



Morven Hawthorn Pit Grid Connection Project

Preliminary Environmental Information Report

Volume 3, Annex 7.1: Dust Risk Assessment
Methodology

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Glossary

Term	Meaning
MHPGC Project Preliminary Environmental Information Report (PEIR)	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project and which helps to inform consultation responses.
Morven Hawthorn Pit Grid Connection Project (hereafter MHPGC Project)	The MHPGC Project is comprised of the offshore export cables in Scottish and English waters from the Morven North or the Morven South offshore substation platform(s) (OSP), landfall, onshore export cables, the onshore land substation (LSS) and AC connection cables. Also referred to in this report as the MHPGC Project, for ease of reading.
MHPGC Project PEIR Red Line Boundary: Onshore	Spatial extent used to define the environmental assessment within the PEIR. The area within which all onshore components of the MHPGC Project will be located landward of MHWS, including areas required on a temporary basis during construction and/or decommissioning (e.g. construction compounds).

Acronyms

Acronym	Meaning
IAQM	Institute of Air Quality Management
HDV	Heavy Duty Vehicle
LNR	Local Nature Reserve
MHPGC	Morven Hawthorn Pit Grid Connection
PEIR	Preliminary Environmental Information Report
PM ₁₀	Particulate matter 10 micrometers or less in diameter
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest

Units

Unit	Meaning
m	Metres
m ²	Square metres

Unit	Meaning
m ³	Cubic metres
t	Tonnes
µg/m ³ or µg.m ⁻³	Micrograms per cubic metre

1 Introduction

1.1 Overview

- 1.1.1.1 This report presents the dust risk assessment methodology for the Morven Hawthorn Pit Grid Connection Project (referred to hereafter as 'the MHPGC Project'). It forms **Volume 3, Annex 7.1: Dust Risk Assessment Methodology, of the Preliminary Environmental Information Report (PEIR)** prepared for the MHPGC Project and supports **Volume 3, Chapter 7: Onshore Air Quality, of the PEIR**.
- 1.1.1.2 The report presents the dust risk assessment methodology for the potential construction dust impacts, in accordance with Institute of Air Quality Management (IAQM) Dust Guidance (IAQM, 2024). The Onshore Air Quality Study Area has been defined with respect to construction dust and covers an area up to 250m around the MHPGC PEIR Red Line Boundary: Onshore.

2 Dust risk assessment methodology

2.1 Overview

- 2.1.1.1 During the construction phase, there would be potential impacts from dust annoyance and locally elevated concentrations of PM_{10} . The suspension of particles in the air is dependent on surface characteristics, weather conditions and on-site activities. These impacts have the potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source. Separation distance is also an important factor as dust annoyance is usually limited to within a few hundred metres of its source. This is due to the rapid decrease in concentrations with distance from the source due to dispersion.
- 2.1.1.2 The IAQM assessment methodology (IAQM, 2024) first step is a screening exercise that the MHPGC Project triggered. According to the guidance an assessment will normally be required where there is:
- a 'human receptor' within:
 - 250 m of the boundary of the site; and/or
 - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
 - an 'ecological receptor' within:
 - 50 m of the boundary of the site; and/or 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- 2.1.1.3 The IAQM assessment methodology (IAQM, 2024) considers three separate dust effects and defines their significance according to the sensitivity of the surrounding area, as follows:
- Annoyance due to dust soiling;
 - Harm to ecological receptors;
 - The risk of health effects due to a significant increase in exposure to PM_{10} .
- 2.1.1.4 IAQM Guidance (IAQM, 2024) recommends that the risk of dust emission magnitude is combined with the sensitivity of the study area to determine the risk of dust impacts from construction phase activities. The risk of dust arising in sufficient quantities to cause annoyance and/or health impacts is determined using four risk categories: high, medium, low, or negligible. Depending on the level of risk for each activity, appropriate mitigation is selected.
- 2.1.1.5 The assessment of construction dust effects follows the IAQM (2024) methodology, which provides a structured, risk-based framework for identifying where dust impacts may occur during any demolition, earthworks, construction and trackout activities. Rather than attempting to predict exact dust concentrations, the IAQM (2024) approach focuses on identifying the risk of dust impacts. This risk-based framework enables appropriate and proportionate mitigation measures to be defined, with the assumption that, where such measures are implemented in line with best practice, residual effects from construction activities would be not significant.
- 2.1.1.6 The methodology is based on four linked components (i.e. steps). The STEP 5 refers to the preparation of an assessment report:
- STEP 1: Screen the need for a detailed assessment, as detailed above;
 - STEP 2: Assess the risk of dust impacts: STEP 2A: define the potential dust emission Magnitude, STEP 2B: receptor sensitivity and area sensitivity, which are combined to determine the overall risk of dust impacts (STEP 2C; and
 - STEP 3: Site specific mitigation.
 - STEP 4: Determine the significance of effect
- 2.1.1.7 There is also STEP 5 that refers to the preparation of an assessment report. This Annex details in the following paragraphs the information used to determine STEP 2. The full assessment is presented in **Volume 3, Chapter 7: Onshore Air Quality, of the PEIR**.

2.2 STEP 2: Assess the risk of dust impacts

2.2.1 STEP 2A: Define the potential dust emission

- 2.2.1.1 Dust emission magnitude considers the scale and nature of site activities, such as the size of earthworks, the volume of construction, the number of vehicles operating and the potential for dusty materials to be disturbed. Activities (earthworks, construction and trackout in respect of the MHPGC Project) are categorised as having a small, medium or large potential to generate dust, using defined criteria and professional judgement. These defined criteria are further described in **Table 2.1**.

Table 2.1: Criteria for determining dust emission magnitude

Large	Medium	Small
Earthworks		
– Total site area >110,000m² – Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) – >10 heavy earth moving vehicles active at any one time – Formation of bunds >6m in height	– Total site area 18,000m² - 110,000m² – Moderately dusty soil type (e.g. silt) – 5-10 heavy earth moving vehicles active at any one time – Formation of bunds 3m - 6m in height	– Total site area <18,000m² – Soil type with large grain size (e.g. sand) – <5 heavy earth moving vehicles active at any one time – Formation of bunds <3m in height
Construction		
– Total building volume >75,000m³ – On-site concrete batching – Sandblasting	– Total building volume 12,000m³ - 75,000m³ – Potentially dusty construction material (e.g. concrete) – On-site concrete batching	– Total building volume <12,000m³ – Construction material with low potential for dust release (e.g. metal cladding or timber)
Trackout		
– >50 Heavy Duty Vehicles (HDV) (>3.5 tonne (t)) movements in any one day – Potentially dusty surface material (e.g. high clay content) – Unpaved road length >100m	– 20-50 HDV (>3.5t) movements in any one day – Moderately dusty surface material (e.g. high clay content) – Unpaved road length 50m - 100m	– <20 HDV (>3.5t) movements in any one day – Surface material with low potential for dust release – Unpaved road length <50m

2.2.2 STEP 2B: Define the Sensitivity of the Area

Receptor sensitivity

- 2.2.2.1 Receptor sensitivity reflects how susceptible people, property or ecological features are to dust effects. This includes sensitivity to dust soiling, human health effects associated with PM₁₀ exposure and ecological impacts. Sensitivity is influenced by the type of receptor (for example residential properties, workplaces or designated ecological sites), the duration of exposure and the importance or vulnerability of the receptor.
- 2.2.2.2 The criteria used to determine receptor sensitivity (high, medium or low) to construction phase activities are described in **Table 2.2**.

Table 2.2: Criteria for determining sensitivities of people to dust soiling effects, health effects of PM₁₀ and ecological effects

High	Medium	Low
Sensitivities of people to dust soiling effects		
– Users can reasonably expect an enjoyment of a high level of amenity; or – The appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. – Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.	– Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or – The appearance, aesthetics or value of their property could be diminished by soiling; or – The people or property would not reasonably be expected to be present continuously or regularly for extended periods as part of the normal pattern of use of the land. – Indicative examples include parks and places of work.	– The enjoyment of amenity would not reasonably be expected; or – Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or – There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. – Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short-term car parks and roads.
Sensitivities of people to the health effects of PM₁₀		
– Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). – Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	– Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives a relevant location would be one where individuals may be exposed for eight hours or more in a day). – Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation.	– Locations where human exposure is transient. – Indicative examples include public footpaths, playing fields, parks and shopping streets.
Sensitivities of receptors to ecological effects		
– Locations with an international or national designation and the designated features may be affected by dust soiling; or – Locations where there is a community of a particularly dust sensitive species such as vascular species	– Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or – Locations with a national designation where the features may be affected by dust deposition.	– Locations with a local designation where the features may be affected by dust deposition. – An indicative example is a Local Nature Reserve (LNR) with dust sensitive features.

High	Medium	Low
included in the Red Data List For Great Britain. – Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.	– Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.	

Area sensitivity

2.2.2.3 Area sensitivity is then determined by combining receptor sensitivity with the number of receptors and their distance from the dust source (**Tables 2.3 to 2.5**). As dust concentrations and deposition rates reduce rapidly with distance, receptors closer to the source are generally more sensitive. For human health impacts, background PM₁₀ concentrations are also taken into account, recognising that areas with higher existing pollution levels may be more susceptible to exceedances of air quality objectives.

2.2.2.4 The criteria used to determine the sensitivity to dust soiling of the Onshore Air Quality Study Area for construction dust risk assessment are described in **Table 2.3**.

Table 2.3: Dust soiling effect on people and property

Receptor sensitivity	Number of receptors	Distance from the source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

2.2.2.5 The criteria used to determine the sensitivity to human health impacts of the Onshore Air Quality Study Area for construction dust risk assessment are described in **Table 2.4**.

Table 2.4: Human health impacts

Receptor sensitivity	Annual mean PM ₁₀ concentration (µg/m ³)	Number of receptors	Distance from the source (m)			
			<20	<50	<100	<250
High	>32	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low

Receptor sensitivity	Annual mean PM ₁₀ concentration (µg/m ³)	Number of receptors	Distance from the source (m)			
			<20	<50	<100	<250
	24-28	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	Medium	>32	High	Medium	Low	Low
			Medium	Low	Low	Low
		28-32	Medium	Low	Low	Low
			Low	Low	Low	Low
		24-28	Low	Low	Low	Low
			Low	Low	Low	Low
		<24	Low	Low	Low	Low
			Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

2.2.2.6 The criteria used to determine the sensitivity to ecological impacts of the Onshore Air Quality Study Area for construction dust risk assessment are described in **Table 2.5**.

Table 2.5: Ecological impacts

Receptor sensitivity	Distance from the source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

2.2.3 STEP 2C: Define the Risk of Impacts

2.2.3.1 Finally, the dust emission magnitude and area sensitivity are combined using the IAQM (2024) risk matrices (**Tables 2.6 to 2.8**) to determine the risk of dust impacts for each activity type (earthworks, construction and trackout in respect of the MHPGC Project). Risks are classified as negligible, low, medium or high. This risk classification directly informs the level of mitigation required, ensuring that control measures are proportionate to the potential for impact. Where appropriate mitigation

measures are implemented in line with IAQM (2024) guidance, significant residual effects are generally not expected.

2.2.3.2 The criteria used to determine the risk of earthworks dust impacts are described in **Table 2.6**.

Table 2.6: Risk of earthworks dust impacts

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

2.2.3.3 The criteria used to determine the risk of construction dust impacts are described in **Table 2.7**.

Table 2.7: Risk of construction dust impacts

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

2.2.3.4 The criteria used to determine the risk of trackout dust impacts are described in **Table 2.8**.

Table 2.8: Risk of trackout dust impacts

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

3 References

Institute of Air Quality Management (IAQM) (2024) Guidance on the assessment of dust from demolition and construction. Available at: <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>