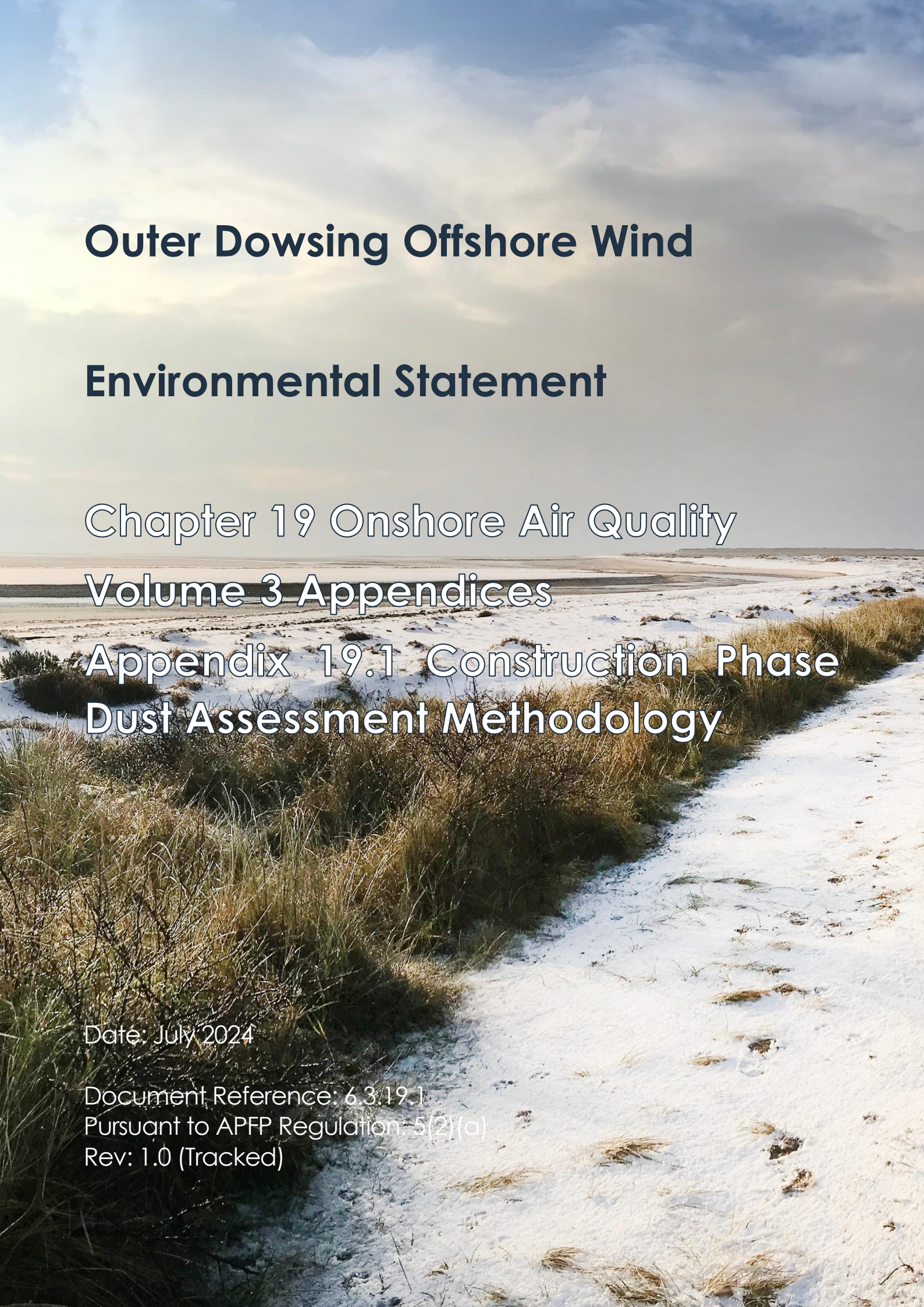

Outer Dowsing Offshore Wind

Environmental Statement

Chapter 19 Onshore Air Quality

Volume 3 Appendices

Appendix 19.1 Construction Phase Dust Assessment Methodology

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Volume 3, Appendix 19.1: Construction Dust Assessment Methodology

Outer Dowsing Offshore Wind Environmental Statement

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Basis of Report

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Tables in Text

Acronyms and Abbreviations

Acronym	Expanded name
EIA	Environmental Impact Assessment
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
PM_{10}	Particulate Matter (with a diameter of 10 microns or less)
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest

Terminology

Term	Description
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
Environmental Statement (ES)	The suite of documents that detail the processes and results of the EIA.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Mitigation	Mitigation measures are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Outer Dowsing Offshore Wind (ODOW)	The Project.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as ‘residential’ or those using areas for amenity or recreation), watercourses etc.

19.0 Construction Dust Assessment Methodology

19.1 Introduction

1. The construction dust assessment methodology is set out within the Institute of Air Quality Management's (IAQM) 'Guidance on the Assessment of Dust from Demolition and Construction' (January~~une~~ 2024~~16~~, Version 2~~1~~.2~~1~~) – referred to as 'IAQM guidance' throughout this appendix~~. It is acknowledged that an updated version of the IAQM guidance was released on 25 January 2024 (Version 2.2.), however at the time of assessment, this was not available and the IAQM advised use of the 2016 Version 1.1~~. This appendix provides a summary of the methodology.

~~2. Where figures relating to area, volume, approximate number of construction vehicles or distances to receptors are given, these relate to thresholds as defined in the IAQM guidance.~~

19.2 Step 1: Screening the Need for a Detailed Assessment

~~3.~~2. In accordance with the IAQM guidance, a detailed construction dust assessment is required where a:

- Human receptor (any location where a person or property may experience the adverse effects of airborne dust or dust soiling) is located within 2~~3~~50m of the site, and/or within 50m of routes used by construction vehicles, up to 250~~0~~m from the site entrance(s); and/or
- Ecological receptor (any sensitive habitat affected by dust soiling) is located within 50m of the site, and/or within 50m of routes used by construction vehicles, up to 250~~0~~m from the site entrance(s).

~~4.~~3. Where the need for a more detailed assessment is screened out, effects are not believed to be significant, and no further assessment is required.

19.3 Step 2: Assess the Risk of Dust Impacts

19.3.1 Step 2a: Define the Potential Dust Emission Magnitude

~~5.~~4. The dust emission magnitude is defined for four potential construction activities using criteria provided within the IAQM guidance (presented in Table 19.1), in combination with professional judgment by a technically competent assessor. The activities considered, if applicable to anticipated works, are as follows:

- Demolition (note, demolition activities are not anticipated to be required for the Project);
- Earthworks;
- Construction; and
- Trackout.

Table 19.1: IAQM Criteria Used to Determine the Dust Emission Magnitude for Each Activity

Activity	Dust Emission Magnitude		
	Small	Medium	Large
Demolition	• Total building volume <120,000m³ • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <6m above ground • Demolition during wetter months	• Total building volume 120,000m³ – 750,000m³ • Potentially dusty construction material • Demolition activities 6-12m above ground level	• Total building volume >750,000m³ • Potentially dusty construction material (e.g., concrete) • On-site crushing and screening • Demolition activities >12m above ground level
Earthworks	• Total site area <1820,000m² • Soil type with large grain size (e.g., sand) • <5 heavy earth moving vehicles active at any one time • Formation of bunds <4m in height • ~~Total material moved <20,000 tonnes~~ • ~~Earthworks during wetter months~~	• Total site area 1820,000m² – 110,000m² • Moderately dusty soil type (e.g., silt) • 5-10 heavy earth moving vehicles active at any one time • Formation of bunds 4m – 8m in height • ~~Total material moved 20,000 tonnes – 100,000 tonnes~~	• 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 >8m in height • ~~Total material moved >100,000 tonnes~~
Construction	• Total building volume <12,000m³ • Construction material with low potential for dust release (e.g., metal cladding or timber)	• Total building volume 12,000m³ – 100,000m³ • Potentially dusty construction material (e.g., concrete) • On site concrete batching	• Total building volume >100,000m³ • On site concrete batching • Sandblasting
Trackout	• <10 heavy-duty vehicle (HDV) outward movements in any one day	• 10-50 HDV outward movements in any one day • Moderately dusty surface material (e.g., high clay content)	• >50 HDV outward movements in any one day • Potentially dusty surface material (e.g., high clay content)

Activity	Dust Emission Magnitude		
	Small	Medium	Large
	• Surface material with low potential for dust release • Unpaved road length <50m	• Unpaved road length 50m – 100m	• Unpaved road length >100m

19.3.2 Step 2b: Define the Sensitivity of the Area

~~6.~~5. In accordance with the IAQM guidance, the sensitivity of the area is defined in relation to three separate dust impacts:

- Annoyance due to dust soiling;
- The risk of health effects due to an increase in exposure to particulate matter (PM_{10}); and
- Harm to ecological receptors with account being taken of the sensitivity of the area that may experience these effects.

~~7.~~6. This is informed by several parameters which are set out in the IAQM guidance; such as the proximity and number of receptors in relation to construction activities, as well as their individual sensitivity.

~~8.~~7. Receptors can demonstrate different sensitivities to changes in their environment, dependant on location, use and perceived value. The sensitivities for individual receptors are determined using the approach outlined in Table 19.2 for each assessed impact.

8. Once the sensitivity of each individual receptor within the study area has been established, a review is conducted to determine the sensitivity of the surrounding area. This is achieved by collectively considering the number of receptors, their sensitivity, and their proximity to dust sources. Background annual mean PM_{10} concentrations are additionally used to characterise the sensitivity with respect to human health impacts and to determine the risk potential.

~~9. this is used to determine the sensitivity of the surrounding area in combination with the number of receptors, their distance to dust sources, and the annual mean PM_{10} background concentration (for human health impacts).~~

~~10.~~9. Reproduced from the IAQM guidance, Table 19.3 to Table 19.5 illustrate how the sensitivity of the area may be determined for dust soiling, human health, and ecological

impacts, respectively. The highest level of sensitivity from each table should be recorded.

~~11.~~10. The quoted distances relate to the nearest dust emission source(s). In the context of construction, demolition and earthworks these activities will occur on-site. Where the exact locations of these activities are not known, receptor distances are determined from the site boundary.

~~12.~~11. By comparison, trackout occurs off-site when HDV transport dust and dirt from construction areas onto the public road network; where it may be deposited and then re-suspended. The quoted distances therefore relate to the proximity of receptors to the public road links likely to be used by construction vehicles. The considered extent (length) of road links affected by trackout from HDVs leaving the site exit(s) is set at 250m~~.determined by the calculated trackout dust emission magnitude as per Section 19.3.1; and is directly linked to the number of construction vehicle movements and the condition (i.e. dust emission potential) of construction areas. Without site-specific mitigation, trackout may occur along the public highway up to 500m from the site exit(s) for large sites, 200m for medium sites and 50m for small sites~~.

Table 19.2 IAQM Criteria for Defining Sensitivity of Receptors

Sensitivity of Area	Human Receptors		Ecological Receptors (A)
	Dust Soiling Effects	Health Effects of Particulate Matter (PM_{10})	
High	• Users can reasonably expect 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.	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (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 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 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.
Medium	• 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 wouldn't reasonably be expected to be present here 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.	• Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (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 PM_{10}, as protection is covered by Health and Safety at Work legislation.	• 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. • Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

Sensitivity of Area	Human Receptors		Ecological Receptors [A]
	Dust Soiling Effects	Health Effects of Particulate Matter (PM_{10})	
Low	• 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.	• Locations where human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.	• Locations with a local designation where the features may be affected by dust deposition. • Indicative example is a local Nature Reserve with dust sensitive features.

Note:
[A] Only applicable if ecological habitats are present which may be sensitive to dust effects.

Table 19.3 Sensitivity of Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<2350
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

Table 19.4 Sensitivity of Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<2250
High	>32µg/m^3	>100	High	High	High	MediumLow
		10 – 100	High	High	Medium	Low
		1 – 10	High	Medium	Low	Low
	28 – 32µg/m^3	>100	High	High	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	High	Medium	Low	Low
	24 – 28µg/m^3	>100	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	<24µg/m^3	>100	Medium	Low	Low	Low
		10 – 100	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
Medium	>32µg/m^3	>10	High	Medium	Low	Low
		1 – 10	Medium	Low	Low	Low
	28 – 32µg/m^3	>10	Medium	Low	Low	Low
		1 – 10	Low	Low	Low	Low
	24 – 28µg/m^3	>10	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
	<24µg/m^3	>10	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table 19.5 Sensitivity of Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

19.3.3 Step 2c: Define the Risk of Impacts

~~13.~~12. The risk of dust impacts arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area.

~~14.~~13. As reproduced from the IAQM guidance, Table 19.6 to Table 19.9 illustrates how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

Table 19.6 Risk of Dust Impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 19.7 Risk of Dust Impacts – Earthworks

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

Table 19.8 Risk of Dust Impacts – Construction

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

Table 19.9 Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium~~Low~~ Risk	Low Risk~~Negligible~~
Low	Low Risk	Low Risk	Negligible

19.4 Step 3: Site-specific Mitigation

~~15.~~14. Mitigation, as provided within the IAQM guidance, is then recommended based upon the calculated dust risks i.e., low, medium or high-risk. The measures are classified as either 'highly recommended' or 'desirable'.

~~16.~~15. The Project-specific measures determined from the assessment outcomes are included within Section 1.1 of the Outline Air Quality Management Plan (Document reference 8.1.2).

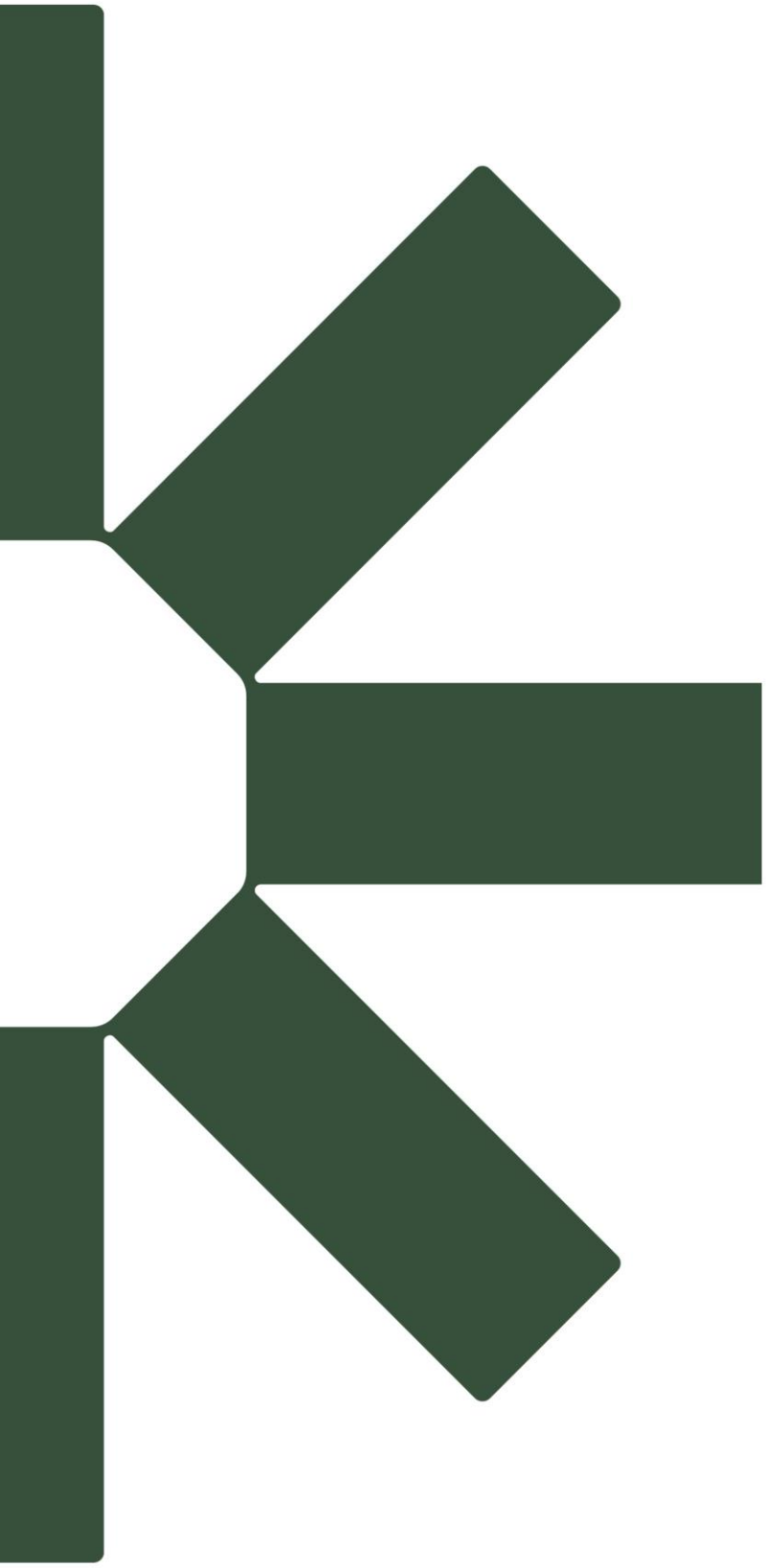
19.5 Step 4: Determine Significant Effects

~~17.~~16. As per IAQM guidance, significance is only assigned to the effect after considering the construction activity with mitigation. This is because for almost all construction activities, the aim is to prevent significant effects on receptors through the use of effective mitigation. The IAQM guidance therefore recommends that the significance of the unmitigated effect is not defined, as is not considered appropriate nor relevant in this context.

~~18.~~17. Following the application of the recommended mitigation measures, residual effects are assessed. In accordance with the IAQM guidance and assuming the effective application of measures, residual effects associated with construction dust are considered to be not significant.

19.6 References

IAQM (2024~~16~~), Guidance on the Assessment of Dust from Demolition and Construction, v2~~1~~.2~~1~~.



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