

8 AIR, CLIMATE & NOISE

8.1 Air

8.1.1 Background

Due to the non-industrial nature of the proposed development and the general character of the surrounding environment, air quality sampling was deemed to be unnecessary for preparing this Environmental Impact Statement (EIS). It is expected that air quality in the existing environment is good, since there are no major sources of air pollution (e.g. heavy industry) in the vicinity of the site.

Some minor indirect emissions associated with the construction of the proposed Blueway development include vehicular and dust emissions.

8.1.2 Air Quality Standards

In 1996, the Air Quality Framework Directive (96/62/EC) was published. This Directive was transposed into Irish law by the Environmental Protection Agency Act 1992 (Ambient Air Quality Assessment and Management) Regulations 1999. The Directive was followed by four Daughter Directives, which set out limit values for specific pollutants:

- The first Daughter Directive (1999/30/EC) deals with sulphur dioxide, oxides of nitrogen, particulate matter and lead.
- The second Daughter Directive (2000/69/EC) addresses carbon monoxide and benzene. The first two Daughter Directives were transposed into Irish law by the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).
- A third Daughter Directive, Council Directive (2002/3/EC) relating to ozone was published in 2002 and was transposed into Irish law by the Ozone in Ambient Air Regulations 2004 (SI No. 53 of 2004).
- The fourth Daughter Directive, published in 2007, deals with polyaromatic hydrocarbons (PAHs), arsenic, nickel, cadmium and mercury in ambient air.

The Air Quality Framework Directive and the first three Daughter Directives have been replaced by the Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC on ambient air quality), which encompasses the following elements:

- The merging of most of the existing legislation into a single Directive (except for the Fourth Daughter Directive) with no change to existing air quality objectives.
- New air quality objectives for PM_{2.5} (fine particles) including the limit value and exposure concentration reduction target.
- The possibility to discount natural sources of pollution when assessing compliance against limit values.
- The possibility for time extensions of three years (for particulate matter PM₁₀) or up to five years (nitrogen dioxide, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

Table 8.1 below sets out the limit values of the CAFE Directive, as derived from the Air Quality Framework Daughter Directives. Limit values are presented in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) and parts per billion (ppb). The notation PM₁₀ is used to describe particulate matter or particles of ten micrometres or less in aerodynamic diameter.

PM_{2.5} represents particles measuring less than 2.5 micrometres in aerodynamic diameter.

The CAFE Directive was transposed in to Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). These Regulations supersede the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and the Ambient Air Quality Assessment and Management Regulations 1999 (S.I. No. 33 of 1999).

Table 8.1 Limit values of Directive 2008/50/EC, 1999/30/EC and 2000/69/EC (Source: EPA)

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m ³)	Limit Value (ppb)	Basis of Application of Limit Value	Attainment Date
Sulphur dioxide (SO ₂)	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year	1 st Jan 2005
Sulphur dioxide (SO ₂)	Protection of human health	24 hours	125	47	Not to be exceeded more than 3 times in a calendar year	1 st Jan 2005
Sulphur dioxide (SO ₂)	Protection of vegetation	Calendar year	20	7.5	Annual mean	19 th Jul 2001
Sulphur dioxide (SO ₂)	Protection of vegetation	1 st Oct to 31 st Mar	20	7.5	Winter mean	19 th Jul 2001
Nitrogen dioxide (NO ₂)	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year	1 st Jan 2010
Nitrogen dioxide (NO ₂)	Protection of human health	Calendar year	40	21	Annual mean	1 st Jan 2010
Nitrogen monoxide (NO) and nitrogen dioxide (NO ₂)	Protection of ecosystems	Calendar year	30	16	Annual mean	19 th Jul 2001
Particulate matter 10 (PM ₁₀)	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year	1 st Jan 2005
Particulate matter 2.5 (PM _{2.5})	Protection of human health	Calendar year	40	-	Annual mean	1 st Jan 2005
Particulate matter 2.5 (PM _{2.5}) Stage 1	Protection of human health	Calendar year	25	-	Annual mean	1 st Jan 2015
Particulate matter 2.5 (PM _{2.5}) Stage 2	Protection of human health	Calendar year	20	-	Annual mean	1 st Jan 2020

Pollutant	Limit Value Objective	Averaging Period	Limit Value ($\mu\text{g}/\text{m}^3$)	Limit Value (ppb)	Basis of Application of Limit Value	Attainment Date
Lead (Pb)	Protection of human health	Calendar year	0.5	-	Annual mean	1st Jan 2005
Carbon Monoxide (CO)	Protection of human health	8 hours	10,000	8,620	-	1st Jan 2005
Benzene (C ₆ H ₆)	Protection of human health	Calendar Year	5	1.5	-	1st Jan 2010

The Ozone Daughter Directive 2002/3/EC is different from the other Daughter Directives in that it sets target values and long-term objectives for ozone rather than limit values. Table 8.2 presents the limit and target values for ozone.

Table 8.2 Target values for Ozone Defined in Directive 2008/50/EC

Objective	Parameter	Target Value for 2010	Target Value for 2020
Protection of human health	Maximum daily 8 hour mean	120 mg/m ³ not to be exceeded more than 25 days per calendar year averaged over 3 years	120 mg/m ³
Protection of vegetation	AOT ₄₀ calculated from 1 hour values from May to July	18,000 mg/m ³ .h averaged over 5 years	6,000 mg/m ³ .h
Information Threshold	1 hour average	180 mg/m ³	-
Alert Threshold	1 hour average	240 mg/m ³	-

AOT₄₀ is a measure of the overall exposure of plants to ozone. It is the sum of the excess hourly concentrations greater than 80 $\mu\text{g}/\text{m}^3$ and is expressed as $\mu\text{g}/\text{m}^3$ hours.

8.1.2.1 Dust

There are no statutory limits for dust deposition in Ireland. The German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – The Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance. The EPA generally sets a maximum daily dust deposition level of 350 mg/m²/day when measured according to the Bergerhoff method in Industrial Emissions Licences issued by them.

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, *i.e.* soil, sand, overburden, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust.

Proposed measures to control dust include:

- The roads adjacent the site will be regularly inspected by the Site Construction Manager for cleanliness, and cleaned as necessary;
- The transport of soils or other material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles where necessary;
- Damping down surfaces will be carried out where necessary to control dust emissions.

8.1.3 Receiving Environment

The proposed development is located within the counties, Kildare, Laois and Carlow. Due to its length, the proposed Blueway passes through a range of environments. For the most part the site is located in a working rural landscape, with site specific land use, largely relating to recreation. However, the route does pass through a number of settlements as mentioned in Chapter 3 of this EIS. The proposed works will be carried out along the existing Barrow Way walking trail and on the existing towpath along the banks of the Grand Canal Barrow Line and Barrow Navigation Trackway, therefore the land use, in this case, will remain recreational.

The Environmental Protection Agency (EPA) has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and environs
- Zone B: Cork City and environs
- Zone C: 16 urban areas with population greater than 15,000
- Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Framework Directive and Daughter Directives. The site of the proposed development lies mostly within Zone D, which represents rural areas located away from large population centres. The development passes through Carlow Town, which can be designated as Zone C i.e. an urban area with a population of greater than 15,000.

8.1.4 Existing Air Quality

The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The Zone D air monitoring station nearest to the proposed development is in Mountrath, Co. Laois, approximately 26.5km west of the site. For the purposes of this EIS, the Mountrath air monitoring station is to be representative of all areas of the proposed development within Zone D. EPA air quality data is available for Mountrath in the report *'Ambient Air Monitoring at Mountrath, Co. Laois 22nd September 2004 – 14th June 2005'*, as detailed below. This is the most recent report available for this monitoring station. The route passes through a Zone C Air Quality Zone in Carlow Town, data for this station is taken from the report *'Ambient Air Monitoring In Carlow, Co. Carlow 12th July 2004 – 14th March 2005'*, which is also detailed below. This is the most recent report available for this monitoring station.

8.1.4.1 Sulphur Dioxide (SO₂)

8.1.4.1.1 Mountrath Air Monitoring Station

Sulphur dioxide data for the 2004/2005 monitoring period in Mountrath is presented in Table 8.3. Neither the hourly limit value nor lower assessment threshold set out in the CAFE Directive were exceeded during the monitoring period.

Table 8.3 Sulphur Dioxide Data Mountrath September 2004 to June 2005

Parameter	Measurement
No. of hours	6,347
No. of measured values	6,153
Percentage Coverage	96.9%
Maximum hourly value	28.2 µg/m ³
98 th percentile for hourly values	9.3 µg/m ³
Mean hourly value	3.9 µg/m ³
Maximum 24-hour mean	12.0 µg/m ³
98 th percentile for 24-hour mean	6.9 µg/m ³

8.1.4.1.2 Carlow Town Air Monitoring Station

Sulphur dioxide data for the 2004/2005 monitoring period in Carlow Town is presented in Table 8.4. Neither the hourly limit value nor lower assessment threshold set out in the CAFE Directive were exceeded during the monitoring period.

Table 8.4 Sulphur Dioxide Data Carlow Town May 2004 to March 2005

Parameter	Measurement
No. of hours	5,823
No. of measured values	5,177
Percentage Coverage	88.9%
Maximum hourly value	48.4 µg/m ³
98 th percentile for hourly values	18.1 µg/m ³
Mean hourly value	4.7 µg/m ³
Maximum 24-hour mean	22.1 µg/m ³
98 th percentile for 24-hour mean	16.1 µg/m ³

8.1.4.2 Particulate Matter (PM10)

8.1.4.2.1 Mountrath Air Monitoring Station

Particulate matter (PM₁₀) data for the 2004/2005 monitoring period in Mountrath is presented in Table 8.5. The annual and daily limit values for the protection of health were not exceeded during the measurement period. The upper assessment threshold was exceeded on 37 days and the lower assessment threshold was exceeded on 135 days. The CAFE Directive stipulates that these assessment thresholds should not be exceeded more than seven times in a calendar year.

Table 8.5 Particulate Matter (PM10) Data Mountrath September 2004 to June 2005

Parameter	Measurement
No. of days	264
No. of measured values	230
Percentage Coverage	87.1%
Maximum daily value	48.3 µg/m ³
Mean daily value	22.5 µg/m ³

8.1.4.2.2 Carlow Town Air Monitoring Station

Particulate matter (PM₁₀) data for the 2004/2005 monitoring period in Carlow Town is presented in Table 8.6. There was one daily value greater than the 2004 limit value (55 µg.m-3) and two values greater than the 2005 limit value (50 µg.m-3) The upper assessment threshold was exceeded on 13 days and the lower assessment threshold

was exceeded on 35 days. The CAFE Directive stipulates that these assessment thresholds should not be exceeded more than seven times in a calendar year. Therefore Carlow can be classified as being above the upper assessment threshold.

Table 8.6 Particulate Matter (PM10) Data Carlow Town May 2004 to March 2005

Parameter	Measurement
No. of days	244
No. of measured values	147
Percentage Coverage	60.2%
Maximum daily value	57.4 µg/m ³
Mean daily value	16.6 µg/m ³

8.1.4.3 Nitrogen Dioxide (NO₂)

8.1.4.3.1 Mountrath Air Quality Monitoring Station

Nitrogen dioxide and oxides of nitrogen data for the 2004/2005 monitoring period in Mountrath is presented in Table 8.7. The lower assessment threshold for the protection of human health was not exceeded for mean hourly NO₂ or NO_x values. However, the lower assessment threshold for protection of vegetation (19.5 µg/m³) was exceeded during the measurement period. This standard may not be applicable to the urban environment in which the air monitoring occurred.

Table 8.7 Nitrogen Dioxide and Oxides of Nitrogen Data Mountrath September 2004 to June 2005

Parameter	Measurement
No. of hours	6,347
No. of measured values	4,855
Percentage Coverage	76.5%
Maximum hourly value (NO ₂)	62.6 µg/m ³
98 th percentile for hourly values (NO ₂)	38.0 µg/m ³
Mean hourly value (NO ₂)	12.5 µg/m ³ NO ₂
Mean hourly value (NO _x)	23.8 µg/m ³ NO _x

8.1.4.3.2 Carlow Town Air Quality Monitoring Station

Nitrogen dioxide and oxides of nitrogen data for the 2005/2005 monitoring period in Carlow Town is presented in Table 8.8. No hourly or annual mean NO₂/NO_x limit values, lower assessment thresholds or higher assessment thresholds for the protection of human health were exceeded during the monitoring period. The CAFE Directive stipulates that this threshold should not be exceeded more than 18 times in a calendar year.

Table 8.8 Nitrogen Dioxide and Oxides of Nitrogen Data Carlow Town May 2004 to March 2005

Parameter	Measurement
No. of hours	5,823
No. of measured values	5,289
Percentage Coverage	90.8%
Maximum hourly value (NO ₂)	90.5 µg/m ³
98 th percentile for hourly values (NO ₂)	50.0 µg/m ³
Mean hourly value (NO ₂)	15.8 µg/m ³
Mean hourly value (NO _x)	27.4 µg/m ³ NO ₂

8.1.4.4 Carbon Monoxide (CO)

8.1.4.4.1 Mountrath Air Quality Monitoring Station

Carbon monoxide data for the 2004-2005 monitoring period in Mountrath is presented in Table 8.9. The mean hourly concentration of carbon monoxide recorded was 0.3 mg/m³. The carbon monoxide limit value for the protection of human health is 10 mg/m³. On no occasion were values in excess of the 10 mg limit value set out in the CAFE Directive recorded.

Table 8.9 Carbon Monoxide Data Mountrath September 2004 to June 2005

Hourly Values	Result
No. of hours	6,347
No. of measured values	5,834
Percentage Coverage	91.8%
Maximum hourly value	2.4 mg/m ³
98 th percentile for hourly values	1.3 mg/m ³
Mean hourly value	0.3 mg/m ³
Maximum 8-hour mean	1.6 mg/m ³
98 th percentile for 8-hour mean	1.2 mg/m ³

8.1.4.4.2 Carlow Town Air Quality Monitoring Station

Carbon monoxide data for the Carlow monitoring station took place from 12th July to 2nd December 2004 and is presented in Table 8.10. The mean hourly concentration of carbon monoxide recorded was 0.2 mg/m³. The carbon monoxide limit value for the protection of human health is 10 mg/m³. On no occasion were values in excess of the 10 mg limit value set out in the CAFE Directive recorded.

Table 8.10 Carbon Monoxide Data Carlow Town July 2004 to December 2004

Hourly Values	Result
No. of hours	5,823
No. of measured values	1,193
Percentage Coverage	20.5%
Maximum hourly value	0.6 mg/m ³
98 th percentile for hourly values	0.5 mg/m ³
Mean hourly value	0.2 mg/m ³
Maximum 8-hour mean	0.5 mg/m ³
98 th percentile for 8-hour mean	0.4 mg/m ³

8.1.5 Likely Impacts on Air and Associated Mitigation Measures

8.1.5.1 Do-Nothing Scenario

If the proposed development were not to proceed, the existing recreational uses of the site would continue and there would be no change to existing air quality conditions in the area. There would be no potential for minor emissions to occur as a result of the construction phase of the proposed development.

8.1.5.2 Construction Phase

8.1.5.2.1 Dust

The potential for dust emissions from the construction works are related to excavations and vehicle movements. These emissions are considered negligible given

the small scale of the works areas (c. 2.5m wide path), the localised nature of the works and the temporary and transient nature of the proposed works.

Mitigation

During dry weather conditions, sporadic wetting of surface will be carried out during the construction phase to minimise movement of dust particles to the air where possible, for example at the proposed car parks or at material stockpiles. The public roads adjacent the site will be regularly inspected for cleanliness, and cleaned as necessary. The transport of construction material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles where necessary.

Residual Impact

Temporary, imperceptible impact on air quality conditions.

Significance of Effects

Based on the above assessment, there will be no significant effect.

8.1.5.2.2 General Air Quality

Some minor emissions of greenhouse gases associated with construction vehicles and plant are expected. Any potential short term negative impact will not be significant and will be restricted to the active construction area and the duration of the construction phase of the proposed development in general. This is expected to have a short-term imperceptible negative impact.

Mitigation

All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise.

Residual Impact

Temporary, imperceptible impact on air quality conditions.

8.1.5.2.3 Human Health

Some minor emissions of dust and exhaust gases associated with construction vehicles and plant are expected, which may have the potential to impact human health, however these will not be significant and will be restricted to the active construction area and the duration of the construction phase of the proposed development in general. This is expected to have a short-term imperceptible negative impact.

Mitigation

All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise. Dust suppression mitigation will be employed where necessary.

Residual Impact

Temporary, imperceptible impact on human health.

Significance of Effects

Based on the above assessment, there will be no significant effect.

8.1.5.3 Operational Phase

It is anticipated that there will be imperceptible impacts to air quality during the operational phase of the development. It is expected that the Blueway will be used by walkers and cyclists, resulting in little to no dust or air quality emissions. The majority of the Blueway will be composed of an unbound, compacted surface which is not

anticipated to give rise to dust emissions under the projected use. Routine maintenance will be carried out however this is not likely to generate significant air emissions or impacts and will be similar to the 'do nothing' scenario.

8.1.5.4 Cumulative Impact Assessment

The proposed development is not anticipated to have any significant impacts on air quality and therefore, the potential for cumulative effects with the other projects mentioned in Chapter 2 of this EIS does not exist.

8.2 Climate

8.2.1 Receiving Environment

The southeast of Ireland has a temperate oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station in Kilkenny is the nearest weather and climate monitoring station to the proposed development site, located approximately 17.8km southeast of the site. Meteorological data recorded in Kilkenny from 1978-2007 is available on the Met Éireann website, www.met.ie. The data shows that on average the wettest months recorded during this period were October and December, with July being the driest. The warmest month on average is July (mean temperature 15.8° Celsius), and the coldest is January (mean temperature 4.9° Celsius).

8.2.2 Likely impacts on Climate and Associated Mitigation Measures

8.2.2.1 Do-Nothing Scenario

If the proposed development were not to proceed, the existing recreational uses of the site would continue and there would be no change to existing climatic conditions in the area. There would be no potential for minor greenhouse gas emissions to occur as a result of the construction phase of the proposed development.

8.2.2.2 Construction Phase

The use of machinery during the construction of the proposed development will result in the emission of greenhouse gases. Operations such as the transport of equipment and materials as well as construction personnel are typical examples of machinery use. This impact is considered to be imperceptible only, given the insignificant quantity of greenhouse gases that will be emitted. This is expected to have a short-term imperceptible negative impact and therefore, no mitigation is proposed.

8.2.2.3 Operational Phase

The proposed Blueway will have no negative impacts on climate during its operational phase. There is potential for the proposed development to have a positive impact on air and climate during its operational phase. This positive impact could arise through the provision of facilities which encourage the use of sustainable forms of transport such as bicycles instead of those which emit greenhouse gasses.

8.2.2.4 Cumulative Impact Assessment

The proposed development is not anticipated to have any significant impacts on Air and Climate and therefore, the potential for cumulative impacts with the other projects mentioned in Chapter 2 of this EIS does not exist.

8.3 Noise and Vibration

8.3.1 Existing Noise Environment

The proposed development site is approximately 115 kilometres long, almost all of which runs along the existing tracks and towpaths of the Grand Canal and River Barrow which are currently used for recreational purposes and subject to routine maintenance.

The majority of the site is located in a rural setting and already used for recreation, with agriculture, peatland and forestry in the surrounding area. The route also passes through numerous urban areas at the following main settlements; Rathangan, Monasterevin, Vicarstown, Athy, Carlow, Leighlinbridge, Bagenalstown, Goresbridge, Graiguenamanagh and St. Mullin's.

There are a number of sensitive receptors located adjacent to the site of the proposed development, which includes; dwellings, commercial properties and hospitality based businesses among others. Within rural areas of the site it is assumed that ambient (background) noise levels are low with slightly higher noise levels in urban areas. However, for the purpose of this assessment, as a precautionary approach, the entire route has been considered to have low levels of ambient noise. This ambient noise is mainly composed of traffic in urban areas and at road crossings, while rural ambient noise includes bird song/calls, wind, dogs barking, agricultural machinery and the works associated with the routine maintenance of the towpath and tracks.

8.3.2 Construction Phase Noise Levels

The proposed works will not give rise to any significant noise emissions following commissioning and in the operational phase. In contrast, construction phase noise emissions are of greater significance and more likely to occur.

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and may consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development such as this may be found in the British Standard *British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise*.

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded, indicates a significant noise impact is associated with the construction activities.

Due to the large size and nature of the proposed development site, it has not been deemed necessary or practical to identify individual noise sensitive receptors. Instead, it is assumed that there are numerous receptors within 100m which can be considered sensitive.

The National Roads Authority (NRA) document Guidelines for the treatment of noise and vibration in national road schemes (2004) recommends limits applicable to the construction phase of projects. Although the guidance is applicable specifically to road

construction projects, the limits are widely applied in Ireland to other construction projects. The limits are presented in Table 8.11.

Table 8.11 Noise limits recommended by the NRA (2004).

Period	LAeq 1 h	LASmax
Weekdays 0700-1900 h	70 dB	80 dB
Weekdays 1900-2200 h	60 dB	65 dB
Saturdays 0700-1630 h	65 dB	75 dB
Sundays & bank holidays 0800-1630 h	60 dB	65 dB

On the basis of the above, Table 8.12 suggests limits considered suitable for the proposed project. In the absence of any NRA LASmax criteria for night-time hours, LASmax limits are adopted from LAFmax limits included in the World Health Organisation document Guidelines for community noise (1999).

Table 8.12 Suggested noise limits at all receptors, based on BS 5228:2009 and NRA guidance.

Period	LAeq 1 h	LASmax
Weekdays 0700-1900 h	70 dB	80 dB
Weekdays 1900-2300 h	60 dB	65 dB
Saturdays 0700-1630 h	65 dB	75 dB
Saturdays 1630-2300 h	60 dB	60 dB
Sundays & bank holidays 0700-2300 h	60 dB	65 dB
Night-time 2300-0700 h	50 dB	60 dB

Considering the rural nature of the majority of the site it can be expected that the sensitive receptors in the vicinity of the development have low ambient noise levels.

A variety of plant items will be in use for the purposes of site works, preparation and construction. There are no items of plant expected to give rise to noise levels that would be considered excessive or unusual and none that will lead to any significant vibration impacts. The expected plant list is provided in Table 8.13.

Table 8.13 outlines the noise levels associated with various generic items of plant. This list is indicative only and represents a worst case scenario in terms of the actual items of plant which are anticipated to be required. Noise source data has been obtained from BS 5228-1.

Table 8.13 Indicative Noise Levels from Construction Plant at Various Distances from the proposed works

Item (BS 5228 Ref.)	Highest Predicted Noise Level at Stated Distance from Edge of Works (dB LAeq,1hr)		
	40m	60m	100m
Wheeled loader (C.3.51)*	56	52	48
Tracked excavator (C.3.43)*	57	53	49
Dump truck (C.3.60)*	54	50	46
Diesel Hoist (C.7.98)	58	54	50
Compressor (C.7.27)	55	51	47
Generator (C.7.49)	59	55	51
Road Roller (C.3.114)	59	55	51
HGV Movements	50	49	46

Note * Assume noise control measures as outlined in Table B1 of BS 5228 – 1 (i.e. fit acoustic exhaust).

The total predicted noise levels for the type of plant to be used are predicted to be below the appropriate noise limits at distances greater than 40m and therefore a significant impact is not predicted in relation to noise sensitive locations at further distances.

Notwithstanding this, typical mitigation measures that can be considered for any properties closer to the site are outlined in the mitigation section below with further guidance contained within the BS 5228 standards.

Note that the predicted noise levels referred to in this Section are indicative only and are intended to demonstrate that it will be possible for the contractor to comply with current best practice guidance. It should also be noted that the predicted “worst case” levels are expected to occur for only short periods of time (temporary impacts) at a limited number of locations.

8.3.3 Best Practice

With regard to construction activities, reference will be made to *British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise*, which offers detailed guidance on the control of noise from demolition and construction activities. In particular, it is proposed that various practices be adopted during construction, including:

- Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- Establishing channels of communication between the contractor/developer, Local Authority and residents, if required;
- Appointing a site representative responsible for matters relating to noise and vibration;
- Monitoring typical levels of noise during critical periods and at sensitive locations, if required;

A variety of practicable noise control measures will be employed, which may include the selection of plant with lower inherent potential for generation of noise, careful siting of any fixed plant to maximise separation distances to sensitive properties and the application of agreed hours of construction works.

8.3.4 Likely and Significant Impacts and Associated Mitigation Measures

8.3.4.1 Do-Nothing Impact

If the proposed development were not to proceed, there would be no change to existing noise conditions in the area. There would be no potential for noise impacts associated with the construction phase of the works.

8.3.4.2 Construction Phase

There is likely to be a temporary slight negative impact at a limited number of sensitive receptors at any one time due to the small scale of each construction team along the route, their dispersed nature and the temporary nature of the works phase. Although the construction works may give rise to noise impacts on sensitive receptors in the area, these noise impacts will be very temporary in nature as the works move along the route. Moreover, the long term impact is expected to be positive, given the creation of amenity areas.

Mitigation

Best practice measures (outlined in section 8.3.3) for noise control will be adhered to onsite during the construction phase of the proposed development. These measures will mitigate the slight temporary negative impact associated with construction phase noise, thereby reducing the potential negative impact.

Residual Impact

Temporary, slight, negative impact.

Significance of Effects

Based on the above assessment, there will be no significant effect.

8.3.4.3 Operational Phase

Operation of the Blueway will consist of cycling and walking, essentially quiet activities. Therefore, it is not anticipated that the anticipated increased number of visitors will have any impact on noise levels and no mitigation has been proposed. Some maintenance will be required from time to time. This however, will be minor and temporary in nature and will be subject to the same noise controls as are outlined in the construction phase. This is also similar to the do-nothing scenario.

8.3.4.4 Cumulative Impact Assessment

Cumulative impacts relate mainly to the construction phase of the project. There are no significant cumulative impacts expected, but the possibility that some receptors may be affected by simultaneous construction emissions from the proposed development and other non-related projects cannot be discounted, particularly in urban areas.

There is likely to be a temporary slight negative impact from the proposed development at a limited number of sensitive receptors at any one time due to the small scale of each construction team along the route, and the dispersed and temporary nature of the works phase as the works move along the route. Therefore, there is the potential for temporary slight cumulative impacts with the other projects mentioned in Chapter 2 of this EIS, however, such impacts will be very localised and will last for only days or weeks in most cases.

Mitigation

Best practice measures (outlined in section 8.3.3) for noise control will be adhered to onsite during the construction phase of the proposed development. These measures will mitigate the slight temporary negative impact associated with construction phase noise, thereby reducing the potential cumulative negative impact.

Residual Impact

Temporary, slight, negative cumulative impact.

Significance of Effects

Based on the above assessment, there will be no significant effect.