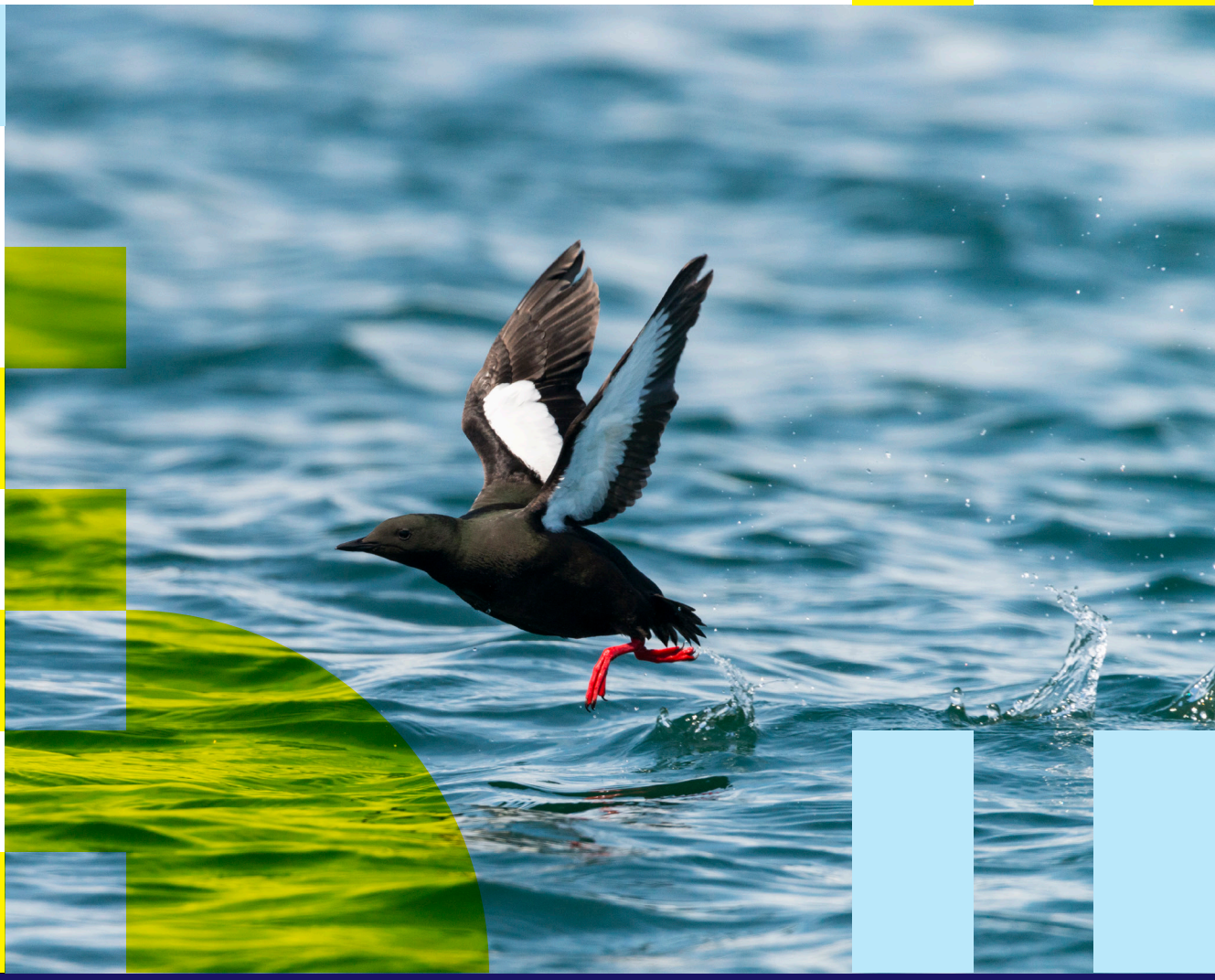
3FMProject

Bringing
Dublin Port
To 2040

Environmental Impact Assessment Report

Appendix 10.2

Volume 3 Part 6



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Third & Final
Masterplan
Project

Appendix 10.2 – Model Inputs and Outputs

Summary of Key Pollutants Considered

The key pollutant emissions associated with combustion processes are oxides of nitrogen (NO_x). Nitrogen Dioxide (NO_2) is classed as both a primary and a secondary pollutant. As a primary pollutant NO_2 is emitted from all combustion processes (such as a gas/oil fired boiler or a car engine). As a secondary pollutant NO_2 is derived from atmospheric reactions of pollutants that are themselves, derived mainly from traffic sources.

Nitrogen oxides (NO_x) which constitute a group of different chemicals that are all formed by the reaction of nitrogen — the most abundant gas in air — with oxygen. NO_x comprises colourless nitric oxide (NO) and the reddish-brown, very toxic and reactive nitrogen dioxide (NO_2). NO_x emissions also lead to the subsequent formation of 'secondary' PM and ground -level ozone in the atmosphere, and cause harm to the environment by contributing to the acidification and eutrophication of waters and soils.

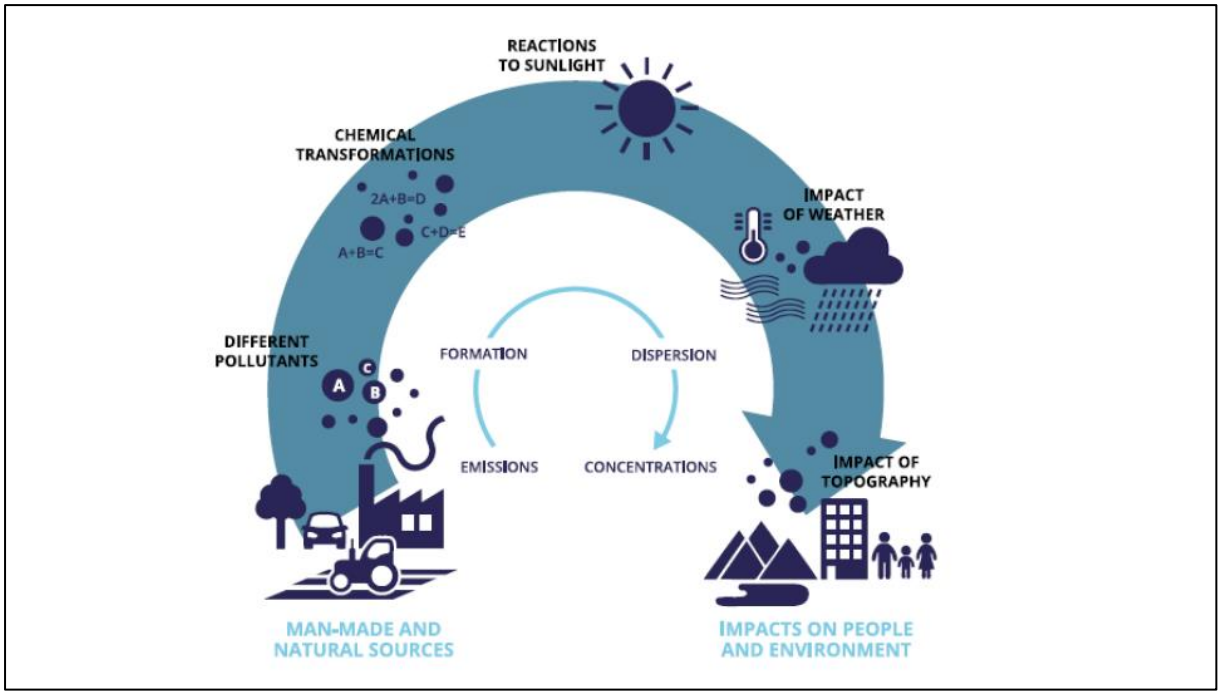


Figure 10.1 Air Pollution from Emission to Exposure

Poor air quality is a serious health and environmental problem. Certain harmful air pollutants are emitted directly from vehicles, such as 'primary' particulate matter (PM) and nitrogen oxides (NO_X). Others, such as ozone and 'secondary' PM, form in the atmosphere after emissions of precursor pollutants, including NO_X and volatile organic compounds. Different sources of pollution, including transport and non-transport sources, emit different types and ratios of pollutants.

The extent to which the population and environment are exposed to harmful levels of air pollution is a complex issue, dependent on how pollutants travel in the atmosphere, their mixing and how they react under different meteorological conditions. Road transport emissions are, relatively, more harmful than those from other sources, as most emissions tend to occur in areas where people live and work, such as cities and towns.

Pollutant Concentrations

In urban areas, pollutant concentrations are primarily determined by the balance between pollutant emissions that increase concentrations, and the ability of the atmosphere to reduce and remove pollutants by dispersion, advection, reaction and deposition. An atmospheric dispersion model is used as a practical way to simulate these complex processes; such a model requires arange of input data,

which can include emissions rates, meteorological data and local topographical information. The model used and the input data relevant to this assessment are described in the following sub-sections.

The atmospheric pollutant concentrations in an urban area depend not only on local sources at a street scale, but also on the background pollutant level made up of the local urban-widebackground, together with regional pollution and pollution from more remote sources brought in on the incoming air mass. This background contribution needs to be added to the fraction from the modelled sources, and is usually obtained from measurements or estimates of urban background concentrations for the area in locations that are not directly affected by local emissions sources.

Dispersion Model Selection

Modelling for this study has been undertaken using ADMS, a version of the ADMS (Atmospheric DispersionModelling System) developed by Cambridge Environmental Research Consultants (CERC) that models a wide range of buoyant and passive releases to atmosphere either individually or in combination. The model calculates the mean concentration over flat terrain and also allows for the effect of plume rise, complex terrain, buildings and deposition. Dispersion models predict atmospheric concentrations within a set level of confidence and there can be variations in results between models under certain conditions; the ADMS model has been formally validated and is widely used in the UK and internationally for regulatory purposes.

ADMS comprises a number of individual modules each representing one of the processes contributing to dispersion or an aspect of data input and output. Amongst the features of ADMS are:

- An up-to-date dispersion model in which the boundary layer structure is characterised by theheight of the boundary layer and the Monin-Obukhov length, a length scale dependent on the friction velocity and the heat flux at the surface. This approach allows the vertical structure of the boundary layer, and hence concentrations, to be calculated more accuratelythan does the use of Pasquill-Gifford stability categories, which were used in many previousmodels (e.g. ISCST3). The restriction implied by the Pasquill-Gifford approach that the dispersion parameters are independent of height is avoided. In ADMS the concentration distribution is Gaussian in stable and neutral conditions, but the vertical distribution is non- Gaussian in convective conditions, to take account of the skewed structure of the vertical component of turbulence;
- A number of complex modules including the effects of plume rise, complex terrain, coastlines, concentration fluctuations and buildings; and,
- A facility to calculate long-term averages of hourly mean concentration, dry and wetdeposition fluxes and radioactivity, and percentiles of hourly mean concentrations, from either statistical meteorological data or hourly average data.

ADMS Roads is designed to estimate NO_2 and PM_{10} and other inert pollutant concentrations from motor vehicles. The science of ADMS Roads is significantly more advanced than that of most other air dispersion models (such as CALINE, ISC and R91) in that it incorporates the latest understanding of the boundary layer structure and goes beyond the simplistic Pasquill-Gifford stability categories method withexplicit calculation of important parameters. The model uses advanced algorithms for the height- dependence of wind speed, turbulence and stability to produce improved predictions.

Model Inputs

Oveview

- **GIS:** ADMS Roads has an interface with MapInfo GIS (Geographical Information System) packages, which were used in the building of the model.
- **User-defined outputs:** The pollutants assessed, the averaging time (which may be an annual average or a shorter period), the percentiles and exceedance values that are of interest, and

whether or not a rolling average is required were set for the PM_{10} and NO_2 limits so they can be directly compared to the relevant Air Quality Objectives.

- **Surface roughness:** The surface roughness in the study area was set to 0.5m.
- **The Monin – Obukhov** length was set to reasonably limit the occurrence of very stable atmospheric conditions. In this case it was defined as 30 m.
- **Receptor Locations:** The main sensitive receptors considered as part of the air quality assessment are the surrounding existing properties – these are representative worst-case receptors. Ground floor (1.5m) is considered. Table 10.1 details the locations modelled.

Surface Roughness

A length scale parameter called the surface roughness length is used in the model to characterise the study area in terms of the effects it will have on wind speed and turbulence, which are key factors in the modelling.

The roughness of the terrain over which a plume passes can have a significant effect on dispersion by altering the velocity profile with height, and the degree of atmospheric turbulence. This is accounted for by a parameter called the surface roughness length. A surface roughness length of 1.5 m has been used within the model to represent the average surface characteristics across the study area.

Meteorological Data

The most important meteorological parameters governing the atmospheric dispersion of pollutants are wind direction, wind speed and atmospheric stability as described below:

- Wind direction determines the sector of the compass into which the plume is dispersed;
- Wind speed affects the distance that the plume travels over time and can affect plume dispersion by increasing the initial dilution of pollutants and inhibiting plume rise; and
- Atmospheric stability is a measure of the turbulence of the air, and particularly of its verticalmotion. It therefore affects the spread of the plume as it travels away from the source. Newgeneration dispersion models, including ADMS, use a parameter known as the Monin - Obukhov length that, together with the wind speed, describes the stability of the atmosphere.

For meteorological data to be suitable for dispersion modelling purposes, a number of meteorological parameters need to be measured on an hourly basis. These parameters includewind speed, wind direction, cloud cover and temperature. There are only a limited number of siteswhere the required meteorological measurements are made.

The year of meteorological data that is used for a modelling assessment can have a significant effect on source contribution concentrations. Dispersion model simulations have been performed using three years of data from Dublin Airport, between 2016 and 2020.

Wind roses have been produced for each of the years of meteorological data used in this assessment and are presented in below.

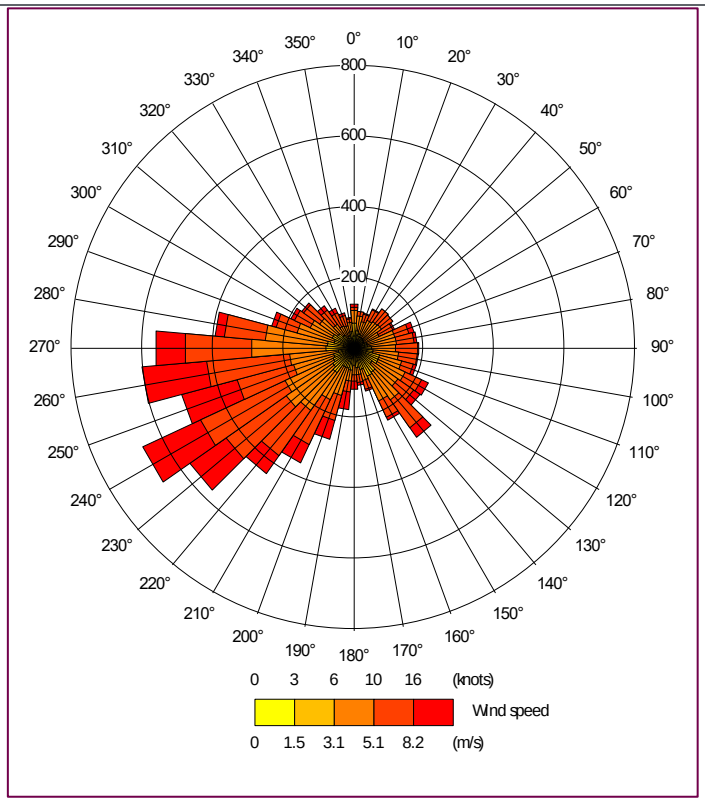


Figure 10.2 Dublin Airport WindRose 2016

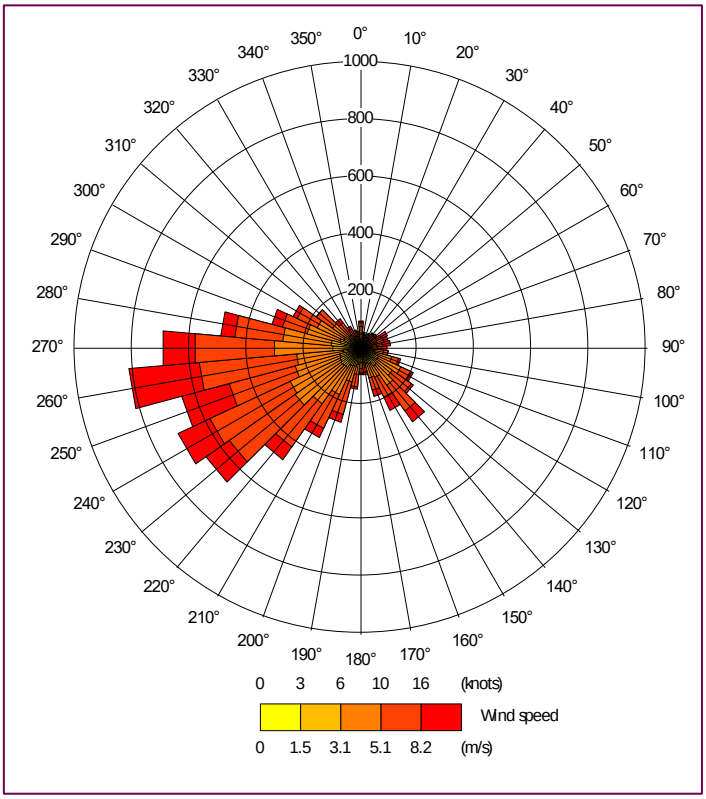


Figure 10.3 Dublin Airport WindRose 2017

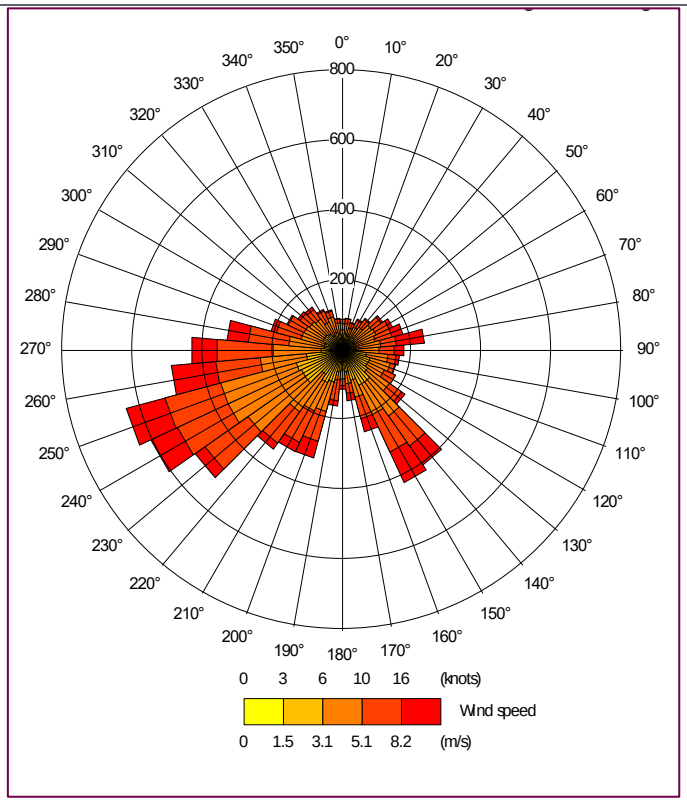


Figure 10.4 Dublin Airport WindRose 2018

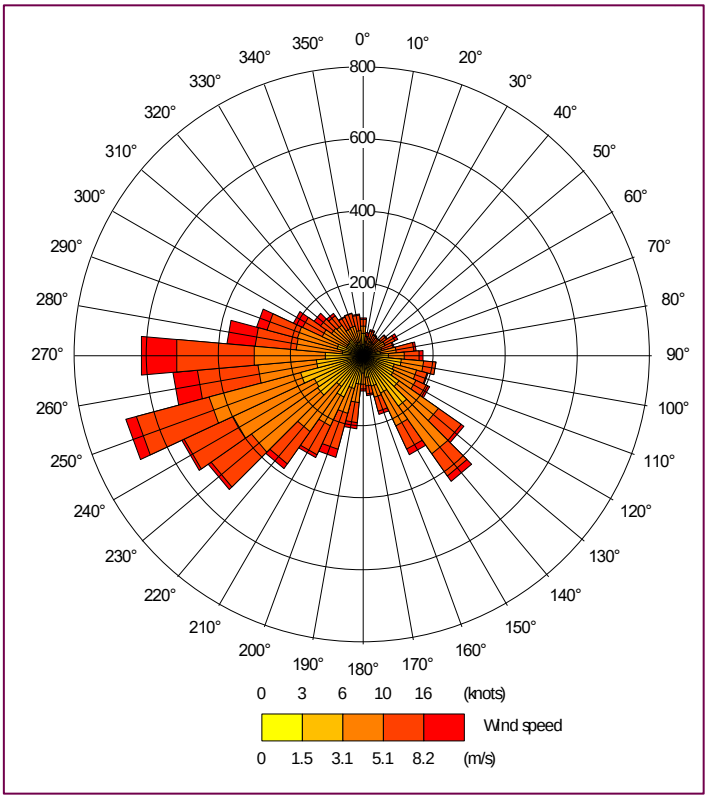


Figure 10.5 Dublin Airport WindRose 2019

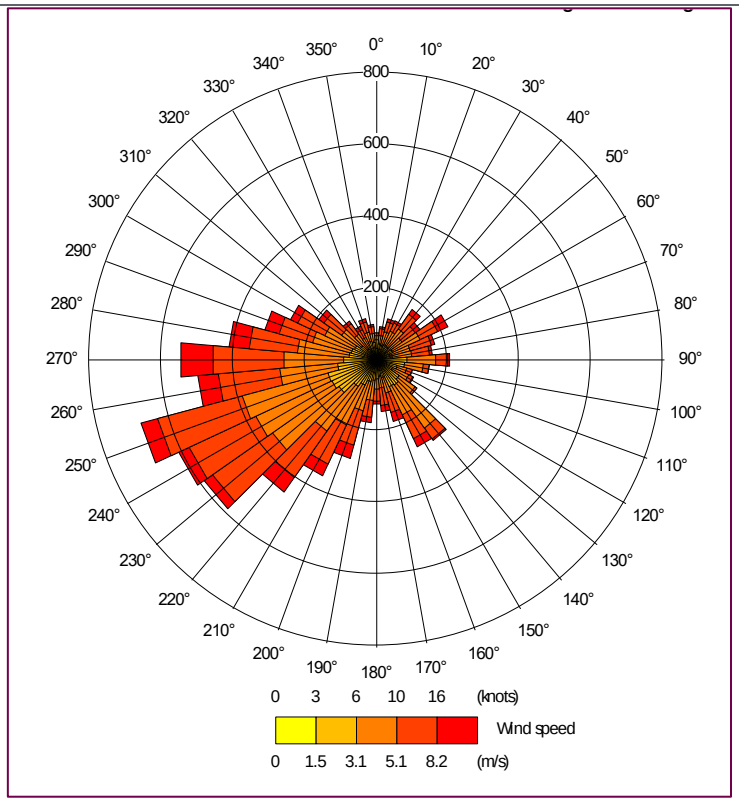
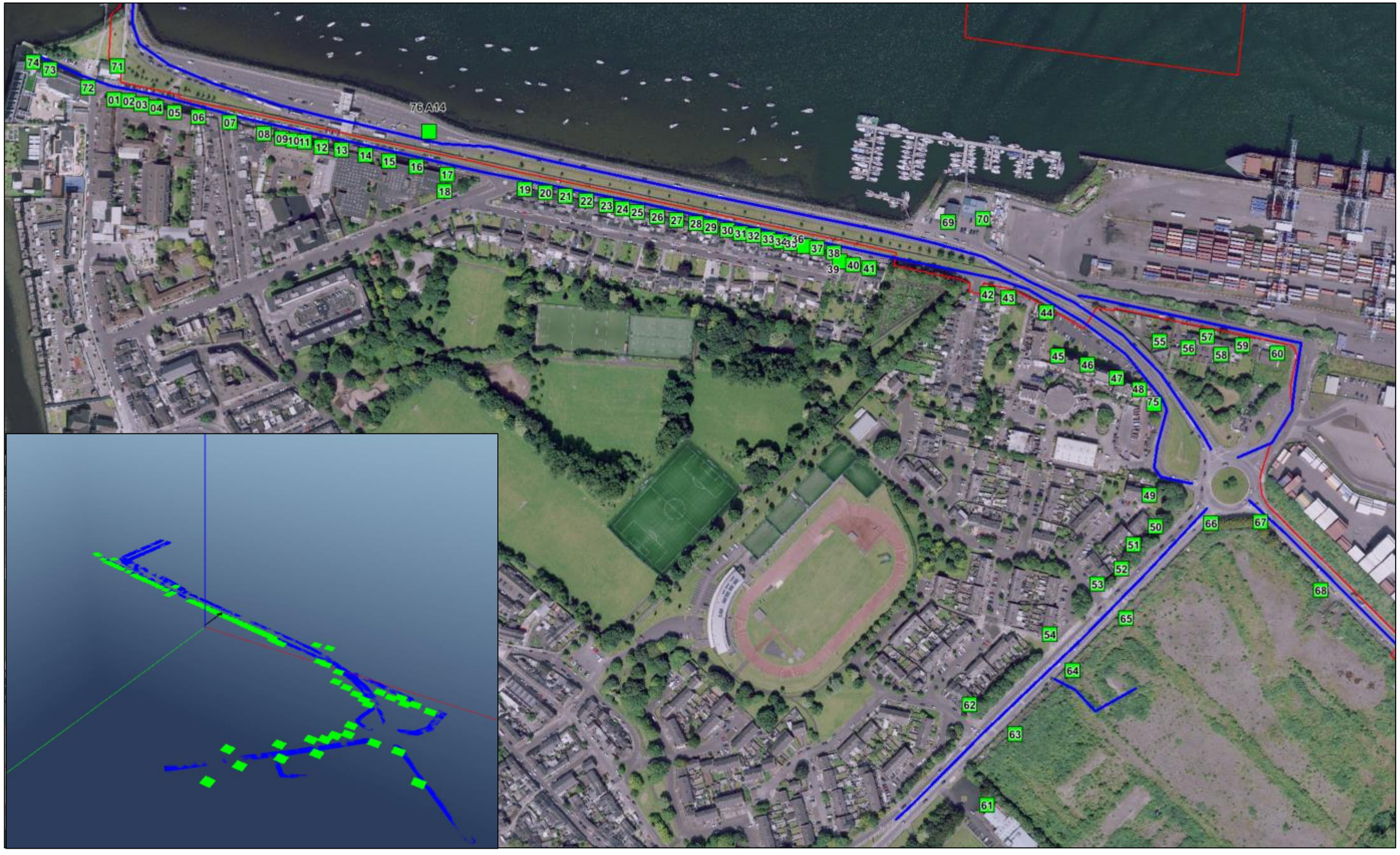


Figure 10.6 Dublin Airport WindRose 2020

Figure 10.7 Air Quality Receptors



Modelled Receptors (ITM Coordinates)

Receptor name	X(m)	Y(m)	Z(m)
1	718006	734160	1.5
2	718019	734159	1.5
3	718030	734156	1.5
4	718043	734153	1.5
5	718059	734149	1.5
6	718080	734145	1.5
7	718108	734140	1.5
8	718138	734130	1.5
9	718154	734126	1.5
10	718164	734124	1.5
11	718174	734123	1.5
12	718189	734118	1.5
13	718207	734116	1.5
14	718228	734111	1.5
15	718249	734106	1.5
16	718273	734101	1.5
17	718300	734094	1.5
18	718298	734079	1.5
19	718369	734081	1.5
20	718387	734078	1.5
21	718405	734075	1.5
22	718423	734071	1.5
23	718441	734067	1.5

24	718455	734064	1.5
25	718468	734061	1.5
26	718486	734057	1.5
27	718503	734054	1.5
28	718520	734051	1.5
29	718533	734048	1.5
30	718548	734045	1.5
31	718560	734042	1.5
32	718571	734040	1.5
33	718584	734037	1.5
34	718595	734035	1.5
35	718604	734033	1.5
36	718616	734031	1.5
37	718627	734029	1.5
38	718642	734025	1.5
39	718647	734017	1.5
40	718659	734014	1.5
41	718673	734011	1.5
42	718778	733988	1.5
43	718796	733985	1.5
44	718830	733972	1.5
45	718840	733934	1.5
46	718866	733926	1.5
47	718892	733914	1.5
48	718912	733904	1.5
49	718921	733811	1.5
50	718926	733783	1.5

51	718907	733767	1.5
52	718896	733746	1.5
53	718875	733732	1.5
54	718833	733688	1.5
55	718930	733947	1.5
56	718955	733941	1.5
57	718972	733951	1.5
58	718984	733935	1.5
59	719003	733943	1.5
60	719034	733936	1.5
61	718777	733537	1.5
62	718762	733626	1.5
63	718802	733600	1.5
64	718853	733656	1.5
65	718900	733702	1.5
66	718975	733786	1.5
67	719019	733787	1.5
68	719072	733727	1.5
69	718743	734052	1.5
70	718774	734055	1.5
71	718009	734190	1.5
72	717983	734171	1.5
73	717949	734187	1.5
74	717934	734193	1.5
75	718925	733891	3.4
76 A14	718284	734132	1.7

Background Information & Model Inputs

Nitrogen Oxides

Nitrogen oxides, NOx (NO + NO2), are predominantly emitted from road vehicle exhausts in the form of nitric oxide (NO) which is then transformed to NO2 via a series of complex chemical processes in the atmosphere. The dominant pathway for NO2 formation is via the reaction of NO with ozone (O3). The UK's Department for Environment, Food and Rural Affairs (DEFRA) have published an approach for predicting NO2 from NOx concentrations at roadsides, which takes account of the difference between fresh emissions of NOx and background NOx, the concentration of O3, and the different proportions of primary NO2 emissions in different years.

The approach was incorporated into a simple spreadsheet calculator which allows the calculation of NO2 from NOx and vice versa. Air quality practitioners are advised to use the latest version of the tool. The tool and User Guide are available here https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/.

The calculator was designed for local authorities in the UK and provides default input data for the regional background concentrations of O3, NOx and NO2 via a "local authority selection tab". For detailed modelling assessments in Ireland, it can be assumed that regional concentrations are characterised by a local authority in Northern Ireland, 'Armagh, Banbridge and Craigavon' is recommended, as the average NOx, NO2 and O3 concentrations in Ireland are reasonably well represented by this area.[1]

This approach has the advantage that concentrations in future years will be automatically calculated within TII REM, which would be needed to assess the opening year of the scheme. For assessment where the TII REM is being used the NOx to NO2 conversion is undertaken by the model when the user imports a receptor file to calculate NO2 concentrations that can be compared to air quality standards.

Relationship between the Annual Mean and 1-Hour Mean Nitrogen Dioxide Standard

The air quality standards for NO2 are expressed in terms of both the annual mean and the number of hours above 200 µg/m3 . Research suggest that the hourly mean standard is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m3 (DEFRA, 2021). This relationship can be used to consider whether short term air quality standards for NO2 are expected to be met.

Relationship between the Annual Mean and 24-Hour Mean PM10 Standard

The air quality standards for PM10 are expressed as the annual mean and the number of days above 50 µg/m3 . Dispersion models are inherently less accurate at predicting exceedances of the 24-hour mean PM10 standard than for the annual mean standard. An empirical relationship between the annual mean concentration and the number of days >50 µg/m3 PM10 was derived in LAQM.TG(22) and takes the form:

No. 24-hour mean exceedances = -18.5 + 0.00145 x annual mean3 + (206/annual mean)

This relationship can be used to consider whether short term air quality standards for PM10 are expected to be met.

[1] For the modelling exercise for the 3FM Project, the background data used was from the site specific monitoring exercises.

Emission Factors

Emission factors were developed for the UK National Atmospheric Emissions Inventory (NAEI) and have been incorporated into the TII REM. This allows users to calculate emission rates in terms of grams per vehicle-kilometre for all years up until 2050.

The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM10 emissions associated with brake and tyre wear.

The toolkit allows users to calculate vehicle emissions for multiple road links based on vehicle fleet composition, traffic speeds and road type.

The emission rates for detailed modelling should also be taken from the TII REM. Air quality practitioners can export these ready for use in detailed modelling packages from a download feature in the TII REM tool.

Background Concentrations

The UK's Department for Environment, Food and Rural Affairs (DEFRA) have published an approach for predicting NO2 from NOx concentrations at roadsides, which takes account of the difference between fresh emissions of NOx and background NOx, the concentration of O3, and the different proportions of primary NO2 emissions in different years. The approach was incorporated into a simple spreadsheet calculator which allows the calculation of NO2 from NOx and vice versa. Air quality practitioners are advised to use the latest version of the tool. The tool and User Guide are available here https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/. The calculator was designed for local authorities in the UK and provides default input data for the regional background concentrations of O3, NOx and NO2 via a "local authority selection tab". For detailed modelling assessments in Ireland, it can be assumed that regional concentrations are characterised by a local authority in Northern Ireland, 'Armagh, Banbridge and Craigavon' is recommended, as the average NOx, NO2 and O3 concentrations in Ireland are reasonably well represented by this area. This approach has the advantage that concentrations in future years will be automatically calculated within TII REM, which would be needed to assess the opening year of the scheme. For assessment where the TII REM is being used the NOx to NO2 conversion is undertaken by the model when the user imports a receptor file to calculate NO2 concentrations that can be compared to air quality standards.

Average Background Particulate Matter – $PM_{2.5}$ ($\mu g/m^3$)

2022 7.48

2023 7.37

2030 7.08

This is used as the background data concentration.

Average Background Particulate Matter – PM_{10} (µg/m3)

2022 12.93

2023 12.8

2030 12.44

This is used as the background data concentration.

Nitrogen Dioxide – NO_2 (µg/m3)

2022 11.96

2023 11.62

2030 9.93

This is used as the background data concentration.

Nitrogen Dioxide – NO_x (µg/m3)

2022 16.02

2023 15.51

2030 13.1

This is used as the background data concentration.

Traffic Flows

Traffic Data Scenarios

This AQIA for the 3FM Development considered cumulative effects to ensure the predicted concentrations include emissions from existing traffic as well as committed Schemes. It is recognised that AQIA will usually be inherently cumulative as traffic growth associated with other developments will need to have been incorporated within the traffic data utilised within the AQA.

The 'high' growth traffic scenario is used to ensure a reasonably foreseeable worse-case scenario is assessed in terms of environmental impacts. This is in accordance with the EPA EIA Guidance (EPA, 2022). The details of the traffic data was discussed with the traffic and noise consultants to ensure the same scenario(s) are used in both the air quality and noise assessments.

Digitised Road Links

The road network was divided into separate links, and describes sections of road where traffic conditions are homogenous (in terms of traffic composition, speed, and flow). Care is taken to assign the appropriate number of road links particularly where there are sensitive receptors in close proximity to the road. The assessment includes all roads expected to make a significant contribution to air quality. In practice, it should not be necessary to include any road more than 200 metres away from a sensitive receptor.

Junctions and Congested Traffic

Consideration is given to sections of road where emissions may be higher, for example, due to congested traffic or road junctions. The simple approach outlined in LAQM.TG(22) is applied where local information with regard to congestion and associated speeds is not available. The assumptions need to be manually applied to the traffic data before it is inputted to the TII REM for use directly or in order to use REM to generate emission rates for use in a detailed dispersion model. Table A outlines the assumptions that can be made.

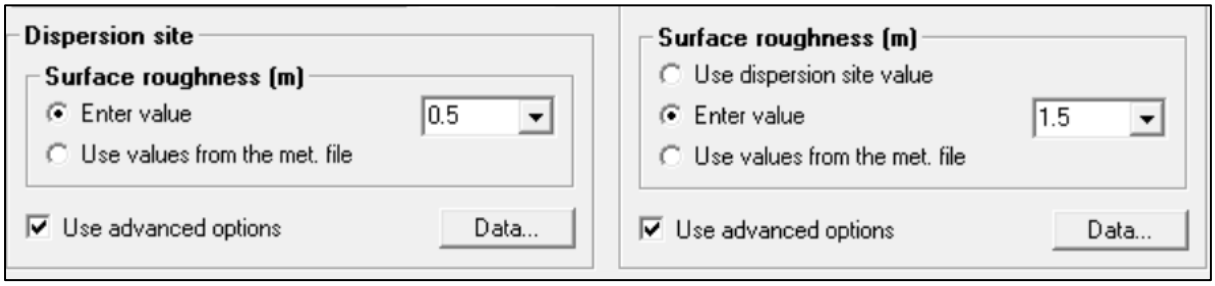
Table A - Junctions and Congested Traffic Assumptions

	Junction Types	Assumptions
1	Busy Junctions	Assume that traffic approaching the junction slows to an average of 20 kph. This should allow for a junction, which suffers from a lot of congestion and stopping

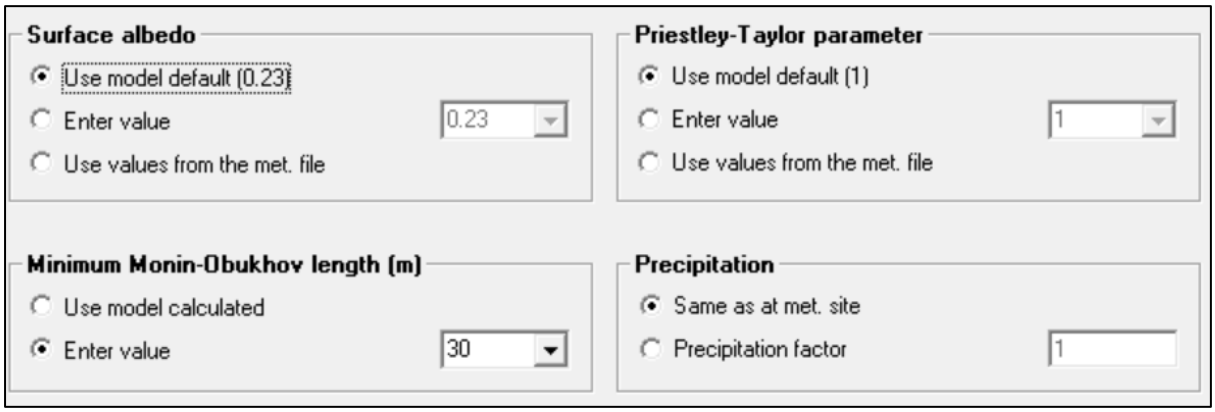
		traffic. In general, these speeds are relevant for approach distances of approximately 25 m
2	Other Junctions	For other junctions (non-motorway) and roundabouts where some slowing of traffic occurs, assume that the speed is 10 kph slower than the average free flowing speed.
3	Motorways	For motorway or trunk slip roads, assume average speeds of 40–45 kph close to the junction.

Model Inputs

Surface Roughness



Advanced Options

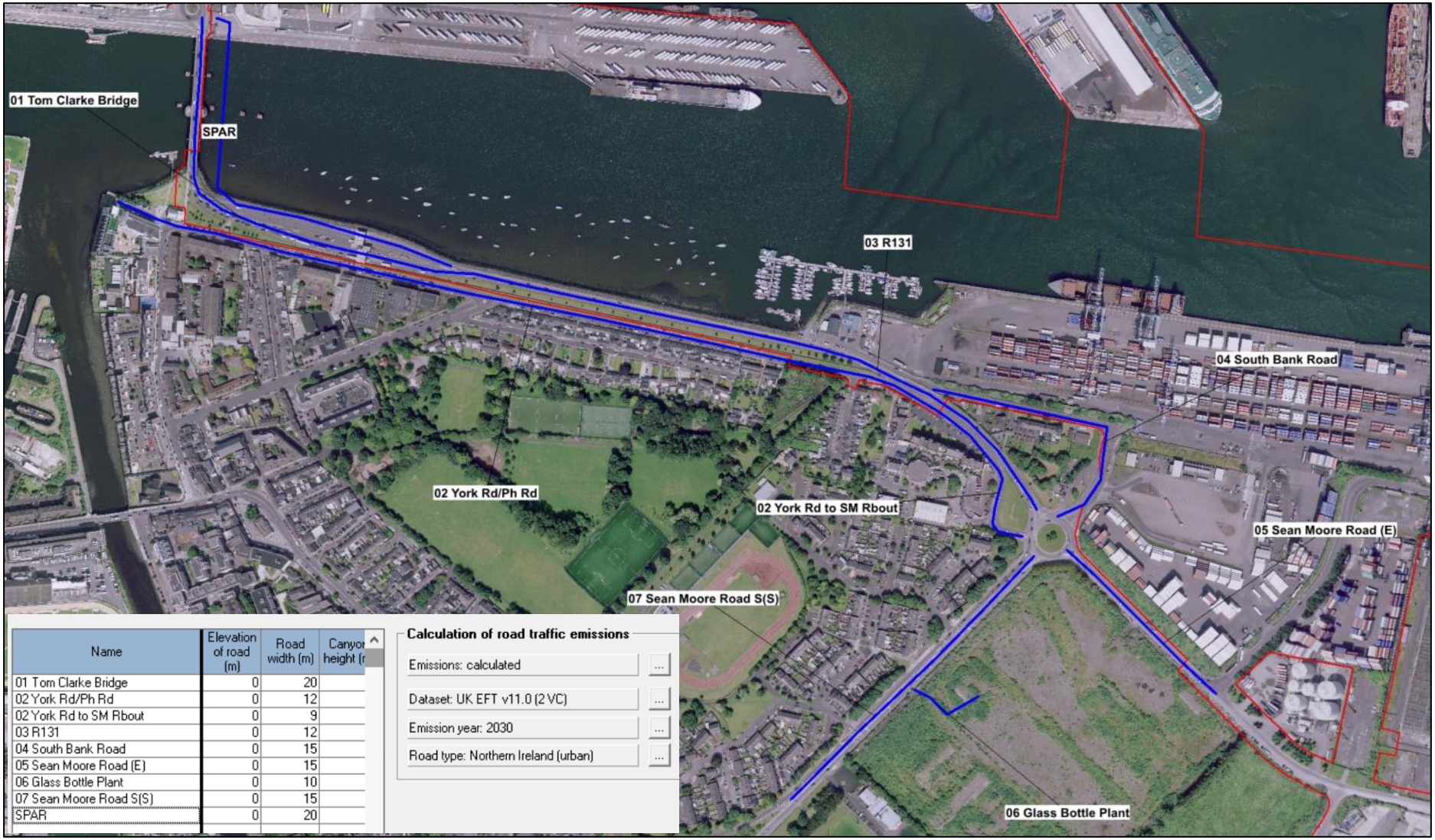


Project Traffic Flows

					Actually 2040						Actually 2040				
2023	AADT	AADT	HOUR	HOUR	2030 WO	AADT	AADT	HOUR	HOUR		2030 WO	AADT	AADT	HOUR	HOUR
	Cars	HGVs	Cars	HGVs		Cars	HGVs	Cars	HGVs			Cars	HGVs	Cars	HGVs
1	22785	2866	949	119	1	31578	4605	1316	192		1	26762	279	1115	12
2	589	40	25	2	2	562	55	23	2		2	555	55	23	2
3	21907	2867	913	119	3	31818	4845	1326	202		3	27002	519	1125	22
4	1740	1357	73	57	4	2649	2137	110	89		4	551	24	23	1
5	4235	1237	176	52	5	10538	2988	439	125		5	8646	1418	360	59
6	0	0	0	0	6	4802	330	200	14		6	4802	330	200	14
7	21063	881	878	37	7	29809	1670	1242	70		7	29878	1744	1245	73
											SPAR	5536	4997	231	208

2030 used in the detailed dispersion model as this is the highest year possible to obtain dispersion model results. Flows reflective of 2040 scenario.

Digitised Links



Name	Elevation of road (m)	Road width (m)	Canyon height (r
01 Tom Clarke Bridge	0	20	
02 York Rd/Ph Rd	0	12	
02 York Rd to SM Rbout	0	9	
03 R131	0	12	
04 South Bank Road	0	15	
05 Sean Moore Road (E)	0	15	
06 Glass Bottle Plant	0	10	
07 Sean Moore Road S(S)	0	15	
SPAR	0	20	

Calculation of road traffic emissions

Emissions: calculated ...

Dataset: UK EFT v11.0 (2 VC) ...

Emission year: 2030 ...

Road type: Northern Ireland (urban) ...

Model Verification

Models selected for use in the assessment of proposed schemes should be fit for purpose and should have some form of published validation assessment and/or technical methodology report available. However, the validation reports prepared by model developers are unlikely to be specific to the assessment area being considered and a comparison between modelled concentrations and local monitoring data should be carried out. This process is referred to as model verification and should be carried out for all dispersion modelling studies.

- Discrepancies between modelled and measured concentrations may arise for a number of reasons, depending on the model being used, for example:
- Uncertainties in traffic data (flows, speeds, vehicle mix);
- Emission factors assumed for each vehicle type;
- Assumptions regarding background concentrations;
- Meteorological data;
- Model input parameters e.g. roughness length, minimum Monin-Obukhov length etc. and
- Model parameters that are fixed, e.g. initial dispersion, but which may in practice vary according to local conditions.

Guidance on model verification is provided in DEFRA's LAQM.TG(22) and this was adhered too in the 3FM air quality modelling.

2022 Base Year (ADMS Model Emission Year 2022; Traffic Used 2023; 2022 London Traffic In NOx-NO2)

An adjustment factor of 4.775 was used for raw modelled data in order to calibrate to the monitored receptor point – modelled receptor 76 A14. Details are shown below:

- **Receptor Identity A14 Monitored Nitrogen Dioxide Average concentration for 2023 – 35.45 µg/m^3**
- **Receptor Name 76 A14 Modelled (adjusted & after using NOx-NO2 Calculator) – 35.45 µg/m^3**

The model reflects the recorded Nitrogen Dioxide concentration and is accurate.

2023 Base Year (ADMS Model Emission Year 2023; Traffic Used 2023; 2023 London Traffic in NOx-NO2)

An adjustment factor of 5.218 was used for raw modelled data in order to calibrate to the monitored receptor point – modelled receptor 76 A14. Details are shown below:

- **Receptor Identity A14 Monitored Nitrogen Dioxide Average concentration for 2023 – 35.45 µg/m^3**
- **Receptor Name 76 A14 Modelled (adjusted & after using NOx-NO2 Calculator) – 35.45 µg/m^3**

The model reflects the recorded Nitrogen Dioxide concentration and is accurate.

2023 Base Year (ADMS Model Emission Year 2023; Traffic Used 2023; 2023 UK Traffic in NOx-NO2)

An adjustment factor of 3.786 was used for raw modelled data in order to calibrate to the monitored receptor point – modelled receptor 76 A14. Details are shown below:

- **Receptor Identity A14 Monitored Nitrogen Dioxide Average concentration for 2023 – 35.45 µg/m^3**
- **Receptor Name 76 A14 Modelled (adjusted & after using NOx-NO2 Calculator) – 35.45 µg/m^3**

The model reflects the recorded Nitrogen Dioxide concentration and is accurate.

To ensure a robust model the highest factor was used. An adjustment factor of **5.218** was used throughout.

2023 Monitoring Results – Please refer to Appendix 10.1 Backgrounds Air Quality Monitoring Data

Receptor identity	R1 - 09/01/2023 to 03/02/2023 (µg/m³)	R2 - 03/02/2023 to 06/03/2023 (µg/m³)	R3 - 06/03/2023 to 13/04/2023 (µg/m³)	R4 - 13/04/2023 to 17/05/2023 (µg/m³)	R5 - 17/05/2023 to 06/06/2023 (µg/m³)	R6 - 06/06/2023 to 04/07/2023 (µg/m³)	R7 - 04/07/2023 to 02/08/2023 (µg/m³)	R8 - 02/08/2023 to 31/08/2023 (µg/m³)	R9 - 31/08/2023 to 03/10/2023 (µg/m³)	R10 - 03/10/2023 to 13/11/2023 (µg/m³)	R11 - 13/11/2023 to 14/12/2023 (µg/m²)	R12 - 04/12/2023 to 11/01/2024 (µg/m³)	Average NO_2 conc (µg/m³) R1 to R12
A1	41.46	34.45	32.10	31.40	27.95	31.43	32.41	26.45	34.15	35.73	36.72	27.53	**32.65**
A2	54.62	45.70	38.76	34.03	24.05	36.92	30.37	36.73	39.71	42.65	63.85	32.53	**39.99**
A3	45.40	35.12	31.30	24.70	15.94	25.10	25.80	26.35	31.34	30.58	42.29	31.55	**30.46**
A4	38.23	Damaged	33.33	34.77	26.31	35.81	26.51	23.39	36.29	Damaged	38.87	28.44	**32.19**
A5	40.25	39.30	39.96	39.84	34.94	34.83	36.42	36.14	44.39	Damaged	45.80	29.80	**38.33**
A6	35.64	33.21	31.95	32.58	26.77	44.68	29.28	33.55	34.90	31.21	38.14	34.68	**33.88**
A7	48.11	39.35	38.05	31.77	19.09	32.02	24.84	30.42	40.25	32.99	43.02	33.67	**34.47**
A8	44.05	31.66	35.47	20.81	12.04	23.81	23.54	26.06	31.51	27.73	39.94	26.94	**28.63**
A9	49.07	41.55	30.82	38.97	46.21	43.80	27.02	24.2	38.64	34.66	45.84	31.56	**37.69**
A10	38.57	34.12	36.72	35.17	30.07	36.51	26.66	30.82	37.51	Damaged	88.70	27.96	**38.44**
A11	47.08	39.08	31.65	34.95	29.50	26.62	32.16	31.04	32.57	34.19	45.15	Damaged	**34.91**
A12	39.35	30.18	33.15	28.80	16.28	38.53	22.51	22.71	26.49	38.05	34.48	24.55	**29.59**
A13	42.93	30.90	24.20	21.09	Damaged	21.13	20.73	21.84	25.92	25.11	34.26	30.01	**27.10**
A14	43.39	38.04	34.14	39.62	35.97	35.44	28.42	30.76	36.00	34.34	41.69	27.55	**35.45**
A15	29.86	28.15	21.03	26.64	30.70	Damaged	Damaged	10.95	27.33	26.39	33.09	15.89	**25.00**
A16	26.94	27.41	20.23	24.84	30.33	24.34	17.77	18.86	25.64	20.21	34.51	20.83	**24.33**
A17	26.33	20.12	15.27	18.36	21.04	16.34	12.80	22.40	Damaged	17.93	30.77	17.03	**19.85**
A18	20.36	19.40	12.82	8.92	22.76	14.74	9.10	21.45	18.14	16.60	28.47	20.73	**17.79**
A19	26.23	21.77	14.63	21.73	23.71	20.72	16.74	14.69	21.02	20.39	31.37	24.38	**21.45**
A20	22.73	21.93	16.61	21.21	21.21	19.66	13.45	21.84	21.44	18.46	Damaged	29.72	**20.75**
A21	28.39	24.80	19.39	28.26	24.45	22.36	9.99	13.52	Damaged	25.74	29.10	18.51	**22.23**
A22	27.29	28.46	15.87	20.77	31.10	18.88	Damaged	17.42	Damaged	19.94	28.96	Damaged	**23.19**
Field Blank	0.11	0.15	0.11	0.10	0.11	0.12	0.12	0.16	0.13	0.13	0.16	0.11	**0.13**
Max values (µg/m³)	54.62	45.70	39.96	39.84	46.21	44.68	36.42	44.39	44.39	42.65	88.70	34.68	39.99
Limit value (µg/m³)	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**

Notes: [1] denotes that the annual average limit value of 40 µg/m³ exceeded at identified monitoring station.
[2] denote that the average measured value is in excess of the annual average limit value of 40µg/m³.
[3] denotes that the hourly average limit value of 200 µg/m³ is likely to exceeded.

NOx-NO2 Calculator

2022 Baseline

Local Authority:		Armagh Banbridge and Craigavon				2022 All traffic
Receptor ID	Easting,m	Northing, m	Road increment NO_x	Background	µg m^{-3}	Total NO_2
			µg m^{-3}	NO_x	NO_2	µg m^{-3}
1	718006	734160	4.735114425	16.02	11.96	14.43
2	718019	734159	5.597255	16.02	11.96	14.87
3	718030	734156	6.06448875	16.02	11.96	15.11
4	718043	734153	6.701426	16.02	11.96	15.44
5	718059	734149	7.42717825	16.02	11.96	15.81
6	718080	734145	8.67249825	16.02	11.96	16.44
7	718108	734140	10.55614025	16.02	11.96	17.39
8	718138	734130	10.4292685	16.02	11.96	17.32
9	718154	734126	10.7159595	16.02	11.96	17.47
10	718164	734124	11.038463	16.02	11.96	17.63
11	718174	734123	11.79372475	16.02	11.96	18
12	718189	734118	11.241305	16.02	11.96	17.73
13	718207	734116	12.363048	16.02	11.96	18.29
14	718228	734111	12.360756	16.02	11.96	18.29
15	718249	734106	12.366868	16.02	11.96	18.29
16	718273	734101	12.675142	16.02	11.96	18.44
17	718300	734094	11.763881	16.02	11.96	17.99
18	718298	734079	7.323322	16.02	11.96	15.76
19	718369	734081	10.9262505	16.02	11.96	17.57
20	718387	734078	11.22062925	16.02	11.96	17.72
21	718405	734075	11.5830995	16.02	11.96	17.9
22	718423	734071	11.50340475	16.02	11.96	17.86

23	718441	734067	11.435743	16.02	11.96	17.83
24	718455	734064	11.436698	16.02	11.96	17.83
25	718468	734061	11.3453045	16.02	11.96	17.78
26	718486	734057	11.30275925	16.02	11.96	17.76
27	718503	734054	11.59861825	16.02	11.96	17.91
28	718520	734051	11.9087545	16.02	11.96	18.06
29	718533	734048	11.80862275	16.02	11.96	18.01
30	718548	734045	11.90068475	16.02	11.96	18.06
31	718560	734042	11.68409075	16.02	11.96	17.95
32	718571	734040	11.82915525	16.02	11.96	18.02
33	718584	734037	11.701615	16.02	11.96	17.96
34	718595	734035	11.84271625	16.02	11.96	18.03
35	718604	734033	11.788902	16.02	11.96	18
36	718616	734031	12.05167025	16.02	11.96	18.13
37	718627	734029	12.2579025	16.02	11.96	18.24
38	718642	734025	11.81807725	16.02	11.96	18.02
39	718647	734017	9.40221375	16.02	11.96	16.81
40	718659	734014	9.29916925	16.02	11.96	16.76
41	718673	734011	9.32571825	16.02	11.96	16.77
42	718778	733988	11.54513825	16.02	11.96	17.88
43	718796	733985	13.73180175	16.02	11.96	18.96
44	718830	733972	16.053741	16.02	11.96	20.1
45	718840	733934	7.2810155	16.02	11.96	15.73
46	718866	733926	8.63511	16.02	11.96	16.42
47	718892	733914	10.43475975	16.02	11.96	17.33
48	718912	733904	13.1846345	16.02	11.96	18.69
49	718921	733811	7.05711575	16.02	11.96	15.62
50	718926	733783	12.40416075	16.02	11.96	18.31
51	718907	733767	11.2711965	16.02	11.96	17.74
52	718896	733746	14.65328125	16.02	11.96	19.42
53	718875	733732	11.6476575	16.02	11.96	17.93
54	718833	733688	12.04255	16.02	11.96	18.13
55	718930	733947	25.5272455	16.02	11.96	24.6
56	718955	733941	16.50722275	16.02	11.96	20.32

57	718972	733951	13.4176545	16.02	11.96	18.81
58	718984	733935	11.538692	16.02	11.96	17.88
59	719003	733943	10.63645575	16.02	11.96	17.43
60	719034	733936	9.589346	16.02	11.96	16.9
61	718777	733537	5.33696975	16.02	11.96	14.74
62	718762	733626	9.6551455	16.02	11.96	16.94
63	718802	733600	15.57141825	16.02	11.96	19.87
64	718853	733656	21.63404475	16.02	11.96	22.78
65	718900	733702	21.51228225	16.02	11.96	22.72
66	718975	733786	24.8434655	16.02	11.96	24.28
67	719019	733787	13.53153825	16.02	11.96	18.87
68	719072	733727	6.7588215	16.02	11.96	15.47
69	718743	734052	22.1459725	16.02	11.96	23.02
70	718774	734055	15.19533925	16.02	11.96	19.68
71	718009	734190	8.67106575	16.02	11.96	16.44
72	717983	734171	4.214161925	16.02	11.96	14.16
73	717949	734187	3.2667876	16.02	11.96	13.67
74	717934	734193	2.6084488	16.02	11.96	13.33
75	718925	733891	11.36206475	16.02	11.96	17.79
76 A14	718284	734132	50.5381225	16.02	11.96	**35.45**

2023 Baseline (All London Traffic)

Local Authority:		**Armagh Banbridge and Craigavon**				**2023 All traffic**
Receptor ID	**Easting,m**	**Northing, m**	**Road increment NO_x $\mu g\ m^{-3}$**	**Background $\mu g\ m^{-3}$**		**Total NO_2 $\mu g\ m^{-3}$**
				NO_x	**NO_2**	
1	718006	734160	4.753457114	16.02	11.96	14.43
2	718019	734159	5.61889894	16.02	11.96	14.88
3	718030	734156	6.0883624	16.02	11.96	15.12
4	718043	734153	6.72819356	16.02	11.96	15.44

5	718059	734149	7.45714816	16.02	11.96	15.81
6	718080	734145	8.7075375	16.02	11.96	16.45
7	718108	734140	10.59838416	16.02	11.96	17.39
8	718138	734130	10.47210856	16.02	11.96	17.33
9	718154	734126	10.76008998	16.02	11.96	17.47
10	718164	734124	11.08402342	16.02	11.96	17.64
11	718174	734123	11.842251	16.02	11.96	18.01
12	718189	734118	11.28789068	16.02	11.96	17.74
13	718207	734116	12.41398726	16.02	11.96	18.3
14	718228	734111	12.41184788	16.02	11.96	18.29
15	718249	734106	12.41821384	16.02	11.96	18.3
16	718273	734101	12.72784996	16.02	11.96	18.45
17	718300	734094	11.81323892	16.02	11.96	18
18	718298	734079	7.35492754	16.02	11.96	15.76
19	718369	734081	10.97366272	16.02	11.96	17.58
20	718387	734078	11.26962768	16.02	11.96	17.73
21	718405	734075	11.63373972	16.02	11.96	17.91
22	718423	734071	11.55416522	16.02	11.96	17.87
23	718441	734067	11.48653994	16.02	11.96	17.84
24	718455	734064	11.4876879	16.02	11.96	17.84
25	718468	734061	11.39616418	16.02	11.96	17.79
26	718486	734057	11.35353312	16.02	11.96	17.77
27	718503	734054	11.65054168	16.02	11.96	17.92
28	718520	734051	11.96195192	16.02	11.96	18.07
29	718533	734048	11.86140106	16.02	11.96	18.02
30	718548	734045	11.95381184	16.02	11.96	18.07
31	718560	734042	11.73637778	16.02	11.96	17.96
32	718571	734040	11.88195998	16.02	11.96	18.03
33	718584	734037	11.75391026	16.02	11.96	17.97
34	718595	734035	11.89552678	16.02	11.96	18.04
35	718604	734033	11.84157266	16.02	11.96	18.01
36	718616	734031	12.10513384	16.02	11.96	18.14
37	718627	734029	12.311871	16.02	11.96	18.24
38	718642	734025	11.8706891	16.02	11.96	18.03

39	718647	734017	9.44531052	16.02	11.96	16.82
40	718659	734014	9.34183758	16.02	11.96	16.76
41	718673	734011	9.3686581	16.02	11.96	16.78
42	718778	733988	11.60243172	16.02	11.96	17.89
43	718796	733985	13.80140128	16.02	11.96	18.98
44	718830	733972	16.14198736	16.02	11.96	20.12
45	718840	733934	7.32231504	16.02	11.96	15.74
46	718866	733926	8.68525664	16.02	11.96	16.43
47	718892	733914	10.493398	16.02	11.96	17.34
48	718912	733904	13.25507668	16.02	11.96	18.71
49	718921	733811	7.05254444	16.02	11.96	15.61
50	718926	733783	12.35690234	16.02	11.96	18.27
51	718907	733767	11.22480506	16.02	11.96	17.71
52	718896	733746	14.5811792	16.02	11.96	19.36
53	718875	733732	11.59147392	16.02	11.96	17.89
54	718833	733688	11.97864952	16.02	11.96	18.08
55	718930	733947	25.70240696	16.02	11.96	24.64
56	718955	733941	16.64014982	16.02	11.96	20.36
57	718972	733951	13.60113444	16.02	11.96	18.88
58	718984	733935	11.65242016	16.02	11.96	17.92
59	719003	733943	10.80032076	16.02	11.96	17.49
60	719034	733936	9.76960922	16.02	11.96	16.98
61	718777	733537	5.30921064	16.02	11.96	14.72
62	718762	733626	9.60226796	16.02	11.96	16.9
63	718802	733600	15.4810233	16.02	11.96	19.8
64	718853	733656	21.508596	16.02	11.96	22.69
65	718900	733702	21.39233896	16.02	11.96	22.63
66	718975	733786	24.73332	16.02	11.96	24.19
67	719019	733787	13.65957604	16.02	11.96	18.91
68	719072	733727	6.83391024	16.02	11.96	15.5
69	718743	734052	22.2552918	16.02	11.96	23.04
70	718774	734055	15.27172932	16.02	11.96	19.7
71	718009	734190	8.70644172	16.02	11.96	16.44
72	717983	734171	4.229199436	16.02	11.96	14.16

73	717949	734187	3.277420582	16.02	11.96	13.67
74	717934	734193	2.617849728	16.02	11.96	13.33
75	718925	733891	11.42121058	16.02	11.96	17.8
76 A14	718284	734132	50.76033874	16.02	11.96	**35.45**

2023 Baseline (All UK Traffic)

Local Authority:		**Armagh Banbridge and Craigavon**				**2023 All traffic**
Receptor ID	**Easting,m**	**Northing, m**	**Road increment NO_x µg m^{-3}**	**Background µg m^{-3}**		**Total NO_2 µg m^{-3}**
				NO_x	**NO_2**	
1	718006	734160	4.3925172	16.02	11.96	14.36
2	718019	734159	5.19204468	16.02	11.96	14.79
3	718030	734156	5.62928982	16.02	11.96	15.03
4	718043	734153	6.22369182	16.02	11.96	15.35
5	718059	734149	6.90040146	16.02	11.96	15.71
6	718080	734145	8.05785738	16.02	11.96	16.33
7	718108	734140	9.80456634	16.02	11.96	17.25
8	718138	734130	9.69621102	16.02	11.96	17.2
9	718154	734126	9.96463842	16.02	11.96	17.34
10	718164	734124	10.26490608	16.02	11.96	17.5
11	718174	734123	10.9657704	16.02	11.96	17.87
12	718189	734118	10.4554176	16.02	11.96	17.6
13	718207	734116	11.49607542	16.02	11.96	18.14
14	718228	734111	11.4952425	16.02	11.96	18.14
15	718249	734106	11.5026252	16.02	11.96	18.15
16	718273	734101	11.79024762	16.02	11.96	18.3
17	718300	734094	10.94657538	16.02	11.96	17.86
18	718298	734079	6.82214484	16.02	11.96	15.67
19	718369	734081	10.18085688	16.02	11.96	17.45
20	718387	734078	10.45761348	16.02	11.96	17.6

21	718405	734075	10.79642262	16.02	11.96	17.78
22	718423	734071	10.72607874	16.02	11.96	17.74
23	718441	734067	10.66607064	16.02	11.96	17.71
24	718455	734064	10.6687587	16.02	11.96	17.71
25	718468	734061	10.58542884	16.02	11.96	17.67
26	718486	734057	10.54696308	16.02	11.96	17.64
27	718503	734054	10.82186454	16.02	11.96	17.79
28	718520	734051	11.10960054	16.02	11.96	17.94
29	718533	734048	11.01691926	16.02	11.96	17.89
30	718548	734045	11.10210426	16.02	11.96	17.94
31	718560	734042	10.9012191	16.02	11.96	17.83
32	718571	734040	11.03535708	16.02	11.96	17.9
33	718584	734037	10.91700672	16.02	11.96	17.84
34	718595	734035	11.0473587	16.02	11.96	17.91
35	718604	734033	10.99745922	16.02	11.96	17.88
36	718616	734031	11.23976322	16.02	11.96	18.01
37	718627	734029	11.42834388	16.02	11.96	18.11
38	718642	734025	11.02380978	16.02	11.96	17.9
39	718647	734017	8.78098338	16.02	11.96	16.71
40	718659	734014	8.68561404	16.02	11.96	16.66
41	718673	734011	8.71147242	16.02	11.96	16.67
42	718778	733988	10.82118306	16.02	11.96	17.79
43	718796	733985	12.88341726	16.02	11.96	18.87
44	718830	733972	15.12287412	16.02	11.96	20.03
45	718840	733934	6.86999988	16.02	11.96	15.69
46	718866	733926	8.15773206	16.02	11.96	16.38
47	718892	733914	9.8407605	16.02	11.96	17.27
48	718912	733904	12.4018002	16.02	11.96	18.62
49	718921	733811	6.26514852	16.02	11.96	15.37
50	718926	733783	10.66576776	16.02	11.96	17.71
51	718907	733767	9.66077406	16.02	11.96	17.18
52	718896	733746	12.45628074	16.02	11.96	18.65
53	718875	733732	9.91095294	16.02	11.96	17.31
54	718833	733688	10.19653092	16.02	11.96	17.46

55	718930	733947	24.35386146	16.02	11.96	24.7
56	718955	733941	15.92232588	16.02	11.96	20.44
57	718972	733951	13.60771692	16.02	11.96	19.25
58	718984	733935	11.3131359	16.02	11.96	18.05
59	719003	733943	10.94983134	16.02	11.96	17.86
60	719034	733936	10.15870878	16.02	11.96	17.44
61	718777	733537	4.5233235	16.02	11.96	14.43
62	718762	733626	8.16030654	16.02	11.96	16.38
63	718802	733600	13.11519618	16.02	11.96	18.99
64	718853	733656	18.2225859	16.02	11.96	21.62
65	718900	733702	18.16261566	16.02	11.96	21.59
66	718975	733786	21.22454316	16.02	11.96	23.14
67	719019	733787	13.22044698	16.02	11.96	19.05
68	719072	733727	6.70190148	16.02	11.96	15.6
69	718743	734052	20.75223966	16.02	11.96	22.9
70	718774	734055	14.25103404	16.02	11.96	19.58
71	718009	734190	8.0598261	16.02	11.96	16.33
72	717983	734171	3.8980656	16.02	11.96	14.09
73	717949	734187	3.012724644	16.02	11.96	13.61
74	717934	734193	2.413605288	16.02	11.96	13.28
75	718925	733891	10.67345334	16.02	11.96	17.71
76 A14	718284	734132	47.1152556	16.02	11.96	**35.45**

Model Outputs

Detailed Dispersion Modelling

2023 ADMS Model Outputs (No background except Nitrogen Dioxide)

Results have been reported for the location where the highest concentration is predicted. This is considered a robust and conservative approach.

Table 10.4 Dublin Airport Met Data 2016 – Adjusted Model Outputs (µg m^{-3})

Receptor	Annual Mean Nitrogen Dioxide (NO_2)	1 Hour Mean Nitrogen Dioxide (NO_2)	24 Hour Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter ($PM_{2.5}$)
1	15.34	108.96	2.02	0.63	0.36
2	15.97	129.59	2.40	0.75	0.43
3	16.32	141.98	2.64	0.81	0.47
4	16.77	152.15	2.94	0.90	0.52
5	17.26	157.60	3.18	0.99	0.57
6	18.08	165.22	3.52	1.15	0.66
7	19.31	178.49	3.98	1.39	0.80
8	19.2	168.87	3.84	1.36	0.78
9	19.38	173.42	3.93	1.40	0.80
10	19.58	174.57	4.06	1.44	0.83
11	20.07	182.58	4.34	1.54	0.88
12	19.7	171.96	4.12	1.46	0.84
13	20.43	181.75	4.45	1.61	0.92
14	20.42	180.05	4.42	1.60	0.92
15	20.41	178.72	4.35	1.60	0.92
16	20.61	181.44	4.34	1.64	0.94
17	20.02	175.85	4.06	1.52	0.88
18	17.06	118.18	2.62	0.95	0.55
19	19.45	148.40	3.74	1.41	0.81
20	19.65	149.06	3.85	1.45	0.83
21	19.89	152.35	3.98	1.50	0.86

22	19.85	151.15	3.96	1.49	0.86
23	19.8	150.19	3.94	1.48	0.85
24	19.81	150.09	3.94	1.48	0.85
25	19.75	149.01	3.90	1.47	0.84
26	19.72	148.51	3.88	1.47	0.84
27	19.92	151.93	3.98	1.50	0.86
28	20.12	155.48	4.07	1.54	0.89
29	20.06	154.73	4.03	1.53	0.88
30	20.12	155.75	4.04	1.54	0.89
31	19.98	153.05	3.96	1.52	0.87
32	20.07	154.38	4.00	1.53	0.88
33	19.99	152.59	3.95	1.52	0.87
34	20.08	153.90	3.98	1.54	0.88
35	20.05	153.04	3.96	1.53	0.88
36	20.22	155.80	4.02	1.56	0.90
37	20.36	157.65	4.05	1.59	0.91
38	20.08	152.58	3.93	1.54	0.88
39	18.48	124.47	3.20	1.22	0.70
40	18.41	122.88	3.15	1.21	0.70
41	18.44	122.55	3.15	1.22	0.70
42	20.04	144.42	4.02	1.53	0.88
43	21.55	175.86	4.78	1.82	1.05
44	23.16	204.47	5.66	2.14	1.23
45	17.16	103.04	2.62	0.97	0.56
46	18.15	122.00	3.13	1.16	0.67
47	19.41	144.52	3.78	1.40	0.81
48	21.32	179.00	4.80	1.78	1.02
49	16.68	70.53	1.93	0.89	0.51
50	19.72	126.32	3.19	1.48	0.85
51	18.99	114.91	2.88	1.34	0.77
52	20.85	144.36	3.69	1.71	0.98
53	19.11	117.08	2.99	1.36	0.78

54	19.27	119.76	3.05	1.39	0.80
55	27.55	212.41	5.13	3.04	1.74
56	22.36	142.27	3.33	1.98	1.13
57	21.11	123.67	2.78	1.72	0.99
58	19.5	103.62	2.34	1.41	0.81
59	19.43	99.46	2.36	1.39	0.80
60	19.03	87.80	2.21	1.31	0.75
61	15.29	78.64	1.59	0.62	0.36
62	17.92	106.34	2.63	1.13	0.65
63	20.9	151.33	3.53	1.72	0.99
64	24.13	200.21	4.75	2.37	1.36
65	24.07	199.34	4.72	2.36	1.36
66	25.77	229.51	4.93	2.70	1.56
67	21.48	153.93	3.90	1.80	1.03
68	16.97	95.41	2.35	0.93	0.53
69	25.61	190.08	4.88	2.64	1.52
70	21.43	138.06	3.36	1.80	1.03
71	18.15	177.31	3.57	1.16	0.67
72	14.93	96.17	1.78	0.55	0.32
73	14.25	74.66	1.42	0.42	0.24
74	13.79	69.81	1.24	0.34	0.19
75	20.08	151.83	4.10	1.54	0.88
76 A14	41.28	409.31	10.04	6.11	3.51

Table 10.5 Dublin Airport Met Data 2017 –Adjusted Model Outputs (µg m^{-3})

Receptor	Annual Mean Nitrogen Dioxide (NO_2)	1 Hour Mean Nitrogen Dioxide (NO_2)	24 Hour Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter ($PM_{2.5}$)
1	13.95	103.58	1.27	0.37	0.21
2	14.36	120.45	1.48	0.44	0.25
3	14.58	138.80	1.60	0.49	0.28

4	14.9	151.97	1.77	0.55	0.31
5	15.28	155.82	2.00	0.62	0.35
6	15.96	160.90	2.30	0.74	0.43
7	17.01	166.47	2.91	0.94	0.54
8	17.02	157.77	2.80	0.95	0.54
9	17.22	158.25	2.91	0.98	0.57
10	17.42	160.33	2.99	1.02	0.59
11	17.85	167.96	3.16	1.10	0.63
12	17.6	159.67	3.00	1.06	0.61
13	18.23	169.61	3.27	1.18	0.68
14	18.25	166.43	3.26	1.18	0.68
15	18.26	166.15	3.24	1.18	0.68
16	18.45	173.07	3.33	1.22	0.70
17	18.09	161.48	3.07	1.15	0.66
18	15.71	108.34	1.95	0.70	0.40
19	17.69	138.96	2.83	1.07	0.62
20	17.84	144.16	2.90	1.10	0.63
21	18.03	148.88	2.99	1.14	0.65
22	17.99	148.39	2.97	1.13	0.65
23	17.95	147.91	2.94	1.12	0.65
24	17.96	148.04	2.94	1.12	0.65
25	17.91	147.09	2.92	1.12	0.64
26	17.89	146.63	2.92	1.11	0.64
27	18.05	149.91	2.99	1.14	0.66
28	18.23	153.45	3.06	1.18	0.68
29	18.18	152.34	3.04	1.17	0.67
30	18.24	152.66	3.06	1.18	0.68
31	18.13	150.09	3.00	1.16	0.67
32	18.22	151.40	3.03	1.17	0.67
33	18.16	149.78	3.00	1.16	0.67
34	18.24	150.98	3.03	1.18	0.68
35	18.21	150.09	3.01	1.17	0.67

36	18.36	152.54	3.06	1.20	0.69
37	18.49	154.31	3.10	1.23	0.70
38	18.25	149.39	3.00	1.18	0.68
39	16.96	122.32	2.43	0.93	0.54
40	16.91	120.82	2.40	0.92	0.53
41	16.93	120.72	2.39	0.93	0.53
42	18.04	143.45	2.85	1.14	0.66
43	19.12	174.82	3.34	1.35	0.77
44	20.31	201.81	3.95	1.58	0.91
45	15.74	95.60	1.72	0.70	0.40
46	16.43	118.77	2.05	0.83	0.48
47	17.34	141.65	2.51	1.00	0.58
48	18.72	176.15	3.17	1.27	0.73
49	15.85	68.88	1.56	0.73	0.42
50	18.62	126.31	2.72	1.27	0.73
51	17.94	112.57	2.44	1.13	0.65
52	19.59	142.00	3.06	1.46	0.84
53	18.05	115.46	2.48	1.16	0.66
54	18.22	119.76	2.53	1.19	0.68
55	28.53	213.44	5.40	3.25	1.86
56	22.98	145.79	3.48	2.10	1.21
57	21.12	123.67	2.76	1.73	0.99
58	19.84	106.12	2.39	1.48	0.85
59	19.34	104.29	2.31	1.38	0.79
60	18.79	92.97	2.18	1.27	0.73
61	14.93	78.37	1.26	0.56	0.32
62	16.93	105.57	2.18	0.94	0.54
63	20.59	150.45	3.12	1.66	0.95
64	23.81	199.16	4.13	2.31	1.33
65	23.83	198.13	4.15	2.31	1.33
66	26.26	221.11	4.69	2.81	1.62
67	20.08	148.74	2.86	1.53	0.88

68	15.94	84.23	1.58	0.74	0.42
69	26.46	189.38	4.82	2.82	1.62
70	22.14	137.73	3.36	1.94	1.11
71	15.83	165.24	2.31	0.72	0.41
72	13.73	87.32	1.09	0.33	0.19
73	13.35	67.24	0.89	0.26	0.15
74	13.04	58.93	0.74	0.20	0.11
75	17.91	150.78	2.90	1.12	0.64
76 A14	41.44	404.60	10.25	6.15	3.53

Table 10.6 Dublin Airport Met Data 2018 – Adjusted Model Outputs (µg m^{-3})

Receptor	Annual Mean Nitrogen Dioxide (NO_2)	1 Hour Mean Nitrogen Dioxide (NO_2)	24 Hour Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter ($PM_{2.5}$)
1	14.69	103.93	1.59	0.51	0.29
2	15.22	126.14	1.86	0.61	0.35
3	15.52	141.98	1.93	0.66	0.38
4	15.93	153.54	2.18	0.74	0.42
5	16.4	155.82	2.37	0.83	0.48
6	17.17	156.23	2.67	0.97	0.56
7	18.33	166.78	3.24	1.20	0.69
8	18.23	162.63	3.20	1.18	0.68
9	18.41	169.51	3.27	1.21	0.70
10	18.61	170.79	3.37	1.25	0.72
11	19.07	179.39	3.56	1.34	0.77
12	18.74	172.57	3.41	1.28	0.73
13	19.44	185.55	3.71	1.41	0.81
14	19.44	180.05	3.67	1.41	0.81
15	19.42	178.72	3.63	1.41	0.81
16	19.58	181.44	3.67	1.44	0.83

17	19.1	173.85	3.41	1.35	0.77
18	16.4	118.18	2.18	0.83	0.48
19	18.66	142.95	3.14	1.26	0.72
20	18.84	146.60	3.22	1.30	0.74
21	19.07	150.14	3.33	1.34	0.77
22	19.02	149.45	3.30	1.33	0.76
23	18.98	148.86	3.27	1.32	0.76
24	18.98	148.98	3.27	1.32	0.76
25	18.93	148.02	3.24	1.31	0.75
26	18.91	147.50	3.23	1.31	0.75
27	19.09	150.94	3.31	1.34	0.77
28	19.29	154.37	3.41	1.38	0.79
29	19.23	153.89	3.39	1.37	0.79
30	19.3	154.85	3.42	1.38	0.79
31	19.17	152.13	3.35	1.36	0.78
32	19.26	153.48	3.40	1.38	0.79
33	19.19	151.68	3.36	1.36	0.78
34	19.29	152.95	3.40	1.38	0.79
35	19.26	152.11	3.39	1.38	0.79
36	19.44	154.72	3.45	1.41	0.81
37	19.58	156.54	3.48	1.44	0.83
38	19.32	151.69	3.38	1.39	0.80
39	17.83	123.73	2.69	1.10	0.63
40	17.78	122.19	2.67	1.09	0.63
41	17.82	121.83	2.69	1.10	0.63
42	19.42	143.86	3.36	1.41	0.81
43	20.83	174.87	4.02	1.68	0.97
44	22.4	201.72	4.71	1.99	1.14
45	16.75	96.52	2.11	0.89	0.51
46	17.71	118.77	2.59	1.08	0.62
47	18.97	141.65	3.15	1.32	0.76
48	20.9	176.15	4.06	1.70	0.97

49	17.07	70.18	1.94	0.96	0.55
50	20.88	127.76	3.53	1.71	0.98
51	20.01	114.93	3.15	1.54	0.89
52	22.17	145.40	4.02	1.97	1.13
53	20.17	117.65	3.24	1.57	0.90
54	20.4	120.60	3.35	1.62	0.93
55	30.49	212.59	6.00	3.66	2.10
56	24.12	142.27	3.97	2.33	1.34
57	22.11	115.56	3.09	1.92	1.10
58	20.6	100.74	2.65	1.63	0.93
59	20.15	91.60	2.42	1.53	0.88
60	19.74	77.91	2.28	1.45	0.83
61	15.14	78.64	1.34	0.60	0.34
62	18.82	106.50	2.84	1.31	0.75
63	21.24	151.28	3.20	1.79	1.03
64	24.72	200.21	4.38	2.49	1.43
65	24.78	199.34	4.43	2.50	1.44
66	27.46	228.76	5.42	3.06	1.76
67	21.95	147.07	3.56	1.89	1.09
68	16.93	92.08	1.97	0.92	0.53
69	29.24	197.70	5.89	3.40	1.95
70	24.06	142.65	4.09	2.33	1.34
71	17.36	171.13	3.00	1.01	0.58
72	14.43	94.76	1.42	0.46	0.26
73	13.99	75.30	1.15	0.37	0.22
74	13.61	65.45	0.99	0.30	0.18
75	19.82	150.78	3.53	1.48	0.85
76 A14	46.58	409.31	12.07	7.40	4.25
	14.69				

Table 10.7 Dublin Airport Met Data 2019 – Adjusted Model Outputs (µg m^{-3})

Receptor	Annual Mean Nitrogen Dioxide (NO_2)	1 Hour Mean Nitrogen Dioxide (NO_2)	24 Hour Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter ($PM_{2.5}$)
1	14.69	103.93	1.59	0.51	0.29
2	15.22	126.14	1.86	0.61	0.35
3	15.52	141.98	1.93	0.66	0.38
4	15.93	153.54	2.18	0.74	0.42
5	16.4	155.82	2.37	0.83	0.48
6	17.17	156.23	2.67	0.97	0.56
7	18.33	166.78	3.24	1.20	0.69
8	18.23	162.63	3.20	1.18	0.68
9	18.41	169.51	3.27	1.21	0.70
10	18.61	170.79	3.37	1.25	0.72
11	19.07	179.39	3.56	1.34	0.77
12	18.74	172.57	3.41	1.28	0.73
13	19.44	185.55	3.71	1.41	0.81
14	19.44	180.05	3.67	1.41	0.81
15	19.42	178.72	3.63	1.41	0.81
16	19.58	181.44	3.67	1.44	0.83
17	19.1	173.85	3.41	1.35	0.77
18	16.4	118.18	2.18	0.83	0.48
19	18.66	142.95	3.14	1.26	0.72
20	18.84	146.60	3.22	1.30	0.74
21	19.07	150.14	3.33	1.34	0.77
22	19.02	149.45	3.30	1.33	0.76
23	18.98	148.86	3.27	1.32	0.76
24	18.98	148.98	3.27	1.32	0.76
25	18.93	148.02	3.24	1.31	0.75
26	18.91	147.50	3.23	1.31	0.75
27	19.09	150.94	3.31	1.34	0.77
28	19.29	154.37	3.41	1.38	0.79

29	19.23	153.89	3.39	1.37	0.79
30	19.3	154.85	3.42	1.38	0.79
31	19.17	152.13	3.35	1.36	0.78
32	19.26	153.48	3.40	1.38	0.79
33	19.19	151.68	3.36	1.36	0.78
34	19.29	152.95	3.40	1.38	0.79
35	19.26	152.11	3.39	1.38	0.79
36	19.44	154.72	3.45	1.41	0.81
37	19.58	156.54	3.48	1.44	0.83
38	19.32	151.69	3.38	1.39	0.80
39	17.83	123.73	2.69	1.10	0.63
40	17.78	122.19	2.67	1.09	0.63
41	17.82	121.83	2.69	1.10	0.63
42	19.42	143.86	3.36	1.41	0.81
43	20.83	174.87	4.02	1.68	0.97
44	22.4	201.72	4.71	1.99	1.14
45	16.75	96.52	2.11	0.89	0.51
46	17.71	118.77	2.59	1.08	0.62
47	18.97	141.65	3.15	1.32	0.76
48	20.9	176.15	4.06	1.70	0.97
49	17.07	70.18	1.94	0.96	0.55
50	20.88	127.76	3.53	1.71	0.98
51	20.01	114.93	3.15	1.54	0.89
52	22.17	145.40	4.02	1.97	1.13
53	20.17	117.65	3.24	1.57	0.90
54	20.4	120.60	3.35	1.62	0.93
55	30.49	212.59	6.00	3.66	2.10
56	24.12	142.27	3.97	2.33	1.34
57	22.11	115.56	3.09	1.92	1.10
58	20.6	100.74	2.65	1.63	0.93
59	20.15	91.60	2.42	1.53	0.88
60	19.74	77.91	2.28	1.45	0.83

61	15.14	78.64	1.34	0.60	0.34
62	18.82	106.50	2.84	1.31	0.75
63	21.24	151.28	3.20	1.79	1.03
64	24.72	200.21	4.38	2.49	1.43
65	24.78	199.34	4.43	2.50	1.44
66	27.46	228.76	5.42	3.06	1.76
67	21.95	147.07	3.56	1.89	1.09
68	16.93	92.08	1.97	0.92	0.53
69	29.24	197.70	5.89	3.40	1.95
70	24.06	142.65	4.09	2.33	1.34
71	17.36	171.13	3.00	1.01	0.58
72	14.43	94.76	1.42	0.46	0.26
73	13.99	75.30	1.15	0.37	0.22
74	13.61	65.45	0.99	0.30	0.18
75	19.82	150.78	3.53	1.48	0.85
76 A14	46.58	409.31	12.07	7.40	4.25

Table 10.8 Dublin Airport Met Data 2020 – Adjusted Model Outputs (µg m^{-3})

Receptor	Annual Mean Nitrogen Dioxide (NO_2)	1 Hour Mean Nitrogen Dioxide (NO_2)	24 Hour Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter (PM_{10})	Annual Mean Particulate Matter ($PM_{2.5}$)
1	14.36	108.24	2.17	0.61	0.35
2	14.79	129.59	2.54	0.72	0.42
3	15.03	141.98	2.80	0.78	0.45
4	15.35	151.97	2.94	0.87	0.50
5	15.71	155.82	3.15	0.96	0.55
6	16.33	160.90	3.56	1.12	0.64
7	17.25	174.24	4.09	1.37	0.78
8	17.2	167.52	3.97	1.35	0.77
9	17.34	166.84	4.08	1.39	0.80

10	17.5	167.59	4.19	1.43	0.82
11	17.87	173.20	4.40	1.53	0.88
12	17.6	166.22	4.16	1.46	0.84
13	18.14	176.79	4.46	1.60	0.92
14	18.14	174.43	4.45	1.60	0.92
15	18.15	174.39	4.45	1.60	0.92
16	18.3	179.10	4.51	1.64	0.94
17	17.86	167.34	4.02	1.52	0.87
18	15.67	112.60	2.57	0.95	0.55
19	17.45	142.55	3.77	1.42	0.81
20	17.6	146.50	3.88	1.46	0.84
21	17.78	150.43	4.01	1.50	0.86
22	17.74	149.92	3.99	1.49	0.86
23	17.71	149.23	3.97	1.48	0.85
24	17.71	149.27	3.98	1.48	0.85
25	17.67	148.19	3.95	1.47	0.85
26	17.64	147.79	3.93	1.47	0.84
27	17.79	151.02	4.02	1.51	0.86
28	17.94	154.37	4.11	1.55	0.89
29	17.89	153.15	4.06	1.53	0.88
30	17.94	154.27	4.08	1.54	0.89
31	17.83	151.52	4.01	1.52	0.87
32	17.9	152.84	4.05	1.54	0.88
33	17.84	151.08	4.00	1.52	0.87
34	17.91	152.31	4.04	1.54	0.88
35	17.88	151.45	4.02	1.53	0.88
36	18.01	153.86	4.09	1.56	0.90
37	18.11	155.66	4.14	1.59	0.91
38	17.9	150.99	4.00	1.53	0.88
39	16.71	123.28	3.23	1.22	0.70
40	16.66	121.76	3.19	1.21	0.69
41	16.67	121.57	3.19	1.21	0.70

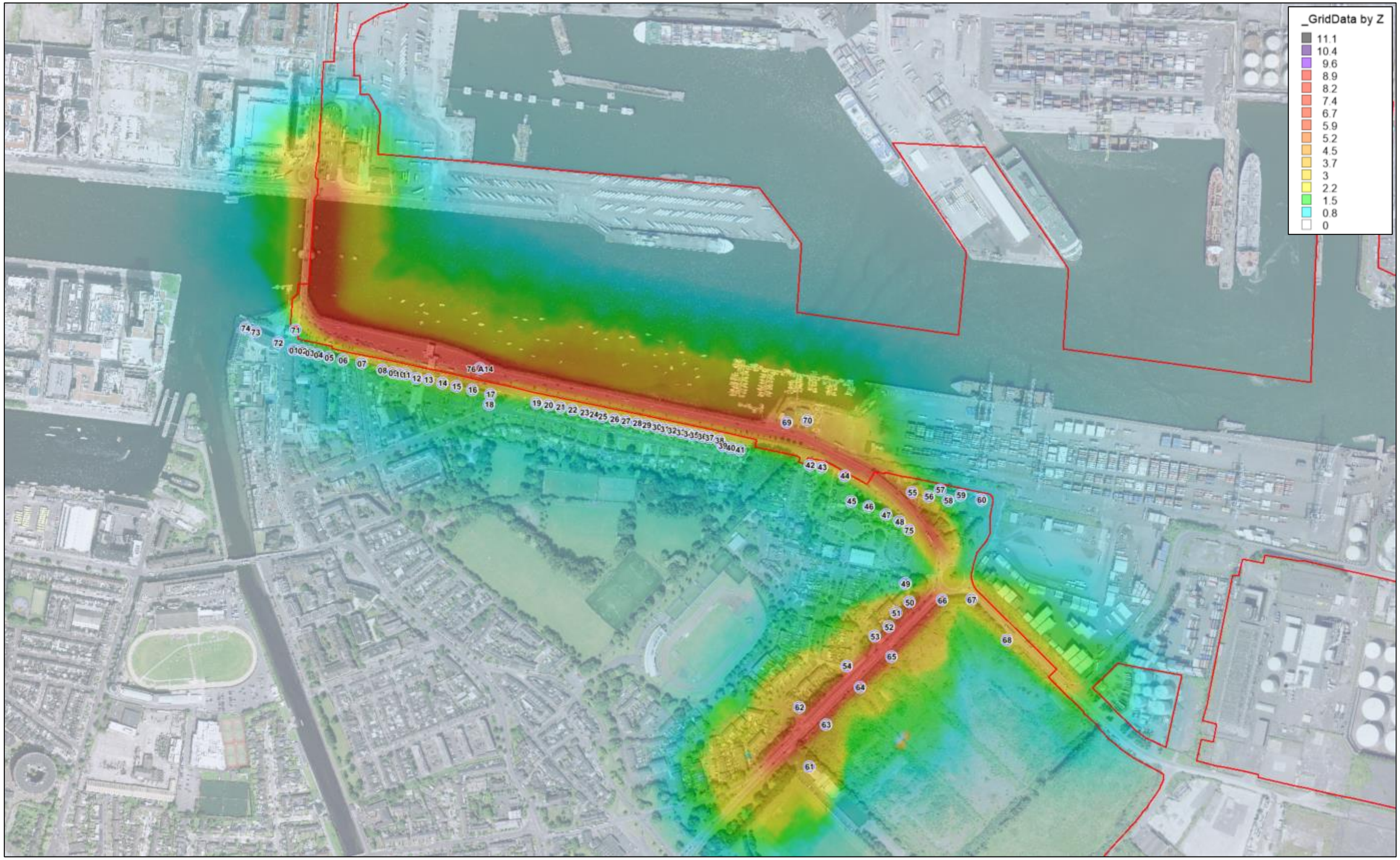
42	17.79	146.53	4.05	1.50	0.86
43	18.87	176.96	4.86	1.79	1.03
44	20.03	209.31	5.75	2.10	1.21
45	15.69	105.62	2.65	0.95	0.55
46	16.38	122.08	3.13	1.13	0.65
47	17.27	144.83	3.90	1.37	0.78
48	18.62	179.38	4.90	1.72	0.99
49	15.37	70.18	1.90	0.88	0.50
50	17.71	127.08	3.07	1.50	0.86
51	17.18	116.28	2.83	1.36	0.78
52	18.65	147.45	3.66	1.75	1.01
53	17.31	119.74	2.95	1.39	0.80
54	17.46	120.83	3.07	1.44	0.83
55	24.7	212.59	5.69	3.38	1.94
56	20.44	142.27	3.67	2.21	1.27
57	19.25	115.56	3.02	1.88	1.08
58	18.05	100.74	2.57	1.57	0.90
59	17.86	97.36	2.51	1.51	0.86
60	17.44	87.80	2.35	1.39	0.80
61	14.43	78.64	1.39	0.64	0.37
62	16.38	106.64	2.60	1.15	0.66
63	18.99	151.28	3.38	1.85	1.06
64	21.62	200.21	4.54	2.57	1.48
65	21.59	198.13	4.53	2.56	1.47
66	23.14	225.33	5.41	2.98	1.72
67	19.05	151.86	3.83	1.83	1.05
68	15.6	94.73	2.23	0.93	0.53
69	22.9	194.80	5.12	2.89	1.66
70	19.58	140.57	3.55	1.98	1.14
71	16.33	179.46	3.83	1.12	0.64
72	14.09	97.65	1.88	0.54	0.31
73	13.61	87.50	1.46	0.42	0.24

74	13.28	82.34	1.22	0.34	0.19
75	17.71	150.78	3.98	1.48	0.85
76 A14	35.45	404.34	11.39	6.56	3.76

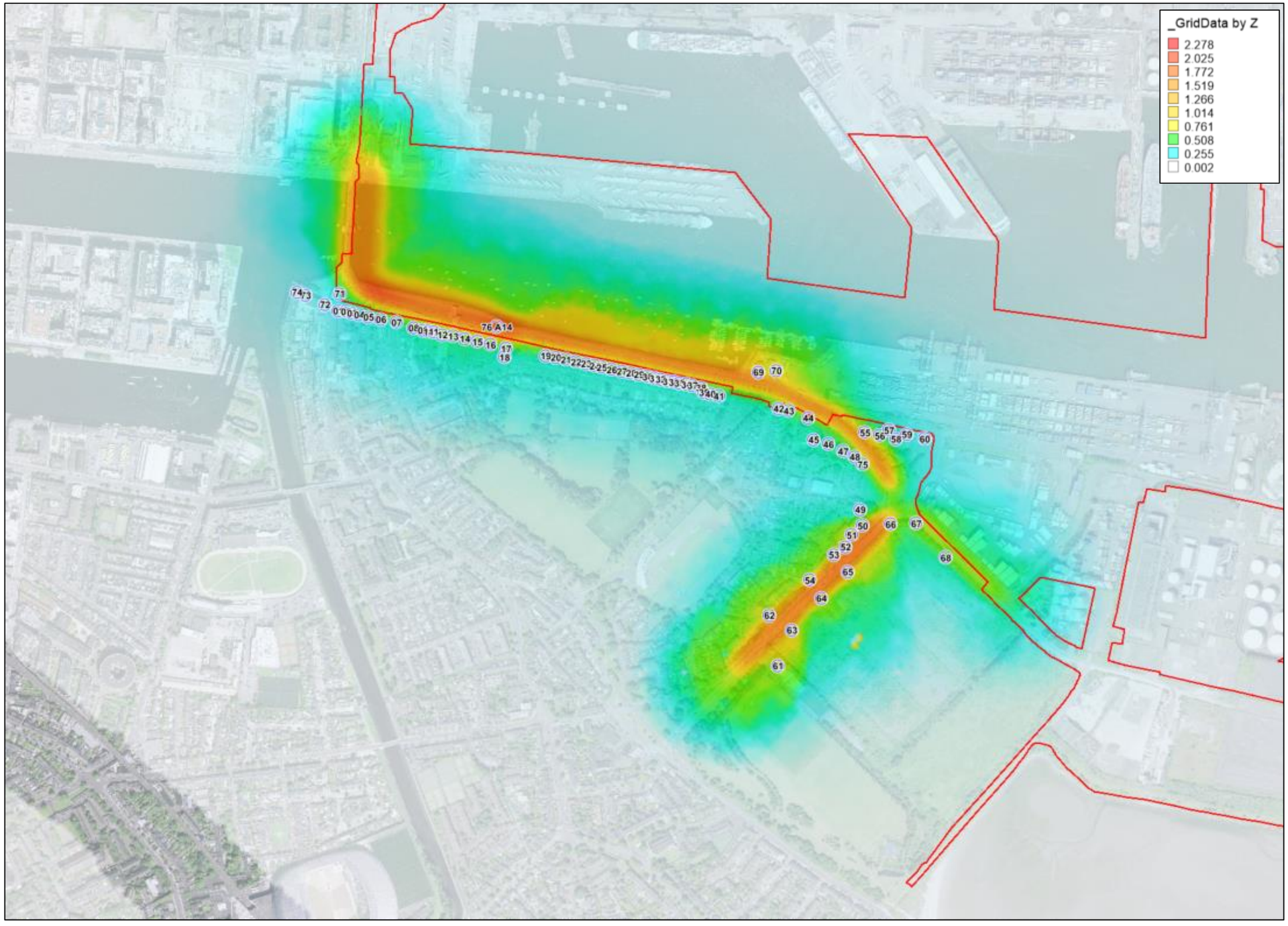
Relevant Air Quality Standards

Pollutant	Averaging Period	Limit Value
Nitrogen Dioxide (NO_2) Protection of Human Health	1 Hour	200 µg/m³ not to be exceeded more than 18 times a calendar year
	Annual Average	40 µg/m³
Nitrogen Oxides (NO_x) Protection of Vegetation	Annual Average	30 µg/m³
Particulate Matter (PM_{10})	24 Hour	50 µg/m³ not to be exceeded more than 35 times a year
	Annual Average	40 µg/m³
Particulate Matter ($PM_{2.5}$)	Annual Average	20 µg/m³

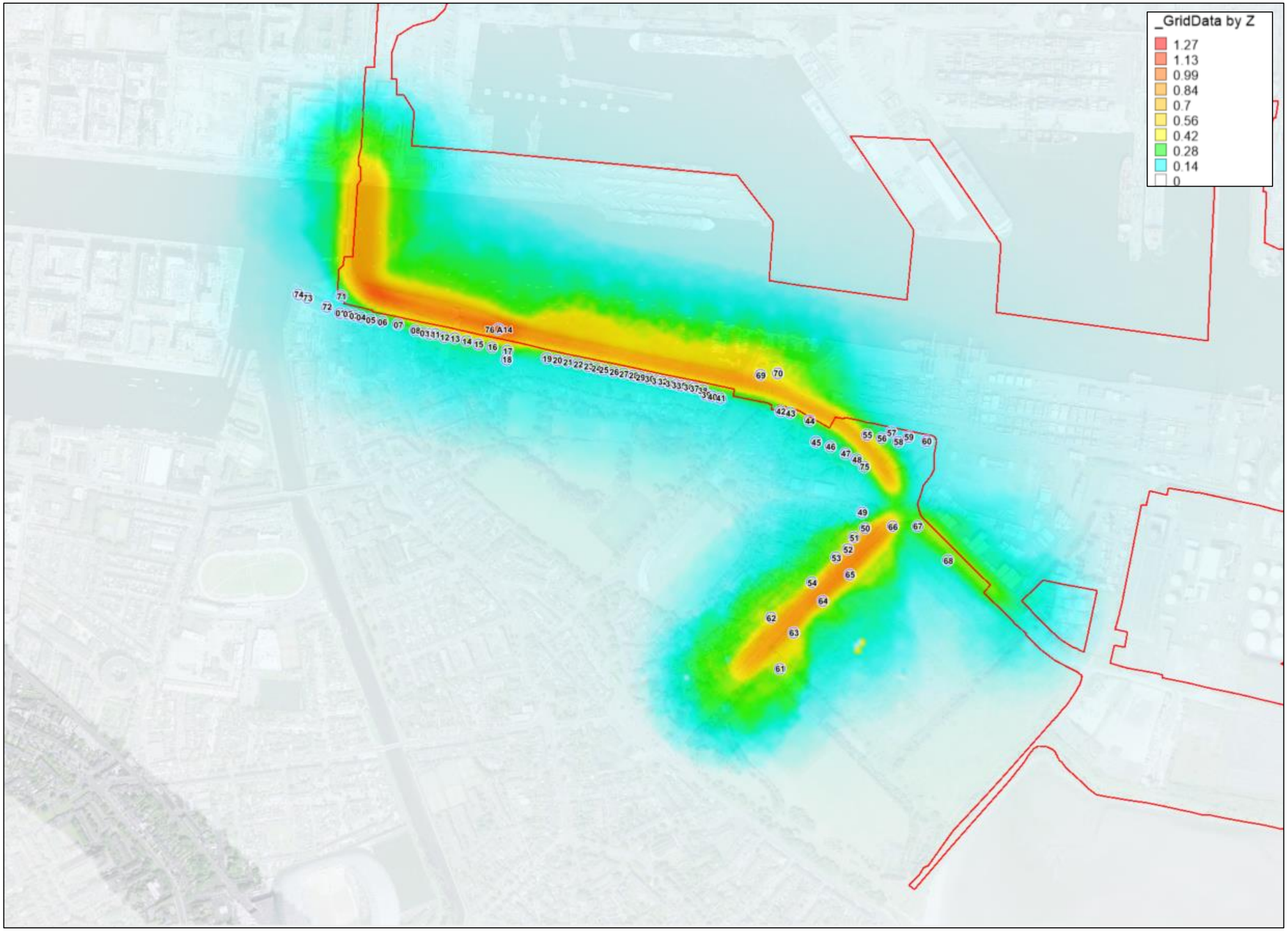
2030/2040 Nitrogen Dioxide as NOX – Raw Modelled Output Annual Mean (µg/m3)



2030/2040 Particulate Matter 10 – Raw Modelled Output Annual Mean (µg/m3)



2030/2040 Particulate Matter 2.5 – Raw Modelled Output Annual Mean (µg/m3)



2030 ADMS Model Outputs (Met 2020)– Nitrogen Dioxide (NO_2) Annual Mean (µg/m3)

Nitrogen Dioxide (NO2)	Receptor	X	Y	Without 2030	With 2030	2030 Actual Difference	2030 % Change	Overall Significance
1	01 Receptor	718006	734160	12.33	11.88	-0.45	-4	Negligible
2	02 Receptor	718019	734159	12.75	12.22	-0.53	-4	Negligible
3	03 Receptor	718030	734156	13	12.42	-0.58	-4	Negligible
4	04 Receptor	718043	734153	13.33	12.68	-0.65	-5	Negligible
5	05 Receptor	718059	734149	13.71	12.97	-0.74	-5	Negligible
6	06 Receptor	718080	734145	14.34	13.41	-0.93	-6	Negligible
7	07 Receptor	718108	734140	15.26	14.04	-1.22	-8	Negligible
8	08 Receptor	718138	734130	15.24	13.96	-1.28	-8	Negligible
9	09 Receptor	718154	734126	15.39	14.04	-1.35	-9	Negligible
10	10 Receptor	718164	734124	15.55	14.15	-1.40	-9	Negligible
11	11Receptor	718174	734123	15.92	14.4	-1.52	-10	Negligible
12	12 Receptor	718189	734118	15.66	14.22	-1.44	-9	Negligible
13	13 Receptor	718207	734116	16.21	14.61	-1.60	-10	Negligible
14	14 Receptor	718228	734111	16.21	14.61	-1.60	-10	Negligible
15	15 Receptor	718249	734106	16.22	14.6	-1.62	-10	Negligible
16	16 Receptor	718273	734101	16.39	14.66	-1.73	-11	Negligible
17	17 Receptor	718300	734094	15.96	14.21	-1.75	-11	Negligible
18	18 Receptor	718298	734079	13.77	12.67	-1.10	-8	Negligible
19	19 Receptor	718369	734081	15.65	13.53	-2.12	-14	Negligible
20	20 Receptor	718387	734078	15.82	13.57	-2.25	-14	Negligible
21	21 Receptor	718405	734075	16.01	13.63	-2.38	-15	Negligible
22	22 Receptor	718423	734071	15.99	13.57	-2.42	-15	Negligible
23	23 Receptor	718441	734067	15.97	13.52	-2.45	-15	Negligible
24	24 Receptor	718455	734064	15.98	13.5	-2.48	-16	Negligible
25	25 Receptor	718468	734061	15.95	13.46	-2.49	-16	Negligible
26	26 Receptor	718486	734057	15.93	13.43	-2.50	-16	Negligible
27	27 Receptor	718503	734054	16.08	13.5	-2.58	-16	Negligible
28	28 Receptor	718520	734051	16.24	13.58	-2.66	-16	Negligible
29	29 Receptor	718533	734048	16.19	13.55	-2.64	-16	Negligible
30	30 Receptor	718548	734045	16.23	13.57	-2.66	-16	Negligible
31	31 Receptor	718560	734042	16.13	13.5	-2.63	-16	Negligible
32	32 Receptor	718571	734040	16.2	13.54	-2.66	-16	Negligible
33	33 Receptor	718584	734037	16.14	13.5	-2.64	-16	Negligible
34	34 Receptor	718595	734035	16.2	13.53	-2.67	-16	Negligible
35	35 Receptor	718604	734033	16.18	13.52	-2.66	-16	Negligible
36	36 Receptor	718616	734031	16.3	13.59	-2.71	-17	Negligible
37	37 Receptor	718627	734029	16.39	13.65	-2.74	-17	Negligible
38	38 Receptor	718642	734025	16.18	13.52	-2.66	-16	Negligible
39	39 Receptor	718647	734017	14.99	12.81	-2.18	-15	Negligible
40	40 Receptor	718659	734014	14.94	12.78	-2.16	-14	Negligible
41	41 Receptor	718673	734011	14.95	12.78	-2.17	-15	Negligible
42	42 Receptor	718778	733988	16.17	13.4	-2.77	-17	Negligible
43	43 Receptor	718796	733985	17.33	14.02	-3.31	-19	Negligible
44	44 Receptor	718830	733972	18.56	14.63	-3.93	-21	Negligible
45	45 Receptor	718840	733934	13.97	12.15	-1.82	-13	Negligible
46	46 Receptor	718866	733926	14.71	12.54	-2.17	-15	Negligible
47	47 Receptor	718892	733914	15.66	13.08	-2.58	-16	Negligible
48	48 Receptor	718912	733904	17.07	13.91	-3.16	-19	Negligible
49	49 Receptor	718921	733811	13.59	12.85	-0.74	-5	Negligible
50	50 Receptor	718926	733783	15.99	15.48	-0.51	-3	Negligible
51	51 Receptor	718907	733767	15.43	15.03	-0.40	-3	Negligible
52	52 Receptor	718896	733746	16.92	16.63	-0.29	-2	Negligible
53	53 Receptor	718875	733732	15.55	15.3	-0.25	-2	Negligible
54	54 Receptor	718833	733688	15.76	15.61	-0.15	-1	Negligible
55	55 Receptor	718930	733947	23.66	17.04	-6.62	-28	Negligible
56	56 Receptor	718955	733941	19.15	14.49	-4.66	-24	Negligible
57	57 Receptor	718972	733951	17.95	13.08	-4.87	-27	Negligible
58	58 Receptor	718984	733935	16.6	13.03	-3.57	-22	Negligible
59	59 Receptor	719003	733943	16.46	12.34	-4.12	-25	Negligible
60	60 Receptor	719034	733936	16.05	11.87	-4.18	-26	Negligible
61	61 Receptor	718777	733537	12.51	12.44	-0.07	-1	Negligible
62	62 Receptor	718762	733626	14.54	14.45	-0.09	-1	Negligible
63	63 Receptor	718802	733600	17.22	17.17	-0.05	0	Negligible
64	64 Receptor	718853	733656	20.84	20.76	-0.08	0	Negligible
65	65 Receptor	718900	733702	19.96	19.8	-0.16	-1	Negligible
66	66 Receptor	718975	733786	21.66	21.02	-0.64	-3	Negligible
67	67 Receptor	719019	733787	20.1	16.95	-3.15	-16	Negligible
68	68 Receptor	719072	733727	15.41	13.61	-1.80	-12	Negligible
69	69 Receptor	718743	734052	21.67	16.42	-5.25	-24	Negligible
70	70 Receptor	718774	734055	18.13	14.44	-3.69	-20	Negligible
71	71 Receptor	718009	734190	14.34	13.28	-1.06	-7	Negligible
72	72 Receptor	717983	734171	12.02	11.64	-0.38	-3	Negligible
73	73 Receptor	717949	734187	11.52	11.25	-0.27	-2	Negligible
74	74 Receptor	717934	734193	11.24	11.01	-0.23	-2	Negligible
75	75 Receptor	718925	733891	16.12	13.43	-2.69	-17	Negligible
76	76 Receptor	718284	734132	33.79	31.42	-2.37	-7	Negligible

2030 ADMS Model Outputs (Met 2020)– Nitrogen Dioxide (NO_2) Hourly Mean (µg/m3)

Nitrogen Dioxide (NO2)	Receptor	X	Y	Without 2030	With 2030	2030 Actual Difference	2030 % Change	Overall Significance
1	01 Receptor	718006	734160	79.15	68.92	-10.22	-13	Negligible
2	02 Receptor	718019	734159	92.19	77.97	-14.22	-15	Negligible
3	03 Receptor	718030	734156	100.85	89.26	-11.59	-11	Negligible
4	04 Receptor	718043	734153	110.35	99.59	-10.76	-10	Negligible
5	05 Receptor	718059	734149	112.77	104.66	-8.11	-7	Negligible
6	06 Receptor	718080	734145	118.98	106.71	-12.27	-10	Negligible
7	07 Receptor	718108	734140	127.59	109.69	-17.90	-14	Negligible
8	08 Receptor	718138	734130	122.80	104.08	-18.73	-15	Negligible
9	09 Receptor	718154	734126	123.89	102.95	-20.94	-17	Negligible
10	10 Receptor	718164	734124	125.23	102.52	-22.71	-18	Negligible
11	11Receptor	718174	734123	129.67	104.88	-24.79	-19	Negligible
12	12 Receptor	718189	734118	122.71	99.71	-23.00	-19	Negligible
13	13 Receptor	718207	734116	130.26	106.05	-24.21	-19	Negligible
14	14 Receptor	718228	734111	128.52	105.42	-23.10	-18	Negligible
15	15 Receptor	718249	734106	129.34	104.76	-24.58	-19	Negligible
16	16 Receptor	718273	734101	132.45	108.45	-24.00	-18	Negligible
17	17 Receptor	718300	734094	124.71	107.80	-16.91	-14	Negligible
18	18 Receptor	718298	734079	83.84	74.00	-9.84	-12	Negligible
19	19 Receptor	718369	734081	109.59	72.61	-36.98	-34	Negligible
20	20 Receptor	718387	734078	113.01	71.20	-41.81	-37	Negligible
21	21 Receptor	718405	734075	116.14	70.41	-45.73	-39	Negligible
22	22 Receptor	718423	734071	115.78	68.54	-47.23	-41	Negligible
23	23 Receptor	718441	734067	115.41	67.18	-48.23	-42	Negligible
24	24 Receptor	718455	734064	115.48	66.25	-49.24	-43	Negligible
25	25 Receptor	718468	734061	114.80	65.00	-49.81	-43	Negligible
26	26 Receptor	718486	734057	114.49	64.24	-50.24	-44	Negligible
27	27 Receptor	718503	734054	117.05	65.53	-51.52	-44	Negligible
28	28 Receptor	718520	734051	119.78	66.87	-52.90	-44	Negligible
29	29 Receptor	718533	734048	118.89	66.54	-52.34	-44	Negligible
30	30 Receptor	718548	734045	119.15	66.87	-52.28	-44	Negligible
31	31 Receptor	718560	734042	117.14	65.63	-51.51	-44	Negligible
32	32 Receptor	718571	734040	117.96	66.17	-51.79	-44	Negligible
33	33 Receptor	718584	734037	116.64	65.35	-51.29	-44	Negligible
34	34 Receptor	718595	734035	117.47	65.88	-51.60	-44	Negligible
35	35 Receptor	718604	734033	116.90	65.48	-51.42	-44	Negligible
36	36 Receptor	718616	734031	118.75	66.63	-52.13	-44	Negligible
37	37 Receptor	718627	734029	120.16	67.41	-52.75	-44	Negligible
38	38 Receptor	718642	734025	116.32	65.26	-51.06	-44	Negligible
39	39 Receptor	718647	734017	95.97	53.10	-42.87	-45	Negligible
40	40 Receptor	718659	734014	94.81	52.42	-42.39	-45	Negligible
41	41 Receptor	718673	734011	94.65	52.26	-42.39	-45	Negligible
42	42 Receptor	718778	733988	114.69	61.80	-52.89	-46	Negligible
43	43 Receptor	718796	733985	138.82	74.80	-64.02	-46	Negligible
44	44 Receptor	718830	733972	161.45	85.88	-75.56	-47	Negligible
45	45 Receptor	718840	733934	83.77	39.03	-44.74	-53	Negligible
46	46 Receptor	718866	733926	97.02	45.84	-51.18	-53	Negligible
47	47 Receptor	718892	733914	114.66	55.83	-58.83	-51	Negligible
48	48 Receptor	718912	733904	141.63	71.08	-70.55	-50	Negligible
49	49 Receptor	718921	733811	54.01	51.69	-2.32	-4	Negligible
50	50 Receptor	718926	733783	100.52	96.57	-3.95	-4	Negligible
51	51 Receptor	718907	733767	91.47	88.74	-2.73	-3	Negligible
52	52 Receptor	718896	733746	113.87	111.83	-2.05	-2	Negligible
53	53 Receptor	718875	733732	92.84	90.43	-2.40	-3	Negligible
54	54 Receptor	718833	733688	97.03	98.03	1.00	1	Negligible
55	55 Receptor	718930	733947	164.60	96.42	-68.18	-41	Negligible
56	56 Receptor	718955	733941	110.33	65.62	-44.72	-41	Negligible
57	57 Receptor	718972	733951	96.52	47.29	-49.23	-51	Negligible
58	58 Receptor	718984	733935	79.48	47.77	-31.72	-40	Negligible
59	59 Receptor	719003	733943	81.86	37.32	-44.54	-54	Negligible
60	60 Receptor	719034	733936	73.93	29.90	-44.03	-60	Negligible
61	61 Receptor	718777	733537	59.70	54.94	-4.76	-8	Negligible
62	62 Receptor	718762	733626	83.34	83.24	-0.10	0	Negligible
63	63 Receptor	718802	733600	113.80	108.44	-5.36	-5	Negligible
64	64 Receptor	718853	733656	149.28	141.89	-7.39	-5	Negligible
65	65 Receptor	718900	733702	147.83	138.31	-9.52	-6	Negligible
66	66 Receptor	718975	733786	169.49	161.72	-7.78	-5	Negligible
67	67 Receptor	719019	733787	165.65	101.39	-64.27	-39	Negligible
68	68 Receptor	719072	733727	103.56	60.71	-42.85	-41	Negligible
69	69 Receptor	718743	734052	151.47	85.96	-65.51	-43	Negligible
70	70 Receptor	718774	734055	110.10	63.31	-46.80	-43	Negligible
71	71 Receptor	718009	734190	132.64	105.92	-26.72	-20	Negligible
72	72 Receptor	717983	734171	71.09	62.33	-8.76	-12	Negligible
73	73 Receptor	717949	734187	62.96	54.47	-8.49	-13	Negligible
74	74 Receptor	717934	734193	59.16	48.74	-10.41	-18	Negligible
75	75 Receptor	718925	733891	116.84	60.03	-56.81	-49	Negligible
76	76 Receptor	718284	734132	298.44	267.51	-30.93	-10	Negligible

2030 ADMS Model Outputs (Met 2020)– Particulate Matter (PM_{10}) µg/m3

Particulate Matter (10)	Receptor	X	Y	Without 2030	With 2030	2030 Actual Difference	2030 % Change	Overall Significance
1	01 Receptor	718006	734160	13.28	12.58	-0.70	-5	Negligible
2	02 Receptor	718019	734159	13.43	12.61	-0.82	-6	Negligible
3	03 Receptor	718030	734156	13.52	12.62	-0.89	-7	Negligible
4	04 Receptor	718043	734153	13.63	12.64	-0.99	-7	Negligible
5	05 Receptor	718059	734149	13.77	12.66	-1.11	-8	Negligible
6	06 Receptor	718080	734145	13.99	12.69	-1.30	-9	Negligible
7	07 Receptor	718108	734140	14.32	12.74	-1.58	-11	Negligible
8	08 Receptor	718138	734130	14.32	12.73	-1.58	-11	Negligible
9	09 Receptor	718154	734126	14.37	12.74	-1.63	-11	Negligible
10	10 Receptor	718164	734124	14.43	12.75	-1.68	-12	Negligible
11	11Receptor	718174	734123	14.56	12.77	-1.80	-12	Negligible
12	12 Receptor	718189	734118	14.47	12.75	-1.72	-12	Negligible
13	13 Receptor	718207	734116	14.67	12.78	-1.89	-13	Negligible
14	14 Receptor	718228	734111	14.67	12.78	-1.89	-13	Negligible
15	15 Receptor	718249	734106	14.67	12.78	-1.89	-13	Negligible
16	16 Receptor	718273	734101	14.73	12.79	-1.95	-13	Negligible
17	17 Receptor	718300	734094	14.58	12.75	-1.83	-13	Negligible
18	18 Receptor	718298	734079	13.79	12.64	-1.15	-8	Negligible
19	19 Receptor	718369	734081	14.46	12.70	-1.76	-12	Negligible
20	20 Receptor	718387	734078	14.52	12.70	-1.82	-13	Negligible
21	21 Receptor	718405	734075	14.59	12.71	-1.89	-13	Negligible
22	22 Receptor	718423	734071	14.59	12.70	-1.89	-13	Negligible
23	23 Receptor	718441	734067	14.58	12.70	-1.88	-13	Negligible
24	24 Receptor	718455	734064	14.58	12.70	-1.89	-13	Negligible
25	25 Receptor	718468	734061	14.57	12.69	-1.88	-13	Negligible
26	26 Receptor	718486	734057	14.56	12.69	-1.87	-13	Negligible
27	27 Receptor	718503	734054	14.62	12.70	-1.92	-13	Negligible
28	28 Receptor	718520	734051	14.67	12.70	-1.97	-13	Negligible
29	29 Receptor	718533	734048	14.66	12.70	-1.96	-13	Negligible
30	30 Receptor	718548	734045	14.67	12.70	-1.97	-13	Negligible
31	31 Receptor	718560	734042	14.64	12.69	-1.94	-13	Negligible
32	32 Receptor	718571	734040	14.66	12.70	-1.96	-13	Negligible
33	33 Receptor	718584	734037	14.64	12.69	-1.94	-13	Negligible
34	34 Receptor	718595	734035	14.66	12.70	-1.97	-13	Negligible
35	35 Receptor	718604	734033	14.65	12.70	-1.96	-13	Negligible
36	36 Receptor	718616	734031	14.70	12.70	-2.00	-14	Negligible
37	37 Receptor	718627	734029	14.73	12.71	-2.02	-14	Negligible
38	38 Receptor	718642	734025	14.66	12.70	-1.96	-13	Negligible
39	39 Receptor	718647	734017	14.22	12.64	-1.58	-11	Negligible
40	40 Receptor	718659	734014	14.20	12.64	-1.56	-11	Negligible
41	41 Receptor	718673	734011	14.21	12.64	-1.57	-11	Negligible
42	42 Receptor	718778	733988	14.65	12.69	-1.96	-13	Negligible
43	43 Receptor	718796	733985	15.07	12.73	-2.34	-16	Negligible
44	44 Receptor	718830	733972	15.52	12.78	-2.74	-18	Negligible
45	45 Receptor	718840	733934	13.85	12.60	-1.26	-9	Negligible
46	46 Receptor	718866	733926	14.12	12.63	-1.49	-11	Negligible
47	47 Receptor	718892	733914	14.46	12.66	-1.80	-12	Negligible
48	48 Receptor	718912	733904	14.97	12.72	-2.25	-15	Negligible
49	49 Receptor	718921	733811	13.74	12.64	-1.10	-8	Negligible
50	50 Receptor	718926	733783	14.65	12.83	-1.82	-12	Negligible
51	51 Receptor	718907	733767	14.44	12.80	-1.64	-11	Negligible
52	52 Receptor	718896	733746	15.01	12.91	-2.09	-14	Negligible
53	53 Receptor	718875	733732	14.49	12.82	-1.68	-12	Negligible
54	54 Receptor	718833	733688	14.58	12.84	-1.74	-12	Negligible
55	55 Receptor	718930	733947	17.44	12.96	-4.49	-26	Negligible
56	56 Receptor	718955	733941	15.72	12.77	-2.95	-19	Negligible
57	57 Receptor	718972	733951	15.23	12.66	-2.57	-17	Negligible
58	58 Receptor	718984	733935	14.77	12.66	-2.11	-14	Negligible
59	59 Receptor	719003	733943	14.69	12.61	-2.08	-14	Negligible
60	60 Receptor	719034	733936	14.52	12.58	-1.95	-13	Negligible
61	61 Receptor	718777	733537	13.37	12.61	-0.76	-6	Negligible
62	62 Receptor	718762	733626	14.12	12.76	-1.36	-10	Negligible
63	63 Receptor	718802	733600	15.13	12.95	-2.18	-14	Negligible
64	64 Receptor	718853	733656	16.54	13.22	-3.32	-20	Negligible
65	65 Receptor	718900	733702	16.19	13.15	-3.04	-19	Negligible
66	66 Receptor	718975	733786	16.84	13.24	-3.60	-21	Negligible
67	67 Receptor	719019	733787	16.05	12.92	-3.13	-19	Negligible
68	68 Receptor	719072	733727	14.34	12.69	-1.65	-12	Negligible
69	69 Receptor	718743	734052	16.70	12.91	-3.79	-23	Negligible
70	70 Receptor	718774	734055	15.37	12.76	-2.60	-17	Negligible
71	71 Receptor	718009	734190	13.99	12.68	-1.31	-9	Negligible
72	72 Receptor	717983	734171	13.17	12.56	-0.61	-5	Negligible
73	73 Receptor	717949	734187	12.99	12.53	-0.46	-4	Negligible
74	74 Receptor	717934	734193	12.89	12.52	-0.38	-3	Negligible
75	75 Receptor	718925	733891	14.63	12.69	-1.94	-13	Negligible
76	76 Receptor	718284	734132	21.67	14.16	-7.51	-35	Negligible

2030 ADMS Model Outputs (Met 2020)– Particulate Matter ($PM_{2.5}$) µg/m3

Particulate Matter (2.5)	Receptor	X	Y	Without 2030	With 2030	2030 Actual Difference	2030 % Change	Overall Significance
1	01 Receptor	718006	734160	7.55	7.16	-0.39	-5	Negligible
2	02 Receptor	718019	734159	7.63	7.17	-0.46	-6	Negligible
3	03 Receptor	718030	734156	7.68	7.18	-0.50	-7	Negligible
4	04 Receptor	718043	734153	7.75	7.19	-0.55	-7	Negligible
5	05 Receptor	718059	734149	7.82	7.20	-0.62	-8	Negligible
6	06 Receptor	718080	734145	7.95	7.22	-0.72	-9	Negligible
7	07 Receptor	718108	734140	8.13	7.25	-0.88	-11	Negligible
8	08 Receptor	718138	734130	8.13	7.24	-0.88	-11	Negligible
9	09 Receptor	718154	734126	8.16	7.25	-0.91	-11	Negligible
10	10 Receptor	718164	734124	8.19	7.25	-0.94	-11	Negligible
11	11Receptor	718174	734123	8.26	7.26	-1.00	-12	Negligible
12	12 Receptor	718189	734118	8.21	7.25	-0.96	-12	Negligible
13	13 Receptor	718207	734116	8.32	7.27	-1.05	-13	Negligible
14	14 Receptor	718228	734111	8.32	7.27	-1.05	-13	Negligible
15	15 Receptor	718249	734106	8.33	7.27	-1.06	-13	Negligible
16	16 Receptor	718273	734101	8.36	7.27	-1.09	-13	Negligible
17	17 Receptor	718300	734094	8.27	7.25	-1.02	-12	Negligible
18	18 Receptor	718298	734079	7.83	7.19	-0.64	-8	Negligible
19	19 Receptor	718369	734081	8.21	7.23	-0.98	-12	Negligible
20	20 Receptor	718387	734078	8.24	7.23	-1.02	-12	Negligible
21	21 Receptor	718405	734075	8.28	7.23	-1.05	-13	Negligible
22	22 Receptor	718423	734071	8.28	7.23	-1.05	-13	Negligible
23	23 Receptor	718441	734067	8.27	7.22	-1.05	-13	Negligible
24	24 Receptor	718455	734064	8.28	7.22	-1.05	-13	Negligible
25	25 Receptor	718468	734061	8.27	7.22	-1.05	-13	Negligible
26	26 Receptor	718486	734057	8.27	7.22	-1.04	-13	Negligible
27	27 Receptor	718503	734054	8.30	7.22	-1.07	-13	Negligible
28	28 Receptor	718520	734051	8.33	7.23	-1.10	-13	Negligible
29	29 Receptor	718533	734048	8.32	7.23	-1.09	-13	Negligible
30	30 Receptor	718548	734045	8.33	7.23	-1.10	-13	Negligible
31	31 Receptor	718560	734042	8.30	7.22	-1.08	-13	Negligible
32	32 Receptor	718571	734040	8.32	7.22	-1.09	-13	Negligible
33	33 Receptor	718584	734037	8.31	7.22	-1.08	-13	Negligible
34	34 Receptor	718595	734035	8.32	7.22	-1.10	-13	Negligible
35	35 Receptor	718604	734033	8.31	7.22	-1.09	-13	Negligible
36	36 Receptor	718616	734031	8.34	7.23	-1.11	-13	Negligible
37	37 Receptor	718627	734029	8.36	7.23	-1.13	-14	Negligible
38	38 Receptor	718642	734025	8.32	7.22	-1.09	-13	Negligible
39	39 Receptor	718647	734017	8.07	7.20	-0.88	-11	Negligible
40	40 Receptor	718659	734014	8.06	7.19	-0.87	-11	Negligible
41	41 Receptor	718673	734011	8.07	7.19	-0.87	-11	Negligible
42	42 Receptor	718778	733988	8.31	7.22	-1.09	-13	Negligible
43	43 Receptor	718796	733985	8.55	7.24	-1.30	-15	Negligible
44	44 Receptor	718830	733972	8.80	7.27	-1.53	-17	Negligible
45	45 Receptor	718840	733934	7.87	7.17	-0.70	-9	Negligible
46	46 Receptor	718866	733926	8.01	7.18	-0.83	-10	Negligible
47	47 Receptor	718892	733914	8.21	7.21	-1.00	-12	Negligible
48	48 Receptor	718912	733904	8.49	7.24	-1.25	-15	Negligible
49	49 Receptor	718921	733811	7.81	7.19	-0.61	-8	Negligible
50	50 Receptor	718926	733783	8.32	7.30	-1.02	-12	Negligible
51	51 Receptor	718907	733767	8.20	7.28	-0.92	-11	Negligible
52	52 Receptor	718896	733746	8.52	7.35	-1.17	-14	Negligible
53	53 Receptor	718875	733732	8.23	7.29	-0.94	-11	Negligible
54	54 Receptor	718833	733688	8.28	7.30	-0.97	-12	Negligible
55	55 Receptor	718930	733947	9.87	7.37	-2.50	-25	Negligible
56	56 Receptor	718955	733941	8.90	7.26	-1.64	-18	Negligible
57	57 Receptor	718972	733951	8.63	7.21	-1.42	-17	Negligible
58	58 Receptor	718984	733935	8.38	7.20	-1.17	-14	Negligible
59	59 Receptor	719003	733943	8.33	7.18	-1.15	-14	Negligible
60	60 Receptor	719034	733936	8.24	7.16	-1.08	-13	Negligible
61	61 Receptor	718777	733537	7.60	7.18	-0.42	-6	Negligible
62	62 Receptor	718762	733626	8.02	7.26	-0.76	-10	Negligible
63	63 Receptor	718802	733600	8.59	7.37	-1.22	-14	Negligible
64	64 Receptor	718853	733656	9.38	7.52	-1.86	-20	Negligible
65	65 Receptor	718900	733702	9.18	7.48	-1.70	-19	Negligible
66	66 Receptor	718975	733786	9.54	7.53	-2.02	-21	Negligible
67	67 Receptor	719019	733787	9.09	7.35	-1.74	-19	Negligible
68	68 Receptor	719072	733727	8.14	7.22	-0.92	-11	Negligible
69	69 Receptor	718743	734052	9.46	7.34	-2.11	-22	Negligible
70	70 Receptor	718774	734055	8.71	7.26	-1.45	-17	Negligible
71	71 Receptor	718009	734190	7.95	7.22	-0.73	-9	Negligible
72	72 Receptor	717983	734171	7.49	7.15	-0.34	-5	Negligible
73	73 Receptor	717949	734187	7.39	7.13	-0.26	-3	Negligible
74	74 Receptor	717934	734193	7.33	7.12	-0.21	-3	Negligible
75	75 Receptor	718925	733891	8.30	7.22	-1.08	-13	Negligible
76	76 Receptor	718284	734132	12.23	8.04	-4.20	-34	Negligible

REM Inputs

REM Model Outputs 2023 Base Year

Link	Total LDV flow (AADT)	Total HDV flow (AADT)	LDV Speed (kph)	HDV Speed (kph)	Road Type	County	Link Type	Link Length (km)
From DPT to Slip	19899	11997	30	30	Urban	Dublin	TII	0.37
Southbound Slip Road to Port	773	2593	30	30	Urban	Dublin	TII	0.34
Northbound Slip Road to M50	1039	3724	30	30	Urban	Dublin	TII	0.39
Promenade Road Jct 6 to Jct 7	2506	3975	30	30	Urban	Dublin	TII	0.15
Promenade Road Jct 7 to Jct 8	3279	6568	30	30	Urban	Dublin	TII	0.095
Promenade Road Jct 8 to Bond Road Jct 24	798	182	30	30	Urban	Dublin	TII	0.27
Promenade Road Jct 8 to Southbound Slip Road to East Wall	1479	377	30	30	Urban	Dublin	TII	0.26
Promenade Road Jct 8 to Jct 9	4764	6869	30	30	Urban	Dublin	TII	0.22
Promenade Road Jct 9 to Bond Drive Extension 1st jct	266	715	30	30	Urban	Dublin	TII	0.42
Bond Drive Extension 1st Jct to Bond Drive Extension End	2143	2322	30	30	Urban	Dublin	TII	0.13
Promenade Road Jct 9 to Jct 25	4577	6783	30	30	Urban	Dublin	TII	0.064
Promenade Road Jct 25 to Jct 10	3591	3656	30	30	Urban	Dublin	TII	0.17
Promenade Road Jct 10 to Jct 11 Access Road	1184	1296	30	30	Urban	Dublin	TII	0.34
Access road Jct 11 to Jct 27	0	0	30	30	Urban	Dublin	TII	0.41
Promenade Road Jct 27 to Jct 28	0	0	30	30	Urban	Dublin	TII	0.54

Tolka Quay Road Jct 28 to Jct 23	0	0	30	30	Urban	Dublin	TII	0.08
Tolka Quay Road Jct 23 to Jct 12	0	0	30	30	Urban	Dublin	TII	0.28
Tolka Quay Road Jct 12 to Jct 27	0	0	30	30	Urban	Dublin	TII	0.17
Tolka Quay Road Jct 12 to Jct 14	0	0	30	30	Urban	Dublin	TII	0.13
Tolka Quay Road Jct 12 to Jct 16	0	0	30	30	Urban	Dublin	TII	0.4
No.2 Branch Road North Extension Jct 16 to Jct 11	0	0	30	30	Urban	Dublin	TII	0.17
No.2 Branch Road North Jct 16 to Jct 15	0	0	30	30	Urban	Dublin	TII	0.12
Tolka Quay Road Jct 17 to Jct 10	1794	2637	30	30	Urban	Dublin	TII	0.15
Tolka Quay Road Jct 16 to Jct 17	2801	4151	30	30	Urban	Dublin	TII	0.35
Tolka Quay Road Jct 17 to Jct 26	2439	3712	30	30	Urban	Dublin	TII	0.2
Tolka Quay Road Jct 26 to Jct 25	1062	3291	30	30	Urban	Dublin	TII	0.19
Tolka Quay Road Jct 26 to Jct 19	1639	2126	30	30	Urban	Dublin	TII	0.15
Tolka Quay Road Jct 19 to Jct 18	1544	1076	30	30	Urban	Dublin	TII	0.11
Tolka Quay Road Jct 19 to End Point (left)	165	1634	30	30	Urban	Dublin	TII	0.35
DPT to Jct 5	18089	5680	30	30	Urban	Dublin	TII	0.67
Jct 5 to East Wall Road	12018	880	30	30	Urban	Dublin	TII	1
Jct 5 to Jct 4 East Wall Road	26341	6140	30	30	Urban	Dublin	TII	0.15
Alexandra Road Jct 4 to Jct 22	2005	1848	30	30	Urban	Dublin	TII	0.03
Alexandra Road Jct 22 to DPC Car Park	491	15	30	30	Urban	Dublin	TII	0.16
Alexandra Road Jct 22 to 36	2086	1845	30	30	Urban	Dublin	TII	0.25

Jct 36 to No.1 Branch road South Jct	2142	2068	30	30	Urban	Dublin	TII	0.07
Alexandra Road Branch Road to Jct 18	2148	2107	30	30	Urban	Dublin	TII	0.34
Alexandra Road Jct 18 to 37	1550	1492	30	30	Urban	Dublin	TII	0.3
Alexandra Road Jct 37 toNo2 Brandch Road	1393	1469	30	30	Urban	Dublin	TII	0.36
Alexandra Road waet of No 2 Branch Road	998	1079	30	30	Urban	Dublin	TII	0.27
Alexandra Road Jct 15 to Jct 14	0	0	30	30	Urban	Dublin	TII	0.41
Alexandra Road Jct 14 to DFT	0	0	30	30	Urban	Dublin	TII	0.02
Alexandra Road Jct 13 to DFT	0	0	30	30	Urban	Dublin	TII	0.13
Terminal Road North Jct 28 to Jct 13	0	0	30	30	Urban	Dublin	TII	0.12
Alexandra Road Jct 13 to T2	0	0	30	30	Urban	Dublin	TII	0.07
Alexandra Road Ext. Jct 21 to T1	0	0	30	30	Urban	Dublin	TII	0.51
Alexandra Road Ext. Jct 21 to T5	0	0	30	30	Urban	Dublin	TII	0.44
East Wall Road Jct 4 to Jct 3	27210	5257	30	30	Urban	Dublin	TII	0.19
Jct 3 to Sheriff Street Upper	5927	427	30	30	Urban	Dublin	TII	1
Jct 3 to Jct 2 East Wall Road	24315	4995	30	30	Urban	Dublin	TII	0.18
Jct 2 to T3	135	5	30	30	Urban	Dublin	TII	0.96
Jct 2 to Jct 1 East Wall Road	24347	4996	30	30	Urban	Dublin	TII	0.1
Jct 1 to North Wall Quay	8454	2274	30	30	Urban	Dublin	TII	1
Jct 1 to North Quay Extension	4	2	30	30	Urban	Dublin	TII	0.56
Jct 1 to Jct 29 (Tom Clarke Bridge)	19918	2867	30	30	Urban	Dublin	TII	1.24
York Road/Pigeon House Road to Jct 29	549	40	30	30	Urban	Dublin	TII	1.17

Jct 29 to Sean Moore Road	20182	881	30	30	Urban	Dublin	TII	1
Jct 29 to Jct 30 South Bank Road	415	1266	30	30	Urban	Dublin	TII	0.78
Jct 30 to MTL	200	1237	30	30	Urban	Dublin	TII	0.12
Jct 30 to Pigeon House Road	208	32	30	30	Urban	Dublin	TII	0.39
Jct 29 to Jct 31 South Bank Road	2531	1704	30	30	Urban	Dublin	TII	0.22
Jct 31 to Jct 32 White Bank Road	2640	646	30	30	Urban	Dublin	TII	0.55
Jct 31 to ESB Ringsend (Port Park Car Park)	0	0	30	30	Urban	Dublin	TII	0.39
Jct 32 to ESB Ringsend	150	19	30	30	Urban	Dublin	TII	0.06
Jct 32 to Plot L Pigeon House Road	118	156	30	30	Urban	Dublin	TII	0.09
Jct 32 to Jct 33 Pigeon House Road	1714	485	30	30	Urban	Dublin	TII	0.22
Jct 33 to Jct 34 Pigeon House Road	1511	456	30	30	Urban	Dublin	TII	0.11
Jct 33 to 1st Jct Shellybanks Road	358	49	30	30	Urban	Dublin	TII	0.6
Jct 34 to Covanta & Staff Car Park	47	244	30	30	Urban	Dublin	TII	0.31
Jct 34 to Dublin Sewage Treatment	1423	151	30	30	Urban	Dublin	TII	0.09
Jct 34 to Jct 35 Pigeon House Road	1423	151	30	30	Urban	Dublin	TII	0.46
Jct 35 to Pigeon House Harbour	29	11	30	30	Urban	Dublin	TII	0.11
Jct 35 to to ESB Poolbeg	275	18	30	30	Urban	Dublin	TII	0.98
Jct 35 to Dublin Sewage Treatment Works Jct	656	151	30	30	Urban	Dublin	TII	0.15
Dublin Sewage Treatment Works Jct into site	0	0	30	30	Urban	Dublin	TII	0.12
Jct 35 to Great South Wall	763	44	30	30	Urban	Dublin	TII	1.56

REM Model Inputs 2040 DM

Link	Total LDV flow (AADT)	Total HDV flow (AADT)	LDV Speed (kph)	HDV Speed (kph)	Road Type	County	Link Type	Link Length (km)
From DPT to Slip	26691	20465	30	30	Urban	Dublin	TII	0.37
Southbound Slip Road to Port	1427	3896	30	30	Urban	Dublin	TII	0.34
Northbound Slip Road to M50	1561	6368	30	30	Urban	Dublin	TII	0.39
Promenade Road Jct 6 to Jct 7	5550	7302	30	30	Urban	Dublin	TII	0.15
Promenade Road Jct 7 to Jct 8	6977	11198	30	30	Urban	Dublin	TII	0.095
Promenade Road Jct 8 to Bond Road Jct 24	897	192	30	30	Urban	Dublin	TII	0.27
Promenade Road Jct 8 to Southbound Slip Road to East Wall	3439	927	30	30	Urban	Dublin	TII	0.26
Promenade Road Jct 8 to Jct 9	10760	12243	30	30	Urban	Dublin	TII	0.22
Promenade Road Jct 9 to Bond Drive Extension 1st jct	419	1223	30	30	Urban	Dublin	TII	0.42
Bond Drive Extension 1st Jct to Bond Drive Extension End	3624	3998	30	30	Urban	Dublin	TII	0.13
Promenade Road Jct 9 to Jct 25	10631	12010	30	30	Urban	Dublin	TII	0.064
Promenade Road Jct 25 to Jct 10	9310	6667	30	30	Urban	Dublin	TII	0.17
Promenade Road Jct 10 to Jct 11 Access Road	2719	2712	30	30	Urban	Dublin	TII	0.34
Tolka Quay Road Jct 17 to Jct 10	3903	3973	30	30	Urban	Dublin	TII	0.15
Tolka Quay Road Jct 16 to Jct 17	4835	6903	30	30	Urban	Dublin	TII	0.35
Tolka Quay Road Jct 17 to Jct 26	4083	5510	30	30	Urban	Dublin	TII	0.2

Tolka Quay Road Jct 26 to Jct 25	6246	6826	30	30	Urban	Dublin	TII	0.19
Tolka Quay Road Jct 26 to Jct 19	670	3330	30	30	Urban	Dublin	TII	0.15
Tolka Quay Road Jct 19 to Jct 18	0	0	30	30	Urban	Dublin	TII	0.11
Tolka Quay Road Jct 19 to End Point (left)	670	3330	30	30	Urban	Dublin	TII	0.35
DPT to Jct 5	23704	10202	30	30	Urban	Dublin	TII	0.67
Jct 5 to East Wall Road	16187	1451	30	30	Urban	Dublin	TII	1
Jct 5 to Jct 4 East Wall Road	35551	11701	30	30	Urban	Dublin	TII	0.15
Alexandra Road Jct 4 to Jct 22	0	3298	30	30	Urban	Dublin	TII	0.03
Alexandra Road Jct 22 to DPC Car Park	861	26	30	30	Urban	Dublin	TII	0.16
Alexandra Road Jct 22 to 36	959	3352	30	30	Urban	Dublin	TII	0.25
Jct 36 to No.1 Branch road South Jct	1008	3242	30	30	Urban	Dublin	TII	0.07
Alexandra Road Branch Road to Jct 18	1008	3242	30	30	Urban	Dublin	TII	0.34
Alexandra Road Jct 18 to 37	1966	3422	30	30	Urban	Dublin	TII	0.3
Alexandra Road Jct 37 toNo2 Brandch Road	1753	1844	30	30	Urban	Dublin	TII	0.36
Alexandra Road waet of No 2 Branch Road	1753	1844	30	30	Urban	Dublin	TII	0.27
East Wall Road Jct 4 to Jct 3	35551	8403	30	30	Urban	Dublin	TII	0.19
Jct 3 to Sheriff Street Upper	7351	645	30	30	Urban	Dublin	TII	1
Jct 3 to Jct 2 East Wall Road	32002	7991	30	30	Urban	Dublin	TII	0.18
Jct 2 to T3	0	0	30	30	Urban	Dublin	TII	0.96
Jct 2 to Jct 1 East Wall Road	32002	7991	30	30	Urban	Dublin	TII	0.1
Jct 1 to North Wall Quay	9851	3770	30	30	Urban	Dublin	TII	1

Jct 1 to North Quay Extension	0	0	30	30	Urban	Dublin	TII	0.56
Jct 1 to Jct 29 (Tom Clarke Bridge)	26973	4605	30	30	Urban	Dublin	TII	1.24
York Road/Pigeon House Road to Jct 29	537	55	30	30	Urban	Dublin	TII	1.17
Jct 29 to Sean Moore Road	28139	1670	30	30	Urban	Dublin	TII	1
Jct 29 to Jct 30 South Bank Road	602	2047	30	30	Urban	Dublin	TII	0.78
Jct 30 to MTL	295	2120	30	30	Urban	Dublin	TII	0.12
Jct 30 to Pigeon House Road	217	45	30	30	Urban	Dublin	TII	0.39
Jct 29 to Jct 31 South Bank Road	7550	2988	30	30	Urban	Dublin	TII	0.22
Jct 31 to Jct 32 White Bank Road	1273	1915	30	30	Urban	Dublin	TII	0.55
Jct 31 to ESB Ringsend (Port Park Car Park)	4338	464	30	30	Urban	Dublin	TII	0.39
Jct 32 to ESB Ringsend	86	40	30	30	Urban	Dublin	TII	0.06
Jct 32 to Plot L Pigeon House Road	150	244	30	30	Urban	Dublin	TII	0.09
Jct 32 to Jct 33 Pigeon House Road	2067	637	30	30	Urban	Dublin	TII	0.22
Jct 33 to Jct 34 Pigeon House Road	2037	667	30	30	Urban	Dublin	TII	0.11
Jct 33 to 1st Jct Shellybanks Road	600	78	30	30	Urban	Dublin	TII	0.6
Jct 34 to Covanta & Staff Car Park	81	359	30	30	Urban	Dublin	TII	0.31
Jct 34 to Dublin Sewage Treatment	1697	227	30	30	Urban	Dublin	TII	0.09
Jct 34 to Jct 35 Pigeon House Road	1697	227	30	30	Urban	Dublin	TII	0.46
Jct 35 to Pigeon House Harbour	32	22	30	30	Urban	Dublin	TII	0.11
Jct 35 to to ESB Poolbeg	321	33	30	30	Urban	Dublin	TII	0.98
Jct 35 to Dublin Sewage Treatment Works Jct	1797	127	30	30	Urban	Dublin	TII	0.15

Dublin Sewage Treatment Works Jct into site	441	111	30	30	Urban	Dublin	TII	0.12
Jct 35 to Great South Wall	910	72	30	30	Urban	Dublin	TII	1.56

REM Model Outputs 2040 DS

Link	Total LDV flow (AADT)	Total HDV flow (AADT)	LDV Speed (kph)	HDV Speed (kph)	Road Type	County	Link Type	Link Length (km)
From DPT to Slip	26735	21840	30	30	Urban	Dublin	TII	0.37
Southbound Slip Road to Port	1497	6406	30	30	Urban	Dublin	TII	0.34
Northbound Slip Road to M50	1711	8694	30	30	Urban	Dublin	TII	0.39
Promenade Road Jct 6 to Jct 7	6114	9366	30	30	Urban	Dublin	TII	0.15
Promenade Road Jct 7 to Jct 8	7611	15772	30	30	Urban	Dublin	TII	0.095
Promenade Road Jct 8 to Bond Road Jct 24	1092	235	30	30	Urban	Dublin	TII	0.27
Promenade Road Jct 8 to Southbound Slip Road to East Wall	3654	761	30	30	Urban	Dublin	TII	0.26
Promenade Road Jct 8 to Jct 9	11337	16560	30	30	Urban	Dublin	TII	0.22
Promenade Road Jct 9 to Bond Drive Extension 1st jct	455	1235	30	30	Urban	Dublin	TII	0.42
Bond Drive Extension 1st Jct to Bond Drive Extension End	3541	3940	30	30	Urban	Dublin	TII	0.13
Promenade Road Jct 9 to Jct 25	11174	16302	30	30	Urban	Dublin	TII	0.064

Promenade Road Jct 25 to Jct 10	7234	7438	30	30	Urban	Dublin	TII	0.17
Promenade Road Jct 10 to Jct 11 Access Road	2572	2554	30	30	Urban	Dublin	TII	0.34
Tolka Quay Road Jct 17 to Jct 10	7186	7933	30	30	Urban	Dublin	TII	0.15
Tolka Quay Road Jct 16 to Jct 17	4999	6957	30	30	Urban	Dublin	TII	0.35
Tolka Quay Road Jct 17 to Jct 26	7390	10493	30	30	Urban	Dublin	TII	0.2
Tolka Quay Road Jct 26 to Jct 25	5639	10046	30	30	Urban	Dublin	TII	0.19
Tolka Quay Road Jct 26 to Jct 19	2436	3798	30	30	Urban	Dublin	TII	0.15
Tolka Quay Road Jct 19 to Jct 18	0	0	30	30	Urban	Dublin	TII	0.11
Tolka Quay Road Jct 19 to End Point (left)	2436	3798	30	30	Urban	Dublin	TII	0.35
DPT to Jct 5	23527	6740	30	30	Urban	Dublin	TII	0.67
Jct 5 to East Wall Road	16117	1437	30	30	Urban	Dublin	TII	1
Jct 5 to Jct 4 East Wall Road	39132	4517	30	30	Urban	Dublin	TII	0.15
Alexandra Road Jct 4 to Jct 22	0	3298	30	30	Urban	Dublin	TII	0.03
Alexandra Road Jct 22 to DPC Car Park	867	26	30	30	Urban	Dublin	TII	0.3
Alexandra Road Jct 22 to 36	1430	8175	30	30	Urban	Dublin	TII	0.25
Jct 36 to No.1 Branch road South Jct	1523	8280	30	30	Urban	Dublin	TII	0.07
Alexandra Road Branch Road to Jct 18	1523	8280	30	30	Urban	Dublin	TII	0.34

Alexandra Road Jct 18 to 37	2489	8448	30	30	Urban	Dublin	TII	0.3
Alexandra Road Jct 37 toNo2 Brandch Road	1641	1834	30	30	Urban	Dublin	TII	0.36
Alexandra Road waet of No 2 Branch Road	1641	1834	30	30	Urban	Dublin	TII	0.27
East Wall Road Jct 4 to Jct 3	35833	4518	30	30	Urban	Dublin	TII	0.19
Jct 3 to Sheriff Street Upper	7641	758	30	30	Urban	Dublin	TII	1
Jct 3 to Jct 2 East Wall Road	31883	3963	30	30	Urban	Dublin	TII	0.18
Jct 2 to T3	0	0	30	30	Urban	Dublin	TII	0.96
Jct 2 to Jct 1 East Wall Road	31883	3963	30	30	Urban	Dublin	TII	0.1
Jct 1 to North Wall Quay	10143	3774	30	30	Urban	Dublin	TII	1
Jct 1 to North Quay Extension	0	0	30	30	Urban	Dublin	TII	0.56
Jct 1 to Jct 29 (Tom Clarke Bridge)	26483	279	30	30	Urban	Dublin	TII	1.24
York Road/Pigeon House Road to Jct 29	500	55	30	30	Urban	Dublin	TII	1.17
Jct 29 to Sean Moore Road	28134	1744	30	30	Urban	Dublin	TII	1
Jct 29 to Jct 30 South Bank Road	538	14	30	30	Urban	Dublin	TII	0.78
Jct 30 to MTL	0	0	30	30	Urban	Dublin	TII	0.12
Jct 30 to Pigeon House Road	496	55	30	30	Urban	Dublin	TII	0.39
Jct 29 to Jct 31 South Bank Road	7227	1419	30	30	Urban	Dublin	TII	0.22

Jct 31 to Jct 32 White Bank Road	0	0	30	30	Urban	Dublin	TII	0.55
Jct 31 to ESB Ringsend (Port Park Car Park)	0	0	30	30	Urban	Dublin	TII	0.39
Jct 32 to ESB Ringsend	188	35	30	30	Urban	Dublin	TII	0.06
Jct 32 to Plot L Pigeon House Road	84	596	30	30	Urban	Dublin	TII	0.09
Jct 32 to Jct 33 Pigeon House Road	2281	2534	30	30	Urban	Dublin	TII	0.22
Jct 33 to Jct 34 Pigeon House Road	2396	2525	30	30	Urban	Dublin	TII	0.11
Jct 33 to 1st Jct Shellybanks Road	317	1636	30	30	Urban	Dublin	TII	0.6
Jct 34 to Covanta & Staff Car Park	19	328	30	30	Urban	Dublin	TII	0.31
Jct 34 to Dublin Sewage Treatment	2247	1796	30	30	Urban	Dublin	TII	0.09
Jct 34 to Jct 35 Pigeon House Road	2247	1796	30	30	Urban	Dublin	TII	0.46
Jct 35 to Pigeon House Harbour	0	0	30	30	Urban	Dublin	TII	0.11
Jct 35 to to ESB Poolbeg	304	30	30	30	Urban	Dublin	TII	0.98
Jct 35 to Dublin Sewage Treatment Works Jct	1818	1697	30	30	Urban	Dublin	TII	0.15
Dublin Sewage Treatment Works Jct into site	462	99	30	30	Urban	Dublin	TII	0.12
Jct 35 to Great South Wall	921	66	30	30	Urban	Dublin	TII	1.56
SPAR (Alexanra Road to North Quaty Extension)	573	5068	30	30	Urban	Dublin	TII	0.55
SPAR (North Quaty Extension to Maritime Village)	539	4997	30	30	Urban	Dublin	TII	1

SPAR (Maritime Volillage to Whitebank Road)	646	4997	30	30	Urban	Dublin	TII	0.6
SPAR (South Bank Section)	475	1668	30	30	Urban	Dublin	TII	0.4
Access to Plot N from J35	665	1604	30	30	Urban	Dublin	TII	0.2
Access to Plot O (from SPAR)	41	1720	30	30	Urban	Dublin	TII	0.2

REM Outputs

REM Model Outputs 2023 Base Year

Annual Total Emissions

County	Total NO_X (kg/yr)	Total PM_{10} (kg/yr)	Total $PM_{2.5}$ (kg/yr)	Total N_2O (kg/yr)
Dublin	34,595.85	3,315.90	1,933.98	754.87
Total	34,595.85	3,315.90	1,933.98	754.87

Annual Total TII Emissions

County	Total NO_X (kg/yr)	Total PM_{10} (kg/yr)	Total $PM_{2.5}$ (kg/yr)	Total N_2O (kg/yr)
Dublin	34,595.85	3,315.90	1,933.98	754.87
Total	34,595.85	3,315.90	1,933.98	754.87

Detailed Emissions Breakdown

	Link	Total NOX (kg/yr)	LDV NOX (kg/yr)	HDV NOX (kg/yr)	Total PM10 (kg/yr)	LDV PM10 (kg/yr)	HDV PM10 (kg/yr)	Total PM2.5 (kg/yr)	LDV PM2.5 (kg/yr)	HDV PM2.5 (kg/yr)	Total N2O (kg/yr)	LDV N2O (kg/yr)	HDV N2O (kg/yr)
1	From DPT to Slip	3166.25	1029.21	2137.05	313.83	88.78	225.05	183.24	51.58	131.66	79.42	12.61	66.81
2	Southbound Slip Road to Port	461.18	36.74	424.44	47.87	3.17	44.70	27.99	1.84	26.15	13.72	0.45	13.27
3	Northbound Slip Road to M50	755.86	56.64	699.22	78.52	4.89	73.63	45.92	2.84	43.08	22.55	0.69	21.86
4	Promenade Road Jct 6 to Jct 7	339.60	52.55	287.06	34.76	4.53	30.23	20.32	2.63	17.69	9.62	0.64	8.97
5	Promenade Road Jct 7 to Jct 8	343.94	43.54	300.40	35.39	3.76	31.63	20.69	2.18	18.51	9.93	0.53	9.39
6	Promenade Road Jct 8 to Bond Road Jct 24	53.78	30.12	23.66	5.09	2.60	2.49	2.97	1.51	1.46	1.11	0.37	0.74
7	Promenade Road Jct 8 to Southbound Slip Road to East Wall	100.94	53.75	47.19	9.61	4.64	4.97	5.60	2.69	2.91	2.13	0.66	1.48
8	Promenade Road Jct 8 to Jct 9	874.05	146.51	727.54	89.25	12.64	76.62	52.17	7.34	44.82	24.54	1.79	22.75

9	Promenade Road Jct 9 to Bond Drive Extension 1st jct	160.19	15.62	144.58	16.57	1.35	15.23	9.69	0.78	8.91	4.71	0.19	4.52
10	Bond Drive Extension 1st Jct to Bond Drive Extension End	184.27	38.94	145.33	18.66	3.36	15.30	10.91	1.95	8.95	5.02	0.48	4.54
11	Promenade Road Jct 9 to Jct 25	249.95	40.95	209.00	25.54	3.53	22.01	14.93	2.05	12.88	7.04	0.50	6.53
12	Promenade Road Jct 25 to Jct 10	384.56	85.34	299.22	38.87	7.36	31.51	22.71	4.28	18.43	10.40	1.05	9.35
13	Promenade Road Jct 10 to Jct 11 Access Road	268.41	56.27	212.14	27.19	4.85	22.34	15.89	2.82	13.07	7.32	0.69	6.63
14	Tolka Quay Road Jct 17 to Jct 10	228.05	37.62	190.43	23.30	3.24	20.05	13.62	1.89	11.73	6.41	0.46	5.95
15	Tolka Quay Road Jct 16 to Jct 17	836.50	137.04	699.46	85.48	11.82	73.66	49.96	6.87	43.09	23.55	1.68	21.87
16	Tolka Quay Road Jct 17 to Jct 26	425.61	68.19	357.42	43.52	5.88	37.64	25.44	3.42	22.02	12.01	0.84	11.17
17	Tolka Quay Road Jct 26 to Jct 25	329.24	28.21	301.04	34.13	2.43	31.70	19.96	1.41	18.55	9.76	0.35	9.41
18	Tolka Quay Road Jct 26 to Jct 19	187.90	34.37	153.53	19.13	2.96	16.17	11.18	1.72	9.46	5.22	0.42	4.80
19	Tolka Quay Road Jct 19 to Jct 18	80.72	23.74	56.98	8.05	2.05	6.00	4.70	1.19	3.51	2.07	0.29	1.78
20	Tolka Quay Road Jct 19 to End Point (left)	283.41	8.07	275.33	29.69	0.70	29.00	17.37	0.40	16.96	8.71	0.10	8.61
21	DPT to Jct 5	3526.34	1694.18	1832.16	339.08	146.14	192.94	197.79	84.91	112.88	78.04	20.75	57.28
22	Jct 5 to East Wall Road	2103.64	1679.97	423.66	189.53	144.91	44.62	110.30	84.20	26.10	33.83	20.58	13.25
23	Jct 5 to Jct 4 East Wall Road	995.73	552.32	443.40	94.34	47.64	46.69	55.00	27.68	27.32	20.63	6.77	13.86
24	Alexandra Road Jct 4 to Jct 22	35.10	8.41	26.69	3.54	0.73	2.81	2.07	0.42	1.64	0.94	0.10	0.83
25	Alexandra Road Jct 22 to DPC Car Park	12.14	10.98	1.16	1.07	0.95	0.12	0.62	0.55	0.07	0.17	0.13	0.04
26	Alexandra Road Jct 22 to 36	294.96	72.90	222.06	29.67	6.29	23.39	17.33	3.65	13.68	7.84	0.89	6.94
27	Jct 36 to No.1 Branch road South Jct	90.65	20.96	69.69	9.15	1.81	7.34	5.34	1.05	4.29	2.44	0.26	2.18
28	Alexandra Road Branch Road to Jct 18	446.98	102.09	344.89	45.13	8.81	36.32	26.37	5.12	21.25	12.03	1.25	10.78

29	Alexandra Road Jct 18 to 37	280.49	65.00	215.49	28.30	5.61	22.69	16.53	3.26	13.28	7.53	0.80	6.74
30	Alexandra Road Jct 37 toNo2 Brandch Road	324.70	70.10	254.60	32.86	6.05	26.81	19.20	3.51	15.69	8.82	0.86	7.96
31	Alexandra Road waet of No 2 Branch Road	177.92	37.67	140.26	18.02	3.25	14.77	10.53	1.89	8.64	4.85	0.46	4.38
32	East Wall Road Jct 4 to Jct 3	1203.56	722.69	480.87	112.98	62.34	50.64	65.85	36.22	29.63	23.89	8.85	15.03
33	Jct 3 to Sheriff Street Upper	1034.10	828.52	205.57	93.12	71.47	21.65	54.19	41.53	12.67	16.58	10.15	6.43
34	Jct 3 to Jct 2 East Wall Road	1044.67	611.81	432.86	98.36	52.77	45.58	57.33	30.66	26.67	21.03	7.50	13.53
35	Jct 2 to T3	20.43	18.12	2.31	1.81	1.56	0.24	1.05	0.91	0.14	0.29	0.22	0.07
36	Jct 2 to Jct 1 East Wall Road	580.87	340.34	240.53	54.69	29.36	25.33	31.88	17.06	14.82	11.69	4.17	7.52
37	Jct 1 to North Wall Quay	2276.56	1181.77	1094.79	217.23	101.94	115.29	126.68	59.23	67.45	48.70	14.48	34.23
38	Jct 1 to North Quay Extension	0.85	0.31	0.54	0.08	0.03	0.06	0.05	0.02	0.03	0.02	0.00	0.02
39	Jct 1 to Jct 29 (Tom Clarke Bridge)	5164.08	3452.53	1711.55	478.05	297.81	180.24	278.49	173.04	105.45	95.81	42.30	53.51
40	York Road/Pigeon House Road to Jct 29	112.32	89.79	22.53	10.12	7.75	2.37	5.89	4.50	1.39	1.80	1.10	0.70
41	Jct 29 to Sean Moore Road	3245.35	2821.20	424.15	288.02	243.36	44.67	167.53	141.40	26.13	47.82	34.56	13.26
42	Jct 29 to Jct 30 South Bank Road	520.66	45.25	475.41	53.97	3.90	50.06	31.56	2.27	29.29	15.42	0.55	14.86
43	Jct 30 to MTL	74.82	3.35	71.46	7.82	0.29	7.53	4.57	0.17	4.40	2.28	0.04	2.23
44	Jct 30 to Pigeon House Road	17.35	11.34	6.01	1.61	0.98	0.63	0.94	0.57	0.37	0.33	0.14	0.19
45	Jct 29 to Jct 31 South Bank Road	258.32	77.84	180.48	25.72	6.71	19.01	15.02	3.90	11.12	6.60	0.95	5.64
46	Jct 31 to Jct 32 White Bank Road	374.03	202.97	171.05	35.52	17.51	18.01	20.71	10.17	10.54	7.83	2.49	5.35
47	Jct 31 to ESB Ringsend (Port Park Car Park)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	Jct 32 to ESB Ringsend	1.81	1.26	0.55	0.17	0.11	0.06	0.10	0.06	0.03	0.03	0.02	0.02
49	Jct 32 to Plot L Pigeon House Road	8.24	1.48	6.76	0.84	0.13	0.71	0.49	0.07	0.42	0.23	0.02	0.21
50	Jct 32 to Jct 33 Pigeon House Road	104.08	52.71	51.37	9.96	4.55	5.41	5.81	2.64	3.16	2.25	0.65	1.61

51	Jct 33 to Jct 34 Pigeon House Road	47.38	23.23	24.15	4.55	2.00	2.54	2.65	1.16	1.49	1.04	0.28	0.75
52	Jct 33 to 1st Jct Shellybanks Road	44.18	30.03	14.15	4.08	2.59	1.49	2.38	1.50	0.87	0.81	0.37	0.44
53	Jct 34 to Covanta & Staff Car Park	38.45	2.04	36.42	4.01	0.18	3.83	2.35	0.10	2.24	1.16	0.02	1.14
54	Jct 34 to Dublin Sewage Treatment	24.45	17.90	6.54	2.23	1.54	0.69	1.30	0.90	0.40	0.42	0.22	0.20
55	Jct 34 to Jct 35 Pigeon House Road	124.94	91.50	33.44	11.41	7.89	3.52	6.65	4.59	2.06	2.17	1.12	1.05
56	Jct 35 to Pigeon House Harbour	1.03	0.45	0.58	0.10	0.04	0.06	0.06	0.02	0.04	0.02	0.01	0.02
57	Jct 35 to to ESB Poolbeg	46.17	37.67	8.49	4.14	3.25	0.89	2.41	1.89	0.52	0.73	0.46	0.27
58	Jct 35 to Dublin Sewage Treatment Works Jct	24.66	13.76	10.90	2.33	1.19	1.15	1.36	0.69	0.67	0.51	0.17	0.34
59	Dublin Sewage Treatment Works Jct into site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	Jct 35 to Great South Wall	199.43	166.39	33.05	17.83	14.35	3.48	10.38	8.34	2.04	3.07	2.04	1.03

REM Model Outputs 2040 DM

Annual Total Emissions

County	Total NO_X (kg/yr)	Total PM_{10} (kg/yr)	Total $PM_{2.5}$ (kg/yr)	Total N_2O (kg/yr)
Dublin	18,726.86	4,798.83	2,641.01	1,223.17
Total	18,726.86	4,798.83	2,641.01	1,223.17

Annual Total TII Emissions

County	Total NO_X (kg/yr)	Total PM_{10} (kg/yr)	Total $PM_{2.5}$ (kg/yr)	Total N_2O (kg/yr)
Dublin	18,726.86	4,798.83	2,641.01	1,223.17
Total	18,726.86	4,798.83	2,641.01	1,223.17

Detailed Emissions Breakdown

	Link	Total NOX (kg/yr)	LDV NOX (kg/yr)	HDV NOX (kg/yr)	Total PM10 (kg/yr)	LDV PM10 (kg/yr)	HDV PM10 (kg/yr)	Total PM2.5 (kg/yr)	LDV PM2.5 (kg/yr)	HDV PM2.5 (kg/yr)	Total N2O (kg/yr)	LDV N2O (kg/yr)	HDV N2O (kg/yr)
1	From DPT to Slip	1675.61	564.57	1111.04	462.39	113.99	348.40	253.00	64.10	188.90	131.19	16.66	114.53
2	Southbound Slip Road to Port	222.10	27.74	194.36	66.55	5.60	60.95	36.20	3.15	33.05	20.85	0.82	20.04
3	Northbound Slip Road to M50	399.21	34.80	364.40	121.30	7.03	114.27	65.91	3.95	61.96	38.59	1.03	37.56
4	Promenade Road Jct 6 to Jct 7	208.30	47.59	160.71	60.00	9.61	50.40	32.73	5.40	27.32	17.97	1.40	16.57
5	Promenade Road Jct 7 to Jct 8	193.98	37.89	156.09	56.60	7.65	48.95	30.84	4.30	26.54	17.21	1.12	16.09
6	Promenade Road Jct 8 to Bond Road Jct 24	21.45	13.85	7.61	5.18	2.80	2.39	2.87	1.57	1.29	1.19	0.41	0.78
7	Promenade Road Jct 8 to Southbound Slip Road to East Wall	86.48	51.12	35.36	21.41	10.32	11.09	11.82	5.80	6.01	5.15	1.51	3.65
8	Promenade Road Jct 8 to Jct 9	530.54	135.33	395.21	151.25	27.32	123.93	82.56	15.36	67.19	44.73	3.99	40.74
9	Promenade Road Jct 9 to Bond Drive Extension 1st jct	85.43	10.06	75.37	25.67	2.03	23.63	13.96	1.14	12.81	8.07	0.30	7.77

10	Bond Drive Extension 1st Jct to Bond Drive Extension End	103.19	26.93	76.26	29.35	5.44	23.91	16.02	3.06	12.97	8.66	0.79	7.86
11	Promenade Road Jct 9 to Jct 25	151.68	38.90	112.78	43.22	7.85	35.37	23.59	4.42	19.18	12.77	1.15	11.63
12	Promenade Road Jct 25 to Jct 10	256.78	90.48	166.30	70.42	18.27	52.15	38.55	10.27	28.28	19.81	2.67	17.14
13	Promenade Road Jct 10 to Jct 11 Access Road	188.15	52.85	135.30	53.10	10.67	42.43	29.00	6.00	23.00	15.51	1.56	13.95
14	Tolka Quay Road Jct 17 to Jct 10	120.91	33.47	87.44	34.18	6.76	27.42	18.67	3.80	14.87	10.00	0.99	9.01
15	Tolka Quay Road Jct 16 to Jct 17	451.25	96.74	354.50	130.70	19.53	111.16	71.26	10.98	60.27	39.40	2.86	36.54
16	Tolka Quay Road Jct 17 to Jct 26	208.38	46.68	161.70	60.13	9.43	50.70	32.79	5.30	27.49	18.05	1.38	16.67
17	Tolka Quay Road Jct 26 to Jct 25	258.14	67.84	190.30	73.37	13.70	59.67	40.06	7.70	32.36	21.62	2.00	19.62
18	Tolka Quay Road Jct 26 to Jct 19	79.04	5.75	73.29	24.14	1.16	22.98	13.11	0.65	12.46	7.72	0.17	7.55
19	Tolka Quay Road Jct 19 to End Point (left)	184.42	13.41	171.01	56.33	2.71	53.63	30.60	1.52	29.08	18.02	0.40	17.63
20	DPT to Jct 5	1910.86	907.92	1002.94	497.82	183.32	314.50	273.61	103.08	170.52	130.18	26.79	103.39
21	Jct 5 to East Wall Road	1138.28	925.37	212.90	253.60	186.84	66.76	141.26	105.06	36.20	49.26	27.31	21.95
22	Jct 5 to Jct 4 East Wall Road	562.39	304.86	257.53	142.31	61.55	80.76	78.40	34.61	43.79	35.54	9.00	26.55
23	Alexandra Road Jct 4 to Jct 22	14.52	0.00	14.52	4.55	0.00	4.55	2.47	0.00	2.47	1.50	0.00	1.50
24	Alexandra Road Jct 22 to DPC Car Park	8.49	7.88	0.61	1.78	1.59	0.19	1.00	0.89	0.10	0.30	0.23	0.06
25	Alexandra Road Jct 22 to 36	136.66	13.71	122.96	41.32	2.77	38.56	22.46	1.56	20.91	13.08	0.40	12.67
26	Jct 36 to No.1 Branch road South Jct	37.33	4.03	33.30	11.26	0.81	10.44	6.12	0.46	5.66	3.55	0.12	3.43
27	Alexandra Road Branch Road to Jct 18	181.33	19.59	161.74	54.67	3.96	50.72	29.72	2.22	27.50	17.25	0.58	16.67
28	Alexandra Road Jct 18 to 37	184.35	33.72	150.63	54.04	6.81	47.23	29.44	3.83	25.61	16.52	1.00	15.53
29	Alexandra Road Jct 37 toNo2 Brandch Road	133.48	36.08	97.40	37.83	7.28	30.54	20.66	4.10	16.56	11.11	1.06	10.04
30	Alexandra Road waet of No 2 Branch Road	100.11	27.06	73.05	28.37	5.46	22.91	15.49	3.07	12.42	8.33	0.80	7.53
31	East Wall Road Jct 4 to Jct 3	620.41	386.15	234.26	151.43	77.97	73.46	83.67	43.84	39.83	35.54	11.40	24.15

32	Jct 3 to Sheriff Street Upper	514.88	420.24	94.64	114.53	84.85	29.68	63.80	47.71	16.09	22.16	12.40	9.76
33	Jct 3 to Jct 2 East Wall Road	540.36	329.31	211.05	132.67	66.49	66.18	73.27	37.39	35.88	31.47	9.72	21.76
34	Jct 2 to Jct 1 East Wall Road	300.20	182.95	117.25	73.71	36.94	36.77	40.71	20.77	19.94	17.49	5.40	12.09
35	Jct 1 to North Wall Quay	1116.33	563.16	553.17	287.17	113.71	173.46	157.99	63.94	94.05	73.64	16.62	57.02
36	Jct 1 to Jct 29 (Tom Clarke Bridge)	2749.91	1912.06	837.85	648.79	386.06	262.73	359.55	217.09	142.45	142.80	56.43	86.37
37	York Road/Pigeon House Road to Jct 29	45.36	35.92	9.44	10.21	7.25	2.96	5.68	4.08	1.61	2.03	1.06	0.97
38	Jct 29 to Sean Moore Road	1853.68	1608.64	245.04	401.63	324.80	76.84	224.30	182.64	41.66	72.73	47.47	25.26
39	Jct 29 to Jct 30 South Bank Road	261.12	26.84	234.28	78.88	5.42	73.46	42.88	3.05	39.83	24.94	0.79	24.15
40	Jct 30 to MTL	39.35	2.02	37.33	12.11	0.41	11.71	6.58	0.23	6.35	3.91	0.06	3.85
41	Jct 30 to Pigeon House Road	7.41	4.84	2.58	1.78	0.98	0.81	0.99	0.55	0.44	0.41	0.14	0.27
42	Jct 29 to Jct 31 South Bank Road	191.41	94.96	96.45	49.42	19.17	30.25	27.18	10.78	16.40	12.74	2.80	9.94
43	Jct 31 to Jct 32 White Bank Road	194.57	40.03	154.54	56.54	8.08	48.46	30.82	4.54	26.28	17.11	1.18	15.93
44	Jct 31 to ESB Ringsend (Port Park Car Park)	123.27	96.72	26.55	27.85	19.53	8.33	15.50	10.98	4.51	5.59	2.85	2.74
45	Jct 32 to ESB Ringsend	0.65	0.29	0.35	0.17	0.06	0.11	0.09	0.03	0.06	0.05	0.01	0.04
46	Jct 32 to Plot L Pigeon House Road	3.99	0.77	3.22	1.17	0.16	1.01	0.64	0.09	0.55	0.35	0.02	0.33
47	Jct 32 to Jct 33 Pigeon House Road	46.56	26.00	20.56	11.70	5.25	6.45	6.45	2.95	3.50	2.89	0.77	2.12
48	Jct 33 to Jct 34 Pigeon House Road	23.58	12.81	10.77	5.96	2.59	3.38	3.28	1.45	1.83	1.49	0.38	1.11
49	Jct 33 to 1st Jct Shellybanks Road	27.45	20.58	6.87	6.31	4.16	2.15	3.50	2.34	1.17	1.32	0.61	0.71
50	Jct 34 to Covanta & Staff Car Park	17.76	1.44	16.33	5.41	0.29	5.12	2.94	0.16	2.78	1.73	0.04	1.68
51	Jct 34 to Dublin Sewage Treatment	11.73	8.73	3.00	2.70	1.76	0.94	1.50	0.99	0.51	0.57	0.26	0.31
52	Jct 34 to Jct 35 Pigeon House Road	59.95	44.63	15.32	13.81	9.01	4.80	7.67	5.07	2.61	2.90	1.32	1.58
53	Jct 35 to Pigeon House Harbour	0.56	0.20	0.36	0.15	0.04	0.11	0.08	0.02	0.06	0.04	0.01	0.04
54	Jct 35 to to ESB Poolbeg	22.73	17.98	4.75	5.12	3.63	1.49	2.85	2.04	0.81	1.02	0.53	0.49

55	Jct 35 to Dublin Sewage Treatment Works Jct	18.20	15.41	2.80	3.99	3.11	0.88	2.22	1.75	0.48	0.74	0.45	0.29
56	Dublin Sewage Treatment Works Jct into site	4.98	3.03	1.95	1.22	0.61	0.61	0.68	0.34	0.33	0.29	0.09	0.20
57	Jct 35 to Great South Wall	97.64	81.16	16.48	21.55	16.39	5.17	12.02	9.21	2.80	4.09	2.40	1.70

REM Model Outputs 2040 DS

Annual Total Emissions

County	Total NO_X (kg/yr)	Total PM_{10} (kg/yr)	Total $PM_{2.5}$ (kg/yr)	Total N_2O (kg/yr)
Dublin	20,678.90	5,396.49	2,965.59	1,414.87
Total	20,678.90	5,396.49	2,965.59	1,414.87

Annual Total TII Emissions

County	Total NO_X (kg/yr)	Total PM_{10} (kg/yr)	Total $PM_{2.5}$ (kg/yr)	Total N_2O (kg/yr)
Dublin	20,678.90	5,396.49	2,965.59	1,414.87
Total	20,678.90	5,396.49	2,965.59	1,414.87

Detailed Emissions Breakdown

	Link	Total NOX (kg/yr)	LDV NOX (kg/yr)	HDV NOX (kg/yr)	Total PM10 (kg/yr)	LDV PM10 (kg/yr)	HDV PM10 (kg/yr)	Total PM2.5 (kg/yr)	LDV PM2.5 (kg/yr)	HDV PM2.5 (kg/yr)	Total N2O (kg/yr)	LDV N2O (kg/yr)	HDV N2O (kg/yr)
1	From DPT to Slip	1751.19	565.50	1185.69	485.98	114.18	371.80	265.80	64.21	201.59	138.91	16.69	122.22
2	Southbound Slip Road to Port	348.68	29.10	319.58	106.09	5.87	100.21	57.64	3.30	54.34	33.80	0.86	32.94
3	Northbound Slip Road to M50	535.66	38.15	497.51	163.71	7.70	156.01	88.92	4.33	84.59	52.41	1.13	51.28
4	Promenade Road Jct 6 to Jct 7	258.57	52.43	206.14	75.23	10.59	64.64	41.00	5.95	35.05	22.80	1.55	21.25
5	Promenade Road Jct 7 to Jct 8	261.18	41.33	219.85	77.29	8.35	68.94	42.07	4.69	37.38	23.88	1.22	22.66
6	Promenade Road Jct 8 to Bond Road Jct 24	26.17	16.86	9.31	6.32	3.40	2.92	3.50	1.91	1.58	1.46	0.50	0.96

7	Promenade Road Jct 8 to Southbound Slip Road to East Wall	83.34	54.31	29.03	20.07	10.97	9.10	11.10	6.17	4.94	4.60	1.60	2.99
8	Promenade Road Jct 8 to Jct 9	677.15	142.58	534.56	196.42	28.79	167.63	107.08	16.19	90.89	59.31	4.21	55.10
9	Promenade Road Jct 9 to Bond Drive Extension 1st jct	87.03	10.92	76.11	26.07	2.21	23.87	14.18	1.24	12.94	8.17	0.32	7.85
10	Bond Drive Extension 1st Jct to Bond Drive Extension End	101.47	26.32	75.15	28.88	5.31	23.57	15.77	2.99	12.78	8.52	0.78	7.75
11	Promenade Road Jct 9 to Jct 25	193.97	40.88	153.09	56.26	8.25	48.00	30.67	4.64	26.03	16.99	1.21	15.78
12	Promenade Road Jct 25 to Jct 10	255.84	70.30	185.53	72.37	14.19	58.18	39.53	7.98	31.54	21.20	2.07	19.13
13	Promenade Road Jct 10 to Jct 11 Access Road	177.41	49.99	127.41	50.05	10.09	39.95	27.34	5.68	21.66	14.61	1.48	13.13
14	Tolka Quay Road Jct 17 to Jct 10	236.22	61.62	174.60	67.19	12.44	54.75	36.68	7.00	29.69	19.82	1.82	18.00
15	Tolka Quay Road Jct 16 to Jct 17	457.30	100.02	357.28	132.23	20.20	112.03	72.10	11.36	60.75	39.78	2.95	36.83
16	Tolka Quay Road Jct 17 to Jct 26	392.42	84.49	307.93	113.62	17.06	96.56	61.95	9.59	52.35	34.24	2.49	31.74
17	Tolka Quay Road Jct 26 to Jct 25	341.32	61.25	280.07	100.19	12.37	87.82	54.57	6.95	47.62	30.68	1.81	28.87
18	Tolka Quay Road Jct 26 to Jct 19	104.48	20.89	83.59	30.43	4.22	26.21	16.58	2.37	14.21	9.23	0.62	8.62
19	Tolka Quay Road Jct 19 to End Point (left)	243.79	48.74	195.05	71.00	9.84	61.16	38.70	5.53	33.16	21.54	1.44	20.11
20	DPT to Jct 5	1563.74	901.14	662.60	389.72	181.95	207.78	214.97	102.31	112.66	94.90	26.59	68.30
21	Jct 5 to East Wall Road	1132.22	921.37	210.85	252.15	186.03	66.12	140.46	104.61	35.85	48.93	27.19	21.73
22	Jct 5 to Jct 4 East Wall Road	434.98	335.56	99.42	98.93	67.75	31.17	55.00	38.10	16.90	20.15	9.90	10.25
23	Alexandra Road Jct 4 to Jct 22	14.52	0.00	14.52	4.55	0.00	4.55	2.47	0.00	2.47	1.50	0.00	1.50
24	Alexandra Road Jct 22 to DPC Car Park	16.01	14.87	1.14	3.36	3.00	0.36	1.88	1.69	0.19	0.56	0.44	0.12
25	Alexandra Road Jct 22 to 36	320.31	20.44	299.88	98.16	4.13	94.03	53.31	2.32	50.99	31.52	0.60	30.91
26	Jct 36 to No.1 Branch road South Jct	91.14	6.09	85.04	27.90	1.23	26.67	15.15	0.69	14.46	8.95	0.18	8.77
27	Alexandra Road Branch Road to Jct 18	442.67	29.60	413.07	135.51	5.98	129.53	73.59	3.36	70.23	43.45	0.87	42.58

28	Alexandra Road Jct 18 to 37	414.56	42.69	371.87	125.23	8.62	116.61	68.07	4.85	63.23	39.59	1.26	38.33
29	Alexandra Road Jct 37 toNo2 Brandch Road	130.65	33.77	96.88	37.20	6.82	30.38	20.31	3.83	16.47	10.98	1.00	9.99
30	Alexandra Road waet of No 2 Branch Road	97.99	25.33	72.66	27.90	5.11	22.78	15.23	2.88	12.35	8.24	0.75	7.49
31	East Wall Road Jct 4 to Jct 3	515.17	389.21	125.96	118.08	78.59	39.50	65.61	44.19	21.42	24.47	11.49	12.98
32	Jct 3 to Sheriff Street Upper	548.04	436.82	111.22	123.07	88.20	34.88	68.51	49.60	18.91	24.36	12.89	11.46
33	Jct 3 to Jct 2 East Wall Road	432.75	328.08	104.67	99.06	66.24	32.82	55.05	37.25	17.80	20.47	9.68	10.79
34	Jct 2 to Jct 1 East Wall Road	240.42	182.27	58.15	55.04	36.80	18.23	30.58	20.69	9.89	11.37	5.38	5.99
35	Jct 1 to North Wall Quay	1133.61	579.85	553.76	290.72	117.08	173.64	159.99	65.84	94.15	74.19	17.11	57.08
36	Jct 1 to Jct 29 (Tom Clarke Bridge)	1928.09	1877.32	50.76	394.96	379.05	15.92	221.78	213.15	8.63	60.64	55.40	5.23
37	York Road/Pigeon House Road to Jct 29	42.89	33.44	9.44	9.71	6.75	2.96	5.40	3.80	1.61	1.96	0.99	0.97
38	Jct 29 to Sean Moore Road	1864.25	1608.35	255.90	404.98	324.74	80.24	226.12	182.61	43.51	73.84	47.47	26.38
39	Jct 29 to Jct 30 South Bank Road	25.59	23.99	1.60	5.35	4.84	0.50	3.00	2.72	0.27	0.87	0.71	0.17
40	Jct 30 to Pigeon House Road	14.21	11.06	3.15	3.22	2.23	0.99	1.79	1.26	0.54	0.65	0.33	0.32
41	Jct 29 to Jct 31 South Bank Road	136.70	90.89	45.81	32.72	18.35	14.36	18.11	10.32	7.79	7.40	2.68	4.72
42	Jct 32 to ESB Ringsend	0.95	0.64	0.31	0.23	0.13	0.10	0.13	0.07	0.05	0.05	0.02	0.03
43	Jct 32 to Plot L Pigeon House Road	8.30	0.43	7.87	2.56	0.09	2.47	1.39	0.05	1.34	0.82	0.01	0.81
44	Jct 32 to Jct 33 Pigeon House Road	110.49	28.69	81.80	31.44	5.79	25.65	17.16	3.26	13.91	9.28	0.85	8.43
45	Jct 33 to Jct 34 Pigeon House Road	55.82	15.07	40.75	15.82	3.04	12.78	8.64	1.71	6.93	4.65	0.44	4.20
46	Jct 33 to 1st Jct Shellybanks Road	154.90	10.87	144.03	47.36	2.20	45.16	25.72	1.23	24.49	15.17	0.32	14.85
47	Jct 34 to Covanta & Staff Car Park	15.26	0.34	14.92	4.75	0.07	4.68	2.57	0.04	2.54	1.55	0.01	1.54
48	Jct 34 to Dublin Sewage Treatment	35.28	11.56	23.72	9.77	2.33	7.44	5.35	1.31	4.03	2.79	0.34	2.44
49	Jct 34 to Jct 35 Pigeon House Road	180.31	59.09	121.22	49.94	11.93	38.01	27.32	6.71	20.61	14.24	1.74	12.50
50	Jct 35 to to ESB Poolbeg	21.35	17.03	4.31	4.79	3.44	1.35	2.67	1.93	0.73	0.95	0.50	0.44

51	Jct 35 to Dublin Sewage Treatment Works Jct	52.94	15.59	37.35	14.86	3.15	11.71	8.12	1.77	6.35	4.31	0.46	3.85
52	Dublin Sewage Treatment Works Jct into site	4.91	3.17	1.74	1.19	0.64	0.55	0.66	0.36	0.30	0.27	0.09	0.18
53	Jct 35 to Great South Wall	97.24	82.14	15.11	21.32	16.58	4.74	11.89	9.33	2.57	3.98	2.42	1.56
54	SPAR (Alexanra Road to North Quaty Extension)	427.01	18.02	408.99	131.89	3.64	128.25	71.58	2.05	69.54	42.69	0.53	42.16
55	SPAR (North Quaty Extension to Maritime Village)	764.02	30.81	733.21	236.14	6.22	229.92	128.16	3.50	124.66	76.49	0.91	75.58
56	SPAR (Maritime Volillage to Whitebank Road)	462.08	22.16	439.92	142.42	4.47	137.95	77.31	2.52	74.80	46.00	0.65	45.35
57	SPAR (South Bank Section)	108.76	10.86	97.90	32.89	2.19	30.70	17.88	1.23	16.64	10.41	0.32	10.09
58	Access to Plot N from J35	54.67	7.60	47.07	16.30	1.54	14.76	8.87	0.86	8.00	5.08	0.22	4.85
59	Access to Plot O (from SPAR)	50.94	0.47	50.47	15.92	0.09	15.83	8.64	0.05	8.58	5.22	0.01	5.20