14 AIR QUALITY AND CLIMATE

14.1 Introduction

This section describes the existing air and climate environment of the proposed pipeline corridor and surrounding area. The likely significant impacts for both construction and operation of the proposed scheme prior to mitigation are described. The mitigation measures are described in Section 14.4 and the residual impacts after the proposed mitigation measures have been implemented are described in Section 14.5.

14.2 Assessment Methodology

As the operation of the proposed pipeline will not give rise to any emissions, in respect of air and climate, this chapter focusses on the potential emissions which may arise during its construction.

14.2.1 Air Quality

A review of existing air quality monitoring data undertaken by the Environmental Protection Agency (EPA) was undertaken and used to characterise the existing environment.

The impact assessment methodology involved the review and assessment of the proposed pipeline and associated infrastructure to identify the potential for air emissions during construction, operation and de-commissioning. To assess the impacts of construction dust emissions, the NRA Assessment Criteria for the impact of dust emissions from construction activities with standard mitigation in place was used. This table is provided in Appendix 8 of the *National Roads Authority (NRA) Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (NRA, 2011).

Potential vehicle emissions arising from the construction of the proposed development were assessed using the NRA Guidelines. The traffic figures for the construction phase of the project, outlined in Chapter 9 – Roads, Traffic and Transportation, were inputted to a basic air quality prediction screening model. This prediction tool is provided in the Design Manual for Roads and Bridges (DMRB) (Volume 11, Section 3 Air Quality, May 2007) and published by the UK Highways Agency. The DMRB model predicts vehicle emissions for NO_x, NO_2 and $PM_{10,}$ carbon monoxide, benzene and 1,3-butadiene.

The DMRB model requires a number of inputs such as traffic flow (AADT), speed and vehicle mix and annual background pollutant concentration. The latter were sourced from representative EPA fixed monitoring stations in the Dublin City. Predicted concentrations were compared with the Irish ambient air quality standard - S.I. No. 180 of 2011 – Air Quality Standards Regulations, 2011. These regulations set limit values and averaging periods, which are used to assess the impact of emissions on human health, vegetation and ecosystems for six pollutants (SO_2, NO_2 and $NO_{x,}$ particulate matter, lead, benzene and CO).

To assess the potential positive impacts on air quality (and climate) resulting from the potential removal of the current requirement of 15,000 road tanker trips per year, the National Roads Authority (NRA) *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* was consulted. Conservatively it was estimated that some 10,000 road tanker per year (based on current rather than future demands) will be removed as a result of this development and the offset of these emissions was calculated again using the DMRB screening model.

14.2.2 Climate

A desk-top study assessment was undertaken of available climatic information to characterise the existing environment.

Given that traffic emissions are considered a significant source of carbon dioxide (CO_2) which is a greenhouse gas, the impact appraisal considered the positive impacts the proposed pipeline will have on contributing to national targets for the reduction of greenhouse gas emissions.

14.3 Existing Environment

14.3.1 Climate in the Existing Environment

The climatic conditions for the wider geographical area have been derived from meteorological measurements at Dublin Airport synoptic station where the proposed pipeline corridor terminates. Table 14.1 summarises the long-term weather patterns recorded at Dublin Airport from 1961-1990. Data from Dublin Airport indicates that the mean air temperature is 9.6°C and the mean wind speed is 9.9 knots (5 m/s). The mean annual rainfall data recorded at Dublin Airport shows a mean average rainfall of 733 mm.

Table 14.1: Dublin Airport Monthly and Annual Mean and Extreme Values (1961-1990)

Weather Conditions	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TEMPERATURE *(degrees Celsius)*													
mean daily max.	7.6	7.5	9.5	11	14.2	17	19	18.6	17	14	9.8	8.4	**12.8**
mean daily min.	2.5	2.5	3.1	4.4	6.8	9.6	11	11.1	9.6	7.6	4.2	3.4	**6.4**
mean	5	5	6.3	7.9	10.5	13	15	14.9	13	11	7	5.9	**9.6**
absolute max.	17	15	21.3	21	23.4	25	28	28.7	24	21	18	16.2	**28.7**
absolute min.	-9.4	-6.2	-6.7	-3.7	-1	1.5	4.8	4.1	1.7	-0.6	-3.4	-10	**-10.1**
mean no. of days with air frost	6.4	4.9	3.3	1.4	0.2	0	0	0	0	0.1	3.3	4.8	**24.3**
mean no. of days with ground frost	14	13	12.4	9.2	2.9	0.2	0	0	0.6	2.3	9.7	12.5	**76.4**
RELATIVE HUMIDITY *(%)*													
mean at 0900UTC	86	84	82	79	76	76	78	81	82	85	86	86	**82**
mean at 1500UTC	79	75	70	68	67	68	68	70	70	75	78	81	**72**
SUNSHINE *(hours)*													
mean daily duration	1.8	2.5	3.6	5.2	6.1	6	5.4	5.1	4.3	3.1	2.4	1.7	**3.9**
greatest daily duration	8	9.2	11.9	14	15.4	16	15	14.5	12	10	8.5	6.9	**15.9**
mean no. of days with no sun	11	8	5	3	2	2	1	2	3	6	8	11	**61**
RAINFALL *(mm)*													
mean monthly total	70	50	53.5	51	54.8	56	50	71.1	66	70	64.3	75.8	**733**
greatest daily total	30	31	35.7	26	30	47	35	60.2	41	48	55.1	41.7	**60.2**
mean no. of days with >= 0.2mm	18	14	16	14	16	14	13	15	15	16	16	18	**185**
mean no. of days with >= 1.0mm	13	10	11	10	11	10	9	11	10	11	11	12	**128**
mean no. of days with >= 5.0mm	5	3	3	3	4	4	3	4	4	4	4	5	**48**
WIND *(knots)*													
mean monthly speed	12	12	11.6	9.7	8.7	8	8.1	8	8.9	9.9	10.8	11.8	**9.9**
max. gust	75	73	61	60	58	55	54	56	64	73	64	71	**75**
max. mean 10-minute speed	48	49	42	41	39	36	34	41	35	45	43	47	**49**
mean no. of days with gales	2.1	1.1	1.2	0.3	0.3	0.1	0	0.3	0.2	0.5	0.7	1.4	**8.2**
WEATHER *(mean no. of days with...)*													
snow or sleet	6	5.5	4.3	1.7	0.3	0	0	0	0	0.1	0.9	2.9	**21.6**
snow lying at 0900UTC	2.1	1.2	0.4	0	0	0	0	0	0	0	0.1	0.6	**4.5**

Weather Conditions	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
hail	0.7	0.9	2.2	2.4	1.4	0.3	0.1	0.1	0	0.2	0.5	0.8	**9.5**
thunder	0.1	0.1	0.2	0.3	0.6	0.7	0.7	0.6	0.3	0.3	0.1	0.1	**4.1**
fog	4.8	4.3	3.9	4.5	3.6	3.1	3.6	5.3	4.9	4.7	4	3.9	**50.5**

Source (Met Eireann, 2010)

The wind rose for Dublin airport from 2002-2006 is provided in Figure 14.1. This highlights that the prevailing wind direction at this station is predominantly west-south west and the dominant wind speed at 28.3 % of the time period is between 11-16 knots (5.7-8.2 m/s).

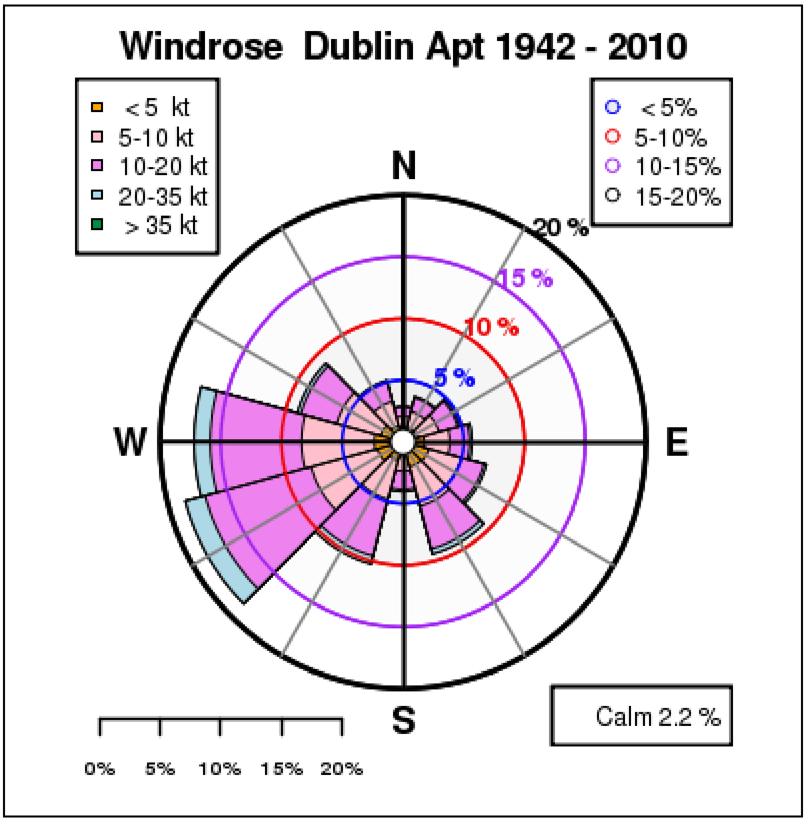

Figure 14.1: Windrose for Dublin Airport (1942-2010)

14.3.2 Air Quality in the Existing Environment

European air quality legislation requires that each member state be defined in terms of Zones and Agglomerations for Air Quality with Ireland divided into four zones. Dublin Conurbation is one zone – Zone A and Cork Conurbation is defined as Zone B. Zone C consists of 24 towns (i.e. Athlone, Bray, Celbridge) and cities (including, Galway, Limerick, Waterford) with a population of greater than 15,000 while Zone D covers the remainder of the country. The proposed pipeline corridor is located in Dublin city (Zone A).

The EPA operates a number of fixed and mobile air monitoring stations. As the site is located in an urban Zone A location, the monitoring sites within this Zone were chosen to represent air quality along the proposed pipeline corridor. 2010-2012 air quality data for pollutants such as nitrogen oxides, sulphur oxides, carbon monoxide and particulate matter at the Zone A locations is provided in Table 14.2.

Results indicate that hourly NO_2 concentrations are elevated at a number of locations that experience high volumes of traffic, for example Swords and Blanchardstown. However, annual mean concentrations are in compliance with the Irish ambient air quality standard, S.I. No. 180 of 2011 – Air Quality Standards Regulations at all locations.

An exceedance of the air quality limit of 10 mg/m^3 for carbon monoxide (CO) was not recorded at any of the EPA stations during 2010, 2011 and 2012.

Results indicate that SO_2 concentrations have declined significantly since the early 1990s and are now consistently low. This reduction can be attributed to a number of factors including the ban on bituminous coal which was initially introduced in Dublin in 1990, the lower sulphur content of fuel and fuel switching from solid fossil fuel to oil and gas. SO_2 concentrations in 2010, 2011 and 2012 overall are very low compared to the hourly, daily and annual limits of 350 $\mu g/m^3$, 125 $\mu g/m^3$ and 20 $\mu g/m^3$ respectively.

Annual particulate matter levels (PM_{10} and $PM_{2.5}$) are within the appropriate limits as set out in the Regulations. However, maximum daily values of PM_{10} are elevated above the respective limit value of 50 $\mu g/m^3$ at nearly all locations. The EPA in their annual report (2013) state that high concentrations are typically measured at traffic influenced sites.

Table 14.2: Summary of EPA Monitoring Results 2010, 2011 & 2012 (Units ug/m^3 unless otherwise stated)

Pollutant	Parameter	Unit	2010 Winetavern Street	2010 Coleraine Street	2010 Rathmines	2010 Dun Laoghaire	2010 Ringsend	2010 Ballyfermot	2010 Tallaght	2010 Swords	2010 Phoenix Park	2010 Marino
NOx	Hourly Max	ug/m3	1334	1967	687	737	1130	853		848		
	Annual Mean	ug/m3	66	64	41	38	55	30		26		
NO_2	Hourly Max	ug/m3	148	168	139	154	151	134		176		
	Annual Mean	ug/m3	35	33	25	23	29	18		16		
CO	8 Hourly Max	mg/m3	2	2.8			2.2					
	Annual Mean	mg/m3	0.3	0.4			0.3					
SO_2	Hourly Max	ug/m3	14	24	76		48	28	38			
	24 -HR Max	ug/m3	6	6	20		15	14	17			
	Annual Mean	ug/m3	1	1	3		4	2	4			
PM_{10}	24 -HR Max	ug/m3	80		122	75	86	52	41		66	
	Annual Mean	ug/m3	19		18	15	23	13	12		11	
$PM_{2.5}$	24 -HR Max	ug/m3		82		108						102
	Annual Mean	ug/m3		12		12						10

Pollutant	Parameter	Unit	2011 Winetavern Street	2011 Coleraine Street	2011 Rathmines	2011 Dun Laoghaire	2011 Ringsend	2011 Ballyfermot	2011 Tallaght	2011 Swords	2011 Phoenix Park	2011 Blanchardstown	2011 Marino
NOx	Hourly Max	ug/m3	1241	1376	776	613	2733			1309		1227	
	Annual Mean	ug/m3	61	49	32	29	57			24		71	
NO_2	Hourly Max	ug/m3	181	167	118	127	202			227		209	
	Annual Mean	ug/m3	34	26	20	18	32			14		31	
CO	8 Hourly Max	mg/m3	0.9	2.7			3						
	Annual Mean	mg/m3	0.1	0.4			0.4						
SO_2	Hourly Max	ug/m3	11	17	28		50		30				
	24 -HR Max	ug/m3	6	5	14		17		12				
	Annual Mean	ug/m3	1	1	3		3		4				
PM_{10}	24 -HR Max	ug/m3	97		80	77	100		68		66	120	
	Annual Mean	ug/m3	14		16	15	20		13		12	16	
$PM_{2.5}$	24 -HR Max	ug/m3		87	60								68
	Annual Mean	ug/m3		11	12								9

Pollutant	Parameter	Unit	2012 Winetavern Street	2012 Coleraine Street	2012 Rathmines	2012 Dun Laoghaire	2012 Ringsend	2012 Ballyfermot	2012 Tallaght	2012 Swords	2012 Phoenix Park	2012 Blanchardstown	2012 Marino	Average 2010-2012	Limit Value
NOx	Hourly Max	ug/m3	888	857	811	560	911			1355		909		1101	
	Annual Mean	ug/m3	51	43	31	30	54			25		63		45	
NO_2	Hourly Max	ug/m3	136	142	138	136	122			241		194		162	200
	Annual Mean	ug/m3	29	26	21	18	25			15		30		25	40
CO	8 Hourly Max	mg/m3	1.4	3.5			2.1							2	10
	Annual Mean	mg/m3	0.1	0.4			0.6							0.3	
SO_2	Hourly Max	ug/m3	19	52	31		37		49					35	350
	24 -HR Max	ug/m3	6	7	10		9		14					11	125
	Annual Mean	ug/m3	0	1	2		3		4					2	20
PM_{10}	24 -HR Max	ug/m3	48		66	53	66				47			74	50
	Annual Mean	ug/m3	13		14	12	20				11			15	40
$PM_{2.5}$	24 -HR Max	ug/m3		51	57								35	72	
	Annual Mean	ug/m3		10	11								8	11	25

Note:

Blank entry = specific parameter monitoring not undertaken

*Limit Value as per S.I. No. 180 of 2011 – Air Quality Standards Regulations

14.4 Potential Impacts

14.4.1 Air Quality

Construction

The principal source of air emissions during the construction of the proposed pipeline are dust emissions. Activities that may generate dust emissions include trench excavation, laying of pipe bedding material, delivery of backfill (unloading), backfilling of trench and river crossing activities.

Dust emissions arise when particulate matter becomes airborne. This airborne dust is then available to be carried downwind from the source. The amount of dust generated and emitted from a working site and the potential impact on surrounding areas varies according to the following:

- The type and quantity of material and working method
- Distance between site activities and sensitive receptors
- Climate/local meteorology and topography.

Table 14.3 details the NRA assessment criteria used for assessing the impact of dust from construction activities sites or varying scale.

Table 14.3: NRA Assessment Criteria for the Impact of Dust Emissions from Construction Activities with Standard Mitigation in Place

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	Description	Soiling	PM_{10}	Vegetation Effects
Major	Large construction sites, with high use of haul roads	100 m	25 m	25 m
Moderate	Moderate construction sites, with moderate use of haul roads	50 m	15 m	15 m
Minor	Minor construction sites, with limited use of haul roads	25 m	10 m	10 m

Source: NRA, 2011

Given that the proposed pipeline will be constructed in 4 working areas which will be approximately 72 m x 4 m long, the proposed development would be considered similar to a moderate construction site. Therefore, based on the NRA assessment criteria soiling effects have the potential to occur at 25 m – 50 m from the source and PM_{10} deposition and vegetation effects will occur at 10 m – 15 m from the source.

As the proposed pipeline is to be constructed in an urban setting and will be limited to the consented planning corridor, receptors will be located within 4 - 25 m of the construction activities and therefore may be potentially impacted by soiling and PM_{10}.

Accumulation and settling of particles on surfaces close to the point of release may lead to the soiling of property, goods, windows, cars or laundry. Such dust causes nuisance and can impact on amenity.

Construction vehicles will generate emissions during the construction of the pipeline having the potential to increase concentrations of NO_2, PM_{10} and $PM_{2.5}$ as a result of the increased numbers of vehicles on roads and increased congestion due to construction activities. The numbers of vehicles accessing each construction site (i.e. the four crews) is described in Chapter 9 – Roads, Traffic and Transportation with the effects of construction vehicle emissions on local air quality assessed in this chapter. To appraise the potential impacts on local and regional air quality, a DMRB screening model was conducted to estimate the baseline for CO, Benzene, NO_x, NO_2 and PM_{10} traffic emissions.

The assessment indicated that the predicted traffic emissions during the construction period will be imperceptible as indicated in Table 14.4.

Table 14.4: Vehicular Emissions from Construction Vehicles

Link	Model Type	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}	
			Annual mean mg/m³	Annual mean mg/m³	Annual mean mg/m³	Annual mean mg/m³	Annual mean mg/m³	Annual mean mg/m³	Days >50mg/m³
Link 1	No Construction	2016	0.456	0.131	0.092	57.495	28.158	16.740	0.608
Link 1	With Construction	2016	0.458	0.132	0.097	58.346	28.360	16.795	0.635
Link 1	*Difference (%)*	*2016*	*0.003*	*0.007*	*0.051*	*0.015*	*0.007*	*0.003*	*0.045*
Link 2	No Construction	2016	0.361	0.035	0.024	49.264	26.123	15.585	0.207
Link 2	With Construction	2016	0.362	0.036	0.026	49.872	26.279	15.620	0.214
Link 2	*Difference*	*2016*	*0.002*	*0.017*	*0.116*	*0.012*	*0.006*	*0.002*	*0.036*
Link 3	No Construction	2016	0.415	0.144	0.098	58.506	28.398	16.501	0.499
Link 3	With Construction	2016	0.416	0.145	0.100	58.841	28.477	16.516	0.505
Link 3	*Difference*	*2016*	*0.000*	*0.003*	*0.025*	*0.006*	*0.003*	*0.001*	*0.013*
Link 4	No Construction	2016	0.424	0.183	0.124	59.871	28.718	16.642	0.562
Link 4	With Construction	2016	0.424	0.184	0.127	60.121	28.776	16.654	0.567
Link 4	*Difference*	*2016*	*0.000*	*0.003*	*0.017*	*0.004*	*0.002*	*0.001*	*0.010*
Link 5	No Construction	2016	0.352	0.025	0.017	48.482	25.921	15.461	0.183
Link 5	With Construction	2016	0.353	0.026	0.020	49.062	26.071	15.492	0.189
Link 5	*Difference*	*2016*	*0.002*	*0.019*	*0.145*	*0.012*	*0.006*	*0.002*	*0.031*

Plant and machinery such as generators, excavators etc. will be required at various stages of the construction works. These will be relatively small units which will be operated on an intermittent basis. Although there will be an emission from these units, given their scale and the length of operation time, the impacts from these emissions will be negligible.

Permanent reinstatement of the pipeline route along roadway sections will be conventional blacktop/asphalt which will be carried out by a specialist contractor and thus there will be no requirement for a dedicated blacktop plant. This activity will be similar to that conducted by local authorities during routine road maintenance.

Operational

Once the proposed pipeline is constructed there will be a positive impact on air quality as its operation will have the potential to remove over 15,000 road tanker trips per year (at current demands) from the public road network. Given that the fuel demand at Dublin Airport will increase, further air quality benefits will be realised through the long-term operation of the pipeline.

To assess the magnitude of this positive impact on air quality and climate, a basic air quality prediction screening model was undertaken. Using the regional DMRB prediction tool, the offset in emissions through the removal of 10,000 fuel tankers per year was calculated and are summarised in Table 14.5.

Table 14.5: Estimation of Offset in Emissions (10,000 Vehicles)

Pollutant	Total emission	Units
CO	244	kg/year
THC	103	kg/year
NO_x	855	kg/year
PM_{10}	13	kg/year
C	57	tonnes/year

This mass emission is based on 10,000 road tankers per year. This is a conservative assessment given that the proposed pipeline not only has the potential to remove all tankers transporting aviation fuel but has also the potential to displace the increases associated with predicted growths in fuel demands as outlined in Chapter 2 – Background to the Development.

In the event that damage is caused to the pipe, dust emissions may arise from repair works in particular if excavations are required.

Decommissioning & Re-validation

There will be no impacts on air quality from the decommissioning of the pipeline. If during re-validation of the pipeline, particular sections require excavation, localised dust emissions may occur.

14.4.2 Climate Impacts

There is the potential for greenhouse gas emissions to the atmosphere during the construction and operation phase such as those arising from construction vehicles, the use of on-site generators, pumps etc. These can impact both on the micro and macro climate as discussed hereunder.

Construction Phase

Microclimate - The significance of impacts associated with the conversion of vegetated surfaces to un-vegetated surfaces is assessed through the consideration of the area of the land experiencing such a change. The proposed pipeline corridor is predominantly beneath a paved surface, once constructed this will be returned to a paved surface. Where the pipeline runs through green areas, these areas will be re-instated as previously. Therefore, as there will be no new significant hardstanding areas as part of the development there will be no impact on air temperature and microclimate.

Operational Impacts

Macroclimate - CO_2 emissions were calculated for the existing scenario whereby fuel is transported by road tanker. Table 14.6 outlines the CO_2 savings that will be achieved by the construction and operation of the proposed pipeline which equates to some 209 tonnes per year. This is based on a conservative figure of 10,000 road tankers being displaced annually.

Table 14.6: Summary of CO_2 Emission Savings

Pollutant	Total emission	Units
C	57	tonnes/year
CO_2	209	tonnes/year

Under the Kyoto Protocol, Ireland will meet its Kyoto obligations which is to limit growth in emission in the period 2008-2012 to 13% above 1990 levels.

The second commitment period applies to emissions from 2013 – 2020 whereby the EU-27 countries have committed to reduce their greenhouse gas emssions by at least 20% by 2020 compared to 1990 levels and to increase this commitment to a 30% reduction if other major emitting countries agree to similar targets under a global climate agreement.

For 2012, Ireland's total national greenhouse gas emissions are estimated to be 57.92 million tonnes of carbon dioxide equivalent (CO_2e) with transport accounting for 19 % of the emissions. EPA projections indicate that Ireland will breach our annual obligations from 2016 onwards in the best-case scenario and that we face significant challenges in transitioning to a low-carbon emission pathway to 2050 particularly in the context of a recovering economy (EPA 2013). The conservative assessment outlined above indicates that the proposed pipeline will have a positive impact on greenhouse gas emissions through the diversion of some 209 t CO_2e each year. These savings have the potential to increase with increasing fuel demands at the Airport.

Decommissioning & Re-validation

There will be no impacts on climate from the decommissioning or re-validation of the pipeline.

14.4.3 Do-Nothing Impacts

The air quality and climate of the receiving environment will continue to be impacted by urban related emissions including transport emissions. The contribution from the transport of aviation fuel from Dublin Port to Dublin Airport will increase with increasing fuel demands.

14.5 Mitigation Measures

The following mitigation measures are proposed for the construction and operation of the proposed development.

Construction Phase

- Surfaces that are to be excavated or cleared will be dampened prior to any works where there is potential for excessive dust to be created
- During trench excavation, laying of pipe bedding material, trench backfilling and excavation of pits, a water bowser will be available to spray exposed soils
- Material excavated from the trench will be loaded directly onto an awaiting HGV and transported offsite by a permitted contractor for recovery or disposal. There will be no storage of excavated material within the working areas
- Backfill material will not be stockpiled within the pipeline corridor or adjacent to each working area. Instead the material will be delivered on an as needed basis and will be transferred directly from the HGV to the trench. This will reduce dust generated as a result of double handling and excessive drop heights
- Permanent reinstatement will be carried out shortly after the pipeline is installed.
- Re-instated vegetated areas will be re-seeded immediately following construction in order to establish vegetated cover to prevent windblown erosion and associated dust emissions
- Wheel mats or gravel will be used at access/egress points along the northern section of the pipeline corridor where the route is located off road in agricultural and amenity lands ((AUL- FAI) Sports Complex at Clonshaugh)
- All vehicles delivering backfill or removing material (i.e. entering and exiting the construction area will be required to be covered or dampened to avoid dust emissions along local roads
- Regular cleaning of public roads will be carried out where necessary
- During the construction phase of the pipeline, the contractor in conjunction with the developer will be required to develop and implement a dust control plan. This plan will be prepared prior to any construction activities and will be established and maintained through the construction period. It will be submitted to DCC and FCC for approval.

14.5.1 Operational Phase

The operation of the pipeline will displace the use of road tankers from the road network. This will have a positive direct impact on local air quality and an indirect positive impact on climate change.

14.5.2 Cumulative Impacts

The potential for cumulative impacts from the laying of other services along the pipeline route is low given that 13.6 km of the 14.4 km route occurs within a regulated environment whereby consultation will be required with the Local Authority. Implementation of appropriate mitigation measures for both schemes will ensure that there are no significant cumulative impacts.

The cumulative impacts arising from the operation of the schemes will not result in cumulative negative impacts.

14.6 Predicted Impacts after Mitigation

Following the implementation of the above mitigation measures, the construction of the proposed pipeline may result in low residual impacts arising from dust nuisance. The operation of the proposed pipeline will result in positive residual impacts.

14.7 Monitoring

Air quality monitoring will continue to be undertaken by the EPA in the Dublin Zone A region. As no air emissions are anticipated from the operation of the proposed pipeline, no additional monitoring is proposed.

14.8 References

- Environmental Protection Agency (2011) Annual Report on Air Quality in Ireland 2010
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