LIVERPOOL BAY DECOMMISSIONING PHASE 1

POINT OF AYR GAS PLANT
Point of Ayr Terminal (General)

Dust Management Plan

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HOLD RECORD

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1.0 INTRODUCTION

1.1 Purpose of this Document

This document comprises the Dust Management Plan (DMP) for the Point of Ayr (PoA) Terminal project granted under the Town And Country Planning Act (TCPA), 1990 by Flintshire County Council (FCC) (Application Ref: FUL/000246/23), as required by Condition 8 which is as follows:

"8. No development within the Demolition or Construction phases shall commence until a construction environment management plan (CEMP) addressing that phase of the development has been submitted to and approved in writing by the Local Planning Authority. The CEMP shall refer to the submitted Register of Environmental Actions and Commitments (REAC document reference T.5.3) and the Outline Construction Management Plan (OCMP document reference T.5.1) and include, where relevant to that phase:

- *any site-specific method statements required;*
- *corrective action and contingency plan procedures; management plans namely:*
  - *Dust Management Plan;*

[….]."

The aim of this DMP is to provide an evidential basis for the specification of appropriate mitigation measures so that best practice is used to control potential impacts of the site activities on local air quality and amenity.

1.2 Stage overview

The Company's Liverpool Bay Carbon Capture Storage Transport & Storage Project (LBA CCS T/S Project) is being developed in parellel with and as a key part of the HyNet Northwest full-chain hydrogren and CCS industrial decarbonisation project (the HyNet Project), which aims to transform the region into the worlds first low carbon industrial cluster by 2030.

The LBA CCS T/S Project has been divided into two phases for the purpose of discharging TCPA planning conditions. The phases of work comprise of and are described as the following:

- Demolition (including Temporary Construction Facilities - TCFs)
- Construction

This document is related to the Demolition Phase only, which includes the demolition scope at the PoA facility (including works involved with the removal of P908 dune valve), as well as scope associated with the new LBA CCS FACILITY.

Under this phase, the PoA facilities will be subject to a partial decommissioning to allow the conversion of the systems from a hydrocarbon to CCS service. The partial decommissioning of PoA systems shall be performed upon a controlled and sequential shutdown of the existing systems and the works involved with the removal of P908 dune valve include its replacement with a 20" pipeline spool.

This DMP is applicable for the TCFs and Demolition Phase only.

The approximate grid reference of the development site is 312288, 384036. Figure 1.1 below shows the project areas included within the Demolition Phase of works.
The application site is located at Liverpool Bay, which falls within the administrative area of FCC. No Air Quality Management Areas (AQMAs) were declared in North Wales.

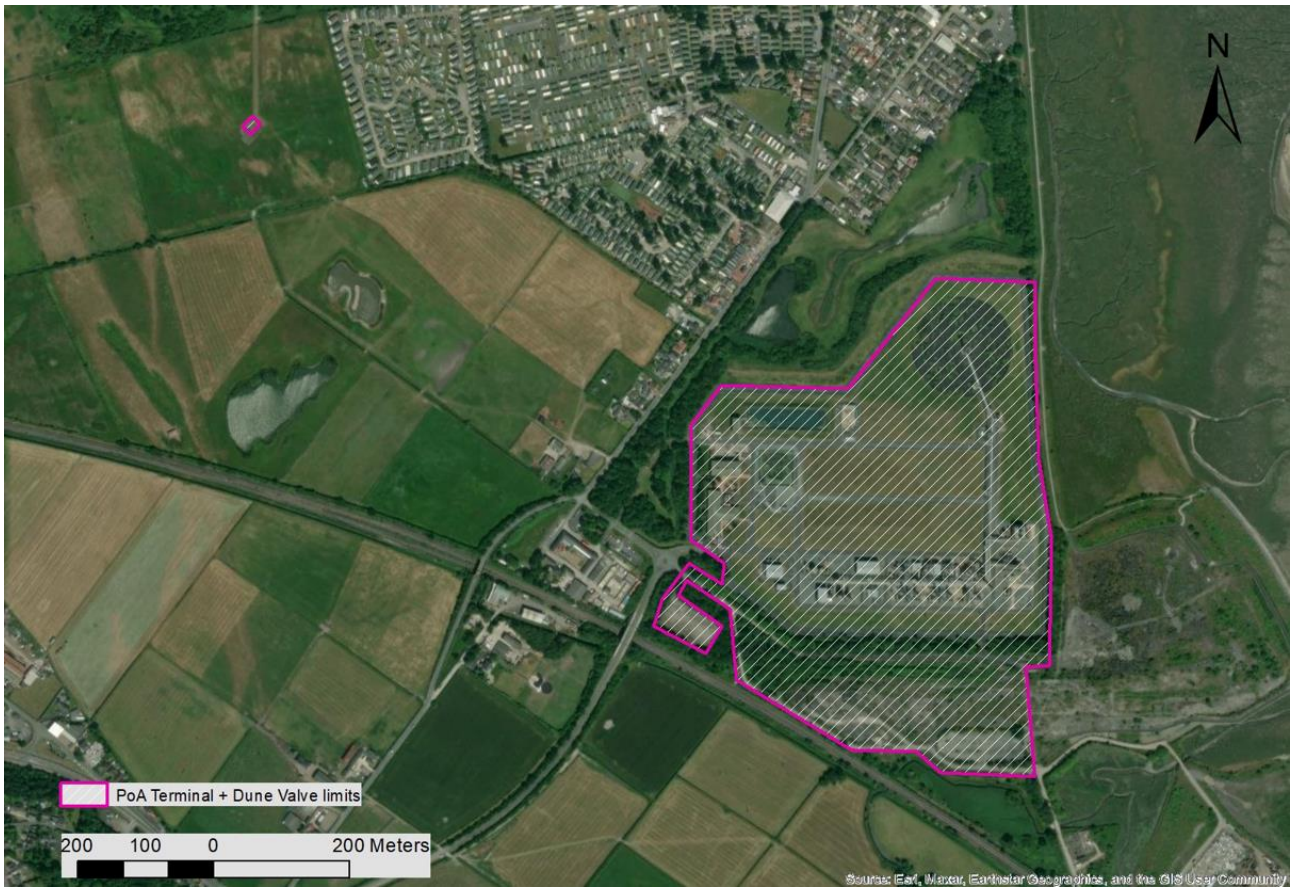

Figure 1.1 Demolition Phase Boundary Limit

2.0 DEFINITIONS AND ABBREVIATIONS

2.1 Definitions

Term	Definition
Company	The party that initiates the project and ultimately pays for its design and construction i.e. ENI UK Ltd will generally specify technical requirements. The term “COMPANY” also includes agents or consultants authorized to act for, and on behalf of, COMPANY.
Contract	An acceptance of legal relations between two or more parties for the transfer of goods or services for value.
Contractor	A person or organization that undertakes responsibility for the execution of a contract, i.e. Saipem S.p.A.
Supplier	The party (Manufacturer or Vendor) that manufactures or supplies equipment or services to perform the duties specified by the Company or Contractor
Shall	A mandatory provision
Should	An advisory provision

2.2 Abbreviations

APF	Asigned Protection Factor
AQAP	Air Quality Action Plan
AQMAs	Air Quality Management Areas
AQOs	Air Quality Objectives
AQSs	Air Quality Standards
CCS	Carbon Capture Storage
CEMP	Construction Environmental Management Plan
COSHH	Control of Substances Hazardous to Health
DMP	Dust Management Plan
EC	European Commission
ECoW	Ecological Clerk of Works
EPSL	European Protected Species Licence
FCC	Flintshire County Council
LAQM	Local Aair Quality Management
LBA	Liverpool Bay
NAQS	National Air Quality Standards
NRW	Natural Resource Wales
NSP	Nominated Site Personnel
PoA	Point of Ayr
REAC	Register of Environmental Actions and Commitments
RPE	Respiratory Protective Equipment
SAL	Site Action Level
SEI	Stockholm Environment Institute
SoW	Scope of Works
TCF	Temporary Construction Facility
TCPA	Town And Country Planning Act
T/S	Transport and Storage

3.0 REFERENCES

This DMP makes reference to, and should be read in conjunction with the following documents:

3.1 Project Documents

[Ref 1]	TCPA – March 2023	T.4 Environmental Statement
[Ref 2]	TCPA – March 2023	T.5.1 Outline Construction Environmental Management Plan
[Ref 3]	TCPA – March 2023	T.5.3 Register of Environmental Actions and Commitments
[Ref 4]	ITT – Appendix E	Contract HSE Requirements
[Ref 5]	102700HFPA09757	Demolition Management Plan
[Ref 6]	102700HFPA09762	Materials Management Plan
[Ref 7]	102700HFPA09764	Sediment Management Plan
[Ref 8]	102700HFPA09766	Soil Management Plan
[Ref 9]	102700HFPA09767	Stakeholder Communications Plan
[Ref 10]	102700HFPA09775	Pollution Prevention and Control Plan for Decommissioning
[Ref 11]	102700HFQJ09791	Biosecurity Risk Assessment and Method Statement

3.2 Company Documents

[Ref 12]	Eni UK HSE IMS B1-SYS-03 R01	Identification of Environmental Aspects
[Ref 13]	OPI HSE 008 ENI SPA	Analysis of the environmental aspects and of the impacts/risks for the environment and the organization
[Ref 14]	OPI HSE 022 ENI SPA NR R01	Management of Environmental Aspects in Development Processes
[Ref 15]	OPI SG HSE 027 E&P R01	Contract Health, Safety and Environmental Requirements for Services, Engineering, EPC, EPIC, EPF, Goods
[Ref 16]	OPI SG HSE 001 UPS R03	HSE Risk Management and Reporting
[Ref 17]	BP HSE 011 eni spa	Air quality monitoring
[Ref 18]	BP HSE 012 eni spa	Management of air emissions in natural resources activities
[Ref 19]	AMTE-TG-013	Biodiversity and Ecosystem services impact assessment and management

3.3 Contractor Documents

[Ref 20]	PL-SPA-HSE-001-E	Saipem S.p.A. HSE Policy
[Ref 21]	MSGGR-GROUP-HSE-001-E	HSE Management System Guideline
[Ref 22]	CR_GR-GROUP-HSE-009-E	Monitoring and reporting
[Ref 23]	CR_GR-GROUP-HSE-012-E	Criteria for identification of significant and social aspects
[Ref 24]	CR_GR-GROUP-HSE-013-E	Operational control of environmental aspects
[Ref 25]	STD-COR-HSE-003	Environmental Reporting
[Ref 26]	STD_GR-GROUP-HSE-002	HSE Competence, Training and Awareness
[Ref 27]	STD_GR-GROUP-HSE-004-E	HSE Monitoring and Improvement
[Ref 28]	STD-COR-HSE-109	HSE Competence, training and awareness
[Ref 29]	STD-COR-HSE-110	Operational Control of Environmental Aspects
[Ref 30]	STD-COR-HSE-116-E	Notification, Investigation and Communication of HSE Incidents
[Ref 31]	STD-COR-HSE-117	HSE audit
[Ref 32]	STD-COR-HSE-118-E	HSE Management Review

3.4 International Codes and Standards

[Ref 33]	ISO 45001	Occupational health and safety management systems, Requirements with Guidance for Use
[Ref 34]	ISO 14001	Environmental Management Systems - Requirements with Guidance for Use

3.5 External References

[Ref 35] Air Quality (England) Regulations 2000, 928.
A requirement for local authroities to review the quality of air within their area.

[Ref 36] Air Quality (England) (Amendment) Regulations 2002, 3043.
A requirement for local authroities to review the quality of air within their area.

[Ref 37] His Majesty's Stationery Office, 2010. *Environmental Protection: The Air Quality Standards Regulations 2010*, [online] Available at: http://www.legislation.gov.uk/uksi/2010/1001/pdfs/uksi_20101001_en.pdf
Air quality standards which serve to protect human health and the environment by establishing standards for ambient air quality.

[Ref 38] Institute of Air Quality Management, 2024. *Guidance on the assessment of dust from demolition and construction v2.2.*
Standards which aim to guide on dust pollution from demolotion and construction activities.

[Ref 39] Institute of Air Quality Management, 2018. *Guidance on Monitoring in the Vicinity of Demolition and Construction Sites V1.1.* [online] Available at: https://iaqm.co.uk/text/guidance/guidance_monitoring_dust_2018.pdf
Reccomended momitoring practices within the vicinity of constrcution sites.

[Ref 40] Department for Environment, Food and Rural Affairs, 2016. *Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance LAQM.TG (16)*.
Relevant policies for local authrotiies to tackle poor air quality

[Ref 41] Department for Environment, Food and Rural Affairs, 2016. *MAGIC Map* [online] Available at: http://magic.defra.gov.uk
Authroratitve georgaphic information system about the natural environment acorss government records.

[Ref 42] Department for Environment, Food and Rural Affairs, 2007. *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1)*.
Air quality objectives and policy options to further imporve air quality in the UK.

[Ref 43] Department for Environment, Food and Rural Affairs, 2007. *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 2).*

[Ref 44] Evidence base to help support/suplement Volume 1.

[Ref 45] North Wales Authorities Collaborative Project 2023 Air Quality Progress report.
Annual progress report between 2023/24 and policy changes since last revision.

[Ref 46] Communities and Local Government, 2019. National Planning Policy Framework.
Governmental planninig policies in England and how to apply them.

4.0 KEY LEGISLATION AND RELEVANT GUIDANCE

The ambient air quality standards (AQSs) in the United Kingdom are derived from European Commission (EC) Directives and are adopted into English law via [Ref 35] the Air Quality (England) Regulations 2000, [Ref 36] Air Quality (England) Amendment Regulations 2002. The Air Quality Limit Values Regulations 2003 and [Ref 37] Air Quality Standards Regulations 2010. The European Union (Withdrawal) Act retains existing EU environmental provisions in the UK. These criteria have been used within this assessment as appropriate.
The relevant[1] Air Quality Objectives (AQOs) and AQSs derived from the National Air Quality Strategy (NAQS) for England and Wales [Ref 42][Ref 43] (and where they differ, AQSs derived from the Air Quality Standards Regulations 2010) are summarised in Table 4.1.
Fine particulate matter (PM_{10} and $PM_{2.5}$) can be found within dust generated at construction sites.

Table 4.1 Air Quality Standards (AQSs) Relevant to the Proposed Development

Substance	Averaging Period	Exceedances allowed per year	Ground level concentration limit (µg/m^3)
Nitrogen dioxide (NO_2)	1 calendar year	-	40
	1 hour	18	200
Fine particles (PM_{10})	1 calendar year	-	40
	1 hour	35	50
Fine particles ($PM_{2.5}$)	1 calendar year	-	20

4.1 The Environment Act, 1995

These objectives are to be used in the review and assessment of air quality by local authorities under Section 82 of the Environment Act (1995). If exceedances are measured or predicted through the review and assessment process, the local authority must declare an Air Quality Management Area (AQMA) under Section 83 of the Act, and produce an Air Quality Action Plan (AQAP) to outline how air quality is to be improved.

4.2 The Environment Act, 2021

The Environment Act (2021) amends the Environment Act (1995) to reinforce the local air quality management (LAQM) framework, in order to encourage cooperation at the local level and broaden the range of organisations that play a role in improving local air quality. Part 1 of The Environment Act requires targets to be set for fine particulate matter PM2.5, and these were introduced in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, as follows:

- $PM_{2.5}$ concentration interim target, annual mean of 12µg/m3 by 2028;
- $PM_{2.5}$ exposure reduction interim target of 22% reduction compared to 2018 by 2028;
- $PM_{2.5}$ concentration binding target of annual mean of 10µg/m3 by 2040;
- $PM_{2.5}$ exposure reduction binding target of 35% reduction compared to 2018 by 2040.

[1] Relevance, in this case, is defined by the scope of the assessment.

4.3 Relevant Guidance

4.3.1 Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2024) ('the IAQM construction dust guidance')

The Institute of Air Quality Management (IAQM) published a guidance document (IAQM, January 2024 V2.2,) on the assessment of construction phase impacts (herein the 'IAQM construction dust guidance') [Ref 38]. The guidance was produced to provide advice to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. In order to assess the potential impacts, construction activities are divided into four types:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure (i.e. human health) and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified. Further details of this guidance are provided in APPENDIX A and the guidance has been used for the assessment of dust impacts and to identify appropriate mitigation measures.

4.3.2 IAQM Guidance of Air Quality Monitoring in the Vicinity of Demolition and Construction Sites ('the IAQM 2018 guidance')

The IAQM published revised guidance in 2018 [Ref 39] (Bull et al. 2018) on air quality monitoring in the vicinity of demolition and construction sites which provides high level advise on monitoring but is not designed to be prescriptive with regards the various monitoring techniques that can be used.

4.3.3 Health and Safety Executive: Control of Substances Hazardous to Health (COSHH)

Exposure to hazardous substances in the UK workplace is governed by the Control of Substances Hazardous to Health (COSHH) Regulations. Health and Safety Executive publication 'EH40/2005 Workplace Exposure Limits' sets out the list of Workplace Exposure Limits (WEL) for use with the COSHH Regulations 2002. The first duty under COSHH is to prevent exposure, where this is reasonably practicable, by altering the activity. Where prevention is not reasonably practicable, exposure must be controlled.

5.0 BASELINE AIR QUALITY CHARACTERISATION

Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

A desk-based study was undertaken including a review of monitoring data available from FCC and estimated background data from the Local Air Quality Management (LAQM) Support website operated by the Department for Environment, Food and Rural Affairs (Defra) [Ref 40].

5.1 Emissions Sources and Key Air Pollutants

Transport-related emissions are one of the main sources of air pollution in urban areas, such as the proposed development site. NO_2, PM_{10}, and $PM_{2.5}$ are generally regarded as the three most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. These pollutants are generally considered to have the greatest potential to result in human health impacts and are the substances of most concern in terms of existing levels in the area, as discussed below.

The focus of this assessment is the demolition work in relation to the development, for which emissions of dust, PM_{10} and $PM_{2.5}$ are likely to be the primary concern, and to a lesser extent NO_2 which will also be emitted by plant and site traffic during this phase.

5.2 Baseline Monitoring Data

According to the North Wales Authorities Collaborative Project 2023 Air Quality Progress report [Ref 45], FCC undertook non-automatic (passive) monitoring of NO2 at 59 sites during 2022.

There were three diffusion tubes within 10km of the proposed development site. The annual average NO2 concentrations from these are reproduced in Table 5.1 below. The NO2 concentrations did not exceeded the annual mean objective from 2018 to 2022 at any monitoring location.

Table 5.1 Annual Mean Measured NO2 Concentrations within 10 km of the Proposed Development Site

Site ID	Location	Site Type	Approximate Distance from Site (km)	Annual Mean Concentration (µg/m³)				
				2018	2019	2020	2021	2022
ADDC-066	Coed Mawr Cott., Mostyn Road, Greenfield CH8 9DN	Kerbside	8.6	22.6	19.3	17.7	17.3	16.6
ADDC-069	Sycamore House, Greenfield Road, Holywell CH8 7PY	Kerbside	9.8	21.3	21.2	17.4	17.6	15.0
ADDC-115	Ysgol Y Llan Whitford CH8 9AN	Kerbside	6.2	14.9	13.4	9.2	9.4	5.9

5.3 LAQM Background Data

Estimated background air quality data available from the LAQM-Tools website [Ref 41], may also be used to establish likely background air quality conditions at the development site. This website provides estimated annual average background concentrations of NO_2, PM_{10} and $PM_{2.5}$ on a 1km^2 grid basis. Table 5.2 identifies estimated annual average background concentrations for the grid square containing the development site for years from 2025, 2026 and 2027. No exceedances of the NO_2, PM_{10} or $PM_{2.5}$ AQOs are predicted.

Table 5.2 2025, 2026 and 2027 Estimated Background Annual Average NO_2, PM_{10} and $PM_{2.5}$ Concentrations at Proposed Development Site

Assessment Year	**Estimated Annual Average Pollutant Concentrations Derived from the LAQM Website (µg/m^3)**		
	Annual Average NO_2	**Annual Average PM_{10}**	**Annual Average $PM_{2.5}$**
2025	4.8	8.2	5.4
2026	4.7	8.2	5.4
2027	4.7	8.2	5.4
Air Quality Objective	**40**	**40**	**20**

Note: Presented concentrations for 1 km^2 grid centred on 312500, 384500; approximate centre of development site is 312288, 384036.

Based on diffusion tube monitoring data from Flintshire County Council (FCC) annual status report, Table 5.1 and Table 5.2, it is considered highly likely that the site is located in an area where the background annual mean concentrations of the are well below the relevant Air Quality objectives and exceedance of the relevant air quality objectives at the application site is considered unlikely.

6.0 DEMOLITION PHASE IMPACT ASSESSMENT

This assessment has considered both the potential for dust and PM to be generated during the Demolition Phase (including TCFs installation), and the potential for demolition related vehicles at and around the site to affect air quality.

6.1 Demolition Dust and Particulate Matter

6.1.1 Methodology

In accordance with the IAQM construction dust guidance (January 2024, v2.2) [Ref 38] the risk of dust and emissions affecting sensitive receptors in the area around the proposed development site was assessed, based on the 'area sensitivity' and the magnitude of emissions from each of the following types of construction activity:

- Demolition;
- Earthworks;
- Construction; and
- Trackout[2]

For each activity, the risk of site-derived dust and emissions affecting local sensitive receptors is determined as either negligible, low, medium or high risk. The risk category may different for each of the activities and depends on the potential emissions magnitude and the sensitivity of the area. Three different types of impact are considered:

- Disamenity due to dust soiling;
- The risk of health effects due to an increase in exposure to PM10; and
- Harm to ecological receptors.

The assessment is used to define the appropriate level of mitigation required. APPENDIX A sets out the demolition dust assessment methodology in further detail.

6.1.2 Potential Dust Emission Magnitude

With reference to the IAQM criteria outlined in APPENDIX A, the dust emission magnitudes for demolition, earthworks and trackout activities are summarised in Table 6.1, based on information provided by the client. Where information was not available, the worst case has been assumed for the purpose of this dust management plan.
No dust-emitting construction activities are proposed at the site as it involves only TCFs. Therefore, dust emission magnitude for construction has not been assessed.

[2] Within the IAQM construction dust guidance, trackout is defined as "The transport of dust and dirt from the construction/ demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site."

Table 6.1 Summary of Dust Emission Magnitudes (Before Mitigation)

Activity	IAQM Criteria	Dust Emission Magnitude
Demolition	• Total area where earthworks will take place is estimated to be <12,000m^3 • On site crushing and screening are proposed • Dusty materials on site • Height of demolition activity 6-12m.	**Medium**
Earthworks	• Total area where earthworks will take place is estimated to be <18,000-110,000m^2 • Various soil types • The number of heavy earthmoving vehicles is estimated to be 5-10 during peak of earthworks • Height of stockpile 3-6m	**Medium**
Trackout	• The maximum number of heavy-duty vehicle (HDV) outward a movement in any one day is anticipated to >50 • No haulage expected on unsurfaced roads. • Extent of unpaved road within the power of attorney premises.	**Large**

6.1.3 Dust Sensitivity of the Receptors

The IAQM construction dust guidance indicates that the 'area sensitivity' can be determined based on the following factors:

- The sensitivity of individual receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Dust sensitive receptors were identified in the vicinity of the proposed development site following the guidance published by IAQM. The sensitivity of the area to dust soiling, human health and ecological impacts is summarised in Table 6.2.

The Defra MAGIC Maps website indicates that one ecological receptors (The Dee Estuary / Aber Dyfrdwy) which is categorised as Special Protection Area, Special Areas of Conservation, Sites of Special Scientific Interest, Ramsar Site located within the 50m (IAQM screening criteria) of the site boundary. Impacts of ecological receptors are consider applicable.

As trackout dust emission magnitude has been determined as Large, a 500m trackout route has been considered with traffic being routed onto Station Road.

Figure 6.1 and Figure 6.2 show maps indicating the demolition/earthworks and the trackout buffers, for identifying the sensitivity of the area.

Table 6.2 Sensitivity of the area

Potential Impact		Sensitivity of the surrounding area		
		Demolition	**Earthwork**	**Trackout**
Dust soiling	Receptor sensitivity	High	High	Medium
	Number of receptors	1-10	1-10	>1
	Distance from the source	<20m	<20m	<20m
	Overall Sensitivity of the Area	**Medium**	**Medium**	**Medium**
Human health	Receptor sensitivity	High	High	Medium
	Annual mean PM_{10} concentration	<24μg/m^3	<24μg/m^3	<24μg/m^3
	Number of receptors	1-10	1-10	>1
	Distance from the source	<20m	<20m	<20m
	Overall Sensitivity of the Area	**Low**	**Low**	**Low**
Ecological receptor	Receptor sensitivity	High	High	High
	Annual mean PM_{10} concentration	<24μg/m^3	<24μg/m^3	<24μg/m^3
	Number of receptors	1	1	1
	Distance from the source	<20m	<20m	<20m
	Overall Sensitivity of the Area	**High**	**High**	**High**

Figure 6.1 Demolition/Earthworks Activity Buffer Map

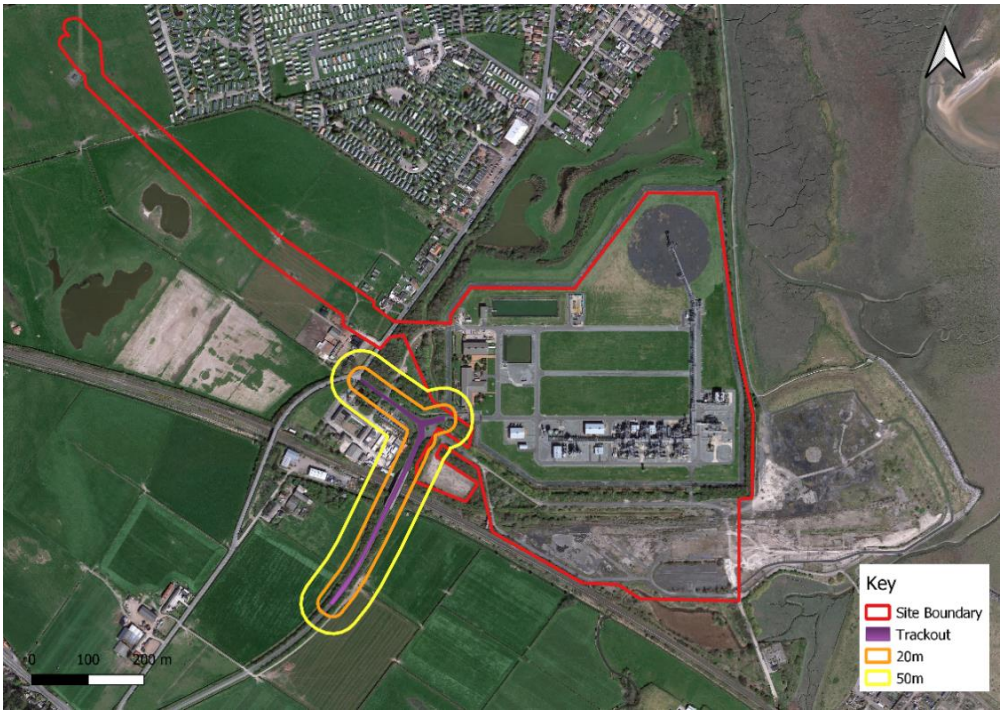

Figure 6.2 Trackout Activity Buffer Map

6.1.4 Dee Estuary Ramsar and Natterjack Toads

If avoidance of significant disturbance during the breeding period is not feasible for any reason, it will be necessary to apply to Natural Resource Wales (NRW) for a European Protected Species Licence (EPSL) to legally permit any works likely to disturb Natterjack Toads. It may be necessary to consult with NRW prior to application to help determine appropriate mitigation measures to be followed during the works. Such measures are likely to include noise and vibrational controls on any plant and equipment to be used, and minimise the duration of works, as far as feasible. Regardless of the requirement for an EPSL, appropriate pollution and dust controls (as outlined previously) will be implemented during works affecting Natterjack Toad habitat. These will be secured via the CEMP. Where Natterjack toad could be present within the PoA terminal, the ground will be hand-searched with an Ecological Clerk of Works (ECoW) present.

6.1.5 Overall Dust Risks

Combining the dust emissions magnitude and the sensitivity of the surroundings, the overall dust risks associated with the proposed development were assessed and are presented in the below Table 6.3.

Table 6.3 Summary of the Dust Risk from all Demolition Activities

Potential Impact	**Dust Risk Impact**		
	Demolition	**Earthwork**	**Trackout**
Dust soiling	Low Risk	Medium Risk	Medium Risk
Human health	Negligible	Low Risk	Low Risk
Ecological receptors	Medium Risk	Medium Risk	High Risk

The aim of this DMP is to specify appropriate mitigation such that, provided the mitigation is effectively applied, no significant effects are anticipated. Mitigation measures to reduce potential impacts, based on this assessment, are defined in Section 7.0.

7.0 CONTROL MEASURES AND MITIGATION

Mitigation measures recommended in the IAQM construction dust guidance are divided into 'general measures', applicable to all sites and measures specific to demolition, earthworks, construction (no dust-emitting construction activities are proposed at the site as it involves only TCFs; therefore, dust emission magnitude for construction has not been assessed) and trackout. Depending on the level of risk assigned to each site, different mitigation is recommended.

For those mitigation measures that are general, the highest risk assessed has been applied. In this case, the '**High risk**' site mitigation measures have been applied, as determined by the dust risk assessment in Section 5. Two categories of mitigation measure are described in the IAQM construction dust guidance – 'highly recommended' and 'desirable', which are indicated according to the dust risk level identified in Table 5.3.

It should be noted that all mitigation measures recommended in the IAQM Guidelines cover those indicated in the Environmental Statement (attached to the TCPA) and the Register of Enviornmental Actions and Comittments (REAC).

These control measures have been selected as relevant to the scope of works taking place withing theDemolition Phase and shall be implemented at all times, and further environmental management measures have been developed to prevent, or where that is not possible, minimise the environmental impacts associated with the works carried out during the Demolition Phase. All REAC References are complied with in full in the control measures following Table 7.1.

Table 7.1 Dust Management Specific REAC Requirements

Action/Commitment	REAC Reference
The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the Site boundary and within site cabins. This may be the environment manager/engineer or the Site manager. The head or regional office contact information will also be displayed.	T-AQ-002
The Dust Management Plan (DMP) will be implemented on site by the Construction Contractor. This will include measures to control other emissions, in addition to dust and PM10 mitigation measures.	T-AQ-003
All dust and air quality complaints will be recorded, and causes identified. Appropriate remedial action will be taken in a timely manner with a record kept of actions taken including of any additional measures put in-place to avoid reoccurrence.	T-AQ-004
The complaints log will be made available to the local authority on request.	T-AQ-005
Any exceptional incidents that cause dust and/or air emissions, either on- or off-site will be recorded, and then the action taken to resolve the situation recorded in the site log book.	T-AQ-006
Daily on-site and off-site inspections (up to a minimum of 50m from the site boundary) will be undertaken by a suitably experienced person, where receptors (including roads) are nearby (within 100m of Site or access roads) to monitor dust. The inspection results will be recorded and made available to the local authority when asked. This will include regular dust soiling checks of surfaces such as street furniture, cars, and windowsills within 100m of construction works.	T-AQ-007
The frequency of Site inspections will be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	T-AQ-008
Continuous dust monitoring will be undertaken at agreed points prior to work commencing on site and throughout construction.	T-AQ-009
The Site layout will be designed and planned so that machinery and dust causing activities are located away from sensitive receptors, as far as reasonably practicable.	T-AQ-010

Action/Commitment	**REAC Reference**
Where practicable, erect solid screens or barriers around dusty activities or the Site boundary that are at least as high as any stockpiles on Site.	T-AQ-011
Runoff of water and/or mud will be mitigated against while the Site is being set up and maintained.	T-AQ-012
Manage earthworks and exposed areas or soil stockpiles to prevent wind-borne dust. Use methods such as covering, seeding or using water suppression.	T-AQ-013
Ensure all vehicle operators switch off engines when not in use and ensure there is no idling.	T-AQ-014
Where reasonably practicable reduce the use of diesel- or petrol-powered generators, for example by using hybrid site generators.	T-AQ-015
A maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas will be imposed.	T-AQ-016
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, for example, suitable local exhaust ventilation systems.	T-AQ-017
Ensure an adequate water supply is on the Site for effective dust/particulate matter suppression/mitigation, using nonpotable water where possible and appropriate.	T-AQ-018
Covered skips will be used to reduce the risk of materials or dusty materials blowing out and contaminating the surrounding site.	T-AQ-019
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.	T-AQ-020
Avoid scabbling (roughening of concrete surfaces) if possible to reduce concrete dust.	T-AQ-021
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	T-AQ-022
All construction plant and equipment will be maintained and in good working order.	T-AQ-023
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 in frequent use.	T-AQ-024
Avoid dry sweeping of large areas.	T-AQ-025
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	T-AQ-026
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	T-AQ-027
Record all inspections of haul routes and any subsequent action in a site log book.	T-AQ-028
Where practicable, hard surfaced haul routes will be installed, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	T-AQ-029
Access points to the local highway will be prepared with temporary hard surfacing and wheel-washing facilities.	T-AQ-030
Ensure construction traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (using wheel washers, etc.) and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.	T-AQ-031
Ensure effective water suppression is used during decommissioning operations	T-AQ-032
Bag and remove any biological debris or damp down such material before decommissioning.	T-AQ-033
Pigging campaigns and manifold venting, wherever possible, to be undertaken during the working day.	T-AQ-034
There will be no bonfires or burning of waste materials.	T-AQ-035
Only remove the stockpile cover (where implemented) in small areas during work and not all at once	T-AQ-036

Action/Commitment	**REAC Reference**
Using modern and efficient low emission construction plant and delivery vehicles, and/or those powered by electricity from alternative/lower carbon fuels, as far as practicable. Construction Contractors will ensure high performance of plant and equipment through correct and efficient operation, maintenance, and servicing of vehicle fleet to avoid polluting emissions.	T-GG-007
Training policies will be in place during site induction to avoid idling of engines, spills of fuels (for example, when refuelling) and safe/environmentally sensitive driving techniques to maximise fuel saving.	T-GG-008
Monitoring of gas ingress, such as mine gas, will be undertaken during trenching and drilling works where necessary. In addition, any trenches / excavations should be gas tested (as it is standard practice) prior to entry.	T-LS-017
A Dust Management Plan has been produced outlining measures to control dust, including timing works outside of prolonged dry weather and using dust suppression techniques.	T-LV-016
Where possible, a standard working-day of 10 hours per day and 5 days per working week and 5 hours on Saturdays will be implemented for the construction of the TCPA Proposed Development	T-PH-002
A Dust Management Plan has been prepared to set out mitigation measures for dust and PM10. This is provided within the OCEMP (Document Reference: T.5.1).	T-PH-009

7.1 Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commence on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary.
- Display the head or regional office contact information.

7.2 Dust Management

- Develop a Dust/Air Quality Management Plan (this document).

7.3 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.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on or off the site, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

7.4 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 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.

- 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.
- Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority.

7.5 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.
- Where practicable, erect solid screens or barriers around dusty activities or site boundary that are at least as high as any stockpiles on site.
- Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- 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.
- Cover, seed or fence stockpiles to prevent wind whipping.

7.6 Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul routes and work areas.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

7.7 Operations

- Where feasible, works will be carried out outside periods of prolonged dry weather, with dust suppression techniques used as necessary
- 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.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-portable water where possible and appropriate.
- Use enclosed chutes, conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- 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.

7.8 Waste management

- Avoid bonfires and burning of waste materials.

7.9 Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).

- Ensure effective water suppression is used during demolition operations. Handheld 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.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

7.10 Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

7.11 Specific to Trackout

- 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.
- Ensure TCFs traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (using wheel washers, etc.) and sheeted when on public highways.
- Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Where feasible, hard-surfaced haul routes will be provided, regularly damped down using fixed or mobile sprinkler systems or mobile water bowsers, and routinely cleaned.
- 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.
- Access gates to be located at least 10m from receptors where possible.

7.12 The Control of Substances Hazardous to Health Regulations 2002 (COSHH)

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) cover activities which may expose workers to construction dust.

There are three key things to consider:

- Assess (the risks)
- Control (the risks)
- Review (the controls)

7.12.1 Assess (the risks)

- task – the more energy the work involves, the bigger the risk. High-energy tools like cut-off saws, grinders and grit blasters produce a lot of dust in a very short time;
- work area – the more enclosed a space, the more the dust will build up. However, do not assume that dust levels will be low when working outside with high-energy tools;
- time – the longer the work takes the more dust there will be;
- frequency – regularly doing the same work day after day increases the risks.

7.12.2 Control (the risks)

- the right size of building materials so less cutting or preparation is needed;
- silica-free abrasives to reduce the risks when blasting;
- a less powerful tool – e.g. a block splitter instead of a cut-off saw;
- a different method of work altogether – e.g. a direct fastening system;
- Water – water damps down dust clouds. However, it needs to be used correctly. This means enough water supplied at the right levels for the whole time that the work is being done. Just wetting the material beforehand does not work;
- On-tool extraction – removes dust as it is being produced. It is a type of local exhaust ventilation (LEV) system that fits directly onto the tool. This 'system' consists of several individual parts – the tool, capturing hood, extraction unit and tubing. Use an extraction unit to the correct specification (ie H (High) M (Medium) or L (Low) Class filter unit). Don't just use a general commercial vacuum.

7.12.3 Review (the control)

- having procedures to ensure that work is done in the right way;
- checking controls are effective. Does the work still seem dusty? You might need to carry out dust exposure monitoring;
- involving workers. They can help identify problems and find solutions;
- maintaining equipment: follow instructions in maintenance manuals;
- regularly look for signs of damage. Make repairs;
- replace disposable masks in line with manufacturer's recommendations;
- properly clean, store, and maintain non-disposable RPE. Change RPE filters as recommended by the supplier;
- carry out a thorough examination and test of any on-tool extraction system at least every 14 months.
- supervising workers. Make sure they: use the controls provided;
- follow the correct work method;
- attend any health surveillance where it is needed.

7.12.4 Respiratory Protective Equipment (RPE)

- adequate for the amount and type of dust – RPE has an assigned protection factor (APF) which shows how much protection it gives the wearer. The general level for construction dust is an APF of 20. This means the wearer only breathes one twentieth of the amount of dust in the air;
- suitable for the work – disposable masks or half masks can become uncomfortable to wear for long periods. Powered RPE helps minimise this. Consider it when people are working for more than an hour without a break;
- compatible with other items of protective equipment;
- fits the user. Face fit testing is needed for tight-fitting masks;
- worn correctly. Anyone using tight-fitting masks also needs to be clean shaven.

7.12.5 Other controls

- limiting the number of people near the work;
- rotating those doing the task;
- enclosing the work to stop dust escaping. Use sheeting or temporary screens;
- general mechanical ventilation to remove dusty air from the work area (e.g. in enclosed spaces such as indoors);
- selecting work clothes that do not keep hold of the dust.

8.0 MONITORING PROTOCOL

Monitoring ambient pollutant levels during site activities can be used to:

- Demonstrate the efficiency of mitigation measures;
- Reduce costs by effective targeting of mitigation measures;
- Demonstrate compliance with regulatory or other standards;
- Demonstrate a commitment to reduce environmental impacts;
- Reduce complaints from site staff and the public;
- Reduce potential for conflict with regulators; and
- Speed up dispute resolution.

Monitoring regimes can range from real time, continuous monitoring to the visual assessment of dust generation. Simple and inexpensive monitoring of demolition impacts may be conducted by means of a number of techniques, including dust deposition monitoring (e.g. by 'Frisbee' dust deposition gauge), and optical real-time continuous particle monitors (e.g. Nephelometers).

The risk of dust impacts from site activities, as identified in Table 5.3, was determined to include a maximum of medium risk for dust soiling impacts associated with earthworks and trackout activities. The risk to human health was assessed as low for both earthworks and trackout. However, a medium risk was identified for ecological receptors in relation to demolition and earthworks, while a high risk was noted for ecological receptors due to trackout activities.

Therefore in accordance with the IAQM construction dust guidance, a monitoring campaign including visual dust observation, dust deposition monitoring (using 'Frisbee' dust deposition gauges) and indicative real-time particulate matter monitoring is recommended.

8.1 Visual Inspections and Site Logbook

The Site Manager or nominated person should undertake regular visual inspection/observation of visible dust, particularly where they suspect high levels of dust-generating activities may occur.

A visual inspection should be undertaken whenever a complaint regarding dust generation is received. The extent of the inspection will generally be on-site but should be extended to the trackout routes, especially on days with heavy traffic movements in and out of the site. These may include 'exceptional incidents', such as very dry, windy days; days when dust suppression techniques fail; etc.

The findings of visual inspections should be documented, and mitigation measures reviewed and implemented as appropriate. The record should include:

- Time & date;
- Reason for inspection (e.g. complaint received, regular inspection);
- Confirmation of any visible dust emissions and that these are being generated on site (and are thus within the control of site);
- Remedial actions taken if emissions observed; and
- Wind direction and strength (a weather station, wind sock or knowledge of the Beaufort Scale would assist in this).

It is important that all site personnel are aware of the requirement for the control of environmental impacts, and appropriate training should be given to all site personnel, covering:

- Health and environmental impacts of emissions to air;
- The benefits of controlling emissions to air;
- Emission control measures;
- Method statements; and
- Importance of good communication.

8.2 Dust Deposition Monitoring

The deposition of dust on surfaces may be one of the main causes of air pollution complaints from demolition, earthworks and TCF construction activities. For this reason, it is recommended that a total of five 'Frisbee' dust deposition gauges or equivalent are to be installed close to the site boundary as shown in Figure 7.1 below.
The 'Frisbee' dust deposition gauge developed by the Stockholm Environment Institute (SEI) at the University of York, is established as a simple and robust method for the quantification of dust deposition. Dust is collected on a horizontal surface and collection bottle. The dust is determined gravimetrically on a filter paper in the laboratory.
The monitoring location is suggested to be located near the sensitive receptors and along site boundaries. It is recommended that dust deposition monitoring is undertaken and maintained throughout the work period. 'Frisbee' samples should be sent to an accredited laboratory for analysis.
The final selection of monitoring location may be subject to a degree of change prior to their installation, depending on practical issues on the site. They may also need to be moved at a later stage for various reasons, including if new dust sensitive premises were introduced, subject to the agreement of all relevant parties. Any proposed variation to the monitoring should be carried out in consultation with the local authority.
It is proposed that the Frisbee sample is changed every four weeks/month. The results will be compared with the Suggested Guidelines for Deposited Ambient Dust (Published by Vallack & Shillito), with a trigger value of 200mg/m^2/day considered given the 'residential areas & urban outskirts' setting of the site.

8.3 PM_{10} Monitoring using Real-Time Dust Monitors

Nephelometer instruments, such as the Turnkey Osiris unit, are not a reference equivalent method for the determination of airborne particulates, however, they do provide continuous data in near real-time that may be related to site events and are considered an appropriate technique for this type of application. It is recommended that one nephelometer instruments will be installed close to the site boundary as shown in Figure 8.1 below.
These instruments measure continuous indicative concentrations of the PM_{10} fraction of suspended particle matter and the data are posted in near real-time to a website and are immediately viewable.
A Site Action Level (SAL) level of 190µg/m^3 (1-hour average PM_{10}) which is recommended in the latest IAQM guidance titled *Guidance on Monitoring in the Vicinity of Demolition and Construction Sites* [Ref 38]will be adopted for the site. If this level is reached, an email will be sent to the Site Manager/other Nominated Site Personnel (NSP).
If the Site Manager receives an email stating that the SAL has been exceeded, the following actions should be taken:

- Review the activities on site and investigate if the exceedance is due to on-site activities;
- If the exceedance is deemed to be from the site activities, apply additional mitigation as soon as is practicable;
- The additional mitigation measures should remain in place until a time that the ambient PM10 concentrations are below the SAL; and
- The incident and investigation should be recorded in the complaints log.

Where the Site Manager is not able to carry out these tasks, it should be ensured that a nominated person is on site in their absence.

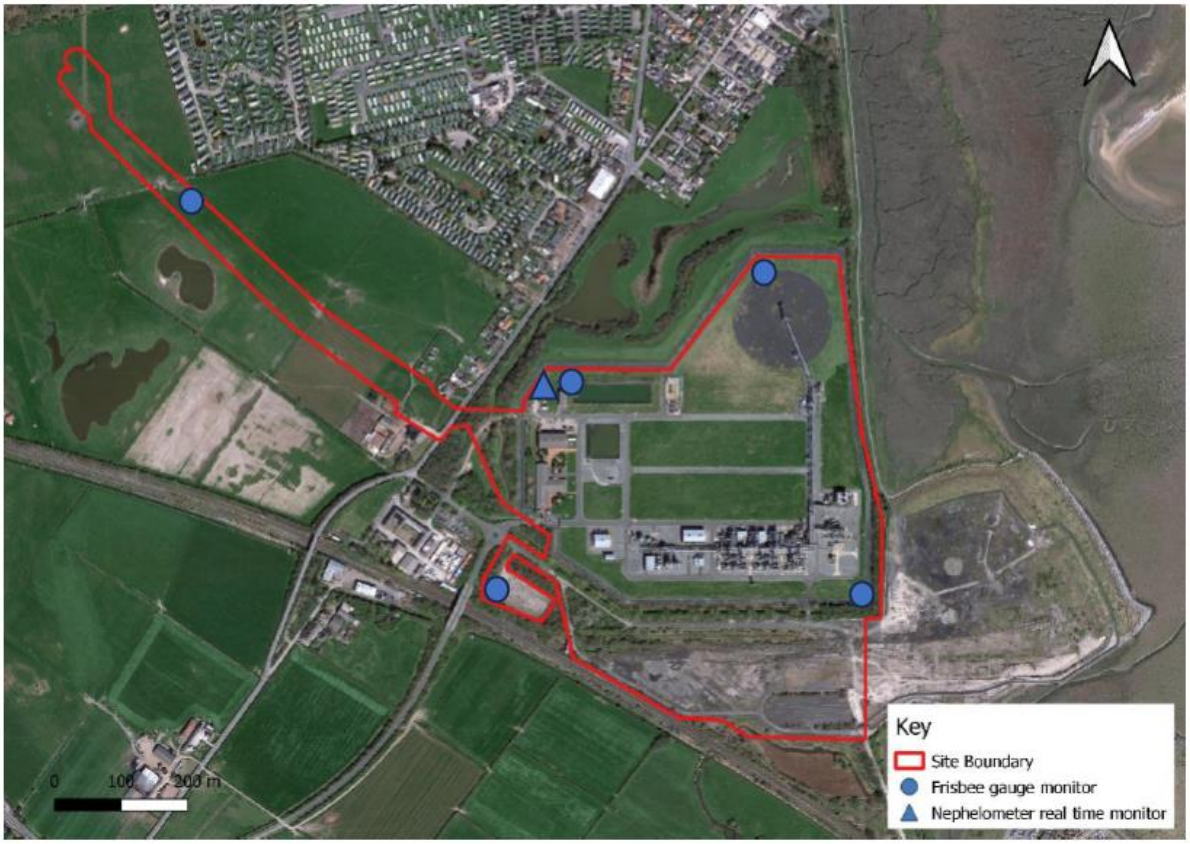

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Figure 8.1 Proposed Monitoring Locations

8.4 Proposed Reporting Programme

- Monitoring reports should be prepared and made available to the local authority on request. The content of the reports may vary according to future requirements of the programme, but it is anticipated that the reports will contain the following:
- Details of the monitoring programme and of the type of demolition activities undertaken during the monitoring period;
- Presentation of dust deposition rates (and particulate matter concentrations, where monitored) at all monitoring locations;
- Discussion/explanation of any exceedances of the relevant dust standards and of any mitigation applied (where known); and,
- Recommendations for the site manager regarding how dust and emissions can be better controlled thereafter.

9.0 IMPLEMENTATION AND MANAGEMENT

9.1 Implementation of AQMP

The Field Environmental Manager (or other nominated site personnel as appropriate) shall be responsible for the control of environmental impacts of demolition activities and TCFs installation. The Site Manager should be provided with appropriate training so that they are aware of how dust and PM can be generated on site, are aware of the requirements of the DMP (including visual dust inspections) and are aware of the routine and emergency procedures designed to control dust emissions.
Site inductions and training for all site personnel should include dust management, sources of dust and PM on site, health and environmental impacts of emissions to air, and the control measures being used.
The Site Manager will keep a record documenting the maintenance of effective emissions control methods and details of any complaints or incidents, and actions taken.
Emissions control procedures and equipment will only work satisfactorily if carried out or used appropriately. The responsible person shall maintain good housekeeping and ensure that all equipment is well maintained and used appropriately.

9.2 Reactive Mitigation Measures

Following reports made by site personnel of visibly elevated concentrations of dust or following dust-related complaints from third parties, it is recommended that an investigation is carried out, documented and appropriate mitigation is applied.
The Field Environmental Manager of works should be responsible for ensuring that appropriate steps are taken to minimise the impacts of the dust event. Appropriate mitigation may include but not necessarily be limited to the following:

- Erect solid screens or barriers around the activities generating the elevated dust/ PM concentrations that are at least as high as the dust-generating activity;
- Cover or dampen stockpiles or other sources of dust (e.g. on-site haul roads) to reduce fugitive dust;
- Ensure that site personnel have switched off machinery when not in use and that all personnel are adhering to site speed limits;
- Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible);
- Ensure that the other mitigation methods identified in Section 6 are complied with by undertaking visual inspections; and,
- Clean up any dry spillages using wet cleaning methods.

It may be appropriate to temporarily suspend particularly dusty site activities where dust concentrations are high for example during abnormal circumstances, where dust suppression equipment malfunctions, or ‘emergency’ circumstances.
It may be appropriate to temporarily stop work until dust concentrations return to acceptable levels.

APPENDIX A

This appendix contains the construction dust assessment methodology used in the assessment. To assess the potential impacts, construction activities are divided into demolition, earthworks, construction and trackout. The descriptors included in this section are based upon the IAQM construction dust guidance. The assessment follows the steps recommended in the guidance.

Step 1 and Step 2 methods from the IAQM guidance are described in this Appendix to assign dust risk categories for each of the construction activities.

The tendency of dust to remain airborne is determined by the particle size and weather conditions. Eventually, particles will drop from suspension as a deposit. The previous Local Air Quality Management Technical Guidance document (LAQM.TG(03))[3] identifies that PM_{10} concentrations fall-off rapidly with distance from source. Figure A1 shows the fall-off in PM_{10} concentration from source for a typical wind speed of 6m/s. At 100m from source, the PM_{10} concentration is predicted to be less than 20% of that at the point of generation.

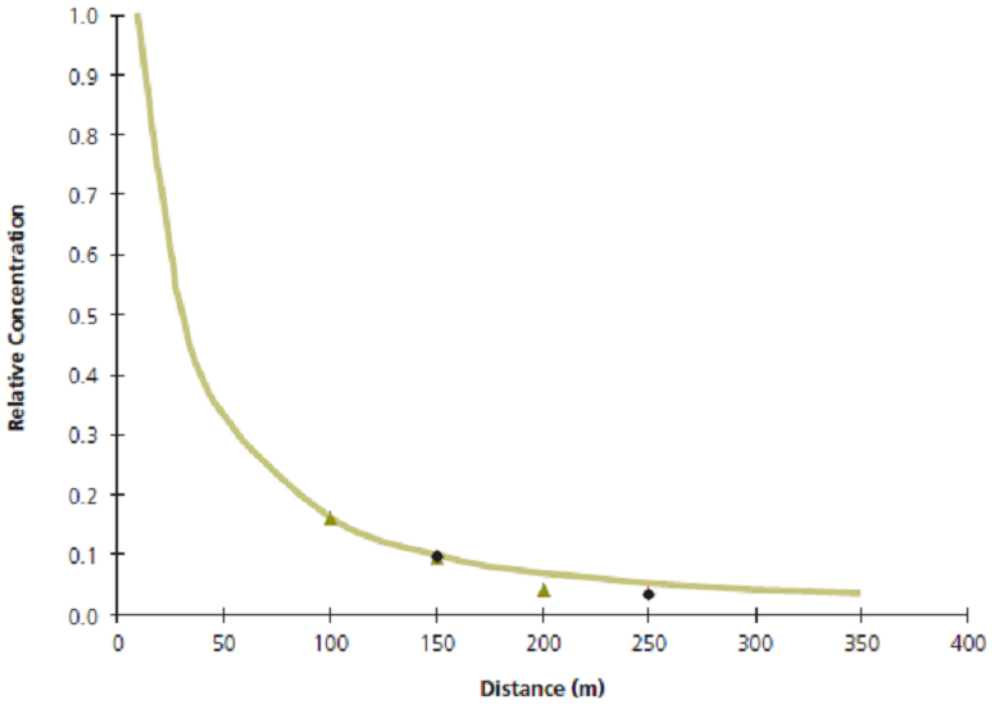

Figure A1 Typical Fall-off in PM_{10} Concentration with Distance from Source

<u>Step 1</u>: Screen the requirement for assessment

The first step is to screen out the requirement for a construction dust assessment; this is usually a somewhat conservative level of screening. An assessment is usually required where there is:

- a 'human receptor' within:
  - 250m of the boundary of the site; or
  - 50m of the route used by construction vehicles onto the public highway, up to 250m from the site entrance(s).
- an 'ecological receptor':
  - 50m of the boundary of the site; or

[3] LAQM TG (03). The Local Air Quality Management Technical Guidance Note published by the Department for Food and Rural Affairs in 2003. This guidance note is revised in 2021 and is available as LAQM TG(16).

- 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

Step 2A: Defining the Potential Dust Emission Magnitude

Demolition

The dust emission magnitude category for demolition is varied for each site in terms of timing, building type, duration and scale. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000m^3, potentially dusty construction material, on-site crushing and screening, demolition activities >12m above ground level;
- **Medium**: Total building volume 12,000m^3 – 75,000m^3, potentially dusty construction material, demolition activities 6m – 12m above ground level; and
- **Small**: Total building volume <12,000m^3, construction material with low potential for dust release, demolition activities <6m above ground, demolition during wetter months.

Earthworks

The dust emission magnitude category for earthworks is varied for each site in terms of timing, geology, topography and duration. Examples of the potential dust emission classes are provided in the guidance as follows:

- **Large**: Total site area >110,000m^2, 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 >6 m in height
- **Medium**: Total site area 18,000 m^2 – 110,000 m^2, 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; and
- **Small**: Total site area <18,000 m^2, soil type with large grainsize (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height.

Construction

The dust emission magnitude category for construction is varied for each site in terms of timing, building type, duration, and scale. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: Total building volume >75,000 m^3, on site concrete batching, sandblasting
- **Medium**: Total building volume 12,000 – 75,000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small**: Total building volume <12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

Factors which determine the dust emission magnitude class of trackout activities are vehicle size, vehicle speed, vehicle number, geology and duration. Examples of the potential dust emissions classes are provided in the guidance as follows:

- **Large**: >50 HDV (>3.5t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- **Medium**: 20 – 50 HDV (>3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 – 100m; and
- **Small**: <20 HDV (>3.5t) trips in any one day, surface material with low potential for dust release, unpaved road length <50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health and ecosystems. The sensitivity of the area takes into account the following factors:

- The specific sensitivities of receptors in the area;

- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether here are natural shelters such as trees, to reduce the risk of wind-blown dust.

Table A1 has been used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Table A1 Sensitivity of Individual receptors in the area surrounding the Site

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	• Users can reasonably expect an enjoyment of a high level of amenity. • 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. • 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 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) • 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. • 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. • 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. • The appearance, aesthetics or value of their property could be diminished by soiling. • 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. • 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 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). • 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 there is a particularly important plant species, where its dust sensitivity is uncertain or unknown. • Locations with a national designation where the features may be affected by dust deposition. • Example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
Low	• The enjoyment of amenity would not reasonably be expected. • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. • 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. • 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. • Example is a local Nature Reserve with dust sensitive features.

Based on the sensitivities assigned of the different types of receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification for the area can be defined for each. Tables A2 to A4 indicate the method used to determine the sensitivity of the area for dust soiling, human health and ecological impacts, respectively.

For trackout, as per the guidance, it is only considered necessary to consider trackout impacts up to 50m from the edge of the road.

Table A2 Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distances from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Low	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 A3 Sensitivity of the area to Human Health Impacts (IAQM construction dust guidance)

Receptor Sensitivity	Annual Mean PM_{10} Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table A4 Sensitivity of the area to Ecological Impacts

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

Step 2C: Defining the Risk of Impacts

The final step is to use both the dust emission magnitude classification with the sensitivity of the area, to determine a potential risk of impacts for each construction activity, before the application of mitigation. Tables A5 to A7 indicate the method used to assign the level of risk for each construction activity.

Table A5 Risk of Dust Impacts from 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 A6 Risk of Dust Impacts from Earthworks/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 A7 Risk of Dust Impacts from Trackout

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