



Parc Pelenna

Air Quality Assessment

For *Trivselhus*

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1. Introduction

Hydrock have been commissioned by Trivselhus to prepare an Air Quality Assessment (AQA) to support the outline planning application for a holiday resort (the 'Proposed Development') on land east of Fairyland Road, Tonna, Neath, SA11 3QE (The 'Site'). The Site is located within the administrative boundary of Neath Port Talbot Council (NPTC).

The Site is centred on the National Grid Reference (NGR); x280250, y199525 and is shown below Figure 1. The Site is situated approximately 2km east of Tonna and 1km south of Clyne. The surrounding locale is characterised by agricultural land and forest.



Figure 1: Site Location

1.1 Proposed Development

The proposals seek permission for outline planning (All Matters Reserved) for a proposed holiday resort comprising 120 lodges (planning ref; P2024/0543), associated leisure building offering hospitality and a pool, new access road, parking, facilities and associated infrastructure including sustainable drainage and on-site wastewater treatment, landscaping, engineering operations and lighting.

1.2 Purpose of Air Quality Assessment

The assessment describes the scope, relevant legislation, assessment methodology and the baseline conditions currently existing in the area. It then presents an assessment of potential impacts during the construction and operational phases of the Proposed Development, and an evaluation of the significance of these effects with respect to air quality.

2. Relevant Legislation and Guidance

2.1 Air Quality Regulations and Objectives

There are two sets of air quality legislation which include ambient air quality thresholds for the protection of public health that apply in Wales, these include legally binding limit values originally set by the European Union (EU) Directive 2008/50/EC¹ on ambient air quality and cleaner air for Europe; and regulations implementing national air quality objectives as set out in the Air Quality Strategy (AQS) for Scotland, Wales and Northern Ireland (AQS)² which local authorities are required to work towards achieving.

The targets and limit values set within the 2008/50/EC directive were transposed into UK law through the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138)³, Air Quality (Amendment) (Wales) Regulations 2002⁴, No 3182 (Wales 298) and Air Quality (Wales) Standards Regulations 2010⁵ and amended through The Air Quality Standards (Wales) (Amendment) (EU Exit) Regulations 2019⁶.

The AQS sets out the government's policies and framework for improving air quality in the UK with the aim of meeting the requirements of above legislation. The AQS also outlines the Limit Values, Target Values, Standards, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment (collectively termed Air Quality Assessment Levels (AQALs) throughout this report). Those relevant to this assessment is provided below, in Table 1:

Table 1: National Air Quality Objectives

Pollutant	Averaging Period	AQALs	
NO ₂	1 Hour Mean	200 µg/m ³	Not to be exceeded more than 18 times in a year.
	Annual Mean	40 µg/m ³	
PM ₁₀	24 Hour Mean	50 µg/m ³	Not to be exceeded more than 35 times in a year.
	Annual Mean	40 µg/m ³	
PM _{2.5}	Annual Mean	25 µg/m ³	

Defra's Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))⁷ provides guidance on where the above AQAL's should apply. This is summarised below, in Table 2.

¹ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Available at: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050>

² Defra, "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland". Available at: <https://www.gov.uk/government/publications/2010-to-2015-government-policy-environmental-quality/2010-to-2015-government-policy-environmental-quality#appendix-5-international-european-and-national-standards-for-air-quality>

³ Welsh Government <https://www.legislation.gov.uk/wsi/2000/1940/made>

⁴ <https://www.legislation.gov.uk/wsi/2002/3182/made>

⁵ Welsh Government, "The Air Quality Standards (Wales) Regulations 2010," May 2010, <https://gov.wales/sites/default/files/publications/2019-04/the-air-quality-standards-wales-regulations-2010.pdf>.

⁶ The Air Quality Standards (Wales) (Amendment) (EU Exit) Regulations 2019, Welsh Statutory Instruments, 2019 No. 390 (W. 95) <https://www.legislation.gov.uk/wsi/2019/390/made>

⁷ Defra, "LAQM Technical Guidance (TG22)" (Department for Food, Environment and Rural Affairs (Defra), August 2022), <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

Table 2: Summary of where AQALs 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 other 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 objective would apply, together with hotels. Gardens of residential properties	Kerbside sites (as opposed to other 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 apply. Kerbside site (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railways stations etc. which are not fully enclosed, where members of the public might be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expect 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 member of the public might reasonably be exposed for a period of 15 minutes	

2.2 Clean Air Plan for Wales

The Clean Air Plan for Wales⁸ sets out Wales's commitment and long-term ambition to improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and the economy. The 10-year pathway has been structured around four core themes; people, environment, prosperity and place. Furthermore, amongst numerous air quality actions, the document outlines the implementation of a Clean Air Act and how it will be developed and what it is likely to include.

The Environment (Air Quality and Soundscapes) (Wales) Act 2024 became law in Wales 14 February 2024⁹. The Clean Air Act (Wales) requires the Welsh Government to:

- » provide a framework for setting national air quality targets and consider who guidelines,
- » amend existing legislation relating to the national air quality strategy;
- » local air quality management; smoke control; clean air zones/low emission zones and vehicle idling; and
- » place a duty on Welsh Ministers to promote awareness of air pollution.

2.3 Local Air Quality Management

Obligations under the Environment Act 2021¹⁰ (which provides an amendment to the Environment Act 1995¹¹) requires local authorities to review and assess air quality in their administrative boundaries. Where AQALs are predicted to be exceeded, the local authority must declare an Air Quality Management Area (AQMA) at sensitive receptor locations and formulate an Air Quality Action Plan (AQAP) to reduce pollution concentrations to values below AQALs.

The Welsh Government published the Local Air Quality Management in Wales Policy Guidance¹² in 2017 in order to integrate the Well-being of Future Generations (Wales) Act 2015¹³ into the Local Air Quality Management (LAQM) system in Wales. This directed local authorities to integrate the five ways of working from this act into LAQM, including the principles of long-term, prevention-focused, integration, collaboration and involvement.

2.4 Well-being of Future Generations Act

The Well-being of Future Generations Act¹⁴ requires public bodies in Wales to consider the long-term impact of their decisions, to collaborate with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change. Under the Well-being of Future Generations Act, the Welsh government has established average population exposure to NO₂ as an indicator to measure progress towards well-being goals in Wales. Regulations made under the Act require public services boards to consider air quality when carrying out their statutory assessments of local well-being.

⁸ Welsh Government, The Clean Air Plan for Wales, Healthy Air, Healthy Wales, 2020

⁹ Welsh Government, The Environment (Air Quality and Soundscapes) (Wales), <https://business.senedd.wales/mglIssueHistoryHome.aspx?lId=40984>

¹⁰ <https://bills.parliament.uk/bills/2593/publications>

¹¹ Environment Agency, "Environment Act 1995" (The Environment Agency, 2002), <http://www.legislation.gov.uk/ukpga/1995/25/contents>.

¹² Welsh Government, "Local Air Quality Management in Wales Policy Guidance," June 2017, <https://gov.wales/sites/default/files/publications/2019-04/local-air-quality-management-in-wales.pdf>.

¹³ Welsh Government, "Well-Being of Future Generations (Wales) Act 2015," 2015, <https://www.legislation.gov.uk/anaw/2015/2/contents/enacted>.

¹⁴ Welsh Government, Well-being of Future Generations (Wales) Act 2015 2015 anaw 2

2.5 Planning Policy Wales

Planning Policy Wales¹⁵ sets out the national policy and guidance for making planning decisions in Wales. Section 6.7 relates to air quality, stating that *"the planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots"*.

For new development, planning authorities and developers must address any implication arising as a result of its association with, or location within, air quality management areas or areas where there are sensitive receptors, not create areas of poor air quality, and seek to incorporate measures which reduce overall exposure to air pollution. It also states the need for consideration of airborne pollution during the construction phase of development.

2.6 Future Wales: the National Plan 2040

Future Wales: the national plan 2040¹⁶ was published in February 2021 by the Welsh government. This document forms part of the national development framework for Wales and promotes development that enhances wellbeing and quality of life. The document should be read in conjunction with Planning Policy Wales and planning applications will need to comply with the plan. Air quality and clean air is referenced throughout the document, in particular developing infrastructure responsibly.

2.7 Local Planning Policy

The Local Development Plan (LDP) for NPTC¹⁷ is the overarching planning policy document providing statutory framework for the development and use of land within administrative area over the period 2011-2026. The plan contains the following policies which relate to air quality and state:

"Policy SP 16: 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;*

[...]

¹⁵ Welsh Government, "Planning Policy Wales: Edition 10.", <https://gov.wales/sites/default/files/publications/2019-02/planning-policy-wales-edition-10.pdf>.

¹⁶ Welsh Government, FUTURE WALES The National Plan 2040, February 2021

¹⁷ Neath Port Talbot County Borough Council, Local Development Plan (2011 - 2026), Adopted January 2016

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."

3. Methodology

3.1 Consultation

Full details of the AQA approach were sent via email to NPTC's Environmental Health Officer (EHO) in December 2024 with a request for further comment / guidance. The following response was received on 18/12/2024:

" In the main I am in agreement with the proposed assessment...

... I am concerned about the junction causing increased traffic straight past the residential property, which seems to be very close to the new proposed junction. It is specifically the number of predicted movements in and out of this junction that I need to understand because that will enable me to make a decision as to whether or not it has significantly changed."

Hydrock, now Stantec subsequently proposed and agreed a semi-quantitative methodology to address the EHO's concerns about the potential air quality impact of the new proposed junction. This information is detailed in the following sections.

3.2 Guidance

The following guidance has been used to undertake this Air Quality Assessment:

- » Defra's LAQM.TG (22)⁷;
- » EPUK & IAQM Land-use Planning & Development Control: Planning for Air Quality¹⁸;
- » The IAQM's guidance on assessing impacts from construction¹⁹.

3.3 Baseline Air Quality

The baseline air quality conditions in the vicinity of the Site have been established through the compilation and review of the following sources. The Baseline Assessment can be found in Section 4.

- » Data from the National Atmospheric Emissions Inventory (NAEI) ²⁰, Environment Agency (EA)²¹ and Defra's Pollutant Release and Transfer Register (PRTR) data²²;
- » Defra's modelled background concentrations of AQS pollutants (UK-AIR)²³. These estimates are produced using detailed modelling tools and are available as concentrations at central 1km² National Grid square locations across the UK. Mapped background concentrations have been obtained based upon the 2021 base year Defra update;
- » Multi Agency Geographic Information for the Countryside (MAGIC)²⁴, and;
- » NPTC's latest available air quality monitoring data, derived from the latest available air quality annual progress report published in 2023²⁵

¹⁸ EPUK & IAQM, "Land-Use Planning & Development Control: Planning for Air Quality" (Institute for Air Quality Management (IAQM), January 2017), <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>.

¹⁹ IAQM, Guidance on the assessment of dust from demolition and construction, January 2024 (V2.2) <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

²⁰ National Atmospheric Emissions Inventory, UK Emissions Interactive Map (beis.gov.uk).

²¹ <https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory>

²² UK Pollutant Release and Transfer Register (PRTR) <https://prtr.defra.gov.uk/map-search>

²³ UK-AIR, "Background Mapping Data for Local Authorities - 2021," n.d., <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>.

²⁴ <https://magic.defra.gov.uk/MagicMap.aspx>

²⁵ Neath Port Talbot Council, 2023 Annual Air Quality Progress Report, October 2023. <https://www.npt.gov.uk/environmental-health/pollution/pollution-monitoring-reports/>

3.4 Construction Phase Assessment

3.4.1 Dust Risk Assessment

The construction dust risk assessment (CDRA) is provided in Section 5 and has been undertaken in line with IAQM guidance. This considers the risk of impacts during the construction phase in terms of nuisance dust, human health (PM₁₀ exposure) and ecological impacts.

With regard to ecological receptors, risk assessment should be taken where high-sensitivity receptors are located within 50m of a Site boundary. The Multi Agency Geographic Information for the Countryside (MAGIC) website, which incorporates Natural Resources Wales interactive maps²⁶, has been reviewed to identify whether any statutory ecological sensitive receptors are situated within 50m of the Site boundary or within 50m of any routes used by construction vehicles on the public highway, up to 250m from the Site entrance.

Ancient woodlands lie within the Site and within 50m of the Site boundary. As the type of woodland species present is unknown, it has been assumed that dust sensitive species are present and as such, the ancient woodlands have been considered within the CDRA.

Sensitive human receptors were identified within 250m of the Site boundary. Based on the IAQM guidance residential dwellings, museums, car parks and car show room are indicative examples of high sensitivity receptors in relation to both dust soiling and health effects of PM₁₀. Indicative examples of medium sensitivity receptors include places of work, such as offices.

The IAQM guidance states that the potential dust emission magnitude from Demolition, Earthworks, Construction and Trackout should all be assessed individually. In addition, the sensitivity of the area to adverse dust impacts should also be defined.

The overall significance of the risk of adverse impacts during the construction phase can then be defined using the 'risk of impacts matrix' for each stage of the construction phase described above.

3.4.2 Construction Traffic Emissions

The IAQM guidance states that from experience of assessing exhaust emissions from site traffic, it is unlikely that any significant adverse impacts on local air quality would be caused and in the vast majority of cases, quantitative assessment is not needed. As such, short term effects of construction traffic emissions have not been assessed as they are also likely to be well below the EPUK & IAQM traffic criteria outlined in Table 3.

3.5 Operational Phase Assessment

The scope of assessment has been determined against the EPUK & IAQM's two stage checklist criteria¹⁸. The Proposed Development meets the Stage 1 Criteria for requiring an AQA and accordingly, has been considered against the relevant Stage 2 checklist criteria shown in Table 3 which identifies whether a detailed assessment of potential air quality impacts is required.

Stage 2 includes some criteria which are not directly relevant to the Proposed Development, such as those related to the realignment of roads within an AQMA, introduction of a new bus station and underground car parks. These have been excluded from this assessment and only relevant screening criteria have been included.

²⁶ Natural England and MAGIC partnership organisations., "Multi Agency Geographic Information for the Countryside.", 2020, <https://magic.defra.gov.uk/MagicMap.aspx>.

Table 3: EPUK & IAQM Assessment Criteria

Criteria	The Development Will:	Indicative Criteria to Proceed to a Detailed AQA:
1	Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV - cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: » more than 100 AADT within or adjacent to an AQMA » more than 500 AADT elsewhere
2	Cause a significant change in Heavy Duty (HDV) flows on local roads with relevant receptors (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: » more than 25 AADT within or adjacent to an AQMA » more than 100 AADT elsewhere.
3	Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
4	Have one of more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB. This includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NO _x emission rate is less than 5mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situation where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emissions rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

3.5.1 Trip Generation

The Site is not located within an AQMA and therefore the less stringent criteria apply. The transport Consultants on the scheme, Hydrock, now Stantec, have confirmed the Proposed Development is anticipated to generate a total of 464 vehicle trips (Annual Average Daily Traffic (AADT)). Table 4 presents the proposed trip generation and anticipated routing on the local road network, namely the B4434.

Table 4: Proposed Trip Generation (AADT)

Road Link	LDV	HDV
Site Access	459	5
B4434 heading east towards Glyneath	184	3

Road Link	LDV	HDV
B4434 heading west towards M4	275	2

As shown in Table 4, the development traffic will predominately comprise of LDVs (459 AADT) with 5 HDV AADT. 60% of development traffic will route to/from the west towards the M4 Junction 43 via the B4434, A474 and A465, and 40% will travel towards/from Glynneath and Merthyr Tydfil via the A465 (towards the M50 motorway). The trip generation is below the EPUK & IAQM thresholds and therefore a detailed assessment of operational development traffic can be screened out, as impacts are likely to be negligible.

3.5.2 New Junction

The Proposed Development will also introduce a new junction as a result of the Site access. The new junction will provide access to the Proposed Development only. Therefore, only traffic associated with the development (Table 4) would reasonably be expected to use this junction.

It is noted that a residential property lies approximately 15m from the B4434 and 50m from the Site access. The estimated baseline flows along the B4434 are approximately 1,400 AADT²⁷. It is generally accepted that exposure > 10m from roads with traffic flows <10,000 AADT could reasonably be classified as background locations²⁸. Furthermore, in accordance with LAQM.TG(22)²⁹ screening assessment for Junctions, an exposure more than 10m from the kerb with <10,000 vehicles/day is considered unlikely to result in an exceedance.

As shown in Table 5, the 2025 Defra background concentrations at the grid square containing the Site and immediate locale, including the residential property, are well below the relevant AQALs. Based on these background concentrations, the NO₂ Fall Off With Distance from Roads Calculator²⁹ has been used in reverse to estimate what concentration would be required at the residential receptor for there to be a risk of exceedance of the annual mean AQAL. This indicates that a roadside NO₂ concentration of >100µg/m³ would be required for annual mean concentrations to exceed 36µg/m³ at the property and result in a risk of exceedance of the relevant AQAL. This is considered unlikely for this location.

Furthermore, from the desk-based evidence available at this time, the baseline concentrations are less than 75% of the relevant AQALs and therefore, for the Proposed Development trips to trigger a slight or moderate impact in line with the EPUK & IAQM guidance, a change of 6% or more (relative to the AQAL) would be required, i.e., an increase in NO₂ and PM₁₀ by 2.4µg/m³ and/or 1.5µg/m³ for PM_{2.5}. This level of increase is not considered to be proportionate to the trip generation figures in Table 4.

On this basis, a significant effect at the residential property, in air quality terms, is considered unlikely as a result of the new junction.

3.5.3 Combustion Sources

It is understood that the preferred option for the energy strategy comprises air source heat pumps for space heating, combined with roof mounted solar voltaic panels to produce electricity and/ or solar thermal panels to preheat incoming water.

On this basis, it is assumed that there will be no substantial combustion sources associated with the Proposed Development, as such impacts from these sources are not discussed further.

²⁷ Estimated baseline flows provided by Hydrock, now Stantec Transport Team

²⁸ AEA Energy and Environment, Diffusion Tubes for Ambient NO₂ Monitoring: Practical guidance for laboratories and users, Feb 2008

²⁹ <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/no2-falloff/>

3.5.4 Summary

Based on the information presented above and in line with EPUK & IAQM guidance it is expected that operational phase impacts should be negligible:

"If none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered as having an insignificant effect".

4. Baseline Air Quality Conditions

4.1 AQMAs

At the time of writing, NPTC have declared an AQMA (Taibach/Margam) for breaches of the PM₁₀ 24-hour mean objective. The AQMA covers an area of land and properties between the Corus Steel Works and the M4 Motorway³⁰ and is located approximately 9.5km south of the Site. Based on the distance, the Proposed Development is unlikely to impact the AQMA.

4.2 Local Emission Sources

The main source of air pollution in the surrounding Site locale is considered to be emissions from vehicles using the local road network, predominantly B4434 and A465 to the east of the Site.

A review of the NAEI²⁰, EA²¹ and Defra's PRTR²² data indicates that there are no major industrial pollution sources in the immediate vicinity of the Site that will influence local air quality.

4.3 Defra Mapped Concentrations

Mapped background concentrations of NO₂, PM₁₀ and PM_{2.5} were downloaded for the grid squares containing the Site. The Site lies within two grid squares and therefore the average concentrations have been presented below.

Table 5: Defra Mapped Background Concentrations

Grid Squares (x,y)	Pollutant	AQAL (µg/m ³)	2025 Annual Mean Concentration (µg/m ³)
279500, 199500 280500, 199500	NO ₂	40	4.4
	PM ₁₀	40	9.0
	PM _{2.5}	25	5.4

The data show that annual mean background concentrations of NO₂, PM₁₀ and PM_{2.5} at the grid squares within which the Site is located are well below the AQALs.

Concentrations of all pollutants are predicted to decline incrementally each year. These reductions are principally due to the forecast effect of the roll out of cleaner vehicles and strategies to reduce emissions across all sectors.

4.4 Air Quality Monitoring Data

The closest automatic analyser to the Site is the Victoria Gardens Roadside monitor (VG2) located approximately 5km to the south west. This automatic monitor measures NO₂ only. Recent measurements are presented below in Table 6.

Passive NO₂ diffusion tube monitoring is currently undertaken by NPTC at numerous locations throughout the Council's area as part of their commitment to LAQM. The closest tubes to the Site are shown in Figure 5 and the data presented in Table 6.

³⁰ https://uk-air.defra.gov.uk/aqma/details?aqma_ref=76



Figure 2: Local Authority Monitoring

Table 6: NO₂ Monitoring Concentrations

Site ID	Site Name	Site Type	Annual Mean NO ₂ Concentration (µg/m ³)				
			2018	2019	2020	2021	2022
VG2	Victoria Gardens	R	34.0	32.0	27.0	26.0	27.0
1a,b,c	1 Victoria Gardens	R	32.5	34.0	29.8	32.6	25.7
4	8 Victoria Gardens	R	22.7	23.5	20.1	22	20.1
5	28 Eastland Rd. Neath	R	25.7	27.2	23.9	26.8	20.6
12	34 Eastland Rd. Neath	R	24.9	26.7	22.2	24.1	19.7
13	40 Eastland Rd. Neath	R	22.2	23.6	20.5	24.4	20.1
14	32 Eastland Rd. Neath	R	25.9	26.6	23.0	25.5	21.7
15	30 Eastland Rd. Neath	R	25.9	27.1	23.7	26.5	20.2
16	5 Victoria Gardens	R	29.2	30.2	25.6	26.6	24.3
17	1 Greenway Rd. Neath	R	29.3	21.3	26.0	29.5	23.8
20a,b,c	3 Victoria Gardens	R	28.6	29.8	25.9	27.4	22.6

Site ID	Site Name	Site Type	Annual Mean NO ₂ Concentration (µg/m ³)				
			2018	2019	2020	2021	2022
21	50 Greenway Rd. Neath	R	32.8	33.7	32.5	34.8	25.8
22	54 Windsor Rd. Neath	R	21.1	21.3	17.6	21.3	16.1
23	4 Victoria Gardens	R	26.1	26.2	22.2	23.3	19.2
24a,b,c	Stockhams Corner. Neath	R	25.4	28.0	24.8	26.0	21.3
34a,b,c	Cimla Rd Analyser	R	36.7	36.6	30.0	34.0	26.3

Notes:

R = Roadside

The data in Table 6 shows there have been no exceedances of the NO₂ annual mean AQAL during the period 2018 to 2022. Moreover, concentrations have remained well below 60µg/m³ and therefore, in accordance with LAQM.TG(22), exceedance of the hourly NO₂ AQAL is considered unlikely.

The highest concentration was 36.7µg/m³ in 2018 at monitoring site 34a,b,c. During 2018 and 2019 the measured concentration was within 10% of the AQAL and therefore in line with LAQM.TG (22) there was a risk of exceedance of the annual mean AQAL for NO₂ at this location.

The B4434 starts at the roundabout intersecting with the A474 and continues past the Site towards Resolven. Monitoring sites on the B4434 include those along Victoria Gardens and Eastland Road in Neath, which all illustrate 2022 measured roadside concentrations well below the AQAL.

With exception of the Site access road which is not relevant exposure, the Site would be reasonably considered a rural background location in the context of proximity to pollution sources. All monitoring locations in the study area are classified as roadside and none illustrate concentrations above the AQALs. Roadside concentrations are not representative of relevant exposure at the Site, therefore concentrations at the Site would be expected to be more comparable to those presented in Table 5, which are well below all relevant AQALs.

Measurements in 2020 and 2021 should be treated with caution due to the potential effects of the Covid 19 pandemic.

5. Construction Phase Assessment

5.1 Overview

The construction phase of the Proposed Development will involve a number of activities that will release polluting emissions to air. Predominantly, these will be emissions of dust. As such, a qualitative construction dust risk assessment has been carried out in accordance with IAQM guidance. Information used in the assessment of Potential Dust Emission Magnitude was provided by the client. Additional application of professional judgement was required to ensure a robust assessment.

Construction activities will typically include:

- » material export and import;
- » temporary stockpiling of materials;
- » groundwork for foundations and services;
- » construction of buildings;
- » landscaping works; and
- » vehicle movements (with the potential to track-out material from site).

5.2 Potential Dust Emission Magnitude

5.2.1 Demolition

The existing buildings will be demolished as part of the development proposals. The total volume of buildings / infrastructure to be demolished is <12,000 m³, with demolition activities taking place below 6m above ground level.

Based on the above, the potential dust emission magnitude for earthworks is considered to be **'Small'**.

5.2.2 Earthworks

Earthworks will primarily involve excavating material, haulage, Site clearance, tipping and stockpiling. This may also involve levelling the site and landscaping.

The total area of the Site is falls within the IAQM's 'large' criteria (>110,000m²). The underlying soil texture is loamy³¹ which have a medium potential for dust release when dry due to the particle size.

It is expected that there will be up to 10 heavy earth moving vehicles on site at any one time.

Based on the above, the potential dust emission magnitude for earthworks is considered to be **'Large'**.

5.2.3 Construction

The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build.

An estimation of the total volume of the Proposed Development has been estimated on the quantum of development, and it is considered that the total volume of the buildings proposed is between 12,000m³ - 75,000m³.

³¹ Cranfield University, "Cranfield Soil and Agrifood Institute," n.d., <http://www.landis.org.uk/soilscapes/>.

Construction materials are likely to comprise of timber, metal, stone and glass. It has been assumed that concrete batching and sandblasting will not be undertaken onsite.

Based on the above, the potential dust emission magnitude for construction is considered to be '**Medium**'.

5.2.4 Trackout

The risk of impacts occurring during Trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size, speed and the duration of activities are also factors which are used to determine the risk of impacts.

Vehicles will route via the B4434. Due to the length of access road, unpaved surfaces over 100m may be required. HDV outward movements are predicted to be <50.

Based on the above, the potential dust emission magnitude during Trackout is considered to be '**Large**'.

5.2.5 Summary

Table 7 below shows a summary of the potential dust emission magnitudes from each activity.

Table 7: Dust Emission Magnitude Summary

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

5.3 Sensitivity of Area

The prevailing wind direction for the closest regionally representative meteorological measurement station to the Site, at Mumbles, is shown in Appendix B. The wind rose shows that the prevailing winds are from the west.

Figure 3 shows the construction phase distance buffers (20m, 50m, 100m and 250m) around the Site boundary, as well as identified high and medium sensitivity receptor locations within these buffers.

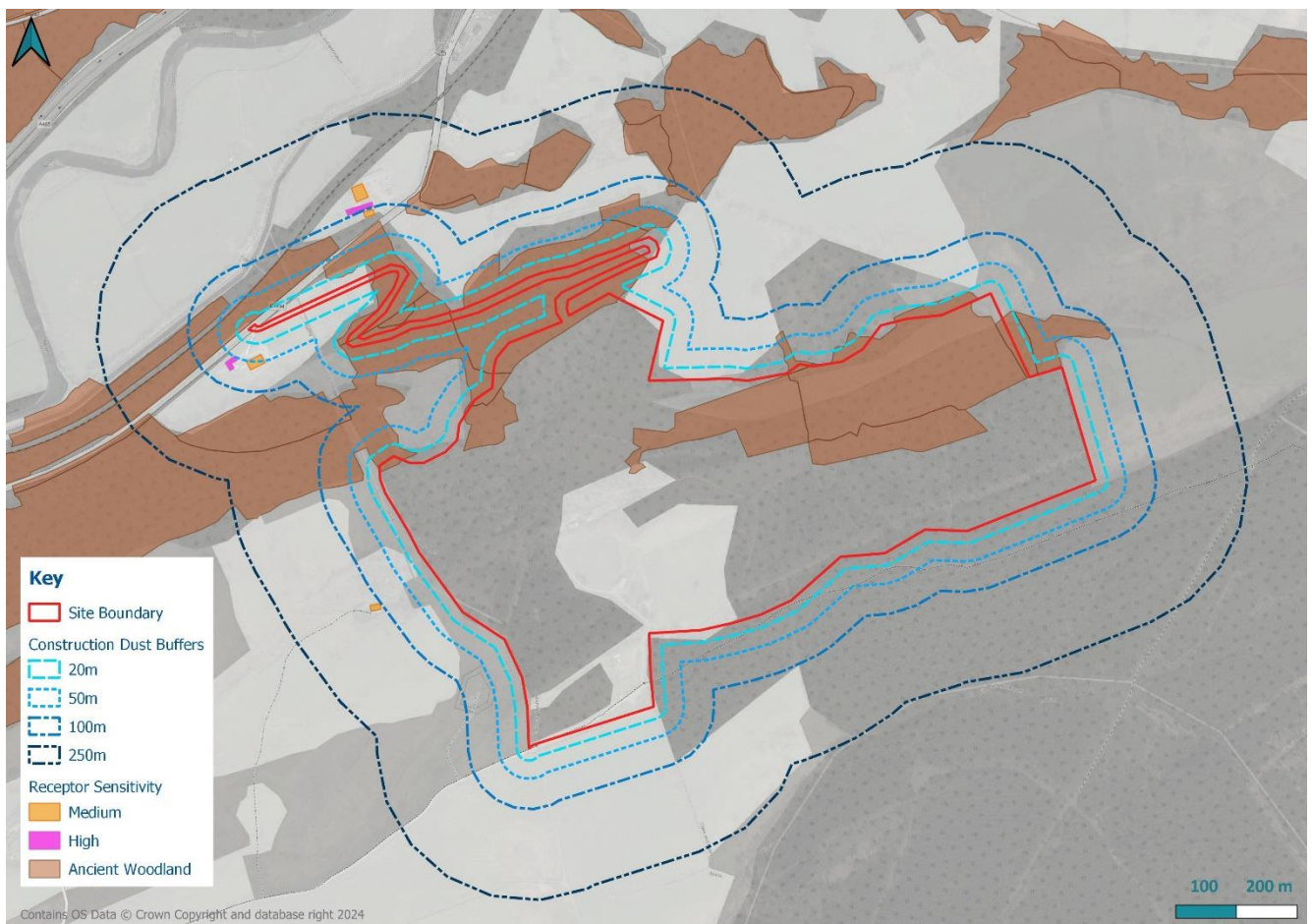


Figure 3: Construction Phase Receptors

5.3.1 Dust Soiling Impacts

Figure 3 illustrates there is 1 high sensitivity human receptors within 50m of the Site boundary, and none within 20m. As such, the overall sensitivity of the surrounding area to nuisance dust soiling effects during Demolition, Earthworks and Construction, according to IAQM guidance, is defined as '**Low**'.

With regard to Trackout, the sensitivity is assessed where receptors are located within 50m from Trackout routes up to 250m from the Site. There are less than 10 high-sensitivity receptors within 20m of potential Trackout routes from the Site, the sensitivity to dust soiling impacts from Trackout is defined as '**Medium**'.

5.3.2 Human Health Impacts

Defra mapped background predictions (Table 5) show that annual mean concentrations of PM₁₀ are not likely to exceed 32µg/m³ and are likely to be <24µg/m³ in the vicinity of the Site³². According to IAQM guidance, where PM₁₀ concentrations are <24µg/m³ and there are less than 100 high sensitivity receptors within 20m of construction works, the overall sensitivity of the surrounding area to human health impacts is defined as '**Low**' for Demolition, Earthworks, Construction and Trackout.

³² 32µg/m³ is the concentration at which exceedance of the 24-hour AQAL is considered likely

5.3.3 Ecological Impacts

Ancient Woodland lies within and adjacent to the Site. The woodland does not have international or national designation and therefore in line with IAQM guidance can be categorised as a '**Low**' sensitivity receptor. On this basis, the overall sensitivity of the surrounding area ecological impacts during Demolition, Earthworks, Construction and Trackout according to IAQM guidance, is defined as '**Low**'.

5.3.4 Summary of Area Sensitivity

The sensitivity of the surrounding area for the potential impacts discussed above is summarised in Table 8 below.

Table 8: Sensitivity of Local Area

Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low	Medium
Human Health	Low	Low	Low	Low
Ecological	Low	Low	Low	Low

5.4 Risk of Impacts

Using the methodology prescribed in the IAQM guidance, the overall risk of impacts can be defined by combining the sensitivity of the area with the potential dust emission magnitude of each stage of the construction phase as described above.

Table 9 provides a summary of the construction dust risk assessment. Overall, the development is considered to be **Medium Risk** for nuisance dust soiling effects, **Low Risk** for PM₁₀ health effects and **Low Risk** for ecological effects, in the absence of mitigation.

Table 9: Risk of Adverse Impacts During Construction Phase

Potential Impact	Dust Impact Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Negligible	Low Risk	Low Risk	Medium Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk
Ecological	Negligible	Low Risk	Low Risk	Low Risk

6. Mitigation Measures

6.1 Construction Phase

The qualitative construction dust risk assessment shows that the works are **Medium Risk** for adverse impacts during construction, in the absence of mitigation.

To effectively reduce the risk of impacts to Negligible, appropriate mitigation measures should be adopted. The IAQM's highly recommended mitigation measures for Medium-Risk sites are provided at Appendix B of this report. Implementing these measures, such as within a Construction Environment Management Plan (CEMP), should effectively reduce the risk of impacts to negligible during the construction phase.

6.2 Operational Phase

6.2.1 *Electric Vehicle Charging Infrastructure*

Each lodge will be fitted with its own EV point for vehicles, and several additional charging points will be provided at the Hub. This should be provided in line with the UK Government's Approved Document Part S (Adopted 2022)³³.

6.2.2 *Combustion Plant*

The Energy Technology Feasibility report prepared by Hydrock³⁴ found the following technologies to be viable for the Proposed Development:

- » Photovoltaic panels (PV);
- » Energy storage systems (ESS);
- » Air source heat pumps; and
- » Ground source heat pumps

Biomass Boilers were also found to be found potentially viable, however this energy source does have drawbacks particularly with regard to air pollution due to the combustion of solid fuel required.

It is strongly recommended that viable technologies not involving combustion are adopted.

³³ HM Government, "Approved Document S, 2021 edition", https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057375/AD_S.pdf

³⁴ Hydrock Parc Pelenna Energy Technology Report, April 2024 doc ref: PPL-HYD-XX-XX-RP-ME-0002

7. Discussion and Conclusion

Hydrock were commissioned by Trivelhus to prepare an AQA for the proposed holiday resort on land east of Fairyland Road, Tonna, Neath.

Modelled UK-AIR background concentrations and local air quality monitoring data have been used to establish baseline air quality at the Site and surrounding locale. Predicted background concentrations of NO₂, PM₁₀ and PM_{2.5} at the Site and surrounding locale are all below the relevant AQALs. Local air quality monitoring has shown no exceedances of the annual mean AQAL for NO₂ in recent years.

A qualitative construction dust risk assessment has been undertaken in line with IAQM guidance. Through good practice and implementation of appropriate mitigation measures outlined, it is expected that the release of dust would be effectively controlled and mitigated, with resulting effects considered to be 'not significant'. All dust impacts are considered to be temporary and short-term in nature.

Based on the evidence provided within this report, the Proposed Development does not trigger any of the relevant EPUK & IAQM threshold criteria for detailed assessment, and the impact of the Proposed Development on local air quality is expected to be Negligible.

From the evidence presented, and by following the guidance provided herein, the Proposed Development will comply with all relevant air quality policy. As such, air quality should not pose any significant obstacles to the planning process.

Appendix A Windrose

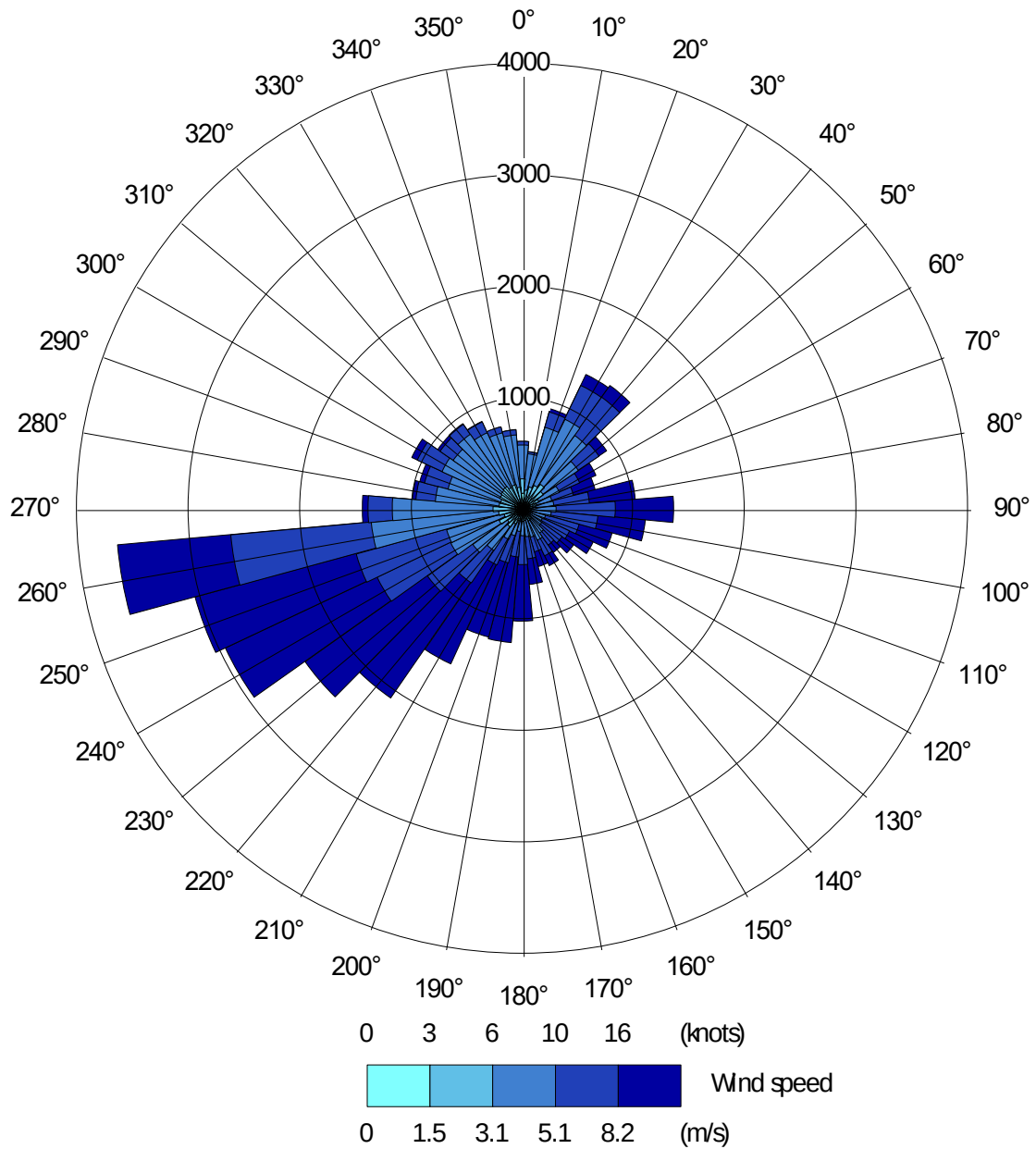


Figure 4: Wind rose Mumbles (2019-2023)

Appendix B Construction Dust Mitigation

In order to mitigate the worst-case dust impacts the following general mitigation measures are highly recommended by the IAQM for Medium Risk construction sites. Highly recommended mitigation measures applicable specifically to Demolition, Earthworks, Construction and Trackout are provided based on the respective risk of adverse impact.

Communications

- » Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- » 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.
- » Display the head or regional office contact information
- » Develop and implement a Dust Management Plan (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 in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.

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-site, and the action taken to resolve the situation in the log book.

Monitoring

- » 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 PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

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.
- » Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- » Fully enclose 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.

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.

Operations

- » Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- » Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- » Use enclosed chutes and 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

Waste Management

- » No bonfires and burning of waste materials.

Measures Specific to Demolition

- » Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- » Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- » Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks (Desirable)

- » Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- » During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up

Measures Specific to Construction

- » 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.

Measures 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.
- » Avoid dry sweeping of large areas.
- » Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- » Record all inspections of haul routes and any subsequent action in a site log book.

- » Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers and regularly cleaned.
- » Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- » 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 10 m from receptors where possible.