

Land North of Elba Crescent – Air Quality Assessment

For: Richard Hayward Properties
Site: Land North of Elba Crescent, Swansea

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Quality Assurance

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Section 1.0 Introduction

1.1 Background

Richard Hayward Properties has submitted a planning application for a proposed residential development (hereafter referred to as the 'proposed development') on land to the north of Elba Crescent, Swansea.

Arthian has been appointed to provide an air quality assessment.

1.2 Site Description

The site is located on land to the north of Elba Crescent, Swansea. The site is bounded to the north, east and west by industrial/commercial developments and to the south by residential dwellings and the A483. The site is located entirely within the boundaries of Neath Port Talbot Council (NPTC).

A location plan of the site and the surrounding area is shown below in Figure 1.1. The site is highlighted by a red boundary.

Figure 1.1: Site Location

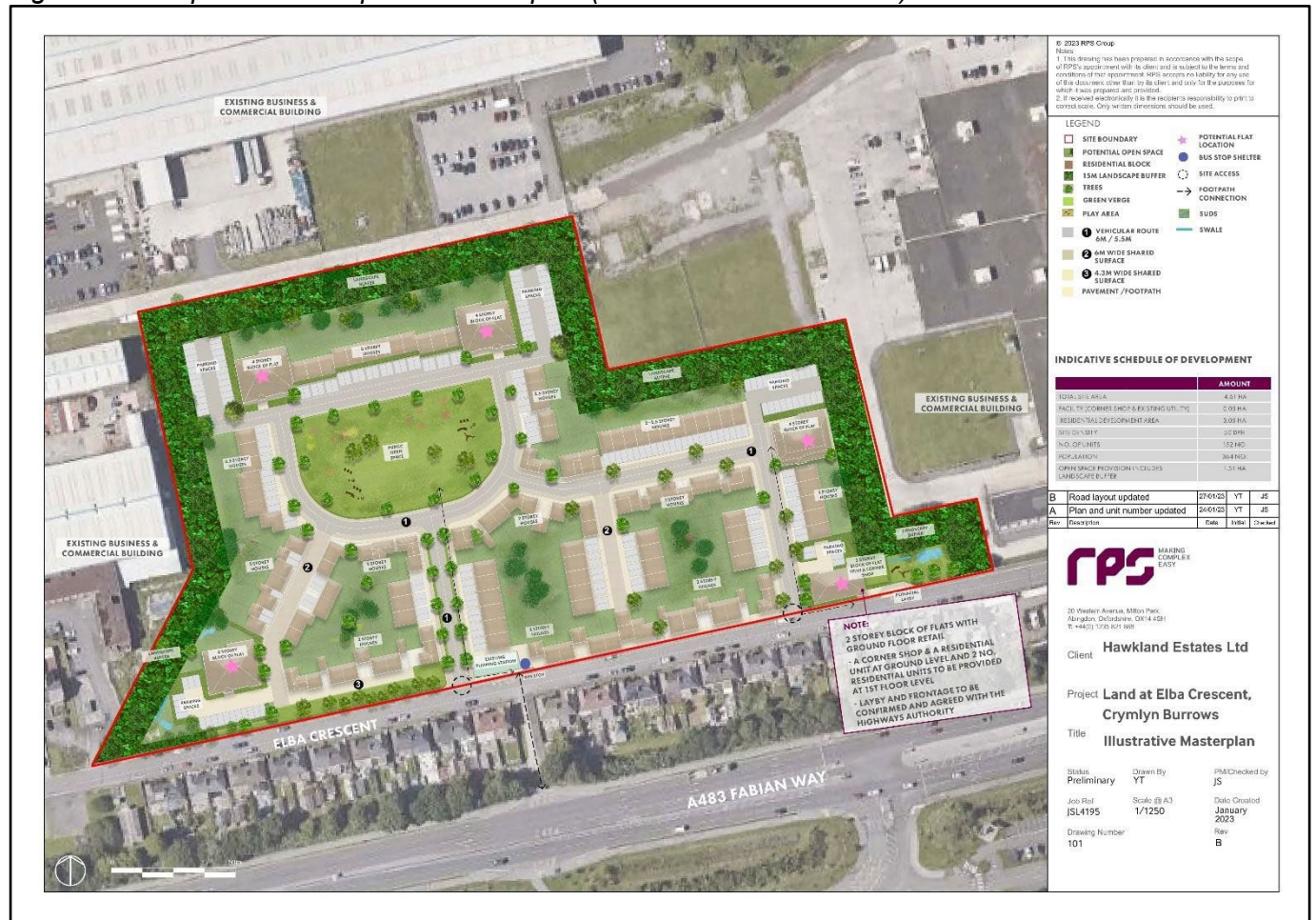


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1.3 Proposed Development

The proposed development is for the construction of approximately 152 residential units with associated landscaping and infrastructure. A site masterplan is shown in Figure 1.2.

Figure 1.2: Proposed Development Masterplan (Reference JSL4195-101)



RPS Data ©

1.4 Scope of Work

The assessment was undertaken in accordance with:

- Local Air Quality Management Technical Guidance (LAQM.TG22), published by the Department for Environment, Food and Rural Affairs (Defra) and the devolved administrations.
- IAQM Guidance on the assessment of dust from demolition and construction.
- Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) Land-Use Planning & Development Control: Planning for Air Quality guidance.

It consisted of three main parts:

1.4.1 Baseline Air Quality

An assessment of the baseline air quality at the proposed development was undertaken by reviewing available documentation and monitoring data, based on Local Air Quality Management (LAQM) reports and data available from the air quality background maps and other LAQM tools.

1.4.2 Construction Impacts

The impact of construction activities at the site was assessed qualitatively using the IAQM's *Guidance on the assessment of dust from demolition and construction*. This assessed the potential of the activities to generate dust and the sensitivity of the surrounding area to health and ecological impacts and used these to derive an overall risk of dust impact.

1.4.3 Operational Impacts

A qualitative screening assessment was undertaken to understand the likely development impact on surrounding air quality in accordance with the EPUK & IAQM Guidance *Land-Use Planning & Development Control: Planning for Air Quality*.

Section 2.0 Legislation, Policy & Guidance

2.1 National Legislation & Policy

2.1.1 Air Quality Strategy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 1 (Air Quality Strategy) establishes the policy for ambient air quality in the UK. It includes the National Air Quality Objectives (NAQOs) for the protection of human health and vegetation for 11 pollutants. NO₂, PM₁₀ and PM_{2.5} are considered the pollutants of greatest concern in relation to potential emissions from the proposed development and are the focus of this air quality assessment.

Table 2.1 summarises the relevant NAQOs for NO₂, PM₁₀ and PM_{2.5} that apply in Wales.

Table 2.1: NAQOs

Pollutant	Objective	Reference	Additional Information
NO ₂	200 µg/m ³	1-hour Mean	Maximum 18 exceedances a year
	40 µg/m ³	Annual Mean	-
PM ₁₀	50 µg/m ³	24-hour Mean	Maximum 35 exceedances a year
	40 µg/m ³	Annual Mean	-
PM _{2.5}	20 µg/m ³	Annual Mean	-

Local Air Quality Management (LAQM) Technical Guidance document LAQM.TG22 summarises locations at which these objectives should apply, based on associated averaging periods. This has been reproduced in Appendix A. It is also noted that the objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (e.g. centre of roadways).

LAQM.TG22 states that in the absence of site-specific monitoring, exceedance of the 1-hour mean NO₂ objective is likely to occur where annual mean concentrations are in excess of 60 µg/m³. Therefore, receptors will be assessed against an annual mean concentration of 60 µg/m³ for comparison against the 1-hour mean NO₂ objective.

For the PM₁₀ short-term (24-hour mean) objective, the number of potential annual exceedances can be estimated by using the following relationship within LAQM.TG22 in the absence of site-specific monitoring:

No. 24-hour mean exceedances = $-18.5 + 0.00145 \times \text{annual mean}^3 + (206/\text{annual mean})$

2.1.2 Planning Policy Wales

The latest guidance published in February 2024, Planning Policy Wales (PPW) sets out the Government's planning policies for Wales and how these are expected to be applied. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales. The PPW should be taken into account in the preparation of development plans and therefore the policies set out within the PPW are a material consideration in planning decisions.

Under paragraph 3.8, it states that:

“Good design can help to ensure high environmental quality. Landscape and green infrastructure considerations are an integral part of the design process. Integrating green infrastructure is not limited to focusing on landscape and ecology, rather, consideration should be given to all features of the natural environment and how these function together to contribute toward the quality of places. This embraces the principles of ‘ecosystems services’ and sustainable management of natural resources where multiple benefits solution become an integral part of good design. In a similar manner, addressing environmental risks can make a positive contribution to environmental protection and improvement, addressing land

contamination, instability and flood risk and providing for biodiversity, climate protection, improved air quality, soundscape and water resources benefits.”

Under paragraph 4.1.8, it states that:

“The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Delivering this objective will make an important contribution to decarbonisation, improving air quality, increasing physical activity, improving the health of the nation and realising the goals of the Well-being of Future Generations Act.”

Under paragraph 6.1.32, it states that:

“When considering a scheme of enabling development, planning permission should be granted only where all of the following can be applied: [...]

- *The enabling development does not give rise to significant risks, for example residential development in the floodplain or significantly impact on air quality or soundscape.”*

Under paragraph 6.7.6, it states that:

In proposing new development, planning authorities and developers must, therefore:

- *Address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- *Not create areas of poor air quality or inappropriate soundscape; and*
- *Seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.*

2.1.3 UK Clean Air Strategy 2019

The Defra Clean Air Strategy 2019 aims to show how the UK will tackle all sources of air pollution, make air healthier to breathe, protect nature and boost the economy.

The strategy builds on an extensive consultation process which indicated broad-based support for many of the actions Defra were proposing. There was also a range of constructive feedback and challenge that has enabled Defra to improve and extend its ambition even further in certain key areas. A document summarising the responses to the consultation is published alongside the strategy. The strategy sets out these proposals in detail and indicates how devolved administrations intend to make their share of emissions reductions.

2.2 Local Planning Policy

2.2.1 NPTC Local Development Plan

The Local Development Plan is the council's current primary planning document which sets out the policies used for determining planning applications within NPTC. The Local Development Plan contains the following policies related to air quality:

“Policy SP 1 Environmental Protection

Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures:

1. *Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels;*
2. *Giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable;*
3. *Ensuring that developments do not increase the number of people exposed to significant levels of pollution.”*

“Policy EN 8 Pollution and Land Stability

Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and/or local amenity or would expose people to unacceptable risk due to the following will not be permitted:

- *Air pollution;*
- *Noise pollution;*
- *Light pollution;*
- *Contamination;*
- *Land instability;*
- *Water (including groundwater) pollution.*

Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.”

2.3 Guidance

A summary of the publications referred to in the undertaking of this assessment is provided below.

2.3.1 Local Air Quality Management Review and Assessment Technical Guidance

Defra has published technical guidance for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM.TG22, has been used where appropriate in the assessment presented herein.

2.3.2 Guidance on the Assessment of Dust from Demolition and Construction

Guidance on the Assessment of Dust from Demolition and Construction published by the IAQM was produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM₁₀ impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

2.3.3 Land-Use Planning & Development Control: Planning For Air Quality

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.

2.3.4 A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites

The IAQM has published guidance to assist consultants in the assessment of air quality impacts of developments on designated nature conservation sites. The document includes screening criteria for when detailed modelling assessments of impacts on designated sites may be required.

Section 3.0 Baseline Air Quality

3.1 Local Air Quality Management

The UK Air Quality Strategy establishes a framework for the improvement of air quality and focusses on measures agreed at a national and international level. However, it was recognised, that despite such strategic measures, areas of poor air quality would likely remain, and that these will best be dealt with using local measures implemented through the LAQM regime. Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management.

The LAQM regime has been in place in the UK since 1997. The role of the regime is to review local air quality and identify all relevant locations where the air quality objectives are being or are likely to be exceeded. Where an area of exceedance is identified, the local authority is required to declare an Air Quality Management Area (AQMA) and implement an Air Quality Action Plan to improve air quality within the areas. As part of this process, the authority is required to regularly review and assess air quality within its boundary.

NPTC has declared one AQMA within its jurisdiction, however, this is located approximately 7.5km south-east of the proposed development. The closest AQMA to the site is the Swansea AQMA 2010 located in neighbouring Swansea Council (SC), approximately 3.4km west of the proposed development. The Swansea AQMA was declared for exceedances of the annual mean NO₂ objective. The AQMA covers an area encompassing residential properties alongside main arterial routes located within Haford, Sketty and Fforestfach. Potential impacts on the AQMA have been considered in this assessment.

3.2 Local Emissions Sources

3.2.1 Roads

At the nearest point, the site is 60m north of the A483 (Fabian Way), which is an A road which connects to Swansea. Whilst the A483 is considered likely to be the main source of emissions at the site, conditions at the site are more likely to be representative of urban background than a roadside location close to the A483 due to fall-off of pollutant concentrations with distance from road edge.

3.2.2 Industrial Sources

A review of the registered permitted activities from NPTC¹ and neighbouring SC² has identified that there are no significant emissions sources within 1km of the proposed development, as shown in Figure 3.1.

¹ <https://www.npt.gov.uk/environmental-health/pollution/industrial-pollution-control/permitted-activities/>

² <https://www.swansea.gov.uk/environmentalpermitregister>

Figure 3.1: NPTC and SC Permitted Activities



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3.3 Air Quality Monitoring Data

A review of the available local monitoring data has been undertaken. During 2022, NPTC operated six automatic monitoring sites and monitored NO₂ concentrations at twenty-six diffusion tubes sites. Of these monitors, none are located within 4km of the proposed development.

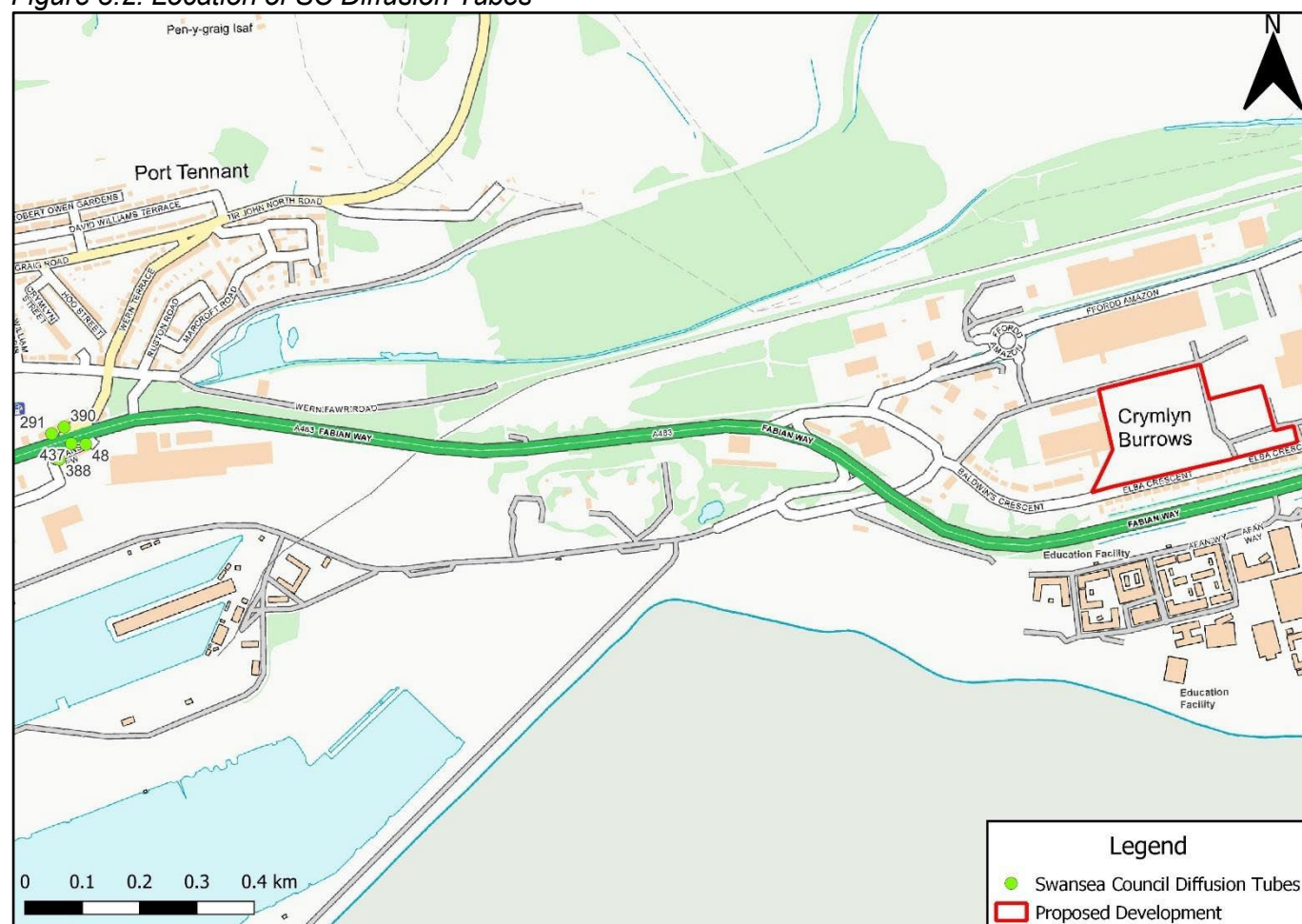
During 2022, neighbouring SC operated twelve automatic monitoring sites and monitored NO₂ concentrations at one hundred and ninety-one diffusion tubes sites. Of these monitors, five are located within 2km of the proposed development. Annual mean NO₂ concentrations from these monitors are presented below in Table 3.1 and Figure 3.2.

The closest automatic monitoring, which monitors PM₁₀ and PM_{2.5}, are located more than 3km from the proposed development. As such, PM₁₀ and PM_{2.5} pollutant concentrations will be estimated using background pollutant data as they are considered to be more representative of conditions at the proposed development.

Table 3.1: SC NO₂ Diffusion Tube Data

Site ID	Distance to Site (km)	Type	Annual Mean NO ₂ Concentration (µg/m ³)		
			2020	2021	2022
48	1.8	Roadside	20.9	25.2	22.7
291	1.8	Roadside	23.3	28.0	24.2
388	1.8	Roadside	11.1	13.0	11.4
390	1.8	Roadside	20.7	24.3	22.0
437	1.8	Roadside	18.4	22.2	19.4

Figure 3.2: Location of SC Diffusion Tubes



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Monitoring data from Table 3.1 show that there have been no recent recorded exceedances (2020 – 2022) of the annual mean NO₂ objective from diffusion tubes located within 2km of the proposed development.

Like the proposed development, all of the diffusion tubes detailed above are located adjacent to the A483. However, due to fall-off of pollutant concentrations with distance from road edge, the diffusion tubes detailed in Table 3.1 are considered to be a worst-case representation of air quality conditions at the proposed development. In the most recent recorded year (2022), a maximum concentration of 24.2 µg/m³ was recorded at diffusion tube 291 which is below the annual mean objective by 15.8 µg/m³. As noted in Section 3.2.1, conditions at the site are likely to be more representative of urban background location considering the distance the nearest busy road, the A483.

3.4 Background Pollutant Data

1km square background data (as per the Defra UK Air Information Resource website) was reviewed for comparison purposes against the monitoring data in Table 3.1. Annual mean data is presented in Table 3.2 below covering the site (grid reference 269500, 193500).

Table 3.2: Annual Mean Background Pollutant Grid Data at the Site

Location	Grid Reference ³	Year	NO ₂ µg/m ³	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³
Site	269500, 193500	2018	10.3	10.9	7.1
		2019	9.8	10.7	6.9
		2020	9.4	10.6	6.8
		2021	9.1	10.4	6.7
		2022	8.8	10.3	6.6
		2023	8.6	10.2	6.5

³ Central point of 1km x 1km square

Location	Grid Reference ³	Year	NO ₂ µg/m ³	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³
		2024	8.3	10.1	6.4

The Defra estimated background concentrations of NO₂, PM₁₀ and PM_{2.5} are below their respective air quality objectives and are predicted to decrease in future years. Defra has predicted background pollutant decreases in future years due to future developments in vehicle technology and changes to national and local policy.

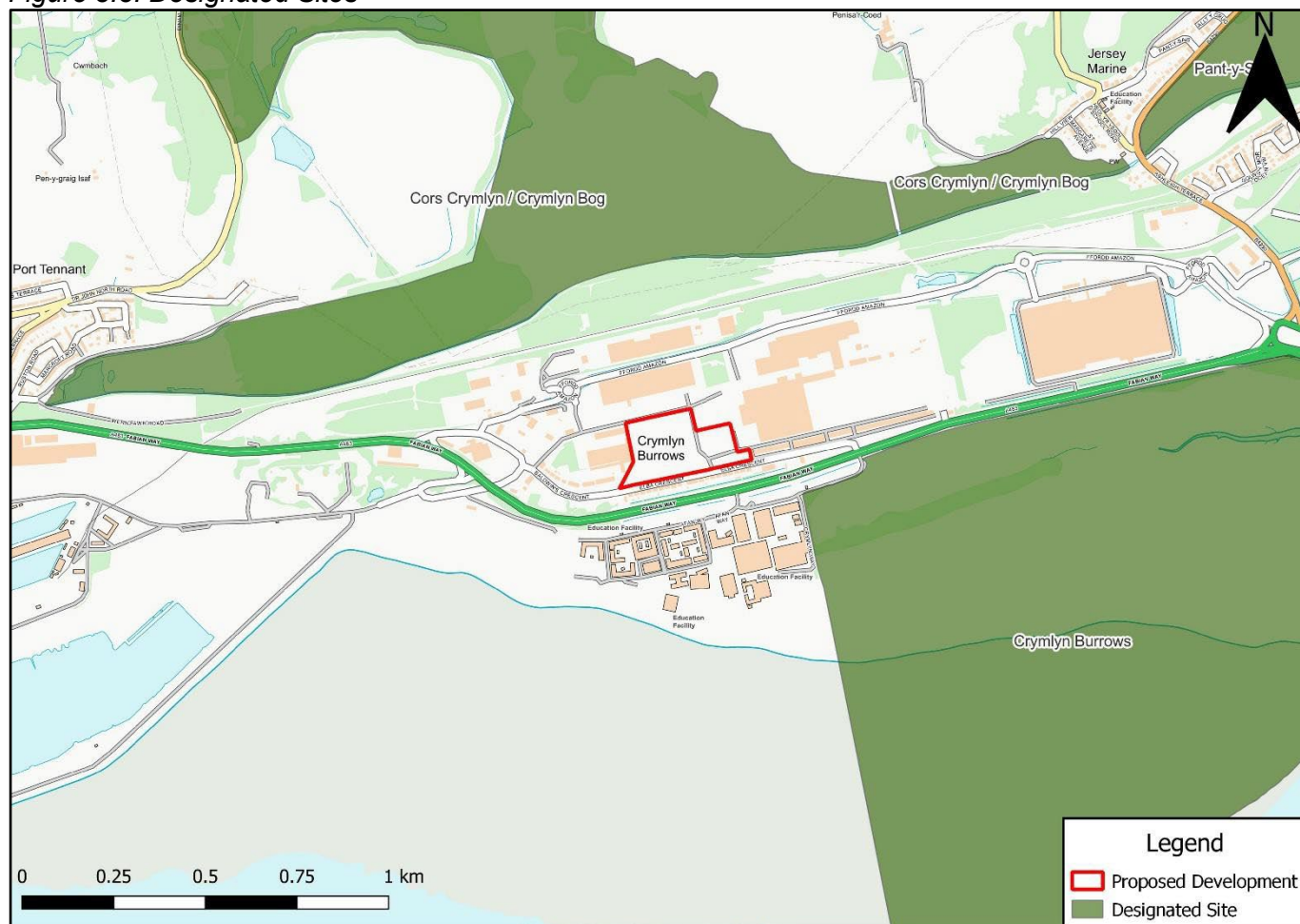
3.5 Designated Ecological Sites

With reference to the IAQM guidance on assessing impacts on designated sites, potential impacts should be considered on all designated sites within 200m of an affected road network. A baseline review has indicated that there are two designated sites within 200m of roads where road traffic from the proposed development may be distributed:

- Crymlyn Bog SSSI/SAC
- Crymlyn Burrows SSSI

Sections of both of these designated sites are located within 200m of the A483, as shown in Figure 3.3. Potential impacts on these sites have been considered in the assessment.

Figure 3.3: Designated Sites



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Section 4.0 Construction Impact Assessment

4.1 Introduction

The 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_{2.5-10} concentrations, as a result of dust generating activities on site; and
- An increase in concentrations of airborne particles and NO₂ due to exhaust emissions from diesel powered vehicles and equipment used on site (non-road mobile machinery) and vehicles accessing the site.

4.2 Construction Dust Assessment Methodology

The risk of dust emissions from a demolition/construction site causing loss of amenity and/or health or ecological impacts is related to the:

- Activities being undertaken (demolition, number of vehicles and plant, etc.);
- Duration of these activities;
- Size of the site;
- Meteorological conditions (wind speed, direction and rainfall);
- Proximity of receptors to the activities;
- Adequacy of the mitigation measures applied to reduce or eliminate dust; and
- Sensitivity of the receptors to dust.

The quantity of dust emitted from construction operations will be related to the area of land being worked, and the level of construction activity (nature, magnitude and duration). Emissions from construction vehicles passing over unpaved ground can be particularly important. The wind direction, wind speed and rainfall, at the time when a construction activity is taking place, will also influence whether there is likely to be a dust impact.

The IAQM *Guidance on the Assessment of Dust from Construction and Demolition v2.2* document informed this assessment.

This guidance document provides an advised procedure for a semi-quantitative dust risk assessment and screening criteria for the activities undertaken on-site. Mitigation measures are also suggested based on the assessed risk.

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

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

The potential for dust emissions is assessed for each activity that is likely to take place. The methodology considers three separate dust impacts:

- Annoyance due to dust soiling;
- The risk of health effects due to an increase in exposure to PM_{2.5-10}; and
- Harm to ecological receptors with account being taken of the sensitivity of the area that may experience these effects.

The assessment is used to define appropriate mitigation measures to reduce the potential for any significant effect. The 4-step assessment process is outlined in Table 4.1 below.

Table 4.1: Assessment Process Steps

Step	Intent
1	To screen the requirement for a more detailed assessment. No further assessment is required if there are no receptors within a certain distance of the works.
2	To assess the risk of dust impacts. This is done separately for each of the four activities (demolition, earthworks, construction and trackout) and takes account of: - Step 2A: The scale and nature of the works, which determines the potential dust emission magnitude; and - Step 2B: The sensitivity of the area. These factors are combined in Step 2C to give the risk of dust impacts. Risks are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk. Based on the threshold criteria and professional judgement one or more of the groups of activities may be assigned a 'negligible' risk. Such cases could arise, for example, because the scale is very small and there are no receptors near to the activity.
3	To determine the site-specific mitigation for each of the four potential activities in Step 2. This will be based on the risk of dust impacts identified in Step 2.
4	To examine the residual effects and to determine whether or not these are significant.

4.3 Step 1 – Screening

An assessment is required where there is:

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

There are human receptors within 250 m of the site and within 50 m of the site entrance, therefore the proposed development impact is not screened out, and a more detailed assessment is required.

There are no relevant ecological receptors within the screening distance.

4.4 Step 2A – Dust Emission Magnitude

The dust emission magnitude has been categorised in Table 4.2 below. At this stage of development, final construction details are not available. As such, the dust emission magnitudes detailed below have been largely derived applying worst-case assumptions and based on Arthian's experience of similar schemes.

Table 4.2: Dust Emission Magnitude

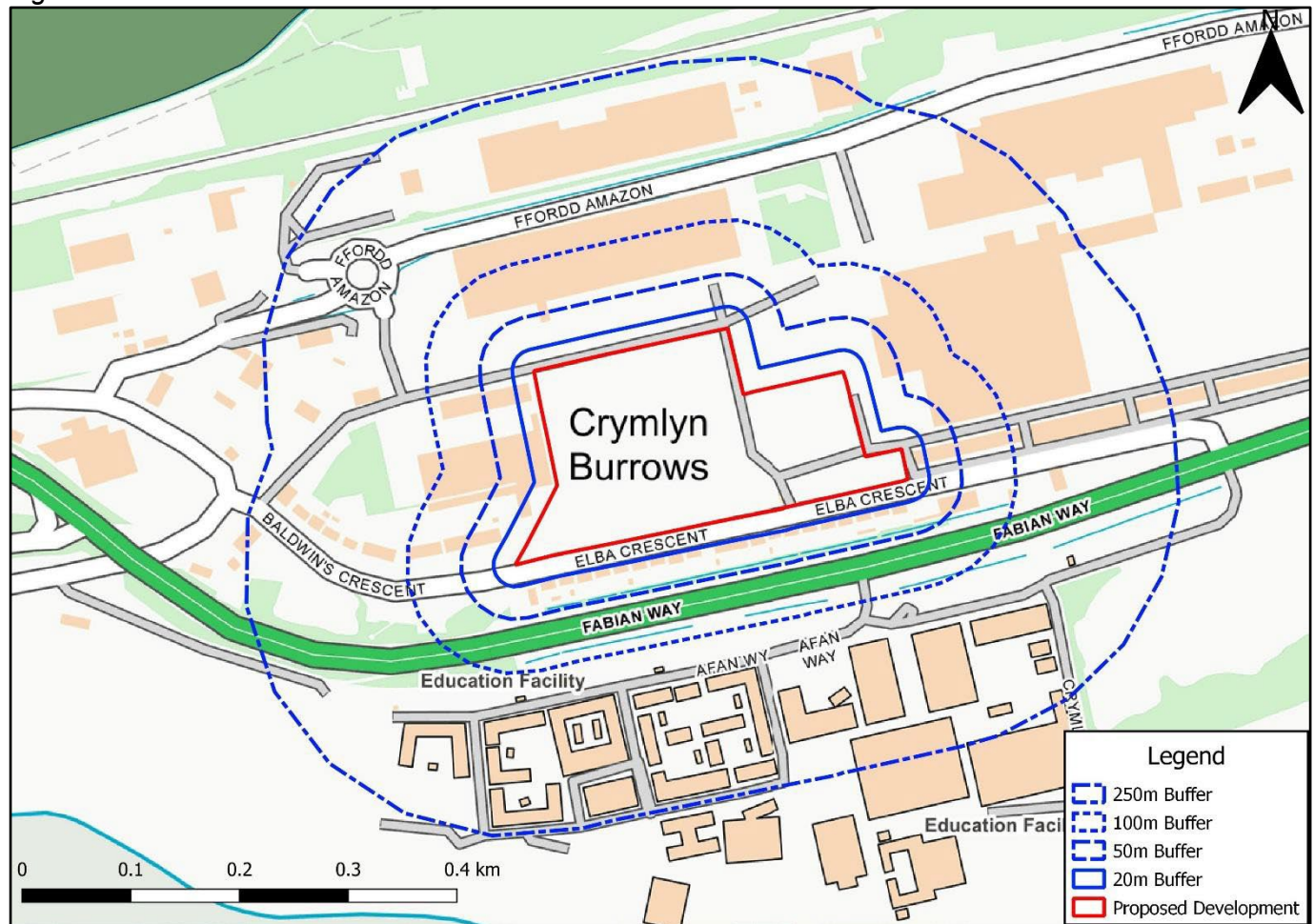
Activity	Magnitude	Justification
Demolition	N/A	The site is currently vacant, and it has been assumed that no demolition is scheduled.
Earthworks	Medium	- Total site area is between 18,000 m² and 110,000m². - It is anticipated that 5-10 heavy earth moving vehicles active at any one time.
Construction	Medium	- Total volume of buildings to be constructed has been estimated to be 12,000 m³ - 75,000 m³. - It is not known if any concrete batching or sand blasting will take place on site.

Activity	Magnitude	Justification
Trackout	Medium	- Maximum daily outwards movement of Heavy Duty Vehicles (HDVs, vehicles more than 3.5 tonnes) is expected to be 20-50. - Extent of unpaved road at the site is expected to be less than 100m.

4.5 Step 2B – Sensitivity of Area

The area sensitivity has been categorised below relative to IAQM guidance. For the purpose of assessing the sensitivities of people to health effects of PM₁₀, the current year (2024) Defra estimated background PM₁₀ concentration of 10.1 µg/m³ (Table 3.2) has been used in the absence of site-specific data. The dust buffer zones for the earthworks and construction areas are shown in Figure 4.1.

Figure 4.1: Dust Buffer Zones for Earthworks and Construction Activities



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4.5.1 Sensitivity of Area – Earthworks and Construction

The closest high sensitive receptors are located approximately 20m south of the site boundary on Elba Crescent. In addition to high sensitive receptors, there are several medium sensitive receptors in proximity to the site boundary including neighbouring commercial/industrial developments. The closest of these receptors fall within 20m of the site boundary.

The overall sensitivity of the area to dust soiling effects on people and property from earthworks and construction activities is therefore considered to be 'high'.

Given the PM₁₀ concentration at the site is below 24 µg/m³, the overall sensitivity of the area to human health impacts from demolition activity is therefore considered 'low'.

4.5.2 Sensitivity of Area – Trackout

Allowing for potential trackout within a distance of 200 m, potential receptors include residential dwellings on Elba Crescent, the closest of which fall within 20m of the road edge. Therefore the overall sensitivity of the area to dust soiling effects on people and property from trackout activity is considered ‘high’.

Given the PM₁₀ concentration at the Site is below 24 µg/m³, the overall sensitivity of the area to human health impacts from trackout activity is considered ‘low’.

4.5.3 Sensitivity of Area – Summary

In Table 4.3, the outcome of the above analysis is summarised.

Table 4.3: Step 2B Outcome

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	High	High	High
Human Health	N/A	Low	Low	Low
Ecological	N/A	N/A	N/A	N/A

4.6 Step 2C – Risk of Dust Impacts

The risk of impacts in the instance that no mitigation measures were applied are summarised in Table 4.4, in accordance with the IAQM guidance.

Table 4.4: Summary Dust Risk Table

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium Risk	Medium Risk	Medium Risk
Human Health	N/A	Low Risk	Low Risk	Low Risk
Ecological	N/A	N/A	N/A	N/A

4.7 Step 3 – Recommended Dust Control Measures

This risk summary in Table 4.4 is now used to prepare a bespoke mitigation plan for the site, in accordance with the IAQM guidance. The requirement for each measure is categorised as follows:

- Highly recommended;
- Desirable; and
- Not required.

The bespoke mitigation plan is detailed in Table 4.5 to Table 4.9 below.

Table 4.5: Mitigation for All Sites: Communications

Mitigation Measure	Requirement?
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	Highly recommended
2. 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.	Highly recommended
3. Display the head or regional office contact information.	Highly recommended

Table 4.6: Mitigation for All Sites: Dust Management

Mitigation Measure	Requirement?
4. Develop and implement a DMP, which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM ₁₀ continuous monitoring and/or visual inspections.	Highly recommended
Site Management	
5. 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.	Highly recommended
6. Make the complaints log available to the local authority when asked.	Highly recommended
7. 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 a log book.	Highly recommended
8. Hold regular liaison meetings with other high risk construction sites within 500 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.	Not required
Monitoring	
9. 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 100 m of site boundary, with cleaning to be provided if necessary.	Desirable
10. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority asked	Highly recommended
11. 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.	Highly recommended
12. 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.	Highly Recommended
Preparing and Maintaining the Site	
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	Highly recommended
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	Highly recommended
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	Highly recommended
16. Avoid site runoff of water or mud.	Highly recommended
17. Keep site fencing, barriers and scaffolding clean using wet methods.	Highly recommended

Mitigation Measure	Requirement?
18. 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.	Highly recommended
19. Cover, seed or fence stockpiles to prevent wind whipping.	Highly recommended
Operating Vehicle/Machinery and Sustainable Travel	
20. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable	Highly recommended
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	Highly recommended
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Highly recommended
23. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un- surfaced haul roads and work areas	Desirable
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	Not required
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	Desirable
Operations	
26. 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.	Highly recommended
27. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	Highly recommended
28. Use enclosed chutes and conveyors and covered skips.	Highly recommended
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Highly recommended
30. 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.	Highly recommended
Waste Management	
31. Avoid bonfires and burning of waste materials.	Highly recommended

Table 4.7: Measures Specific to Earthworks

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

Table 4.8: Measures Specific to Construction

Mitigation Measure	Requirement?
35. Avoid scabbling (roughening of concrete surfaces) if possible	Desirable
36. 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.	Highly recommended
37. 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.	Desirable
38. For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	Desirable

Table 4.9: Measures Specific to Trackout

Mitigation Measure	Requirement?
39. 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.	Highly recommended
40. Avoid dry sweeping of large areas.	Highly recommended
41. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	Highly recommended
42. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Highly recommended
43. Record all inspections of haul routes and any subsequent action in a site log book.	Highly recommended
44. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsters, and regularly cleaned.	Highly recommended
45. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Highly recommended
46. 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.	Highly recommended
47. Access gates to be located at least 10m from receptors where possible.	Highly recommended

4.8 Construction Vehicles and Equipment

4.8.1 On Road Vehicle Emissions

Construction traffic is anticipated to access the site via Elba Crescent. The EPUK & IAQM Guidance sets out screening criteria for assessment of road vehicle emissions. The Annual Average Daily Traffic (AADT) generated by the site's construction phase vehicles will fall well below the air quality screening criteria for vehicles on roads not located within an AQMA (500 LDVs AADT and 100 HDVs AADT). Considering the above, potential emissions from construction road vehicles are considered to be not significant.

Nonetheless, the following best practice measures are recommended:

- Where practicable encourage the use of ultra-low emission vehicles to make deliveries.
- Encourage site workers to travel to and from site using sustainable transport methods.
- Consolidate deliveries to avoid unnecessary vehicle trips, maximise vehicle utilisation by ensuring full loading and efficient routing.

- Ensuring that the engines of all vehicles are not left running unnecessarily to prevent exhaust emissions (and noise). It is an offence under Regulation 98 of the Road Vehicles (Construction and Use) Regulations 1986 to leave a vehicle engine idling unnecessarily whilst stationary. A driver may be asked to switch off their engine if it is believed a stationary idling offence (under reg.98 of the Road Vehicles (Construction and Use) (Amended) Regulations 2003 (SI 1986/1806) is being committed.

4.8.2 Onsite Vehicles and Equipment

Final details of the exact plant and equipment likely to be used on site will be determined by the appointed contractor. Given that the scale of the site, it is considered unlikely to comprise dump trucks, tracked excavators, diesel generators, asphalt spreaders, rollers, compressors and trucks. The number of plant and their location within the Site are likely to be variable over the construction period.

The following best practice measures are recommended to limit emissions from onsite vehicles and equipment:

- Where possible sites should ensure that a suitable electrical supply is available prior to commencing to avoid the use of generators.
- Sites should use electrical/battery powered equipment to avoid the use of diesel and petrol.
- Where electrically powered equipment is not available sites should use low emission vehicles and plant fitted with catalysts, diesel particulate filters or similar devices.
- Plant and equipment should only be operated using ultra low sulphur fuels.
- All plant should be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturer's recommendations and records maintained for the work undertaken.

4.8.3 Non-Road Mobile Machinery (NRMM)

All NRMM of net power between 37kW and 560kW operating are required to meet the standards based upon the engine emissions standards in EU Directive 97/68/EC and its subsequent amendments. This applies to both variable and constant speed engines for both NO_x and PM₁₀.

LAQM.TG22 guidance provides the following examples of how emissions from NRMM can be minimised:

- *“Ensure all equipment complies with the appropriate NRMM standards;*
- *Where feasible, ensure further abatement plant is installed on NRMM equipment, e.g. Diesel Particulate Filters;*
- *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 possible; and*
- *Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas.”*

LAQM.TG22 also states that “with suitable controls and site management” exhaust emissions from NRMM are “unlikely to make a significant impact on local air quality”. Considering the above and taking into the account the findings of the baseline assessment, the potential impacts from NRMM are considered to be not significant.

Section 5.0 Operational Impact

5.1 Impact of the Local Area on the Proposed Development

A review of existing air quality has been undertaken to determine the suitability of the site for its proposed uses. The proposed development is for the construction of approximately 152 residential units. As per Appendix A, long-term (annual) and short-term (hourly and 24-hour average) air quality objectives apply at residential developments.

SC monitored diffusion tube data (Table 3.1), and Defra background data (Table 3.2) from the site and surrounding area indicates that concentrations of NO₂, PM₁₀ and PM_{2.5} are likely to be below their respective annual mean air quality.

LAQM.TG22 states that in the absence of site-specific monitoring, exceedance of the 1-hour mean NO₂ objective is likely to occur where annual mean concentrations are in excess of an annual mean concentration of 60 µg/m³. Therefore, receptors may be assessed against an annual mean concentration of 60 µg/m³ for comparison against the 1-hour mean NO₂ objective. SC monitored, and Defra estimated, annual mean concentrations in the vicinity of the site are well below 60 µg/m³. This indicates that exceedance of the 1-hour mean NO₂ objective is unlikely to occur at the proposed development.

For the PM₁₀ short-term (24-hour mean) objective, the number of potential exceedances can be estimated by using the following relationship within LAQM.TG22 in the absence of site-specific monitoring:

$$\text{No. 24-hour mean exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + (206/\text{annual mean})$$

Annual mean Defra background concentrations at the site are 10.1 µg/m³ in the current year (2024). Using the above formula, this leads to 3 exceedance day per year, which is well below the maximum number of 35. As such, exceedances of the 24-hour mean objective is unlikely to occur at the proposed development.

Therefore, future occupants of the proposed development would not be exposed to unacceptable air quality and the site is deemed suitable for its proposed future use in this respect.

5.2 Impacts on Surrounding Air Quality

EPUK & IAQM guidance includes a number of indicative criteria that should be used to assess whether there is a need to proceed to a detailed air quality assessment. The criteria also state that exceeding the criteria does not automatically lead to a requirement to undertake a detailed assessment using air dispersion modelling. However, if a qualitative assessment is used it will need to provide a robust conclusion on whether a proposed development is likely to significantly affect air quality.

The results of Stage 1 of the screening assessment are presented in Table 5.1.

Table 5.1: EPUK & IAQM Stage 1 Screening Criteria

Screening Criteria	Development Proposal
A: If any of the following apply	
> 10 residential units or a site area of > 0.5ha	Yes, more than 10 residential units
> 1,000 m ² of floor space for all other uses or a site area > 1 ha	Yes, site area is > 1ha
B. Coupled with any of the following	
Development > 10 parking spaces	Yes
Central energy facility or centralised combustion process	No, central energy facility or centralised combustion process are not proposed.

Table 5.1 indicates that the proposed development will exceed the Stage 1 criteria and as such the proposed development has been considered against the Stage 2 screening criteria presented within Table 5.2.

Table 5.2: EPUK & IAQM Stage 2 Screening Criteria

Screening Criteria	Development Proposal
1. Change of LDV ¹ flows > 500 AADT on roads not within or adjacent to an AQMA; or > 100 AADT on roads within or adjacent to an AQMA	A Transport Assessment ⁴ has been prepared for the proposed development. This states that over a 12-hour period (07:00-19:00) the total trip rate is estimated to be between 579 (average) and 751 (85 th percentile). The distribution of traffic has been reviewed and the headroom
2. Change of HDV ² flows > 100 AADT on roads not within or adjacent to an AQMA; or > 25 AADT on roads within or adjacent to an AQMA	No, the development does not result in a HDV change > 100 AADT.
3. Change of 5m in road alignment	No, there is no change in road alignment proposed.
4. Introduce new junction or remove junction causing significant change in traffic speeds	Not applicable.
5. Introduce/Change bus station causing bus flows to change by > 25 AADT	Not applicable.
6. Underground car park with ventilation within 20m of receptor, with car park movements > 100 (in and out) per day	No, there is no proposed underground car park
7. Substantial combustion process	No combustion sources are proposed.
¹ LDV: Light Duty Vehicles less than 3.5 tonnes ² HDV: Heavy Duty Vehicles more than 3.5 tonnes	

The access to the proposed development will be via Elba Crescent, which is a local road. Traffic will access Elba Crescent via the junction with the A483 (Fabian Way) to the east of the site.

The Transport Assessment⁴ includes a more detailed breakdown on the trip distribution of vehicles arriving and departing from the site:

- Weekday AM period: Approximately 47% of traffic will arrive at the site via the eastbound approach on the A483 while 53% will arrive via the westbound approach.
- Weekday AM period: Approximately 25% of traffic will depart the site via the westbound approach on the A483 while 75% will depart via the eastbound approach.
- Weekday PM period: Approximately 45% of traffic will arrive at the site via the eastbound approach on the A483 while 55% will arrive via the westbound approach.
- Weekday AM period: Approximately 60% of traffic will depart the site via the westbound approach on the A483 while 40% will depart via the eastbound approach.

Based on the above distribution, it is considered that traffic generated by the proposed development on the A483 will be below the EPUK & IAQM criteria for roads not located within an AQMA. For roads adjoining the A483, it is considered that proposed development traffic will be diluted further with distance from the site such that proposed development traffic will be below the criteria.

⁴ CORUN. Land North of Elba Crescent, Swansea – Transport Assessment, November 2023

It is anticipated that the proposed development traffic would be slightly above the EPUK occur on Elba Crescent. A traffic survey was conducted in October 2023 as part of the Transport Assessment. The survey recorded the following vehicle numbers on Elba Crescent during peak periods:

- Weekday AM period: 114 vehicles, no HDVs
- Weekday PM period: 110 vehicles, no HDV's

Given the relatively low baseline traffic numbers on Elba Crescent and the low existing baseline air quality concentrations (Section 3), the increase in vehicle emissions from proposed development traffic is not expected to lead to exceedances of the relevant air quality objectives (Table 2.1) at sensitive receptors on Elba Crescent.

Further assessment of the air quality impact of the proposed development on the local area has therefore been scoped out.

5.3 Impacts on Swansea AQMA

Swansea AQMA is located approximately 3.4km west of the proposed development towards Swansea City Centre. Given the expected traffic distribution of the proposed development and the distance of the AQMA from the site, traffic flows from the proposed development are expected to be sufficiently diluted within the AQMA so that they fall below the EPUK & IAQM criteria for detailed assessment. As such, potential impacts on the Swansea AQMA are considered to be 'not significant'.

5.4 Impacts on Designated Sites

As detailed in Section 3.5, there are two designated sites that have the potential to be impacted from traffic emissions from the proposed development:

- Crymlyn Bog SSSI/SAC
- Crymlyn Burrows SSSI

Both of these designated sites are adjacent to the A483. With reference to the IAQM guidance, the DMRB screening criteria of a change in AADT flows of 1,000 vehicles or 200 HDVs has been widely used to screen out the need for a detailed modelling assessment. Considering the expected trip distribution of the proposed development, traffic increases on the A483 are expected to be well below the DMRB criteria and aforementioned EPUK & IAQM criteria. As such, potential impacts on designated ecological sites are considered to be 'not significant'.

5.5 Mitigation

Potential overall impacts of the proposed development on surrounding air quality (including the AQMA and designated sites) are considered to be 'not significant' in accordance with EPUK and IAQM guidance. As such, additional mitigation measures have not been recommended.

Section 6.0 Conclusions

An assessment of the potential air quality impacts from the proposed development was undertaken, both during the construction phase and the operational phase.

During the construction phase, the main air quality impacts that may arise are dust deposition resulting in the soiling of surfaces, visible dust plumes which are evidence of dust emissions, and elevated PM₁₀ concentrations as a result of dust generating activities on site. A risk assessment following relevant guidance was undertaken which categorised the worst-case unmitigated risk as 'medium' for earthworks, construction and trackout activities. As per good practice, mitigation measures have been proposed in accordance with relevant assigned risk level, to help reduce the residual effect to an acceptable level.

Regarding the suitability of air quality at the site for its intended uses, a review of baseline air quality data indicated that pollutant concentrations at the site are likely to be below the relevant health-based objectives. As such, the future occupants of the proposed development would not be exposed to unacceptable air quality and the site is deemed suitable for its proposed future uses in this respect.

Regarding the impact of the proposed development on the surrounding area (including AQMA and designated sites), an air quality impact screening assessment of the operational phase was undertaken in accordance with the applicable guidance. With regard to operational traffic, a review of the likely traffic distribution indicated that traffic would be below the relevant criteria for more detailed assessment on most roads. Further assessment was undertaken for Elba Crescent where development traffic would be slightly above the criteria. It was determined that given the relatively low baseline traffic numbers on Elba Crescent and the low existing baseline air quality concentrations, the increase in vehicle emissions from proposed development traffic is not expected to lead to exceedances of the relevant air quality objectives at sensitive receptors on Elba Crescent. The potential impacts on Swansea AQMA and designated ecological sites were reviewed and considered to be 'not significant'. As such, additional mitigation measures were not recommended.

The proposed development is considered to be compliant with national and local policy including the NPTC Local Development Plan.

Appendix A: Examples of Where the Air Quality Objectives should Apply

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual Mean	- All locations where members of the public might be regularly exposed. - Building facades of residential properties, schools, hospitals, care homes, etc.	- Building facades of offices or other places of work where members of the public do not have regular access. - Hotels, unless people live there as their permanent residence. - Gardens of residential properties. - Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24 Hour Mean and 8 Hour Mean	- All locations where the annual mean objectives would apply, together with hotels. - Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1 Hour Mean	- All locations where the annual mean and 24 and 8 hour mean objectives would apply. - Kerbside sites (e.g. pavements of busy shopping streets). - Those parts of car parks, bus stations and railway stations, etc. which are not fully enclosed, where the public might reasonably be expected to spend one hour or more. - Any outdoor locations at which the public may be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15 Minute Mean	All locations where members of the public might reasonably be expected to spend a period of 15 minutes or longer.	