

15 Air Quality

15.1 Introduction

1 This chapter considers the potential effects of the proposed Onshore Works for the Neart na Gaoithe Offshore Wind Farm on air quality. It details the baseline situation within the study area, provides an overview of relevant air quality legislation and guidance and an assessment of the potential effect on local air quality during the construction of the Onshore Works. The air quality assessment was undertaken by Arup.

15.1.1 Effects Assessed in Full

2 The following effects have been assessed in full:

- The generation of dust and exhaust emissions from any construction activities and their possible effects on local receptors (i.e. residential properties, schools, offices) and the environment in the vicinity of access roads and/or the construction area.

15.1.2 Effects Scoped Out

3 Following a desk based study on existing pollutant levels in the study area as well as professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, the following topic areas have been 'scoped out', as proposed in the Scoping Report:

- An assessment of operational effects of the proposed Onshore Works.

4 It is considered that once the Onshore Works are operational, there is very limited potential for the development to affect local air quality. Maintenance vehicles (or other vehicle movements associated with the operation of the Onshore Works) are likely to be few and thus very unlikely to give rise to air quality effects (see **Chapter 14: Access, Traffic and Transport**). The scoping out of operational effects has been agreed with the Environmental Health Officer (EHO) at East Lothian Council.

15.1.3 Guidance and Legislation

15.1.3.1 Air Quality Objectives and Limit Values

5 Air quality limit values and objectives are quality standards for the protection of human health and vegetation. They can be used as assessment criteria for determining the significance of any potential changes in local air quality resulting from development.

6 European Union (EU) air quality policy sets the framework for policy in Scotland. Council Directive 96/62/EC of 27 September 1996 on Ambient Air Quality Assessment and Management was intended as a strategic framework for tackling air quality consistently, by setting EU-wide air quality limit values in four daughter directives:

- Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (First Daughter Directive);
- Directive 2000/69/EC of the European Parliament and of the Council relating to limit values for benzene and carbon monoxide in ambient air (Second Daughter Directive);
- Directive 2002/3/EC of the European Parliament and of the Council relating to ozone in ambient air (Third Daughter Directive);
- Directive 2004/107/EC of the European Parliament and of the Council relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (Fourth Daughter Directive).

7 On 11 June 2008 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air for Europe (Ambient Air Quality Directive) came into force. The Directive consolidated and simplified most of the existing air quality legislation with the exception of the Fourth Daughter Directive and introduced a new standard for very fine particulate matter i.e. PM_{2.5}. The Ambient Air Quality Directive and the Fourth Daughter Directive have been transposed into Scottish legislation through the Air Quality Standards (Scotland) Regulations 2010.

8 The Environment Act 1995 requires the preparation of a national air quality strategy (NAQS) setting air quality standards and objectives for specified pollutants and outlining measures to be taken by local authorities (through the system of Local Air Quality Management (LAQM)) and by others for the purpose of achieving these objectives.

A NAQS was published in 1997 and subsequently reviewed and revised in 2000, and an addendum to the Strategy published in 2002. The most recent NAQS is The Air Quality Strategy for England, Scotland, Wales and Northern Ireland published in 2007. The objectives which are relevant to LAQM have been set out in the Air Quality Standards (Scotland) Regulations 2010.

9 **Table 15.1** shows the EU air quality limit values and national air quality objectives for the pollutants of relevance to this study. All those stated are for the protection of human health.

Pollutant	Averaging Period	Objective/Limit Value	Compliance Date	Basis
Nitrogen dioxide (NO ₂)	1 hour mean	200 µg/m ³ , not to be exceeded more than 18 times a year (99.8th percentile)	31 Dec 2005	Scotland
			01 Jan 2010	EU
	Annual mean	40 µg/m ³	31 Dec 2005	Scotland
			01 Jan 2010	EU
Particulate matter (PM ₁₀)	Daily mean	50 µg/m ³ , not to be exceeded more than 35 times a year (90.4th percentile)	01 Dec 2004	Scotland
			Not specified	EU
	Annual mean	40 µg/m ³	31 Dec 2004	Scotland
Not specified			EU	
		18 µg/m ³	31 Dec 2010	Scotland
Particulate matter (PM _{2.5})	Annual mean	12 µg/m ³	2020	Scotland

Table 15.1: EU Air Quality Limit Values and National Air Quality Objectives for Relevant Pollutants

15.1.4 Dust Nuisance

10 Dust is the generic term which the British Standard document BS 6069 (Part Two) (British Standards Institute, 1987) uses to describe particulate matter in the size range 1 – 75 µm (micrometers) in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Dust nuisance is defined as a statutory nuisance in Part III of the Environmental Protection Act 1990. There are currently neither standards nor guidelines for the nuisance of dust in the United Kingdom, nor specified formal dust deposition standards. This reflects the uncertainties in dust monitoring technology and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. However, an informal criterion of 200-250 mg/m²/day (as a 30-day mean) is often applied in the UK as an indicator of potential nuisance.

11 Monitoring and assessment of construction sites in the UK indicates that any elevation in dust deposition rates (which can lead to dust nuisance) or ambient concentrations of particulates (PM₁₀) is limited to well within 200 m of the worksite boundary. If sensitive receptors are present within this distance, then there is significant potential for effects without careful site management. Sensitive receptors include residential units, schools, hospitals and care homes.

12 Fugitive dust emissions from construction activities are likely to be variable and will depend upon type and extent of the activity, soil conditions (soil type and moisture), road surface condition and weather conditions. Soils are inevitably drier during the summer period and periods of dry weather combined with higher than average winds have the potential to generate the most dust.

15.1.4.1 Pollution Prevention and Control

13 Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (IPPC Directive) aims to minimise pollution from various industrial and agricultural activities and requires those with a high pollution potential to have a permit. The IPPC Directive is transposed into domestic legislation by the Pollution Prevention and Control (Scotland) Regulations 2000 (as amended) (PPC

Regulations). The PPC Regulations specify the types of activities that are regulated and the procedure for regulating these activities.

15.1.5 Air Quality Guidance

15.1.5.1 Part IV of the Environment Act 1995: Local Air Quality Management. Policy Guidance LAQM.PG(S)(09)

14 Policy guidance note LAQM.PG(S) (09) provides additional guidance on the links between transport and air quality. LAQM.PG(S) (09) describes how road transport contributes to local air pollution and how transport measures may bring improvements in air quality. Key transport related Government initiatives are set out, including regulatory measures and standards to reduce vehicle emissions and improve fuels, tax-based measures and the development of an integrated transport strategy.

15 LAQM.PG(S) (09) also provides guidance on the links between air quality and the land use planning system. The guidance advises that air quality considerations should be integrated within the planning process at the earliest stage and is intended to aid local authorities in developing action plans to deal with specific air quality problems and create strategies to improve air quality generally. It summarises the main ways in which the land use planning system can help deliver air quality objectives.

15.1.5.2 Environmental Protection UK (EPUK) Guidance: Development Control: Planning for Air Quality

16 The 2006 National Society for Clean Air and Environmental Protection (NSCA) (now EPUK) guidance note 'Development Control: Planning for Air Quality' (as updated in 2010) responds to the need for closer integration between air quality and development control. It provides a framework for air quality considerations within local development control processes, promoting a consistent approach to the treatment of air quality issues within development control decisions.

17 The 2010 update to this guidance includes a useful framework for assessing the air quality effects of a development based on advice provided by the Institute of Air Quality Management.

15.1.5.3 Greater London Authority (GLA) and London Councils, The control of dust and emissions from construction and demolition. Best Practice Guidance

18 The GLA Best Practice Guidance provides an approach for the control of dust and emissions from construction and demolition activities. This document is a London focused document to provide consistent best practice for demolition and construction sites across London, although the principles of best practice can be readily applied to other areas outside London.

15.1.6 Planning Policy Context

19 The key sectors of relevance to planning and air quality are transport, industry and energy, since these are the main sources of air pollution. National planning policy is set out in Scottish Planning Policy (SPP), with paragraph 165 being relevant to air quality assessments of new transport infrastructure. The Scottish Government has also published Planning Advice Notes (PANs) of which PAN 51 'Planning, Environmental Protection and Regulation' and PAN 75 'Planning for Transport' make reference to air quality.

20 PAN50 - Controlling the Environmental Effects of Surface Mineral Workings includes measures to reduce the effect of dust generating activities on local air quality and sensitive receptors. Measures in this document have been included in the construction mitigation section of this chapter.

21 PAN 51 provides government guidance on pollution control for local authorities when drawing up their development plans and making decisions on individual development applications.

22 Whilst relevant to air quality, PAN 75 focuses on the promotion of sustainable transport solutions associated with new developments (e.g. applying maximum car parking standards, use of green travel plans) and therefore is more relevant to building-type developments rather than infrastructure schemes such as the proposed scheme.

15.2 Data Sources

23 Data sources that were employed in this assessment include:

- East Lothian Council Review and Assessment of Air Quality documents;
- The UK Air Information Resource website (<http://uk-air.defra.gov.uk>);

- The Air Quality in Scotland website (www.scottishairquality.co.uk).

24 Though the East Lothian Council Review and Assessment of Air Quality documents include monitoring results, none of the sites monitored by the Council were in close enough proximity to the Onshore Works to provide information on local air quality conditions.

15.3 Engagement

25 A scoping response was received from ELC as part of the consultation process for the proposed Onshore Works, which makes reference to air quality. This scoping response has been taken into account in this assessment and is presented below.

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
ELC	Consultation on the method of assessment, including the use of the Greater London Authority (GLA) guidance for the assessment of construction effects.	This method is acceptable	The method of assessment suggested in the Scoping Report is used in this assessment
ELC	Scoping out of operational and construction traffic.	Agreed that this method is acceptable as no roads meet the screening criteria set out in Design Manual for Roads and Bridges (DMRB) guidance (Highways Agency, 2007) and the Environmental Protection United Kingdom (EPUK) "Development Control: Planning for Air Quality" (EPUK, 2010) guidance (change in AADT flow by more than 5% on roads with more than 10,000 AADT).	Compared traffic generated to both DMRB and EPUK criteria.

Table 15.2: Consultation Responses

15.4 Assessment Methodology

15.4.1 Assessment of Baseline Conditions

26 Existing or baseline ambient air quality refers to the concentration of relevant substances that are already present in the environment; these are present from various sources, such as industrial processes, commercial and domestic activities, agriculture, traffic and natural sources. It is important to establish the baseline air quality, prior to any development, as the effects of a development on air quality can be dependent on how good or bad existing air quality is.

27 Baseline conditions were assessed through a desk study using the data sources listed above.

15.4.2 Construction Assessment

28 The assessment of construction effects involved a review of the proposed construction works, of the locations of human receptors relative to the works, (including a review of sensitive locations), of the duration of the works and of construction traffic data.

29 The DMRB screening criteria have been used to identify whether a quantitative assessment of pollutant emissions from construction vehicles is required to assess potentially adverse effects at nearby sensitive receptors. The use of the EPUK screening criteria has been mandated by East Lothian Council, however, no roads in the vicinity of the assessment meet the minimum Annual Average Daily Traffic (AADT) threshold for consideration of 10,000 vehicles. All traffic would therefore be automatically screened out using this criteria without consideration of that generated by the scheme and so the EPUK screening criteria has not been used in this assessment.

30 The assessment of air quality effects during construction involved a review of the proposed construction works to determine the potential for dust nuisance and hence, additional mitigation required using the GLA Guidance. This included the following steps:

- identify and count the dust sensitive receptors within 25 m, 50 m, 100 m and 200 m of the construction site boundary to identify the scale of effect (high, medium or low) (see **Table 15.3**);
- determine the duration of dust raising activities on each site and the potential for dust to have a nuisance affect and hence, whether the site is low, medium or high risk, based on the threshold in **Table 15.4**.

Distance from Site Boundary	No of Sensitive Receptors	Distance from Site Boundary	No of Sensitive Receptors
	0 - 10	11 - 100	101 - 1000
0 – 25 m	High	High	High
25 – 50 m	Medium	High	High
50 – 100 m	Low	Medium	Medium
100 – 200 m	Negligible	Low	Low

Table 15.3: Thresholds for Potential Dust Nuisance

Duration of Dust Raising Activities	Scale of Dust Raising Potential		
	High	Medium	Low
0 – 3 months	No adjustment	No adjustment	No adjustment
3 – 6 months	Increase by one step	No adjustment	No adjustment
6 – 12 months	Increase by two steps	Increase by one step	No adjustment
> 12 months	Increase by two steps	Increase by two steps	Increase by one step
One step: from 'negligible' to 'low', 'low' to 'medium', 'medium' to 'high'			
Two step: from 'negligible' to 'medium', 'low' to 'high' or 'medium' to 'high'			

Table 15.4: Duration and Scale of Dust Activities

31 Different construction activities can be categorised into different dust raising potential classes (high, medium, low). Activities such as earthmoving, excavation, grading, stockpiling and crushing have a high dust raising potential. Medium risk activities include concrete batching, loading and unloading of vehicles, demolition, grinding, grit blasting and transport of materials. Low risk activities with regard to dust raising potential include landfilling, cutting, burning of material and traffic of dirty vehicles.

32 The extent of mitigation required, as outlined in the GLA and London Councils' Best Practice Guidance (GLA, 2006), has then been defined based on whether the site is identified as low, medium or high risk. In addition, mitigation measures outlined in PAN50 'Controlling the Environmental Effects of Surface Mineral Workings' (Scottish Executive, 1996) have been reviewed and included in the mitigation requirements as appropriate.

15.4.3 Assessing Significance

33 The significance of potential dust nuisance construction effects is noted in the tables below. Effects of 'major' or 'moderate' significance are considered to be 'significant' effects in the context of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011.

Significance of Effect	Description
Major	Potential for emissions and dust to have a significant effect on sensitive receptors. Corresponds to 'high' potential for dust nuisance in Table 15.3
Moderate	Potential for emissions and dust to have an intermittent or likely effect on sensitive receptors. Corresponds to 'medium' potential for dust nuisance in Table 15.3
Minor	Potential for emissions and dust to have an infrequent effect on sensitive receptors. Corresponds to 'low' potential for dust nuisance in Table 15.3
None	No noticeable change in pollutant concentrations or noticeable dust generation at potential receptors. Corresponds to 'negligible' potential for dust nuisance in Table 15.3

Table 15.5: Significance Criteria

34 In this assessment the risk ratings of negligible, low, medium and high (**Table 15.3**) have been used throughout to reflect the subjective nature of dust nuisance.

15.4.4 Study Area

35 The study area for the air quality assessment of the Onshore Works has been limited to an area in the vicinity (approximately 200 m) of the Application Boundary. This distance is the threshold for dust nuisance according to the GLA guidance (see **Table 15.3**).

15.4.5 Cumulative and In-combination Effect Assessment Approach

36 Developments submitted for planning consent and/or in close proximity to the Onshore Works were identified and their cumulative effects assessed against the criteria set out above.

15.5 Baseline Description

15.5.1 Existing Conditions

15.5.1.1 East Lothian Review and Assessment of Air Quality

37 Under the Environment Act 1995, local authorities are required to review and assess air quality with respect to the objectives for seven pollutants specified in the Government's NAQS. Local authorities are required to carry out an 'Updating and Screening Assessment' of their area every three years. If these assessments identify potential hotspot areas likely to exceed air quality objectives, then a Detailed Assessment of those areas is required. Where objectives are not predicted to be met, local authorities must declare the area as an Air Quality Management Area (AQMA). In addition, local authorities are required to produce an Air Quality Action Plan (AQAP) which includes measures to improve air quality within the AQMA.

38 The proposed Onshore Works are located in the south eastern part of the East Lothian administrative area. There are currently no AQMAs within East Lothian; however, there is concern that NO₂ and PM₁₀ concentrations in Musselburgh exceed the relevant air quality objectives. Detailed assessment of potential air pollution 'hot spots', undertaken by East Lothian Council, showed that pollutant concentrations are predicted to meet the relevant air quality objectives. Musselburgh is located approximately 30 km north-west of the Onshore Works.

39 There are no air quality monitoring locations in the vicinity of the Onshore Works.

15.5.1.2 Air Pollution Sources

Industrial Sources

40 Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met and ensuring that any releases are minimised or rendered harmless.

41 Regulated (or prescribed) industrial processes are classified as Part A or Part B activities under the PPC Regulations. Part A activities have the potential for release of prescribed substances to air, land and water, and as such require a PPC permit to operate. Part B activities are smaller in scale than Part A processes and have the potential for release of prescribed substances to air only. Part B activities require a PPC authorisation or permit to operate.

42 There are currently seven listed Part A installations on the Scottish pollutant release inventory website (www.sepa.org.uk/air/process_industry_regulation/pollutant_release_inventory.aspx). Three of these processes are located within 5 km of the proposed Onshore Works. **Table 15.6** provides details of these industrial processes.

Industrial Process	NGR	Distance from the Onshore Works (closest point)
British Energy Generation Ltd	374564; 674989	450m north-east
Viridor Waste Management Ltd	371051; 675563	950m north-west
Lafarge Cement UK Ltd	370598; 676488	1.9 km north-west

Table 15.6: Industrial Processes in the Vicinity of the Onshore Works

43 It is considered that of the industrial processes listed above, the waste management operations and the cement works are likely to have the potential to generate dust during operation. However, the zones of influence of these processes and the application site do not overlap (i.e. they are all more than 400 m from the application site).

Road Traffic

44 In recent decades, transport atmospheric emissions, on a national basis, have grown to match or exceed other sources in respect of many pollutants, particularly in urban areas.

45 The principal pollutants produced as a result of traffic emissions that have been identified as being of most concern by the UK Government's NAQS and in the Highway's Agency DMRB guidance are:

- carbon monoxide (CO);
- nitrogen dioxide (NO₂);
- fine particulate matter (PM₁₀);
- Volatile Organic Compounds, especially benzene and 1,3-butadiene.

46 The proposed scheme is located in the vicinity of the A1, which has an annual average daily traffic (AADT) flow of approximately 10,000 vehicles (survey conducted by Streetwise on 7 June 2012). It is likely that emissions from traffic in combination with emissions from the main industrial activities as outlined above are the main sources of pollution in the vicinity of the proposed development. This is the only major road in the vicinity of the application site. The minor road which provides vehicular access to the site off the A1 currently has approximately 200 vehicle movements a day (survey conducted by Streetwise on 7 June 2012). Further details on road traffic can be found in **Chapter 14**.

15.5.1.3 Pollutant Background Concentrations

47 In the UK, Air (Air Information Resource) website operated by Defra has produced background air pollution data for 2008 and projections for other years for nitrogen oxides (NO_x), NO₂ and PM₁₀ for each 1 km by 1 km OS grid square (available from the UK Air website: <http://uk-air.defra.gov.uk>).

48 Estimated pollutant concentrations for the OS grid squares within which the proposed Onshore Works lie (most western part, middle and most eastern part) for 2012 are shown in **Table 15.7**. 2012 NO₂ and PM₁₀ background pollution maps are shown in **Illustration 15.1** and **Illustration 15.2** respectively.

Pollutant	Unit of Measurement	2012 Measurement
Grid Square Centre: 375500, 674500 (eastern)		
Nitrogen oxides, NO _x	µg/m ³	8.1
Nitrogen dioxide, NO ₂	µg/m ³	5.9
Particulate matter, PM ₁₀	µg/m ³	9.1
Grid Square Centre: 369500, 673500 (middle)		
Nitrogen oxides, NO _x	µg/m ³	4.9
Nitrogen dioxide, NO ₂	µg/m ³	3.7
Particulate matter, PM ₁₀	µg/m ³	10.0
Grid Square Centre: 366500, 669500 (western)		
Nitrogen oxides, NO _x	µg/m ³	4.3
Nitrogen dioxide, NO ₂	µg/m ³	3.2
Particulate matter, PM ₁₀	µg/m ³	7.3

Table 15.7: Background Concentrations in Vicinity of Onshore Works

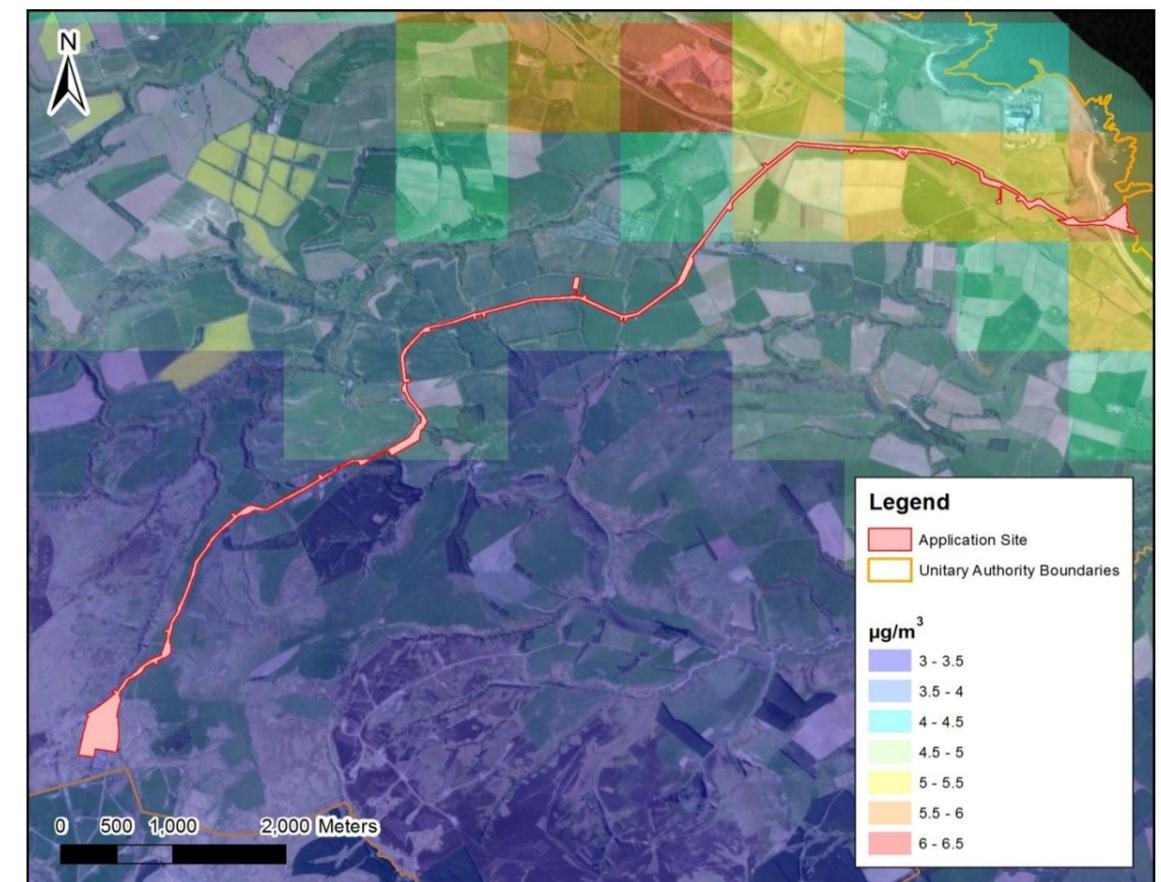


Illustration 15.1: 2012 Background NO₂ Concentrations in Vicinity of Onshore Works

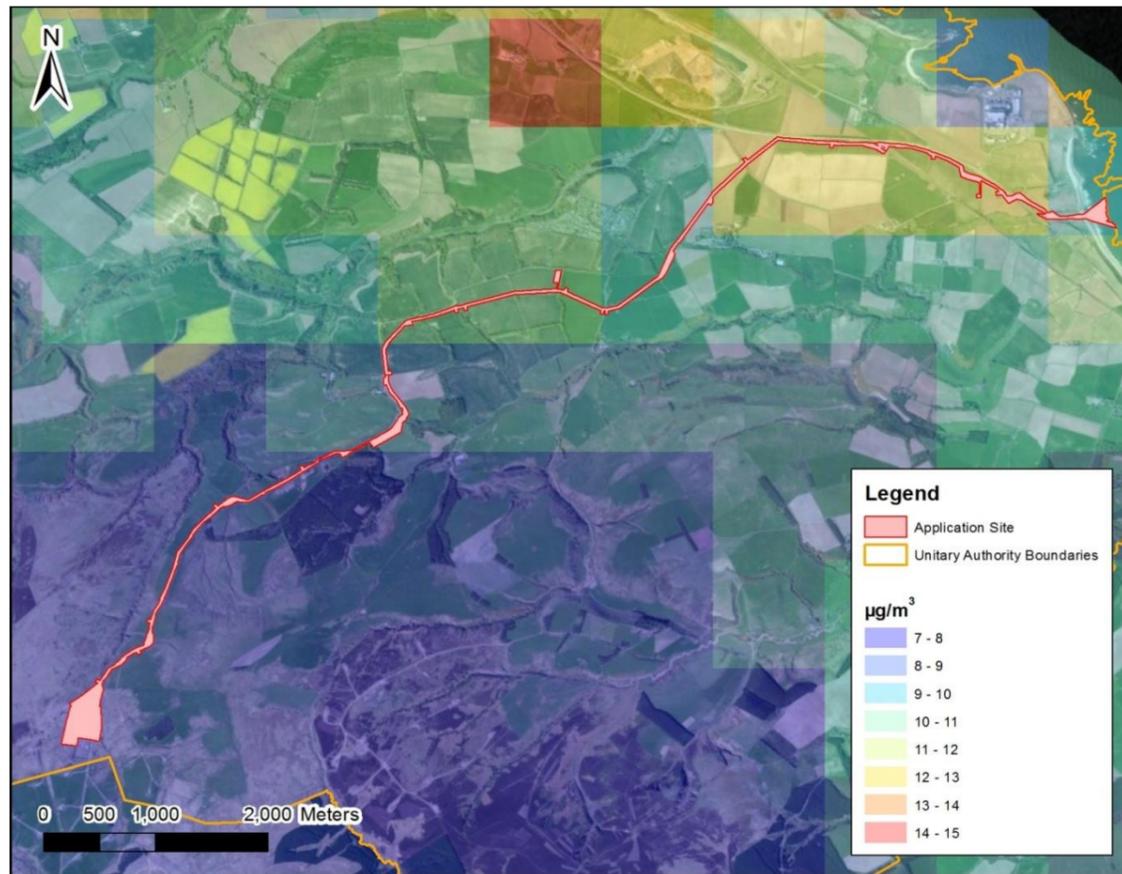


Illustration 15.2: 2012 Background PM₁₀ Concentrations in Vicinity of Onshore Works

Distance from Site Boundary	Number of Sensitive Properties
0-25 m	5
25-50 m	5
50-100 m	7
100-200 m	50

Table 15.8: Number of Sensitive Receptors within Distance Bands

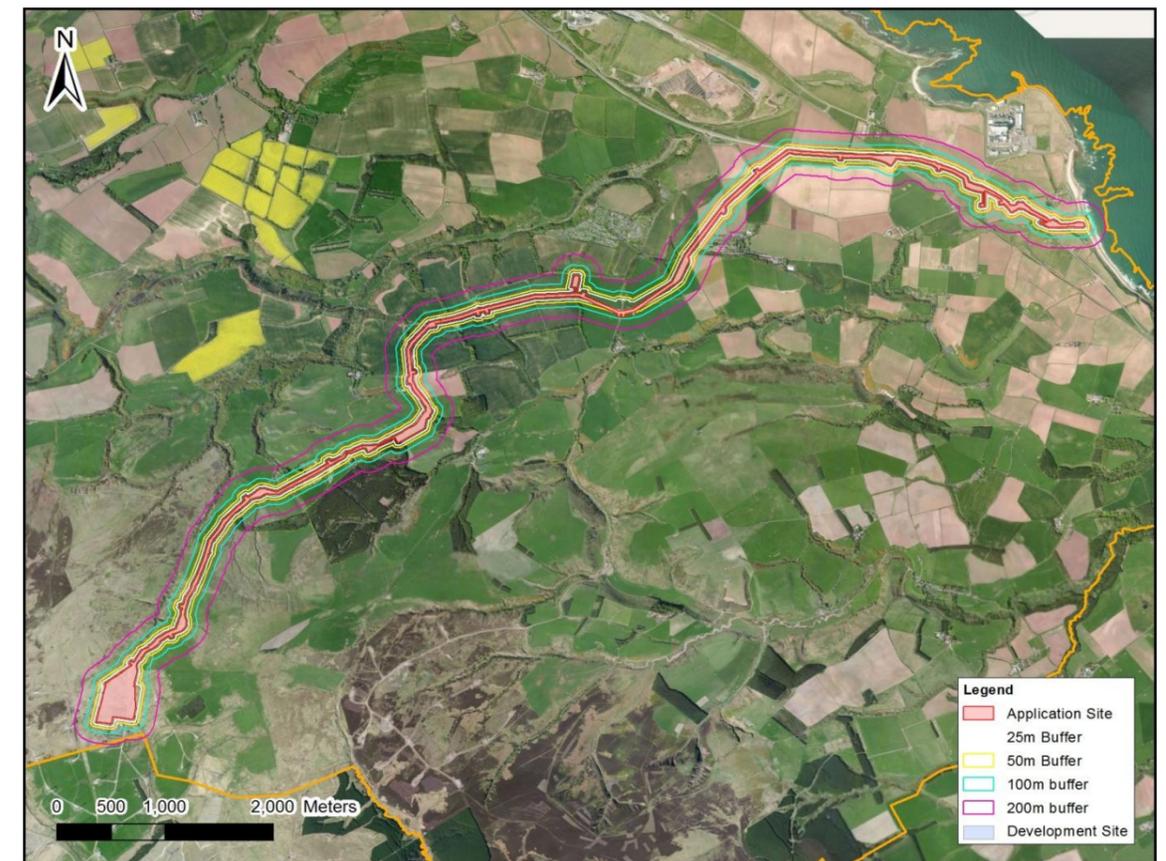


Illustration 15.3: Distance Bands around the Site Boundary (Buffer Zones)

49 **Table 15.7** shows that background pollutant levels are well below the relevant air quality limit value and objective for all pollutants in the vicinity of the application site.

15.5.2 The 'Do Nothing' Scenario

50 If the scheme did not proceed, it is unlikely that any significant air quality changes would occur in the area.

15.5.3 Routing and Design Considerations

51 Air quality considerations have been taken into account for the cable routing of the proposed Onshore Works. As the main anticipated effect would be related to the construction of the proposed Onshore Works, sensitive receptor locations were identified and used as a design consideration.

15.6 Assessment of Effects

15.6.1 Construction

15.6.1.1 Assessment of dust effects arising from cable laying and landfall works

52 The property counts within the distance bands from the cable laying and landfall works site boundary are set out in **Table 15.8**. **Illustration 15.3** shows the location of the distance bands used in the assessment, i.e. the extents of the area considered by this assessment.

53 The construction site cuts mostly through farm land which is sparsely populated. However, five residential buildings are located within 25 m of the construction site. These are isolated farmhouses or houses which form part of a hamlet to the eastern end of the scheme between the A1 and Thorntonloch (NGR 374643,674381). The largest settlement close to the scheme is Innerwick with the majority of the properties within 50-100 m of the construction site located here.

54 Since there are properties located within 25 m of the construction site, the risk of dust nuisance is considered high (see **Table 15.3**) with potential for dust effects of major significance.

55 Key construction activities with the potential to create dust include:

- rock breaking in landfall zone (if required);
- cable trench excavation and filling;
- trenchless construction techniques (which may include HDD and auger boring);
- haul road/substation construction (in particular aggregate handling);

- off-road movements by tracked vehicles and plant;
- on-road vehicle movements (worker movements and delivery of material and plant to/around site).

56 The dust raising potential of the above activities are considered to be high, especially rock breaking, the cable trench excavation, trench filling and aggregate handling.

57 The above activities would take place on a large site (approximately 62 ha including the landfall area and 12 km long) and are expected to last 82 weeks. The location of construction activities, with high dust raising potential, is not expected to remain stationary, however, and would proceed along the length of the Onshore Works. It is not expected that high risk activities would remain stationary for a period of longer than 3 months at locations close to receptors. Low risk activities, such as on-road vehicle movements along the on-site temporary haulage routes, are likely to take place for the duration of the construction period (although not concurrently along the route). Several teams may work on the cable routeing at any one time shortening the total construction period.

58 Considering the criteria in **Table 15.4** and the expectation that high risk activities will last less than 3 months at any one location and that low risk activities are likely to last more than 12 months across the site, the dust raising potential would be raised by one step. The risk of dust nuisance has, however, already been identified as high according to **Table 15.3** and cannot be raised further. This corresponds to the potential for dust effects of major significance.

15.6.1.2 Assessment of Dust Effects arising from Substation Construction

59 The proposed substation is located in an isolated location with no sensitive receptors within 200 m of its site boundary. Therefore, construction of the substation facility is not expected to have any significant construction dust effects and no mitigation to dust nuisance is required other than minimum good practice measures..

15.6.1.3 Assessment of Construction Traffic

60 An analysis of the personnel and vehicle requirements of construction has been completed by Mainstream and Xero Energy Limited. A worst case assessment found that a total of 26,734 two-way vehicle movements would take place over the construction period. This would constitute 11,359 Light Duty Vehicles (LDVs) (<3.5 tonnes) and 15,375 Heavy Duty Vehicles (HDVs) (>3.5 tonnes). Over the 82 week construction period, this would equate to a maximum daily increase of 33 HDVs and 42 LDVs per day. These flows are well below the criteria set out in the DMRB guidance for 'affected roads' that require a quantitative assessment. The DMRB criteria are for roads where:

- traffic flows will change by 1,000 AADT or more;
- HDV flows will change by 200 AADT or more.

61 Furthermore, the traffic generated does not trigger the need for an assessment using the EPUK guidance criteria (traffic will increase by more than 5% on roads with AADT > 1,000).

62 The construction period may be shortened by using multiple gangs to construct different sections of the cable trench concurrently. If the construction period were condensed into a period of 1 year or less, this would have the effect of increasing daily traffic flows, as a year average, to 147 vehicles and HDV flows to 84, volumes which are still under the DMRB thresholds. Therefore, traffic flows generated by the site are considered minor (and hence are not significant, nor are likely to have a significant effect on air quality) and are not assessed further here.

15.6.1.4 Mitigation Measures for Cable Laying and Landfall Works

63 The effect of dust emitting activities outlined above can be greatly reduced or eliminated by applying the site specific mitigation measures from PAN 50: Controlling the Environmental Effects of Surface Mineral Workings and those for high risk sites according to the GLA Best Practice Guidance. Mitigation from these documents appropriate for application to the construction works are listed below for inclusion in a Construction Environmental Management Plan (CEMP). Although an extensive list of mitigation measures is given, only a small length of the scheme is located close to sensitive receptors, the hamlet between the A1 and Thorntonloch, at Innerwick and at the isolated farmhouses along the proposed cabling route, and this is where the majority of the mitigation will be targeted. In addition, the developer will ensure that a communications strategy is developed and implemented in respect of the five residential receptors identified within 25 m of the proposed construction activity to advise of the location, type and duration of potentially dust-producing construction activity.

15.6.1.5 Site Planning

- no bonfires will be permitted;

- machinery and dust causing activities will be located away from sensitive receptors where possible;
- tips and stockpiles will be located away and down-wind from neighbours where possible;
- all personnel will be to be fully trained;
- a trained and responsible manager will be on site during working times to maintain the required logbook and carry out site inspections;
- hard surface/compact site haul routes will be used, where practical.

15.6.1.6 Construction traffic

- all vehicles will switch off engines when not required and no idling vehicles will be permitted;
- effective vehicle cleaning will be implemented in addition to specific fixed wheel washing on leaving site and the damping down of haul routes;
- a surfaced road will be provided between washing facilities and the site exit;
- all loads entering and leaving site will be covered;
- no site runoff of water or mud will be permitted;
- haul roads and other dusty surfaces will be swept regularly;
- on-road vehicles will comply with set emission standards;
- all non-road mobile machinery (NRMM) will use ultra low sulphur tax-exempt diesel (ULSD) where available and be fitted with appropriate exhaust after-treatment from the approved list;
- low speed limits will be observed on site;
- the movement of construction traffic around site will be minimised.

15.6.1.7 Site Activities

- dust generating activities will be minimised;
- a dust removal system will be provided for plant;
- the drop height of falling material will be limited;
- water will be used as a dust suppressant where applicable;
- stockpiles will be covered, seeded or fenced to prevent wind whipping;
- activities/operations will be temporarily suspended if the creation of dust cannot be avoided.

15.6.1.8 Residual Effects

64 Successful application of the above mitigation measures, where appropriate, will reduce, as far as possible, the potential environmental effects from high risk to medium or even low risk (**major** to **moderate** or **minor** effect significance).

15.6.2 Decommissioning

65 The assessment of decommissioning is based upon the removal of the substation, the cable, transition pits and all other related components. The effect of decommissioning on air quality is assessed below.

15.7 Decommissioning of the Cable, Transition Pits and Other Related Components

66 Potential effects during decommissioning of the cable, transition pits and other related components are likely to be similar to those predicted during construction (the significance of effects is not anticipated to be any greater than at construction). The generation of dust from decommissioning activities will relate to :

- re-excavation at the beach to remove cables;
- re-excavation of trenches and subsequent back-filling once cables have been removed;
- haul road construction (in particular aggregate handling);
- off-road movements by tracked vehicles and plant;
- on road vehicle movements.

67 As for construction, targeted mitigation, in accordance with PAN 50 and GLA Best Practice Guidance, is anticipated to reduce the likely risk of dust nuisance.

68 The other potential source of air pollution is emissions from vehicles accessing the site during the decommissioning phase. The traffic figures predicted for the construction phase can be used as a proxy for decommissioning (traffic generated during decommissioning of the substation is considered separately below). Traffic flows predicted

during construction were assessed as being of minor significance and no significant effects were predicted on air quality. The effect of decommissioning traffic on air quality is considered to be no worse than the effects predicted during the construction phase.

15.7.1 Decommissioning of the Substation

69 The proposed substation is located in an isolated location with no sensitive receptors within 200 m of its site boundary. Therefore, decommissioning of the substation facility is not expected to have any significant dust effects and no mitigation of dust nuisance is required other than minimum good practice measures.

70 As with the decommissioning of the cable, transition pits and other related components, the traffic associated with the decommissioning of the substation will be similar to the construction phase. Traffic flows predicted during construction were assessed as being of minor significance. The effect of decommissioning traffic on air quality is considered to be no worse than the effects predicted during the construction phase, therefore no significant effects were predicted on air quality as a result of the decommissioning phase.

15.8 Monitoring

71 No air quality monitoring is proposed for this assessment since adverse air quality effects are only expected at a small number of sensitive receptors in close proximity to small sections of the application site during construction. Visual observation of dust arising from construction works is, however, proposed.

15.9 Assessment of In Combination Effects

72 The air quality assessment for the Offshore Works predicts no significant effects from either construction or operational activities. The only offshore activities within the vicinity of the Onshore Works will be the operation of a vessel required to bring the offshore cables onshore during construction. This activity would occur at the same time as the onshore construction works at the landfall area. However, given the temporary nature of these activities, any in combination effects would be short term and would be of no greater significance than air quality effects predicted as a result of onshore construction activities.

15.10 Assessment of Cumulative Effects

15.10.1 Construction

15.10.2 Assessment of Effects

73 Three developments have been identified as having potential cumulative effects on air quality. These are the Aikengall II Wind Farm and Crystal Rig III Wind Farm schemes and the SPT NnG Scheme. Although the Crystal Rig III Wind Farm and SPT Scheme are in close proximity to the Onshore Works substation footprint, the site has already been classified as high risk without mitigation (the highest level) and so cumulative effects would not affect this classification. Notwithstanding this, the significance of any cumulative effects is likely to be minor as there are few sensitive receptors in and around the substation site.

15.10.2.1 Mitigation

74 No additional mitigation is proposed to address cumulative construction effects.

15.10.2.2 Residual Effects

75 Due to the reasons outlined above, the risk of dust nuisance is expected to result in effects of **minor** significance.

15.10.3 Operation

15.10.3.1 Assessment of Effects

76 Two of the schemes identified as potentially having cumulative effects are wind farms which will result in minimal traffic during the operational phase. Given that the schemes are in close proximity to the Onshore Works, traffic generated from these schemes may utilise the same roads. However, the total combined incremental traffic flows are unlikely to breach the DMRB criteria for affected roads (>1,000 AADT, >200 HDV AADT) and, therefore, are expected to be non-significant. Any other operational effects will not overlap.

15.10.3.2 Mitigation

77 No operational mitigation is proposed to address the non-significant cumulative operational effects.

15.10.3.3 Residual Effects

78 As with the assessment of the Onshore Works in isolation, residual effects are expected to be non-significant.

15.11 Assessment of Cumulative Effects

15.11.1 Construction

79 There are no further air quality construction effects beyond those assessed within this chapter.

15.11.2 Operation

80 Any combustion plant (boilers or combined heat and power (CHP) plant) at the substation have not been considered in this assessment since there are no sensitive receptors within 1 km of the substation component of the works. There are no further operational effects beyond those considered in this chapter.

15.12 Summary

81 **Table 15.9** below summarises the predicted effects of the Onshore Works on air quality.

Predicted Effects	Significance	Mitigation	Significance of Residual Effect
Construction			
Risk of dust nuisance	Major (construction activities classed as high risk for dust nuisance)	Extensive and numerous – from PAN 50 and GLA guidance (see construction assessment mitigation measures)	Moderate to Minor (Construction activities classed as medium to low risk, moderate significance applies only to those receptors within 25 m of construction activities. The remaining 62 residential receptors within 25 m – 200 m of construction activity are categorised as minor significance).
Risk of dust nuisance from increase in construction traffic	Minor	None	Minor
Decommissioning			
Effects during decommissioning phase are not predicted to be any greater than at construction.			
In-combination effects			
No effects identified.			
Cumulative effects			
Construction			
Risk of dust nuisance	Minor	None	Minor
Operation			
Risk of dust nuisance from traffic	Negligible	None	Negligible

Table 15.9: Summary of Predicted Effects

15.13 References

Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

Environmental Protection UK (2010) Development Control: Planning for Air Quality

GLA and London Councils (2006) The control of dust and emissions from construction and demolition. Best Practice Guidance

Highways Agency (2007) Design Manual for Roads and Bridges (DMRB) Volume 11: Environmental Assessment. Section 3: Environmental Assessment Techniques. Part 1: Air Quality

British Standards Institute (1993) BS 6069-4.4:1993 Characterization of air quality. Stationary sources emissions. Determination of the mass concentrations of sulfur dioxide. Performance characteristic of automated measuring methods

The Scottish Government (2010) Scottish Planning Policy (SPP)

The Scottish Government (1996) PAN 50 – Controlling the Environmental Effects of Mineral Workings

The Scottish Government (2006) PAN 51 - Planning, Environmental Protection and Regulation

The Scottish Government (2005) PAN 75 – Planning for Transport