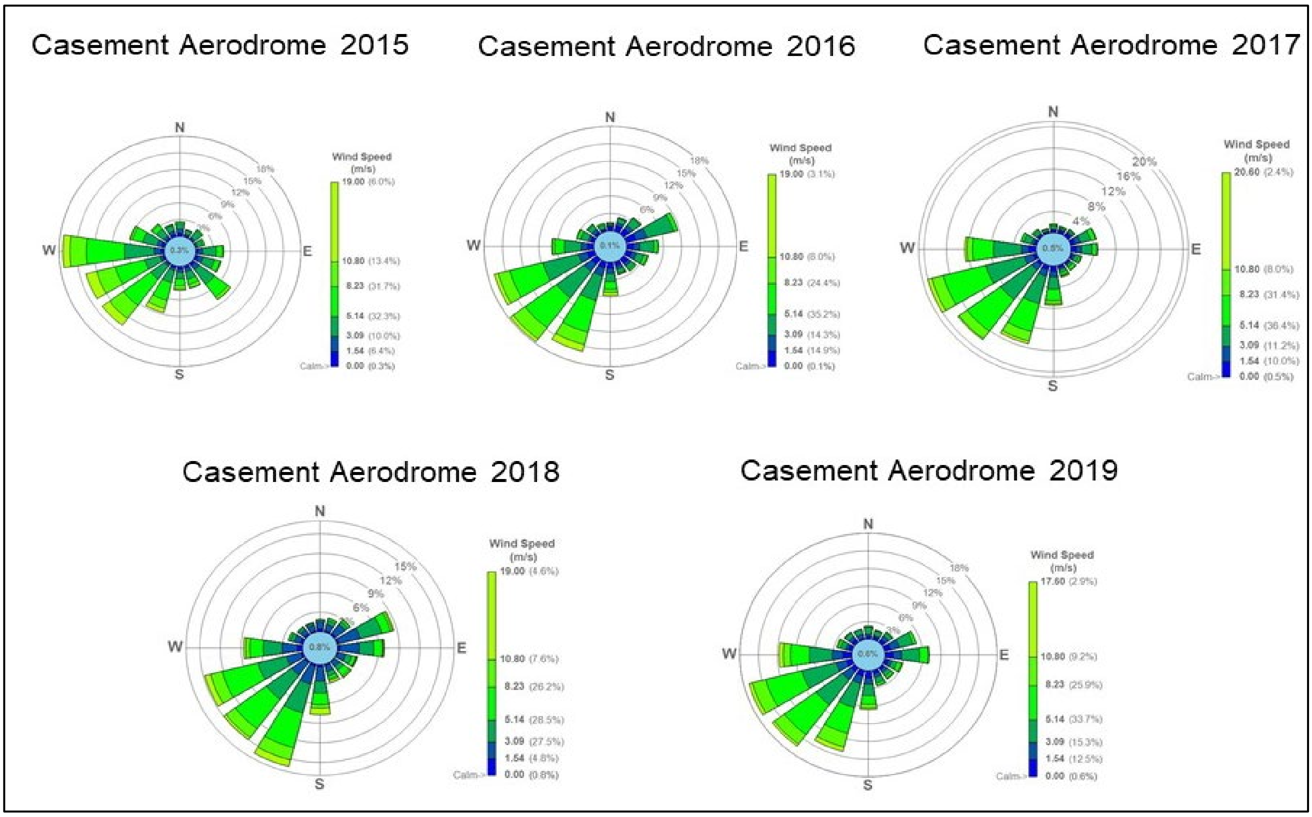

Diagram 3.1: Casement Aerodrome Meteorological Station Windrose 2015 to 2019 (Met Éireann 2020)

It is intended that the Proposed Scheme will have a peak construction year of 2024 and an opening year of 2028. Road traffic emission rates are derived using traffic data for the peak construction year of 2024 and the Opening Year of 2028 and Design Year of 2043 and using emission factors from the COPERT V database (EMISIA 2020) which has been incorporated into the UK DEFRA Emission Factor Toolkit (EFT) Version 10.1 (DEFRA 2020).

The EFT Version 10.1 has been incorporated into the ADMS-Roads model. The toolkit provides emission rates from 2017 to 2030 and traffic emissions for the Proposed Scheme were based on the following assumptions:

- EFT Version 10.1 is based on eight vehicle categories including petrol cars, diesel cars, diesel Light Goods Vehicles (LGV), rigid Heavy Goods Vehicles (HGVs) and buses;
- Systra (ENEVAL) fleet composition data for Ireland (2016 base year) were selected to input car, LGV and HGV proportions (Table 3.1). 2019 projections were used for detailed modelling of the 2020 base year, 2022 projections and 2024 projections were used as conservatively representative of the 2024 peak construction year and 2028 opening year respectively;
- National Transport Model (NTM) fleet projections provided in UK Technical Advisory Group (TAG) (UK Department for Transport 2020) have been used to estimate the proportions of cars, LGV and HGV in 2043. No fleet projection tools currently exist, Irish or UK based, that accurately predict the proportion of electric vehicles in 2043, or which take the 2021 Climate Action Plan measures into account. A conservative approach is therefore inevitable, and is based on the use of the UK NTM as the most up to date and robust alternative to the older 2016 base year Systra fleet;
- Predicted bus fleet composition data was developed for 2019, 2028 and 2043 (Table 7.5). The 2019 bus fleet was also applied to the 2024 construction year;

- Emissions have been calculated using predicted emissions factors for 2019 (to represent the Base Year 2020), 2022 (to represent the peak construction year 2024), 2024 (to represent the Opening Year 2028) and 2030 (to represent the Design Year 2043). A conservative approach to emission years has been taken, similarly to the fleet projections, to counteract some of the uncertainty associated with improved vehicle standards;
- EFT Version 10.1 incorporates updated NO_X (defined as NO and NO_2) speed emission coefficient equations for Euro 5 and 6 vehicles, taken from the European Environment Agency (EEA) COPERT V emission calculation tool which reflects the most recent evidence on the real-world emission performance of these vehicles;
- Fleet composition based on European emission standards from pre-Euro 1 to Euro 6/VI. Systra fleet data was used to estimate Euro class proportions for cars, LGV and HGV. The NTA provided Euro class proportions for the bus fleet; and
- Improvements in the quality of fuel and some degree of retrofitting; technology conversion in the national fleet.

Table 3.1:Summary of Fleet Proportions

Vehicle Type		Base Year 2019	Construction Year 2024	Operational Year 2028	Design Year 2043
Car	Petrol Car	41%	38%	36%	38%
	Diesel Car	57%	60%	63%	25%
	Electric Car	2%	2%	2%	37%
LGV	LGV	99.9%	99.9%	99.9%	81.5%
	Electric LGV	0.1%	0.1%	0.1%	18.5%
HGV	Rigid HGV	86%	86%	86%	86%
	Artic HGV	14%	14%	14%	14%
Bus	Plug-in Hybrid Bus	0%	0%	24%	0%
	Fuel Cell Electric Bus	0%	0%	70%	100%
	Diesel Bus	100%	100%	6%	0%

Advancements in engine technology and the addition of a higher percentage of electric vehicles to the fleet will assist in significantly reducing emissions between 2028 and 2043, even in circumstances where the number of vehicles using a road link increases. Emissions per road link using the EFT Version 10.1 were calculated for the 2043 Do Something scenario and compared to the 2028 Do Something scenario. Conservative assumptions were made for future fleet and uptake of electric vehicles. Across the Proposed Scheme, emissions decreased in 2043, therefore 2028 modelled impacts can be considered worst case. As a result, detailed modelling of the design year 2043 was scoped out for all pollutants on the basis that emissions will be lower compared to 2028 emissions.

3.2.1 Verification Study – Year 2019 Traffic Data

Model verification investigates the level of agreement between modelled and measured concentrations. Difference between modelled and measured pollutant concentrations can arise due to uncertainties in or limitations to the model input data (such as traffic data and meteorological data), uncertainties in monitoring data and inherent modelling limitations. As outlined in LAQM.TG16 (DEFRA 2018), an adjustment to the modelled results is usually required in order to ensure that the final concentrations presented are representative of monitoring information in the area.

A verification study was undertaken using the traffic data for the study area which was received from the NTA Eastern Regional Model (ERM) traffic model for year 2020. The study compared the ambient NO_2 monitored concentration at a range of diffusion tube locations with the ADMS-Roads model output at these locations. DCC has undertaken a diffusion tube monitoring program at a range of locations in the study area for both 2018 and 2019. This data has been used to compare model predictions of NO_2 to monitored NO_2 concentrations.

Background data was based on nitric oxide (NO) and NO_2 levels from Ballyfermot for 2019. Ballyfermot was selected as a suitable suburban background station as it is an ambient air monitoring station suitably removed from Dublin City Centre and at a distance of over 200m from a main roadway. The backgrounds were also utilised in the 2024 and 2028 modelling.

The emission data for the ADMS-Roads model was based on EFT Version 10.1 and the ADMS-Roads model input parameters selected is summarised in Table 3.2.

Table 3.2:Summary of the ADMS-Roads Model Input Parameters

Parameter	Description	Input Value
Coordinate System	Spatial data in ADMS-Roads is linked to a Cartesian coordinate system, measured in meters.	Irish Transverse Mercator (ITM) Coordinate system was used.
Pollutants	A range of preset pollutants can be selected in ADMS-Roads for modelling.	NO_X was specifically modelled.
Road Source Emissions	Road sources emissions can be entered manually or calculated from traffic flow data.	Road emissions have been calculated from traffic flow data.
Street Canyons	ADMS-Roads has to the ability to model street canyon effects either by using the Basic Street Canyon module or the Advance Street Canyon Module to simulate turbulent flow patterns along streets with relatively tall buildings.	Basic Street Canyon module has been used where canyons have been identified.
Road Emission Factors	ADMS-Roads has a range of emission factors including the recent UK Emission Factor Tool (EFT) v.9.0 dataset.	UK Emission Factor Tool (EFT) v.10.1 (8 VC) dataset has been used based on Northern Ireland (Urban)
Traffic Speed	ADMS-Roads can adjust pollutant emission factors to take account of traffic speed.	Average traffic speed specific to each link, as advised by traffic consultant, has been used in the model.
Meteorological Data	ADMS-Roads requires hourly meteorological data from a suitable meteorological station for a full year.	2019 data from Casement Aerodrome has been used in the model.
Surface Roughness	The model requires a representative surface roughness value for both the modelling domain and the meteorological station.	A value of 1.0m has been selected for the modelling domain with a value of 0.1m selected for Casement Aerodrome
Time-varied Emissions	The model can accept a range of profiles including 3-day and 7-day diurnal profiles	3-day diurnal profile (Weekdays, Saturday, Sunday) has been used in the model.
Primary NO_2	Model will assume that a certain percentage of NO_X emissions are NO_2 when modelling chemistry	Primary NO_2 fractions (%) were calculated using the EFT for each modelled scenario: 2020 Base – 28.2% 2024 Do Minimum – 28.9% 2024 Do Something – 28.9% 2028 Do Minimum – 29.6% 2028 Do Something – 29.6%
Complex Terrain	Where terrain exceeds 1;10, terrain effects may be modelled	Flat terrain has been used in the modelling domain

The first step of model verification, in line with LAQM.TG16, is to consider the performance of the model, prior to any adjustment, by comparing modelled and measured road NO_X contribution at each of the site specific survey and DCC diffusion tube locations. Some of the monitoring locations were not considered suitable for model verification, due to missing traffic or monitoring data, or other spatial considerations. A total of ten monitoring sites were included in the verification exercise. The comparison is shown in Diagram 3.2, as the red points and trendline, and also in Table 3.3. This shows that on average, the unadjusted model under predicts total NO_2 concentrations by around 3%.

Table 3.3: Diffusion Tube Monitoring Data Used for Model Verification

Diffusion Tube	Modelled NO_X concentration (µg/m^3)	Modelled NO_2 concentration (µg/m^3)	Monitored NO_X concentration (µg/m^3)	Monitored NO_2 concentration (µg/m^3)	Difference [(modelled – monitored)/(monitored) *100]	Adjustment Factor
Coolock, Newtown (DCC)	3.9	21.8	2.2	20.9	4.2%	1.27
1.2	3.0	21.3	3.3	21.4	-0.6%	
1.3	7.8	23.8	7.9	23.9	-0.4%	
1.4	10.3	25.1	8.3	24.1	4.1%	
1.5	11.4	25.6	7.6	23.7	8%	
1.6	23.6	31.6	22.9	31.4	0.6%	
1.7	6.7	23.2	4.3	22.0	5.6%	
1.8	6.4	23.1	14.5	27.3	-15.4%	
1.9	26.0	32.8	34.8	37.1	-11.6%	
1.10	17.1	28.5	37.3	38.2	-25.5%	

In line with LAQM.TG16, the model adjustment was based on NO_X rather than NO_2 with the NO_2 diffusion tube data first converted to NO_X using the NO_X to NO_2 Calculator (DEFRA 2020). A background NO_2 concentration of 19 µg/m^3 was applied to all conversions. Additionally, the adjustment was applied to the road source contribution only rather than total NO_X, again in line with LAQM.TG16. This process identified that the model performed better at some locations than others, and the adjustment of model bias took this into account. The comparison of road NO_X contributions provided a bias adjustment factor of 1.27 across the study area, which was then applied to the modelled road contributions at all air quality sensitive receptors, before being converted into total NO_2 concentrations.

Following the application of the model bias adjustment factor, the modelled and measured values at these locations included in the verification exercise were compared again. This comparison is shown in Diagram 3.2 as the blue points and trendline. This shows that on average, the adjusted model is within the target 10% of the air quality standard, with a root mean square error (RMSE) of 3.22µg/m^3.

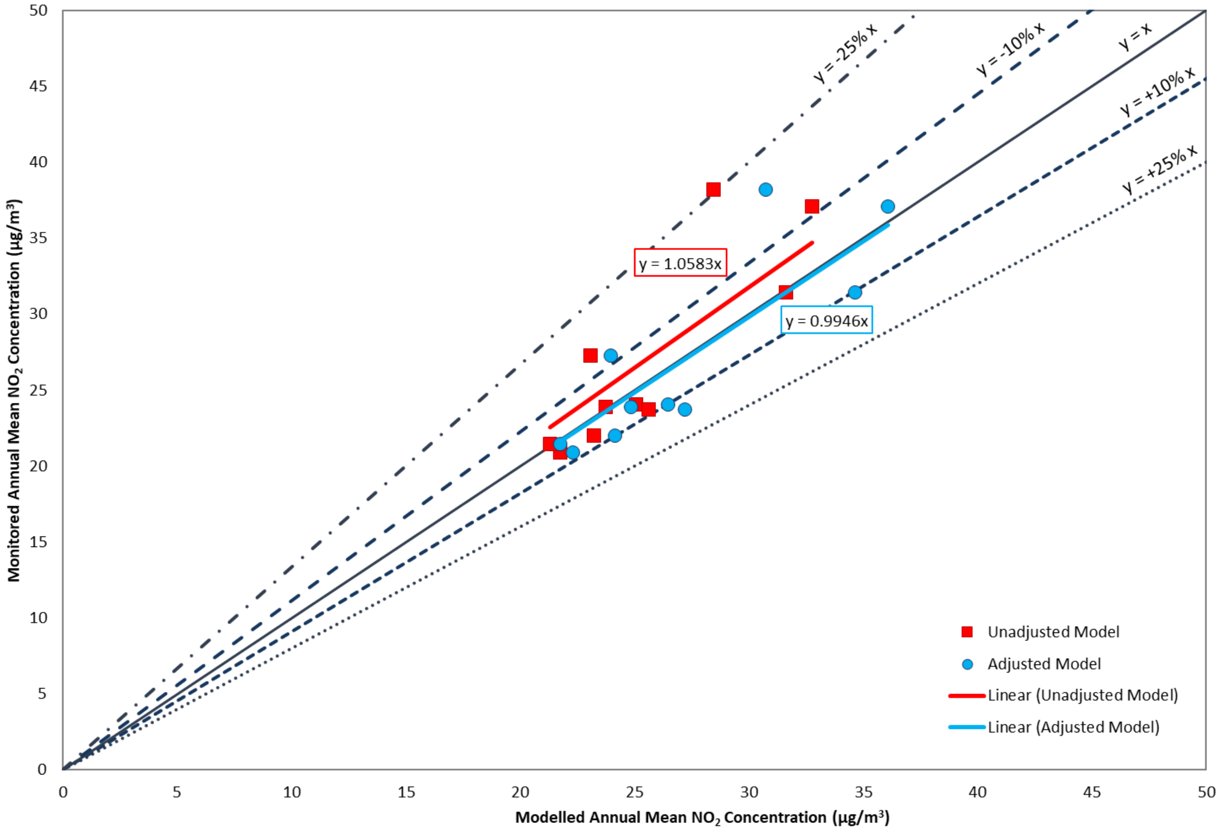

Diagram 3.2: Dispersion Model Verification - Comparison of Monitored and Modelled NO2 Concentrations (µg/m³)

4. Air Quality Assessment

4.1 Construction Phase

During the construction phase, there is the no potential for air quality impacts on the South Dublin Bay and River Tolka Estuary SPA due to the generation of dust, as the habitat is more than 50m from any construction activities or construction access routes.

The South Dublin Bay and River Tolka Estuary SPA is not within 200 m of a construction access route or road that meets the DMRB criteria for detailed assessment, as described in Section 3. Therefore there are no road traffic impacts to report.

4.2 Operational Phase

The potential impact of the Proposed Scheme on the South Dublin Bay and River Tolka Estuary SPA, within 200m of roads impacted by the Proposed Scheme, is outlined in Table 4.1. The annual mean NO_X concentration has been compared to the critical level of 30mg/m^3 along a transect of up to 200m from the nearest impacted road. The critical level for NO_X is exceeded within 150m of the impacted road in the Do Minimum and within 160m in the Do Something scenario. Beyond these distances, the NO_X concentrations are below the critical level. The potential impact of the Proposed Scheme results in a maximum increase in NOx concentrations of 1.2μg/m^3 at 0m from the road edge.

Nitrogen deposition levels have been compared to the lower critical load for the South Dublin Bay and River Tolka Estuary SPA in Table 4.2. All modelled transect points are below the lower critical load for the designated habitat site in both the Do Minimum and the Do Something scenarios. The maximum increase in the NO_2 dry deposition rate is 0.1 Kg (N)/ha/yr, which is 1% of the critical load for the lower boundary limit of inland and surface water habitats of 5-10 Kg(N)/ha/yr (TII 2011).

Table 4.1: Significance of Impacts at South Dublin Bay and River Tolka Estuary SPA (NOX Annual Mean Concentration In 2028)

Annual Mean NO_X in 2028 at South Dublin Bay and River Tolka Estuary SPA						
Receptor	Distance to Road (m)	Receptor Location (ITM)	Do Minimum (µg/m³)	Do Something (µg/m³)	Impact (DS – DM) (µg/m³)	Change as a percentage of critical level (30µg/m³) (%)
South Dublin Bay and River Tolka Estuary SPA (Clontarf Road)	0	718639, 736161	56.3	57.5	1.2	4%
	10	718635, 736152	39.9	40.4	0.5	2%
	20	718630, 736143	35.8	36.1	0.3	1%
	30	718625, 736134	33.9	34.1	0.2	1%
	40	718620, 736126	32.9	33.0	0.1	<0.1%
	50	718615, 736117	32.2	32.3	0.1	<0.1%
	60	718611, 736108	31.7	31.7	0.1	<0.1%
	70	718606, 736099	31.3	31.3	0.1	<0.1%
	80	718601, 736091	31.0	31.1	0.1	<0.1%
	90	718596, 736082	30.8	30.8	<0.1	<0.1%
	100	718591, 736073	30.6	30.6	<0.1	<0.1%
	110	718586, 736064	30.4	30.4	<0.1	<0.1%
	120	718582, 736055	30.3	30.3	<0.1	<0.1%
	130	718577, 736047	30.2	30.2	<0.1	<0.1%
	140	718572, 736038	30.0	30.1	<0.1	<0.1%
	150	718567, 736029	29.9	30.0	<0.1	<0.1%
	160	718562, 736020	29.9	29.9	<0.1	<0.1%
	170	718558, 736012	29.8	29.8	<0.1	<0.1%
	180	718553, 736003	29.7	29.7	<0.1	<0.1%
	190	718548, 735994	29.7	29.7	<0.1	<0.1%
	200	718543, 735985	29.6	29.6	<0.1	<0.1%

Table 4.2: Significance of Impacts at South Dublin Bay and River Tolka Estuary SPA (NO_2 Deposition In 2028)

NO_2 Deposition In 2028 At South Dublin Bay and River Tolka Estuary SPA							
Receptor	Distance to Road (m)	Receptor Location (ITM)	Lower critical load for most sensitive feature (kgN/ha/yr)	Do Minimum (kgN/ha/yr)	Do Something (kgN/ha/yr)	Change in deposition kgN/ha/yr	Change relative to lower critical load (%)
South Dublin Bay and River Tolka Estuary SPA (Clontarf Road)	0	718639, 736161	5	3.4	3.5	0.1	1%
	10	718635, 736152	5	2.6	2.6	<0.1	<0.1%
	20	718630, 736143	5	2.4	2.4	<0.1	<0.1%
	30	718625, 736134	5	2.3	2.3	<0.1	<0.1%
	40	718620, 736126	5	2.2	2.2	<0.1	<0.1%
	50	718615, 736117	5	2.2	2.2	<0.1	<0.1%
	60	718611, 736108	5	2.2	2.2	<0.1	<0.1%
	70	718606, 736099	5	2.1	2.1	<0.1	<0.1%
	80	718601, 736091	5	2.1	2.1	<0.1	<0.1%
	90	718596, 736082	5	2.1	2.1	<0.1	<0.1%
	100	718591, 736073	5	2.1	2.1	<0.1	<0.1%
	110	718586, 736064	5	2.1	2.1	<0.1	<0.1%
	120	718582, 736055	5	2.1	2.1	<0.1	<0.1%
	130	718577, 736047	5	2.1	2.1	<0.1	<0.1%
	140	718572, 736038	5	2.1	2.1	<0.1	<0.1%
	150	718567, 736029	5	2.1	2.1	<0.1	<0.1%
	160	718562, 736020	5	2.1	2.1	<0.1	<0.1%
	170	718558, 736012	5	2.1	2.1	<0.1	<0.1%
	180	718553, 736003	5	2.1	2.1	<0.1	<0.1%
	190	718548, 735994	5	2.1	2.1	<0.1	<0.1%
	200	718543, 735985	5	2.1	2.1	<0.1	<0.1%

5. Conclusion

An assessment has been carried out to determine the potential air quality impacts at European sites, in support of the NIS prepared for the Proposed Scheme.

No construction dust or road traffic air quality impacts are expected at the the South Dublin Bay and River Tolka Estuary SPA due to the Construction Phase of the Proposed Scheme.

During the Operational Phase, the NO_X concentrations in both scenarios (with and without the Proposed Scheme) exceed the critical level of 30 µg/m^3 at the closest point within the site to the nearest impacted road. A maximum increase of 1.2 µg/m^3, or 4% of the critical level, is expected due to the Proposed Scheme. Nitrogen deposition is predicted to comply with the lowest critical load for the site, with a maximum increase of 0.1 Kg (N)/ha/yr.

6. References

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NTA

Údarás Náisiúnta Iompair
National Transport Authority

National Transport Authority
Dún Scéine
Harcourt Lane
Dublin 2
D02 WT20

Project Ireland 2040
Building Ireland's Future