Clydesmuir Industrial Estate

Air Quality Assessment

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Clydesmuir Industrial Estate

Air Quality Assessment

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Acronyms and Abbreviations

AQMA	Air Quality Management Area
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
BPM	Best Practicable Means
Defra	Department for Environment, Food and Rural Affairs
EPUK	Environmental Protection UK
EU	European Union
HMSO	Her/His Majesty's Stationary Office
IAQM	Institute of Air Quality Management
NO_2	Nitrogen dioxide
$PM_{2.5}$	Particulate Matter less than 2.5 microns in diameter
PM_{10}	Particulate Matter less than 10 microns in diameter
WHO	World Health Organization

1 Introduction

1.1 Background

Arcadis Consulting (UK) Limited was commissioned by Pegasus Developments to undertake an Air Quality Assessment to accompany the planning application for the Proposed Development at Clydesmuir Industrial Estate.

This report provides a brief summary of the Proposed Development, outlines relevant legislation, policy and guidance, assessment methodology, the baseline conditions and the likely significant air quality effects associated with the construction and operational phases of the Proposed Development. Mitigation measures which would be implemented to reduce the effect of the Proposed Development on air quality are also described, where relevant.

The Proposed Development involves the demolition of all existing buildings at the Site and the construction of 96 affordable residential units to redevelop the land at Clydesmuir Industrial Estate in Cardiff, along with a total of 86 parking spaces. The Proposed Development also includes reconfiguration of the existing highway layout and other associated works.

1.2 Site Location

The Site is located within Tremorfa, Cardiff and is currently occupied by a mix of light industrial and commercial uses. The South Wales Mainline and a freight railway line are located to the north and west of the site, with an industrial estate to the east of the site and residential properties to the south, as displayed in Figure 1.

Figure 1 - Proposed Development Site

2 Legislation, Policy and Guidance

2.1 Legislation and Policy

Local authorities have a statutory duty under Part IV of the Environment Act 1995 (HMSO, 1995) (as amended by the Environment Act 2021 (HMSO, 2021)) as set out in the Air Quality Strategy for England, Scotland, Wales, and Northern Ireland 2007 (Defra, 2007) to manage local air quality. The Air Quality Objectives applicable to local air quality management in Wales are set out in the Air Quality Standards (Wales) Regulations 2010 (Welsh Statutory Instruments, 2010), which implements EU directive 2008/50/EC obligations (applicable under retained EU Law) into Welsh Law by setting legally binding limit values for key pollutants. The Environment (Air Quality and Soundscapes) (Wales) Act 2024 (Welsh Government, 2024) sets out a national targets framework which align closer to the World Health Organization (WHO) guidelines (WHO, 2021) and are legally required to be set by 2027.

The Air Quality Objectives applicable to this assessment are presented below in Table 1. The objectives are maximum ambient pollutant concentrations which are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale.

Table 1 - Air Quality Objectives

Pollutant	Air Quality Objective Concentration	Air Quality Objective Averaging Period
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
	200µg/m^3	1-hour mean; not to be exceeded more than 18 times a year
Particulate Matter less than 10 microns in diameter (PM_{10})	40µg/m^3 (WHO guideline 20µg/m^3)	Annual mean
	50µg/m^3	24-hour mean; not to be exceeded more than 35 times a year
Particulate Matter less than 2.5 microns in diameter ($PM_{2.5}$)	25µg/m^3 (WHO guideline 10µg/m^3)	Annual Mean

Generally, dust is only a cause of annoyance, but when it is of a sufficient scale and frequency, it may become a statutory nuisance. The relevant legislation dealing with statutory nuisance is given in Part III of the Environmental Protection Act 1990 (HMSO, 1990). A statutory nuisance in relation to dust and deposits is defined under Section 79 of the act as follows:

"Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance.

[…] any accumulation or deposit which is prejudicial to heath or a nuisance".

Under the provisions of the Act, where a local authority is satisfied that a Statutory Nuisance exists, it is under a mandatory duty to serve an Abatement Notice requiring abatement or cessation of one or more activities deemed to be causing the nuisance. In the absence of any kind of standard, identification of a nuisance is dependent on the professional judgment of the local authority as to whether Best Practical Means (BPM) are

being employed to control emissions. Where BPM is evident or can be clearly demonstrated then an activity cannot be deemed to be causing a Statutory Nuisance.

2.2 Local Policy

The policies outlined in the adopted Cardiff Local Development Plan 2006-2026 provide the basis for decisions on land use and planning in Cardiff. The following relevant policies have been considered for this assessment:

Policy EN13: Air, Noise, Light Pollution and Land Contamination

"Development will not be permitted where it would cause or result in unacceptable harm to health, local amenity, the character and quality of the countryside, or interests of nature conservation, landscape or built heritage importance because of air, noise, light pollution or the presence of unacceptable levels of land contamination."

Policy KP18: Natural Resources

"In the interests of the long-term sustainable development of Cardiff, development proposals must take full account of the need to minimise impacts on the city's natural resources and minimise pollution, in particular the following elements:[…]

Minimising air pollution from industrial, domestic and road transportation sources and managing air quality".

2.3 Guidance

The air quality assessment has been carried out in accordance with the following guidance:

- Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)
- Environmental Protection UK (EPUK) and IAQM Guidance on Land Use Planning and Development Control: Planning for Air Quality (EPUK & IAQM, 2017)
- Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management Technical Guidance (LAQM.TG(22)) (Defra, 2025)
- Local air quality and soundscapes management in Wales policy guidance PG(W)(25) (Welsh Government, 2025)

3 Methodology

3.1 Construction Phase

There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined in the Institute of Air Quality Management (IAQM) construction dust guidance (IAQM, 2024). The methodology is summarised in the following paragraphs and detailed assessment steps are presented in Appendix A.

If there are no ecological or human receptors within 250m of the application site boundary or within 50m of the haul routes (up to 250m from the site entrance(s)) then the need for a construction dust assessment is to be screened out. However, if there are receptors within in these distances then an assessment should be carried out.

The most common air quality impacts that may arise during demolition and construction activities are;

- dust deposition, resulting in the soiling of surfaces;
- visible dust plumes, which are evidence of dust emissions;
- elevated PM_{10} and $PM_{2.5}$ concentrations from demolition and construction activities (including earthworks and trackout); and
- an increase in concentrations of PM_{10}, $PM_{2.5}$ and NO_2 due to exhaust emissions from vehicles and equipment used on site (non-road mobile machinery) and vehicles accessing the site.

These impacts may affect human and ecological receptors. The IAQM construction dust guidance (IAQM, 2024) defines a human receptor as:

"Any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to Particulate Matter over a time period relevant to the Air Quality Objectives. In terms of annoyance effects, this will most commonly relate to dwellings, but may also refer to other premises such as buildings housing cultural heritage collections (e.g., museums and galleries), vehicle showrooms, food manufacturers, electronics manufacturers, amenity areas and horticultural operations (e.g., salad or soft-fruit production)."

An ecological receptor is defined as:

"Any sensitive habitat affected by dust soiling. This includes the direct impacts on vegetation or aquatic ecosystems of dust deposition, and the indirect impacts on fauna (e.g., on foraging habitats)".

The risk of dust emissions from demolition/construction activities causing an adverse effect on human or ecological receptors depends on:

- The type of activities being undertaken and the duration of these activities;
- The size of the construction site:
- The meteorological conditions (such as wind speed, wind direction and rainfall);
- The proximity of the receptors to the construction activities;
- The effectiveness of the dust deposition mitigation measures; and
- The receptors' sensitivity to dust.

Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (the vehicle-borne transfer of mud and debris onto the highway).

The potential for dust emissions was assessed for each activity that is likely to take place and considers three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to particulate matter.

The IAQM construction dust guidance (IAQM, 2024) categorises the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of effect) as a means of identifying the level of dust emissions mitigation required to ensure that residual effects are 'not significant'.

3.2 Operational Phase

The development has the potential to impact on existing air quality as a result of an increase in road traffic exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$, associated with vehicles travelling to and from the site. A screening assessment was therefore undertaken using the criteria contained within the IAQM/EPUK guidance (EPUK & IAQM, 2017) to determine the potential for trips generated by the development to affect local air quality. The criteria to determine whether further assessment is required are as follows:

- A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA) or more than 500 AADT elsewhere;
- A change of Heavy Duty Vehicle (HDV) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of roads where the change is 5m or more and the road is within an AQMA; or
- Introduction of a new junction or removal of an existing junction near to relevant receptors.

If these criteria are not exceeded, then the IAQM/EPUK guidance (EPUK & IAQM, 2017) considers air quality impacts associated with a scheme in terms of traffic emissions to be negligible and no further assessment is required

The Proposed Development is not anticipated to meet any of the criteria detailed above, therefore further detailed assessment of vehicle emissions has not been undertaken as part of this air quality assessment.

The Proposed Development has the potential to introduce future receptors to areas of existing poor air quality, therefore a desk-based study has been undertaken to determine the existing baseline air quality across the site and surrounding area.

3.3 Assumptions and Limitations

The following assumptions and limitations have been considered for this air quality assessment:

- The construction dust assessment assumes all construction activity would take place up to the edge of the Site boundary as a worst-case approach;
- Assumptions have been made using professional judgement where information is limited regarding construction dust risk parameters, such as volumes and materials.
- NRMM emissions are assumed to be negligible due to the temporary and transient nature of the proposed construction activities; and
- Due to the size and nature of the Proposed Development, traffic flows associated with the construction and operational phases are assumed to be below the screening criteria of 500 AADT for LDVs and 100 AADT for HDVs.

4 Baseline

4.1 Local Air Quality Management

As required by the Environment Act (HMSO, 1995), Cardiff Council has undertaken review and assessment of air quality within their area of jurisdiction. There are currently four AQMAs declared by Cardiff Council for exceedances of the NO_2 annual mean air quality objective:

- Cardiff City Centre AQMA - Former St Mary Street AQMA with the addition of Westgate Street in Cardiff City Centre;
- Llandaff AQMA - Centre on Cardiff Road through Llandaff village;

- Stephenson Court AQMA - From northeast and northwest boundaries of Stephenson Court, northwest boundary of Burgess Court, northwest and southwest boundaries of Four Elms Court, southwest corner of Four Elms Court south across Newport Road to the junction with Orbit Street, west across Newport Road to the southeast corner of Stephenson Court; and
- Ely Bridge AQMA - A number of residential premises along the A48 Cowbridge Road West, Western Avenue and A4119 through Llandaff Village Cardiff Road.

The closest AQMA to the Proposed Development is Stephenson Court AQMA located approximately 1.2km to the west of the Site.

4.2 Air Quality Monitoring

The most recently published Cardiff Council Air Quality Progress Report was produced in 2024 (Cardiff Council, 2024) which provides air quality monitoring results for 2023. Cardiff Council undertook automatic continuous monitoring at three sites part of the Welsh Automatic Urban Pollution Monitoring Network and the Automatic Urban and Rural Network (AURN). All three automatic sites monitored NO_2 and PM_{10} and two of the three sites also monitored $PM_{2.5}$. In addition, Cardiff Council undertook non-automatic (passive) monitoring of NO_2 at 139 diffusion tube sites during 2023. The 2024 Progress Report (Cardiff Council, 2024) states that there were no exceedances in either the annual or short-term air quality objectives for NO_2, PM_{10} or $PM_{2.5}$ across all monitoring sites in 2023. The closest monitoring site to the Proposed Development is diffusion tube 159 which is located approximately 300m north on Newport Road. The 2023 annual mean NO_2 concentration reported for this site was 26.7µg/m^3, well below the air quality objective value of 40µg/m^3.

Figure 2 displays the Cardiff Council AQMAs and air quality monitoring locations within the vicinity of the Proposed Development Site.

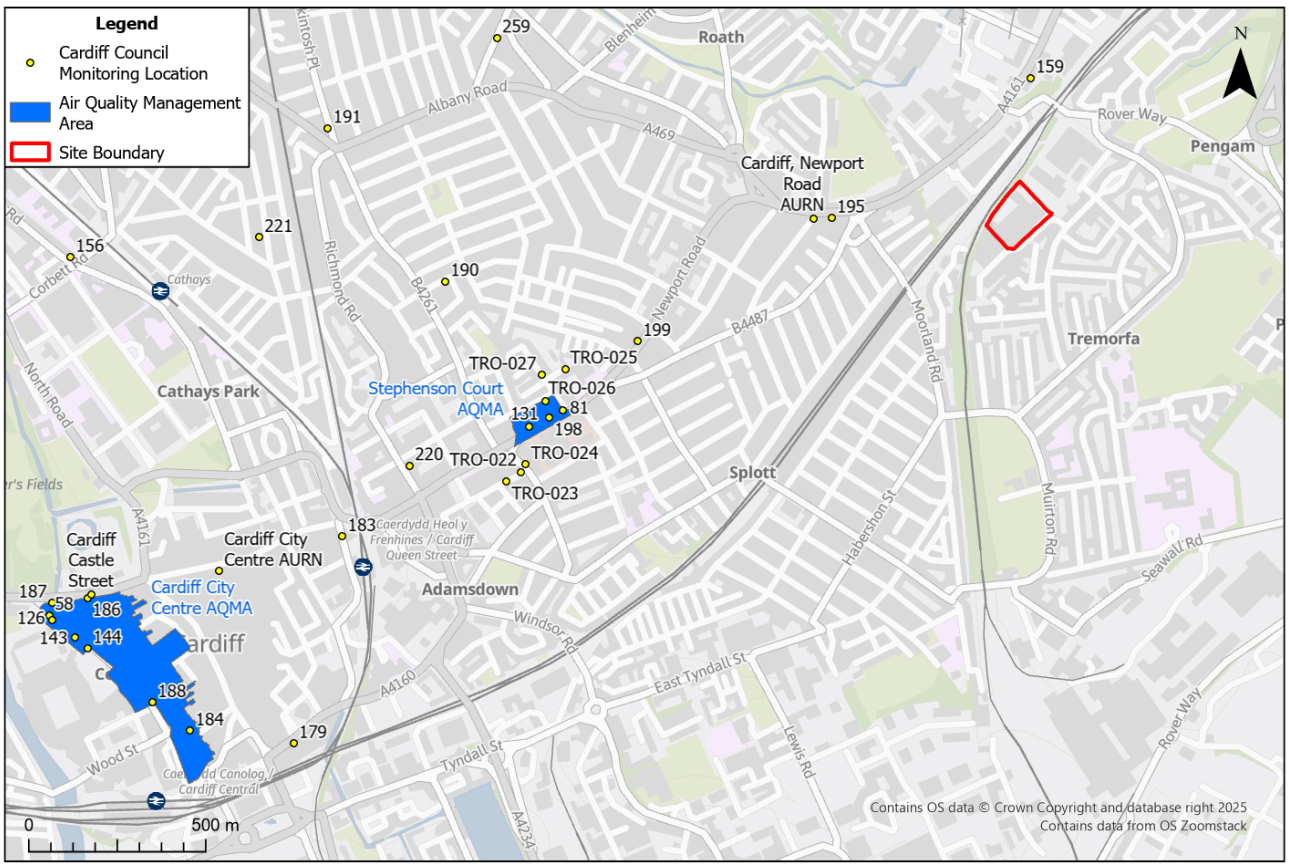

Figure 2 - Cardiff Council AQMAs and monitoring locations within the vicinity of the Proposed Development Site

4.3 Background Pollutant Concentrations

Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by Defra for the entire of the UK to assist local authorities in their review and assessment of air quality. The Proposed Development is located within grid square 320500, 177500. Background pollutant data was downloaded from the Defra website for the purpose of this assessment. Table 2 summarises the 2026 predicted Defra background concentrations across the Site.

Table 2 - Background Pollutant Concentrations

Pollutant	2026 Predicted Background Concentration (µg/m^3)	Air Quality Objective Concentration (µg/m^3)
NO_2	13.1	40
PM_{10}	14.3	40
$PM_{2.5}$	8.9	25

As indicated by the Cardiff Council air quality monitoring data and the Defra background pollutant data, baseline air quality concentrations across the Site is well within the air quality objectives and WHO guidelines.

5 Assessment of Effects

5.1 Construction Phase

A construction dust risk assessment has been undertaken in accordance with IAQM construction dust guidance (IAQM, 2024) and is detailed in Appendix A. The outcome of the dust risk assessment determined that the Proposed Development is a medium risk site. Relevant mitigation measures have been proposed in accordance with the IAQM construction dust guidance (IAQM, 2024) and are presented in Table A13 in Appendix A. Assuming the relevant mitigation measures outlined in Table A13 are implemented, the residual effect from all dust generating activities is predicted to be negligible.

5.2 Operational Phase

Operational vehicle emissions associated with the Proposed Development are considered to have no significant impacts on existing air quality as traffic flows are expected to be well below the IAQM/EPUK screening criteria (EPUK & IAQM, 2017). It should be noted that the Proposed Development is not located within or adjacent to an AQMA therefore the less stringent screening criteria has been considered for this assessment.

The Proposed Development Site is located adjacent to the South Wales Main Line, which is a major rail corridor used by Transport for Wales, Great Western Railway and CrossCountry services for both passenger services and freight traffic. Diesel trains still operate this line, particularly freight traffic, which can give rise to high short-term NO_2 and SO_2 concentrations close to the track. Background NO_2 concentrations in this area are below 25 and therefore in accordance with LAQM.TG(22) (Defra, 2025) it is considered that there is no risk of exceedance of air quality objectives from stationary or moving locomotives. It should also be noted that Cardiff Council have not raised any concerns regarding train emissions in their Air Quality Progress Report (Cardiff Council, 2024).

A review of existing baseline data has determined that air pollutant concentrations are well below air quality objective levels across the site therefore future proposed receptors will not be exposed to existing poor air quality.

6 Conclusion

A construction dust risk assessment determined that the Proposed Development is a medium risk site for dust impacts on nearby sensitive receptors, however with the implementation of the relevant mitigation measures identified, the residual effect from all dust generating activities is predicted to be negligible.

A review of existing baseline data has determined that air pollutant concentrations are well below air quality objective levels across the site and surrounding area. In accordance with the IAQM/EPUK guidance (EPUK & IAQM, 2017) it is concluded that the Proposed Development will not have a significant effect on local air quality and there is no risk of exposure to poor air quality for future receptors associated with the Proposed Development.

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Appendix A

Construction Dust Assessment

Construction Dust Assessment Methodology

The dust risk assessment has been carried out in accordance with the Institute of Air Quality Management (IAQM) construction dust guidance (IAQM, 2024).

The steps for assessing dust emissions in accordance with the IAQM construction dust guidance are detailed in the following sections.

Step 1

Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 250m of the Site boundary or 50m from the construction vehicle route up to 250m from the Site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the Site or 50m from the construction vehicle route, then the assessment also proceeds to Step 2.

Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Step 2

Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table A3.

Table A3 Construction Dust - Magnitude of Emission (IAQM, 2024)

Magnitude	Activity	Criteria
Large	Demolition	Total building volume greater than 75,000m^3 Potentially dusty construction material (e.g. concrete) On-site crushing and screening Demolition activities greater than 12m above ground level
	Earthworks	Total site area greater than 110,000m^2 Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) More than 10 heavy earth moving vehicles active at any one time Formation of bunds greater than 6m in height

Magnitude	Activity	Criteria
	Construction	Total building volume greater than 75,000m^3 On site concrete batching Sandblasting
	Trackout	More than 50 HDV trips per day Potentially dusty surface material (e.g. high clay content) Unpaved road length greater than 100m
Medium	Demolition	Total building volume 12,000m^3 to 75,000m^3 Potentially dusty construction material Demolition activities 6m to 12m above ground level
	Earthworks	Total site area 18,000m^2 to 110,000m^2 Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time Formation of bunds 3m to 6m in height
	Construction	Total building volume 12,000m^3 to 75,000m^3 Potentially dusty construction material (e.g. concrete) On site concrete batching
	Trackout	20 to 50 HDV trips per day Moderately dusty surface material (e.g. high clay content) Unpaved road length 50m to 100m
Small	Demolition	Total building volume under 12,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities less than 6m above ground level Demolition during wetter months
	Earthworks	Total site area less than 18,000m^2 Soil type with large grain size (e.g. sand) Less than 5 heavy earth moving vehicles active at any one time Formation of bunds less than 3m in height
	Construction	Total building volume less than 12,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 20 HDV trips per day

Magnitude	Activity	Criteria
		Surface material with low potential for dust release Unpaved road length less than 50m

Step 2B defines the sensitivity of the area around the proposed Project to potential dust impacts. The influencing factors are shown in Table A4.

Table A4 Construction Dust - Examples of Factors Defining Sensitivity of an Area (IAQM, 2024)

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	Users expect of high levels of amenity. High aesthetic or value property. People expected to be present continuously for extended periods of time. Locations where members of the public are exposed over a time period relevant to the air quality objective for particulate matter less than 10 microns in diameter (PM_{10}). e.g. residential properties, hospitals, schools and residential care homes.	Internationally or nationally designated site e.g. Special Area of Conservation, and the designated features may be affected by dust soiling. Locations where there is a community of a particular dust sensitive species such as vascular species included in the Red Data List for Great Britain.
Medium	Users would expect to enjoy a reasonable level of amenity. Aesthetics or value of their property could be diminished by soiling. 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 e.g. parks and places of work.	Nationally designated site e.g. Sites of Special Scientific Interest with dust sensitive features. Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown.
Low	Enjoyment of amenity would not reasonably be expected. Property would not be expected to be diminished in appearance. Transient exposure, where people would only be expected to be	Locally designated site e.g. Local Nature Reserve where the features may be affected by dust deposition.

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
	present for limited periods. e.g. public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads.	

The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area, and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

These factors were considered during the undertaking of the assessment.

The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table A5.

Table A5 Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property (IAQM, 2024)

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 250
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

Table A6 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table A6 Construction Dust - Sensitivity of the Area to Human Health Impacts (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			Less than 20	Less than 50	Less than 100	Less than 250
High	Greater than 32µg/m^3	More than 100	High	High	High	Medium
		10 - 100	High	High	Medium	Low

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			Less than 20	Less than 50	Less than 100	Less than 250
		1 - 10	High	Medium	Low	Low
	28-32µg/m^3	More than 100	High	High	Medium	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low
	24-28µg/m^3	More than 100	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	Less than 24µg/m^3	More than 100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	Greater than 32µg/m^3	More than 10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	28-32µg/m^3	More than 10	Medium	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	24-28µg/m^3	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	Less than 24µg/m^3	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low

Table A7 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table A7 Construction Dust - Sensitivity of the Area to Ecological Impacts (IAQM, 2024)

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

Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

Table A8 outlines the risk category from demolition activities.

Table A8 Construction Dust - Dust Risk Category from Demolition Activities (IAQM, 2024)

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Medium	Low	Negligible

Table A9 outlines the risk category from earthworks and construction activities.

Table A9 Construction Dust - Dust Risk Category from Earthworks and Construction Activities (IAQM, 2024)

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Table A10 outlines the risk category from trackout activities.

Table A10 Construction Dust - Dust Risk Category from Trackout Activities (IAQM, 2024)

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Step 3

Step 3 requires the identification of site-specific mitigation measures within the guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with negligible risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim

should be to control effects using effective mitigation. Experience shows that this is normally possible, hence the residual effect will normally be not significant.

Construction Dust Assessment

Step 1

The Proposed Development has the potential to result in fugitive dust emissions throughout demolition and construction works. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from highway surfaces. This construction dust assessment has been carried out to assess the risk associated with dust emissions from construction related activities associated with the Proposed Development.

This assessment has been undertaken based on the assumption that dust generating activities could occur up to the Site boundary line as displayed in Figure A3. The site entrance/exit for construction vehicle access is assumed to join the existing road network onto Clydesmuir Road as displayed in Figure A3.

The desk-study using Google Earth identified a number of sensitive human receptors within 250m of the Site boundary. As such, a detailed assessment of potential dust impacts has been undertaken.

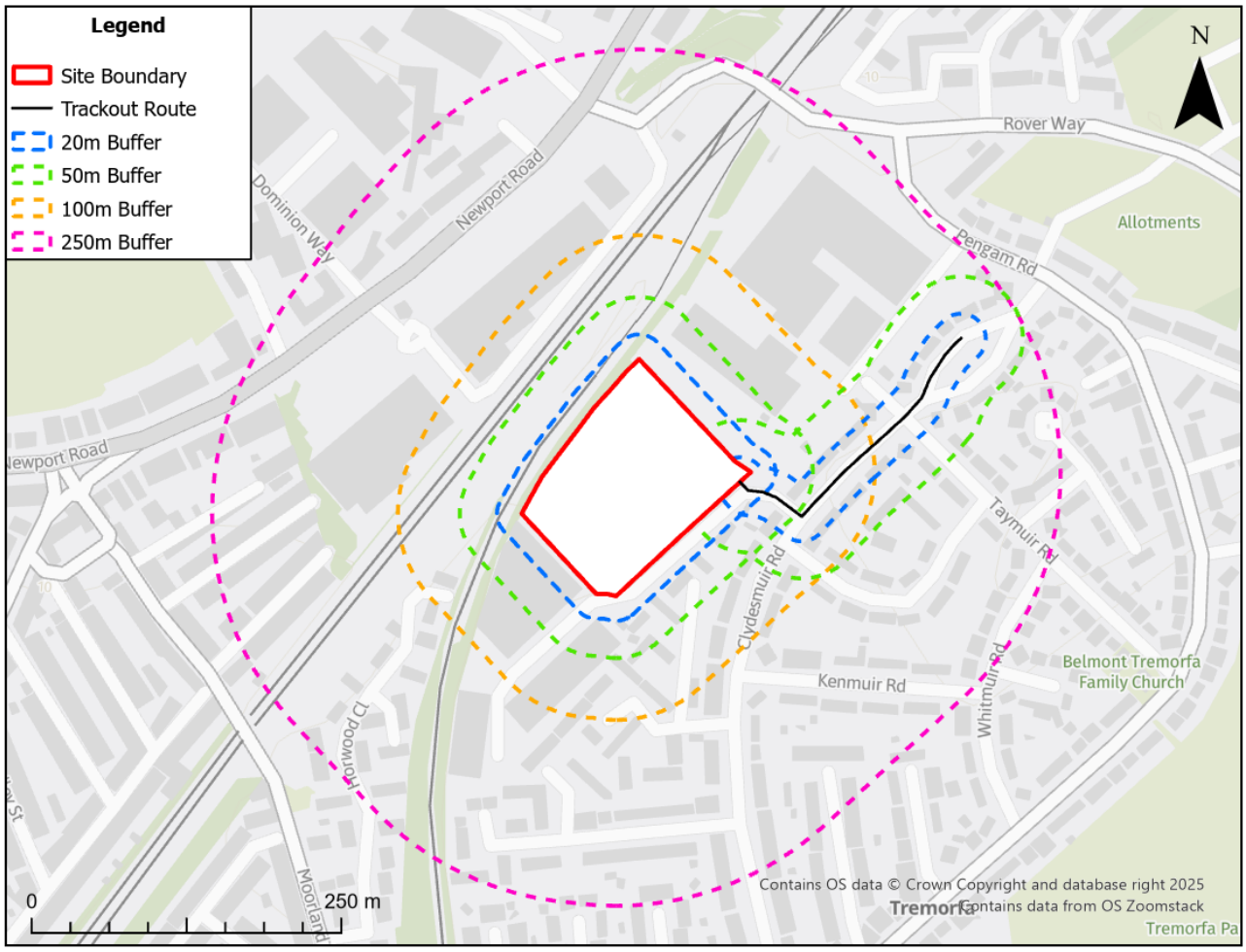

Figure A3 - Construction Dust Assessment Study Area

Step 2

The following section assesses the risk of potential dust impacts of each of the four potential dust generating activities.

Demolition

The existing commercial and industrial buildings and warehouses located on the Site would be demolished prior to construction of the Proposed Development. The total building volume to be demolished is assumed to be between 12,000m^3 - 75,000m^3 between 6-12m above ground level. Therefore, the potential magnitude of dust emissions from demolition is considered to be medium.

Earthworks

Site clearance works, excavation and the digging of trenches for foundations and utilities represent the principal earthworks activities that may generate dust. The total area of the site is estimated to be approximately 18,000m^2. The soil type and number of heavy earth moving vehicles required are unknown, however it is assumed that there would be less than 10 vehicles active at any one time. On this basis, the potential magnitude of dust emissions from earthworks is considered to be medium.

Construction

The proposed development will include a mix of unit types and sizes, including one, two and three-bedroom properties, in both apartment and house formats. The total building volume is not yet confirmed, but is assumed to be between 12,000m^3 - 75,000m^3. Construction materials are likely to include concrete which has the potential to be dusty. Based on the assumed building volume and materials, the potential magnitude of dust emissions from construction is considered to be medium.

Trackout

The number of outward HDV movements per day during construction is not yet known, however it is assumed to be less than 50. Therefore, the potential magnitude of dust emissions from trackout is considered to be medium, as a worst case.

The dust emission magnitude for each dust generating activity is summarised in Table A11.

Table A11 Construction Dust - Magnitude of Emission

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Medium
Construction	Medium
Trackout	Medium

Receptors sensitive to potential dust impacts were approximated from a desktop study of the area up to 250m from the Site boundary for demolition, earthworks and construction, and up to 50m from the road network within 250m of the site access for trackout. This is summarised in Table A12 and displayed in Figure A3.

Table A12 Approximate Number of Dust Sensitive Receptors

Distance from Site (m)	Approximate Number of Human Receptors and Sensitivities	Ecological Receptors and Sensitivities
Demolition, Earthworks and Construction		
Less than 20	1 to 10 receptors with high sensitivity	No ecological receptors
Less than 50	10 to 100 receptors with high sensitivity	No ecological receptors
Less than 100	>100 receptors with high sensitivity	N/A
Less than 250	>100 receptors with high sensitivity	N/A
Trackout		
Less than 20	10 to 100 receptors with high sensitivity	No ecological receptors
Less than 50	10 to 100 receptors with high sensitivity	No ecological receptors

Using the number of receptors and receptor sensitivities determined in Table A12, and the criteria outlined in Table A5, Table A6 and Table A7, the overall sensitivity of the receiving environment to specific dust impacts is summarised in Table A13. No sensitive ecological receptors have been identified within the construction dust study area therefore ecological impacts have not been assessed further.

Table A13 Summary of the Sensitivity of the Study Area

Potential Impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Sensitivity	Medium Sensitivity	Medium Sensitivity	High Sensitivity
Human health*	Low Sensitivity	Low Sensitivity	Low Sensitivity	Low Sensitivity
** Based on the background concentration being less than 24µg/m^3*				

Table A14 summarises the potential risk of dust effects.

Table A14 Summary of the Risk of Dust Effects

Potential Impact	Potential Risk			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Human health	Low Risk	Low Risk	Low Risk	Low Risk

As indicated in Table A14, the potential risk of dust soiling is medium for demolition, earthworks, construction and trackout. The potential risk of human health impacts is low for demolition, earthworks, construction and trackout. The assessment has therefore indicated that the overall risk of dust effects is medium as a worst case for the Proposed Development.

Step 3

The IAQM construction dust guidance (IAQM, 2024) provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the Proposed Development based on the risk of dust effects for each activity and for the overall site (Table A14) and are summarised in Table A15.

Table A15 Proposed Dust Mitigation Measures based on the IAQM Construction Dust Guidance (IAQM, 2024)

Mitigation Measure	Medium Risk Measures. H=Highly Recommended. D=Desirable
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H
Display the head or regional office contact information.	H
Dust Management	
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	H
Site Management	
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	H
Make the complaints log available to the local authority when asked.	H
Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.	H
Monitoring	
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of	D

Mitigation Measure	Medium Risk Measures. H=Highly Recommended. D=Desirable
surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.	
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	H
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible, commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	H
Preparing and maintaining the site	
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H
Erect solid screens or barriers around dusty activities or the site boundary so that are at least as high as any stockpiles on site.	H
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	H
Avoid site runoff of water or mud.	H
Keep site fencing, barriers and scaffolding clean using wet methods.	H
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, cover as described below.	H
Cover, seed or fence stockpiles to prevent wind whipping.	H
Operating vehicle/machinery and sustainable travel	
Ensure all vehicles switch off engines when stationary - no idling vehicles.	H
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H
Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas (if long haul routes are required, these speeds	D

Mitigation Measure	Medium Risk Measures. H=Highly Recommended. D=Desirable
may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the Local Authority, where appropriate).	
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	D
Operations	
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H
Use enclosed chutes and conveyors and covered skips.	H
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H
Waste Management	
Avoid bonfires and burning of waste materials.	H
Demolition (medium risk)	
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H
Bag and remove any biological debris or damp down such material before demolition.	H
Earthworks (medium risk)	

Mitigation Measure	Medium Risk Measures. H=Highly Recommended. D=Desirable
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	D
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	D
Only remove the cover in small areas during work and not all at once.	D
Construction (medium risk)	
Avoid scabbling (roughening of concrete surfaces) if possible.	D
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	H
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	D
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	D
Trackout (medium risk)	
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	H
Avoid dry sweeping of large areas.	H
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	H
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	H
Record all inspections of haul routes and any subsequent action in a site log book.	H
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	H
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	H

Mitigation Measure	Medium Risk Measures. H=Highly Recommended. D=Desirable
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	H
Access gates to be located at least 10 m from receptors where possible.	H

Step 4

Assuming the relevant mitigation measures outlined in Table A15 are implemented, the residual effect from all dust generating activities is considered to be negligible.

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