AIR QUALITY IMPACT ASSESSMENT

MORGAN SINDALL
SWITCH, PORT TALBOT

BY

AIR QUALITY SOLUTIONS LTD

PROJECT CODE: AQ12561

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Air Quality Solutions

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EXECUTIVE SUMMARY

Air Quality Solutions were commissioned by Morgan Sindall to undertake an Air Quality Assessment in support of a proposed research and innovation development at the Switch, Port Talbot.

The proposed new facility is a collaborative innovation centre working with academia, namely Swansea University as a key stakeholder to help end users from the steel industry to develop and deploy new technologies, products, and processes to help move the steel industry towards a net zero carbon future.

The core theme of the SWITCH (South Wales Industrial Transition from Carbon Hub) programme is to assist decarbonisation of the steel and metals industry, to strengthen collaboration between industry and academia and to future proof the steel and metals industry in Wales and the UK.

The construction will consist of a mix of office space, laboratories, research and production area storage areas and external works. The site identified has a recently completed highway scheme within the available red line boundary.

The scheme is to achieve Net Zero Carbon targets in Construction and Operation as set out in the Works Information and a BREEAM Excellent rating.

Due to the scale of the development, there is potential for the proposals to cause impacts at sensitive receptors during the construction and operational phases. Additionally, given the proximity to the A4241 there is potential to expose future site users to elevated pollutant concentrations. An Air Quality Assessment is therefore required in order to determine baseline conditions at the site, assess site suitability for the proposed end-use and assess the potential impacts as a result of the proposed development.

Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of earthworks, construction and trackout activities. It is considered that the use of good practice control measures would provide suitable mitigation for a development of this size and nature and reduce potential impacts to an acceptable level.

Dispersion modelling was undertaken in order to predict annual mean pollutant concentrations across the application site and to predict impacts as a result of additional road vehicle exhaust emissions associated with the proposed development. Results were subsequently verified using local monitoring results provided by Neath Port Talbot Council (NPTC).

The dispersion modelling results indicated that annual mean pollutant concentrations across the application site were below the relevant air quality objectives at proposed sensitive locations.

The university commented that emissions from development processes are minimal, with the biggest emissions being via the use of the reducibility apparatus which releases small quantities CO. There is currently a CO monitor at the top of SAMI that alarms if the level exceeds 30PPM which has never been triggered. Other emissions from the flues relate to the gases used directly on site - all of which (except N2) originate from gas cylinder use within the laboratory areas. This limits volumes of emissions to levels that could be considered insignificant. The largest gas volume is from a nitrogen source, and this is anticipated to be no more than 100l/min for existing usage.

The site is therefore considered suitable for proposed end use without the implementation of protective mitigation techniques.

Additionally, the assessment concluded that impacts on pollutant levels as a result of operational phase pollutant emissions were predicted to be **negligible** at all sensitive locations in the vicinity of the site. The use of robust assumptions, where necessary, was considered to provide sufficient results confidence for an assessment of this nature.

Based on the assessment results the site is considered suitable for the proposed end use subject to the inclusion of relevant mitigation measures to offset excess emissions associated with the development and complies with the NPTC Local Plan and Planning Policy Wales.

1.0 INTRODUCTION

1.1 Background

Air Quality Solutions has been commissioned by Morgan Sindall, hereafter referred to as "the Client" to undertake an Air Quality Assessment in support of a proposed development, comprising of the construction of a mix of office space, laboratories, research and production area storage areas and external works, herein after referred to as the "Proposed Development".

1.2 Site Location and Context

The application site is located at the Switch, Port Talbot at approximate National Grid Reference (NGR) 276500, 189500. Reference should be made to Figure 1 within Appendix A for a location plan.

The application site is located within 100m of the Neath Port Talbot AQMA Taibach/Margam Air Quality Management Area (AQMA Air Quality Management Area (AQMA) which has been declared due to exceedances of the 24- Hour Mean Particulate Matter (PM_{10}) limit. Subsequently, the Proposed Development has the potential to introduce future site users into an area of existing poor air quality.

Additionally, due to the scale of the Proposed Development, there is potential to cause impacts upon existing NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) concentrations as a result of additional road vehicle exhaust emission generated during operation. Fugitive dust impacts may also arise as a result of emission generated during construction.

An Air Quality Assessment has therefore been produced to assess potential impacts as a result of the Proposed Development and to quantify annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations across the site in order to consider suitability for the proposed end-use. The assessment will be undertaken in accordance with the requirements of the Planning Policy Wales (PPW) and the NPTC Local Planning Policy.

1.3 Limitations

This report has been produced in accordance with Air Quality Solutions standard terms of engagement. Air Quality Solutions has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Air Quality Solutions; a charge may be levied against such approval.

2.0 LEGISLATION, GUIDANCE AND POLICY

The following legislation, guidance and policy will be considered and adhered to during the preparation of the Air Quality Assessment:

- European Union (EU) Directive 2008/50/EC;
- Planning Policy Wales (PPW), updated on Febuary 2024;
- The National Planning Practice Guidance (NPPG), relevant chapters produced on 1st November 2019;
- Section 82 of the Environment Act (Part IV), updated 9th November 2021;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs (DEFRA), 2007[1];
- The Air Quality Standards (Amendment) Regulations (2016);
- Local Air Quality Management Technical Guidance 2016 LAQM.TG(16), DEFRA, April 2021[2];
- Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management (IAQM), v1.1, June 2016[3];
- Land-Use Planning and Development Control: Planning for Air Quality, Environmental Protection UK (EPUK) and IAQM, January 2017[4];
- Neath Port Talbot County Borough Council Local Development Plan (2011-2026)[5];
- Neath Port Talbot Pollution Supplementary Planning Guidance (October 2016)[6]

2.1 UK Legislation and Guidance

The Air Quality Standards (Amendment) Regulations (2016) came into force on 31st December 2016. These Regulations amend the Air Quality Standards Regulations 2010 and transpose the EU Directive 2008/50/EC into UK law. Air Quality Limit Values (AQLVs) were published in these regulations for 7 pollutants, as well as Target Values for an additional 6 pollutants.

Part IV of the Environment Act (2021) requires UK government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality. The most recent AQS was produced by DEFRA and published in July 2007[1]. The AQS sets out Air Quality Objectives (AQOs) that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. These are generally in line with the AQLVs, although the requirements for compliance vary slightly.

Table 1 presents the AQOs for pollutants considered within this assessment.

Table 1: Air Quality Objectives

Pollutant	Air Quality Objectives	
	Concentration (µg/m³)	Averaging Periods
NO_2	40	Annual mean
	200	1-hour mean; not to be exceeded more than 18 times a year
PM_{10}	40	Annual mean
	50	24-hour mean; not to be exceeded more than 35 times a year
$PM_{2.5}$	25	Annual mean

1 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA, 2007
2 Local Air Quality Management Technical Guidance 2016 LAQM.TG(16), DEFRA, 2021
3 Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, 2016
4 Land-Use Planning and Development Control: Planning for Air Quality, EPUK and IAQM, 2017

Table 2 summarises the advice provided in DEFRA guidance LAQM.TG(16)[2] on where the AQOs for pollutants considered within this report apply.

Table 2: Examples of Where the Air Quality Objectives Apply

Averaging Periods	Objectives Should Apply At	Objectives Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools, hospitals, care homes etc.	Building façades 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	All locations where the annual mean objective 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-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

The results of the dispersion modelling assessment will also be compared against the relevant AQOs detailed in Table 1 to determine significance.

2.2 Local Planning Policy

Environmental Protection[5]

- Policy SP 16
    - 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. LDP Objectives: OB 2, OB 16 and OB 17.
- Policy EN 8
    - Pollution and Land Stability:

5 https://www.npt.gov.uk/7328
6 https://www.npt.gov.uk/media/7468/spg_pollution_oct16.pdf

- Proposals which would be likely to have an unacceptable adverse efect 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.

- Policy EN 9
  - Developments in the Central Port Talbot Area:
    - Developments in the central Port Talbot area that could result in breaches of air quality objectives during their construction phase, will be required to be undertaken in accordance with a Construction Management Plan submitted as part of the planning process and agreed by the Council.

Reference has been made to these policies during the undertaking of this Air Quality Assessment by assessing the impacts of road vehicle exhaust emissions on future site users and on nearby existing sensitive locations.

3.0 METHODOLOGY

There is the potential for the Proposed Development to expose future site users to elevated NO_2, PM_{10} and $PM_{2.5}$ concentrations, as well as to cause impacts at sensitive locations during the construction and operational phases.

3.1 Construction Phase Assessment

There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction'[3].

Reference should be made to Appendix E for details of the relevant IAQM construction phase assessment criteria, which were utilised in conjunction with site specific information.

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

- Earthworks;
- Construction; and
- Trackout

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

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM_{10} and $PM_{2.5}$

A desk top survey will be undertaken to identify human and ecological receptors within the relevant assessment buffers specified by the IAQM guidance[3]. Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary.

Following the identification of sensitive receptors, a site is then allocated a risk category which is assigned to each activity, based on the scale and nature of the works, as well as the sensitivity of the area to dust impacts.

The assigned magnitude and sensitivity will then determine the overall risk and appropriate mitigation measures to be employed during construction phase activities.

The IAQM guidance[3] is provided in Appendix E, with the details of the assessor's qualifications and experience. provided in Appendix F.

3.2 Operational Phase Assessment

3.2.1 Road Vehicle Exhaust Impact Assessment

The Proposed Development has potential to cause impacts upon existing pollution levels at nearby sensitive receptors as a result of additional road vehicle exhaust emissions (NO_2, PM_{10} and $PM_{2.5}$) generated during the operational phase.

Impacts have been defined by predicting pollutant concentrations at sensitive locations with and without the Proposed Development in place using dispersion modelling and the following assessment scenarios:

- 2019 as baseline year for verification against latest ratified data;
- Opening year do-minimum (DM) (predicted traffic flows in 2025 should the proposals not proceed); and

- Opening year do-something (DS) (predicted traffic flows in 2025 should the proposals be completed, with the addition of traffic generated by the Proposed Development).

In light of expected emission improvements to the national vehicle fleet guided by government policy, it would be unrealistic not to assume a reduction to vehicle emission factors in future years, given the anticipated development year of 2025.

The 2025 scenario assumes an emission drop off based on assumptions provided by the Emission Factor Tool Kit (Eft v11.0) supported by the uptake of low emission vehicles and government incentives and targets concerning fleet proportions by 2030. The results of this scenario will form the basis of this report.

Sensitivity analysis has also been undertaken to assess associated road vehicle exhaust emissions impacts based on the use of 2025 traffic data with 2019 and emission factors obtained from the Eft v11.0 produced by DEFRA.

The sensitivity analysis assumes that vehicle emission factors will not improve in line with current predictions and future emission factors will remain consistent with those predicted for the baseline year of 2019. This has been undertaken to consider a worst-case scenario and does not form the basis of impact significance.

Reference should be made to Appendix B for full assessment input details, Appendix C for details of the full assessment results and Appendix D for sensitivity analysis.

3.2.2 EPUK and IAQM Impact Significant Criteria

Receptors potentially sensitive to changes in pollutant concentrations were identified within the assessment extents. LAQM.TG(16)[2] provides the following examples of where annual mean AQOs should apply:

- Residential properties;
- Schools;
- Hospitals; and
- Care homes.

The sensitivity impact significance of each receptor was defined in accordance with the criteria shown in Table 3. These are based upon the guidance provided within the EPUK and IAQM guidance[4].

Table 3: EPUK and IAQM Assessment Significance Criteria

Long Term Average Concentration	% Change in Concentration Relative to AQO			
	1	2-5	6-10	>10
75% or less of AQO	Negligible	Negligible	Slight	Moderate
76 - 94% of AQO	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO	Moderate	Moderate	Substantial	Substantial

The criteria shown in Table 3 is adapted from the EPUK and IAQM guidance[4] with sensitivity descriptors included to allow comparisons of various air quality impacts. It should be noted that changes of 0%, i.e. less than 0.5%, will be described as negligible in accordance with the EPUK and IAQM guidance[4].

Following the prediction of impacts at discrete receptor locations utilising the criteria in Table 3 the EPUK and IAQM guidance[4] states that this framework is to be used as a starting point to make a judgement on

significance of effect but other influences might need to be accounted for. Whilst impacts might be determined as 'slight', 'moderate' or 'substantial' at individual receptors, overall effect might not necessarily be deemed as significant in some circumstances. The following factors may provide some assistance in determining the overall significance of a development:

- Number of properties affected by significant air quality impacts and a judgement on the overall balance;
- Where new exposure is introduced into an existing area of poor air quality, then the number of people exposed to levels above the objective will be relevant;
- The percentage change in concentration relative to the objective and the descriptions of the impacts at the receptors;
- Whether or not an exceedance of an objective is predicted to arise or be removed in the study area due to a substantial increase or decrease; and
- The extent to which an objective is exceeded e.g. an annual mean NO_2 concentration of 41µg/m^3 should attract less significance than an annual mean of 51µg/m^3.

These factors were considered and an overall significance determined for the impact of operational phase road traffic emissions. It should be noted that the determination of significance relies on professional judgement and reasoning should be provided as far as practicable. This has been considered throughout the assessment when defining predicted impacts.

Full details of data used for the modelling assessment are presented in Appendix B of this report.

3.2.3 Future Exposure

The Proposed Development is located within close proximity to Neath Port Talbot AQMA. Subsequently, the proposals have potential to introduce new receptors into an area of elevated NO_2, PM_{10} and $PM_{2.5}$ concentrations.

Detailed dispersion modelling was therefore undertaken to quantify annual mean pollutant concentrations across the site and determine suitability for the proposed use. The following modelling scenarios were utilised during the future exposure assessment:

- 2019 as baseline year for verification against latest ratified data;
- Opening year do-something (DS) (predicted traffic flows in 2025 should the proposals be completed, with the addition of traffic generated by the Proposed Development)

The results of the dispersion modelling assessment will also be compared against the relevant AQOs detailed in Table 1 to determine significance. Full details of data used for the modelling assessment are presented in Appendix B of this report.

4.0 BASELINE

Existing air quality conditions in the vicinity of the application site were identified in order to provide a baseline for assessment. These are detailed in the following sections.

4.1 Local Air Quality Management

As required by the Environment Act (2021), NPTC has undertaken review and assessment of air quality within their area of administration. This process has indicated that Particulate Matter (PM10) concentrations are above the AQO within their administration. As such, 1 AQMA has been declared, the closest being described as:

- Neath Port Talbot AQMA

The application site is located within 100m South West of the AQMA. As such there is potential for the Proposed Development to introduce future site users into an area of elevated annual mean PM_{10} concentrations, and to cause air quality impacts within this sensitive area during the construction and operational phases. This has been considered within this report.

NPTC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs and as such no further AQMAs have been designated.

4.2 Air Quality Monitoring

Monitoring of pollutant concentrations is undertaken by NPTC using continuous and passive methods throughout their areas of administration. A review of NPTC's most recent Air Quality Monitoring Data[6] indicated that there are currently 3 automatic analysers operated by NPTC within the vicinity of the Proposed Development. Recent monitoring results from this location are shown in Table 4.

Table 4: Automatic Monitoring Results

ID	Site Name	Type	NGR (m)		Distance to Site (m)	Pollutant	Annual Mean Concentration (µg/m³)		
			X	Y			2017	2018	2019
PT2	"Port Talbot Margam (Fire	Industrial	277388	188733	1,119	NO_2	16	15	15
						PM_{10}	23	23	21
PS2	Prince Street	Industrial	277689	188235	1,688	NO_2	-	-	-
						PM_{10}	25	23	20
TW1*	Twll-yn-y Wal Park	Industrial	278196	187891	2,285	NO_2	-	-	-
						PM_{10}	21	21	21

As indicated in Table 4, there were no exceedances of annual mean AQOs for NO_2 and PM_{10} at the monitoring locations in recent years.

NPTC also monitor NO_2 concentrations across the borough using passive diffusion tubes. A review of the most recent air quality monitoring data indicated 4 diffusion tubes located within the vicinity of the application site, presented in Table 5.

6 https://www.npt.gov.uk/1566

Table 5: Diffusion Tube Monitoring Results

ID	Site Name	Type	NGR (m)		Distance to Site (m)	Annual Mean Concentration (µg/m³)		
			X	Y		2017	2018	2019
25	Water St. Port Talbot	Roadside	276131	189926	614	26.4	24.1	27.7
"19a, 19b, 19c"	Port Talbot Fire Station (Tube A), (Tube B), (Tube C)	Industrial	277406	188719	1,142	15.6	13.7	15.7

As indicated in Table 5, all results in recent years are below the relevant AQOs.

Reference should be made to Figure 2 within Appendix A for a graphical representation of the monitoring locations.

4.3 Background Pollutant Concentrations

The total concentration of a pollutant is comprised of explicit local emission sources (such as roads and industrial sources) and the background component. The background component consists of indeterminate sources which are transported into an area from further away by meteorological conditions. Background pollutant concentrations are therefore the ambient level of pollution that is not affected by local sources of pollution.

In reality, it is not usually practical to obtain a true representation of background levels in urban areas due to corruption by local sources; background levels used in assessments may contain a mixture of both sources.

Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist Las in their Review and Assessment of air quality. The Proposed Development site is located across grid square:

- NGR: 276500, 189500

Data for this location was downloaded from the DEFRA website[7]. For the purpose of this assessment, background concentrations are summarised in Table 6 for the verification year (2019) and the predicted development opening year (2025).

Table 6: Predicted Background Pollutant Concentrations

Pollutant	Predicted Background Concentration (µg/m³)	
	2019	2025
NO_x	20.92	17.57
NO_2	15.10	12.92
PM_{10}	13.30	12.50
$PM_{2.5}$	8.09	7.44

As indicated in Table 6, background pollutant concentrations of NO_2, PM_{10} and $PM_{2.5}$ are below the relevant AQOs detailed in Table 1.

7 https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

4.4 Sensitive Receptors

A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for construction dust impacts in the following Sections.

4.4.1 Construction Phase Sensitive Receptors

There are are no nationally or European designated ecological receptors within 50m of the Site boundary, or within 50m from a route used by construction vehicles on the public highway (up to 500m from the Site entrance). Therefore, the risk of dust effects at a nationally or European designated ecological receptor site from construction impacts have not been considered further in this assessment.

Human receptors sensitive to potential dust impacts during, earthworks and construction were identified from a desk-top study of the area up to 350m from the Proposed Development boundary. These are summarised in Table 7.

Table 7: Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors
Less than 20	1 – 10
20 – 50	10 – 100
50 – 100	10 – 100
100 – 350	More than 100

Reference should be made to Figure 3 within Appendix A for a graphical representation of earthworks and construction dust buffer zones.

Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 500m of the site access route. These are summarised in Table 8. The exact construction vehicle access routes were not available for the purpose of this assessment as they will depend on sourcing of materials. This is likely to be decided by the contractor. However, it was assumed that construction traffic would egress the Proposed Development via Oakwood Road, to ensure a worst case trackout assessment is undertaken.

Table 8: Trackout Dust Sensitive Receptors

Distance from Trackout Routes (m)	Approximate Number of Human Receptors
Less than 20	1 – 10
20 – 50	10 – 100

Reference should be made to Figure 4 within Appendix A for a graphical representation of trackout dust buffer zones.

A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 9.

Table 9: Additional Area Sensitivity Factors

Guidance	Comment
Whether there is any history of dust generating activities in the area	The site is located in a commerical area. There is likely to have been a history of dust generating activities due to commuting, redevelopment and industrial processes in the locality.
The likelihood of concurrent dust generating activity on nearby sites.	A review of the NPTC planning portal indicated that there are no large-scale planning applications within the vicinity of the site.
Pre-existing screening between the source and the receptors	There is no dense vegetation present along the development boundaries. Hence, there is no level of natural protective screening in any directions.
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	The wind direction is predominantly from the West of the development. As such, properties to the East of the site would be most affected by dust emissions
Conclusions drawn from local topography	The topography of the area appears to be predominantly flat. As such, there are no constraints to dust dispersion.
Duration of the potential impact, as a receptor may become more sensitive over time	Currently the duration of the construction phase is unknown.
Any known specific receptor sensitivities which go beyond the classifications given in the document.	No specific receptor sensitivities identified during the baseline.

4.4.2 Operational Phase Sensitive Receptors

A desk-top study was undertaken in order to identify any sensitive receptor locations in the vicinity of the site that require specific consideration during the assessment and are summarised Table 10.

Table 10: Existing Sensitive Human Receptors

Potential Impact		NGR (m)		Height (m)
		X	Y	
R1	1 Eagle Mews, Port Talbot SA13 1DL	276,831	189603.0	1.5
R2	1 Talbot Rd, Port Talbot SA13 1HN	276800.0	189585.0	1.5
R3	Eagle St, Port Talbot SA13 1HG	276880.0	189549.0	1.5
R4	29 Talbot Rd, Port Talbot SA13 1HN	276892.0	189483.0	1.5
R5	22 Talbot Rd, Port Talbot SA13 1HU	276927.0	189487.0	1.5
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	276737.0	189678.0	1.5
R7	7 Grove Pl, Port Talbot SA13 1EZ	276819.0	189734.0	1.5
R8	4 Eagle St, Port Talbot SA13 1AA, UK	276839.0	189589.0	1.5
R9	13 Beverley St, Port Talbot SA13 1EB	276941.0	189589.0	1.5
R10	Central Junior School | Ysgol Iau Canolog	276975.0	189516.0	1.5

Potential Impact		NGR (m)		Height (m)
		X	Y	
R11	14 Courtland Pl, Port Talbot SA13 1JJ	276762.0	189842.0	1.5
R12	55 Talbot Rd, Port Talbot SA13 1HU	276965.0	189440.0	1.5

Receptors modelled at 1.5m to represent the average UK "breathing height" above ground level. Reference should be made to Figure 6 within Appendix A for a graphical representation of operational phase emission sensitive human receptor locations.

5.0 ASSESSMENT

5.1 Construction Phase Assessment

5.1.1 Step 1 – Screening

The desk-study detailed in Section 4.4.1 identified a number of receptors with a high classification of sensitivity within 350m of the site boundary, and within 50m of the anticipated trackout routes. As such, a detailed assessment of potential dust impacts was required, and summarised in the below sections.

5.1.2 Step 2A – Magnitude

The scale and nature of the works was determined to assess the magnitude of dust arising from each construction phase activity. The determination of magnitude was based upon the criteria detailed in Appendix E, with the outcome of Step 2A is summarised below in Table 11.

Demolition

There is no scope for demolition in order to prepare the site for construction. Subsequently, this aspect of the construction phase dust risk assessment has not been considered further.

Earthworks

The Proposed Development site is estimated to cover an area of approximately 2,500m^2 – 10,000m^2. The magnitude of potential dust emissions related to earthwork activities is therefore considered medium.

Construction

The proposals comprise the construction of a mix of office space, laboratories, research and production area, storage areas. Given the scale of the Proposed Development the total building and infrastructure volume is less than 25,000m^3. The magnitude of potential dust emissions related to construction activities is therefore considered small.

Trackout

Information on the number of HDV trips to be generated during the construction phase of the Proposed Development was not available at the time of assessment. Similarly, the surface material and unpaved road length was not known at this stage of the project. Based on the site area, it is anticipated that the unpaved road length is likely to be 50m to 100m. The magnitude of potential dust emissions from trackout is therefore considered medium.

Table 11: Dust Emission Magnitude

Magnitude of Activities		
Earthworks	**Construction**	**Trackout**
Medium	Small	Medium

5.1.3 Step 2B – Sensitivity

The next step (Step 2B) is to determine the sensitivity of the surrounding area, based on general principles such as amenity and aesthetics, as well as human exposure sensitivity.

Dust Soiling

As shown in Section 4.4.1, the desk top study indicated are approximately more than 100 sensitive receptors within 350m of the Proposed Development boundary and 10 – 100 within 50m of the anticipated trackout routes.

Based on the assessment criteria detailed in Appendix E, the sensitivity of the receiving environment to potential dust soiling impacts was considered to be medium for all construction phase activities. This is because the site is situated in a predominantly commercial area.

Human Health

The annual mean concentration of PM_{10} is 13.3µg/m^3 as detailed in Section 4. Based on the receptor counts provided above, the area is considered to be of medium sensitivity for all construction phase activities.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria detailed in Appendix E is summarised in Table 12.

Table 12: Sensitivity of the Surrounding Area

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

5.1.4 Step 2C – Risk

Both the magnitude and sensitivity factors are combined in Step 2C to determine the risk of dust impacts without the application of best practice mitigation measures.

It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase. A summary of the risk from each dust generating activity is provided in Table 13.

Table 13: Summary of Potential Unmitigated Dust Risks

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

5.1.5 Step 3 – Mitigation

The IAQM guidance[3] provides a number of potential mitigation measures to reduce impacts during the construction phase. These measures have been adapted for the Proposed Development site as summarised in Table 14.

Table 14: Fugitive Dust Mitigation Measures

Issue	Control Measure
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.
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	• 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. • 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 a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
Preparing & Maintaining 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 actives for an extensive time 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.

Issue	Control Measure
Operating Vehicle/Machinery & Sustainable Travel	• Ensure all vehicles switch off engines when stationary – no idling vehicles. • Avoid the use of diesel- or petrol-powered powered generators and use mains electricity or battery powered equipment where practicable. • Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un- surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate) • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
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 spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste Management	• Avoid bonfires and burning of waste materials
Earthworks & Construction	• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable • Only remove the cover in small areas during work and not all at once • Avoid scabbling (roughening of concrete surfaces) if possible • 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.
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. •

Issue	Control Measure
	• Record all inspections of haul routes and any subsequent action in a site log book. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

5.1.6 Step 4 – Residual Impacts

Assuming the relevant mitigation measures outlined in Table 14 are implemented, the residual effect from all dust generating activities is predicted to be negligible and therefore **not significant** in accordance with the IAQM guidance[3].

5.2 Operational Phase Assessment

The assessment was undertaken in accordance with the methodology detailed in Section 3.2.

5.2.1 Future Exposure

Annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations were predicted across the Proposed Development for the 2025 DS scenario at a height of 1.5m to represent exposure across the ground floor level, as shown in Figures 7 to 9 within Appendix A.

Background NO_2 PM_{10} and $PM_{2.5}$ levels are likely to be lower at elevated heights due to increased distance from emission sources, such as roads. Therefore, predicted concentrations at heights above ground floor level are considered acceptable in regards to future exposure and have not been assessed further.

Nitrogen Dioxide (NO_2)

Predicted annual mean NO_2 concentrations across the Proposed Development site during the DS scenario are summarised in Table 15.

Table 15: Modelling Results – Annual Mean NO_2 at Proposed Development

Floor Level	Predicted 2025 Annual Mean NO_2 Concentration (µg/m³)
Ground (1.5m)	13.9 – 15.4

The predicted concentrations shown in Table 15 indicate that there were no exceedances of the AQO across the Proposed Development. As such, it is considered that annual mean NO_2 levels at the Proposed Development site should not be viewed as a constraint to development.

Predictions of 1-hour NO_2 concentrations were not produced as part of the dispersion modelling assessment. LAQM.(TG16)[2] states if annual mean NO_2 concentrations are below 60µg/m³ then it is unlikely that the 1-hour AQO will be exceeded. As such, based on the results in Table 15, it is not predicted that on-site concentrations will exceed the 1-hour mean AQO for NO_2.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for use without the implementation of mitigation techniques to protect future site users from elevated NO_2 concentrations.

Particulate Matter (PM_{10} & $PM_{2.5}$)

Predicted annual mean PM_{10} and $PM_{2.5}$ concentrations across the Proposed Development site during the DS scenario are summarised in Table 16.

Table 16: Modelling Results – Annual Mean PM_{10} and $PM_{2.5}$ at Proposed Development

Floor Level	Predicted 2025 Annual Mean Concentration (µg/m³)	
	PM_{10}	$PM_{2.5}$
Ground (1.5m)	17.0 – 23.0	10.1 – 14.5

The predicted concentrations shown in Table 16 indicate that there were no exceedances of the annual mean AQOs for PM_{10} or $PM_{2.5}$ throughout the modelling area. As such, it is considered that annual mean PM_{10} or $PM_{2.5}$ levels at the Proposed Development site should not be viewed as a constraint to development.

Based on the results of the dispersion modelling assessment, the site is considered to be suitable for proposed end use without the implementation of mitigation techniques to protect future site users from elevated PM_{10} and $PM_{2.5}$ concentrations.

5.2.2 Impact Assessment – Predicted Concentrations at Exisiting Sensitive Use

Based on data from the appointed traffic consultant, Hydrock, it is expected that there will be 123 Annual Average Daily Traffic (AADT) trips generated by the Proposed Development. Based on the anticipated AADT trip generation a dispersion modelling assessment was undertaken in order to quantify potential changes in pollutant concentrations at sensitive locations in the vicinity of the site.

Predicted impacts on annual mean NO_2 PM_{10} and $PM_{2.5}$ concentrations as a result of operational phase exhaust emissions were predicted to be **negligible** at 12 sensitive receptor locations within the vicinity of the site.

The overall significance of potential impacts was determined to be **not significant** in accordance with the EPUK and IAQM guidance. The use of robust assumptions, in the form of worse-case road vehicle emission factors, was considered to provide sufficient results confidence for an assessment of this nature.

Full assessment results and commentary can be found in Appendix C, further discussion on the overall impact significance is provided in Table 17.

It should be noted that predicted impacts on annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations using 2019 emission factors were also predicted to be **negligible** at 12 sensitive receptor locations within the vicinity of the site. Full assessment results on the sensitivity analysis can be found in Appendix D.

5.2.3 Impact Significance

The overall significance of operational phase road traffic emission impacts for 2025 was determined as not significant. This was based on the predicted impacts at discrete receptor locations and the considerations outlined in Section 5.2. Further justifications are provided in Table 17.

Table 17: Overall Road Emissions Impact Significance

Guidance	Comment
Number of properties affected by slight, moderate or substantial air quality impacts and a judgement on the overall balance	Impacts on annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations were predicted to be **negligible** at 12 sensitive receptors. The overall balance on air quality impacts as a result of the Proposed Development is therefore deemed **not significant**.
Where new exposure is introduced into an existing area of poor air quality, then the number of people exposed to levels above the objective or limit value will be relevant	The proposed development will not result in any new exposure to pollutant concentrations above the AQOs at sensitive locations on the application site and as such no new exposure has been introduced.
The percentage change in concentration relative to the objective and the descriptions of the impacts at the receptors	The change in concentration relative to the AQO was predicted to range from: • 0.06% to 0.16% for NO_2; • 0.06% to 0.19% for PM_{10}; and • 0.03% to 0.10% for $PM_{2.5}$ Resultant impacts were subsequently predicted to be **negligible** at 12 receptor locations.
Whether or not an exceedance of an objective is predicted to arise or be removed in the study area due to a substantial increase or decrease	There were no exceedances of the annual mean AQO for NO_2 PM_{10} and $PM_{2.5}$ at any location within the modelling extent.
The extent to which an objective is exceeded e.g. an annual mean NO_2 concentration of 41µg/m^3 should attract less significance than an annual mean of 51µg/m^3	As stated above, there were no new exceedances of the annual mean AQOs for NO_2, PM_{10} and $PM_{2.5}$ at any location within the modelling extent.

The assessment was undertaken in accordance with the methodology detailed in Section 3.2 and full impact assessment results can be found in Appendix C.

6.0 CONCLUSION

Air Quality Solutions were commissioned by the Client to undertake an Air Quality Assessment in support of a proposed research and innovation development at Switch, Port Talbot.

During the construction phase of the Proposed Development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Assuming good practice dust control measures are implemented, the residual potential air quality impacts from dust generated by construction, earthworks and trackout activities was predicted to be **not significant**.

Dispersion modelling was undertaken to quantify annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations across the application to assess suitability for proposed use. Modelling results were subsequently verified using NPTC local monitoring data.

The dispersion modelling results indicated that annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations across the application site were below the relevant AQOs at the proposed sensitive use.

Emissions generated from the development are minimal, with the biggest emissions being via the use of the reducibility apparatus which releases small quantities CO. There is currently a CO monitor at the top of SAMI that alarms if the level exceeds 30PPM which has never been triggered. Other emissions from the flues relate to the gases used directly on site - all of which (except N2) originate from gas cylinder use within the laboratory areas. This limits volumes of emissions to levels that could be considered insignificant. The largest gas volume is from a nitrogen source, and this is anticipated to be no more than 100l/min for existing usage.

The site is therefore considered suitable for the proposed end-use without the implementation of protective mitigation techniques to protect future amenity.

Predicted impacts on annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations as a result of operational phase exhaust emissions were predicted to be **negligible** at 12 sensitive receptor locations within the vicinity of the site.

The overall significance of potential impacts was determined to be **not significant** in accordance with the EPUK and IAQM guidance. The use of robust assumptions, in the form of worse-case road vehicle emission factors, was considered to provide sufficient results confidence for an assessment of this nature.

Based on the assessment results the site is considered suitable for the proposed end use subject to the inclusion of relevant mitigation measures to offset excess emissions associated with the development and complies with the NPTC Local Plan and PPW.

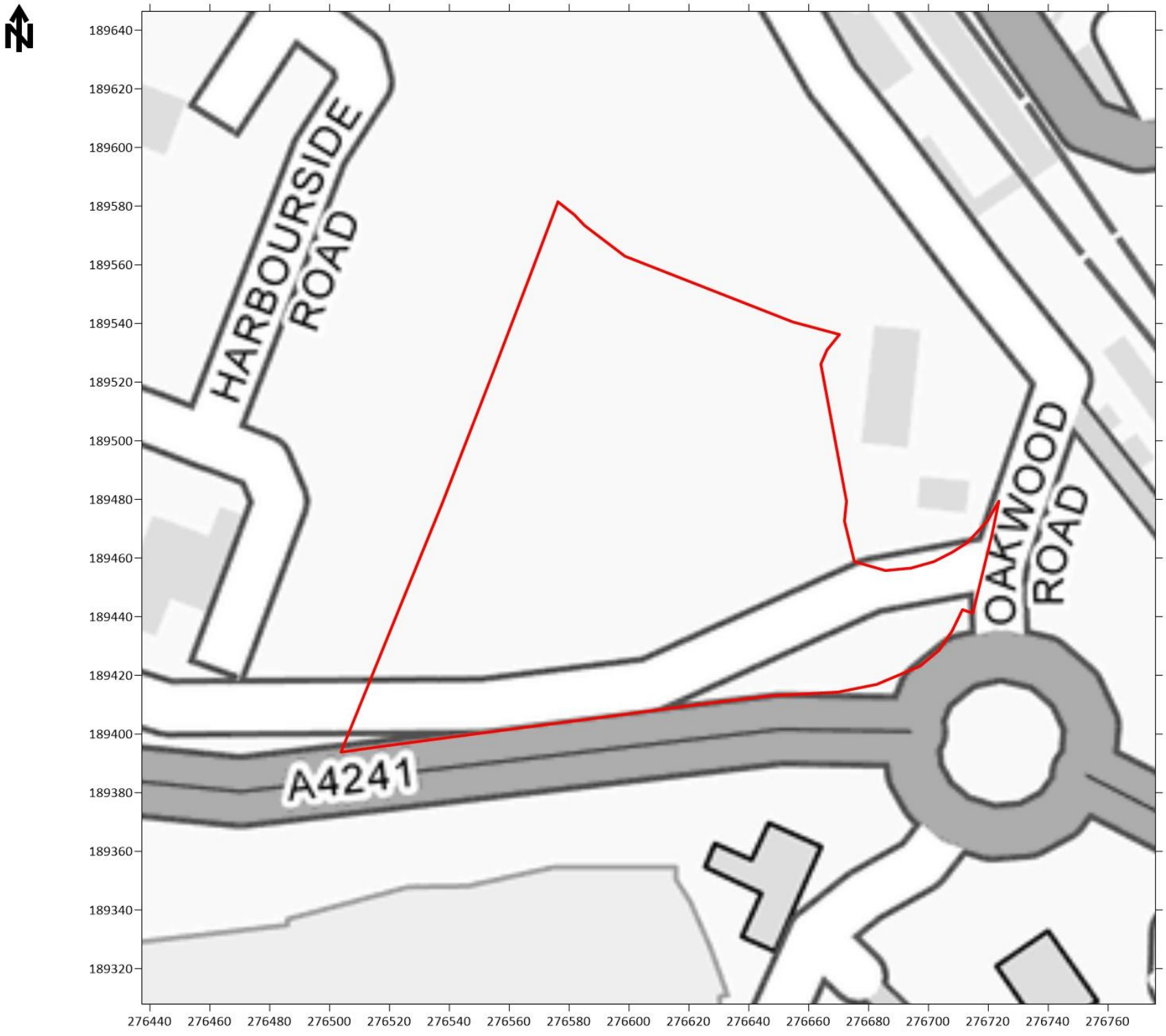
7.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
NPTC	Neath Port Talbot Council
AQO	Air Quality Objectives
AQS	Air Quality Strategy
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DM	Do Minimum
DS	Do Something
DMP	Dust Management Plan
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LA	Local Authority
LDV	Light Duty Vehicle
NGR	National Grid Reference
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
PPW	Planning Policy Wales
NPPG	National Planning Practice Guidance
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5µm
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10µm
TEMPRO	Trip End Model Presentation Program
z_0	Roughness Length

END OF REPORT

Air Quality Solutions

APPENDIX A - FIGURES



Legend

Site Boundary

Title

Figure 1

Site Location

Project

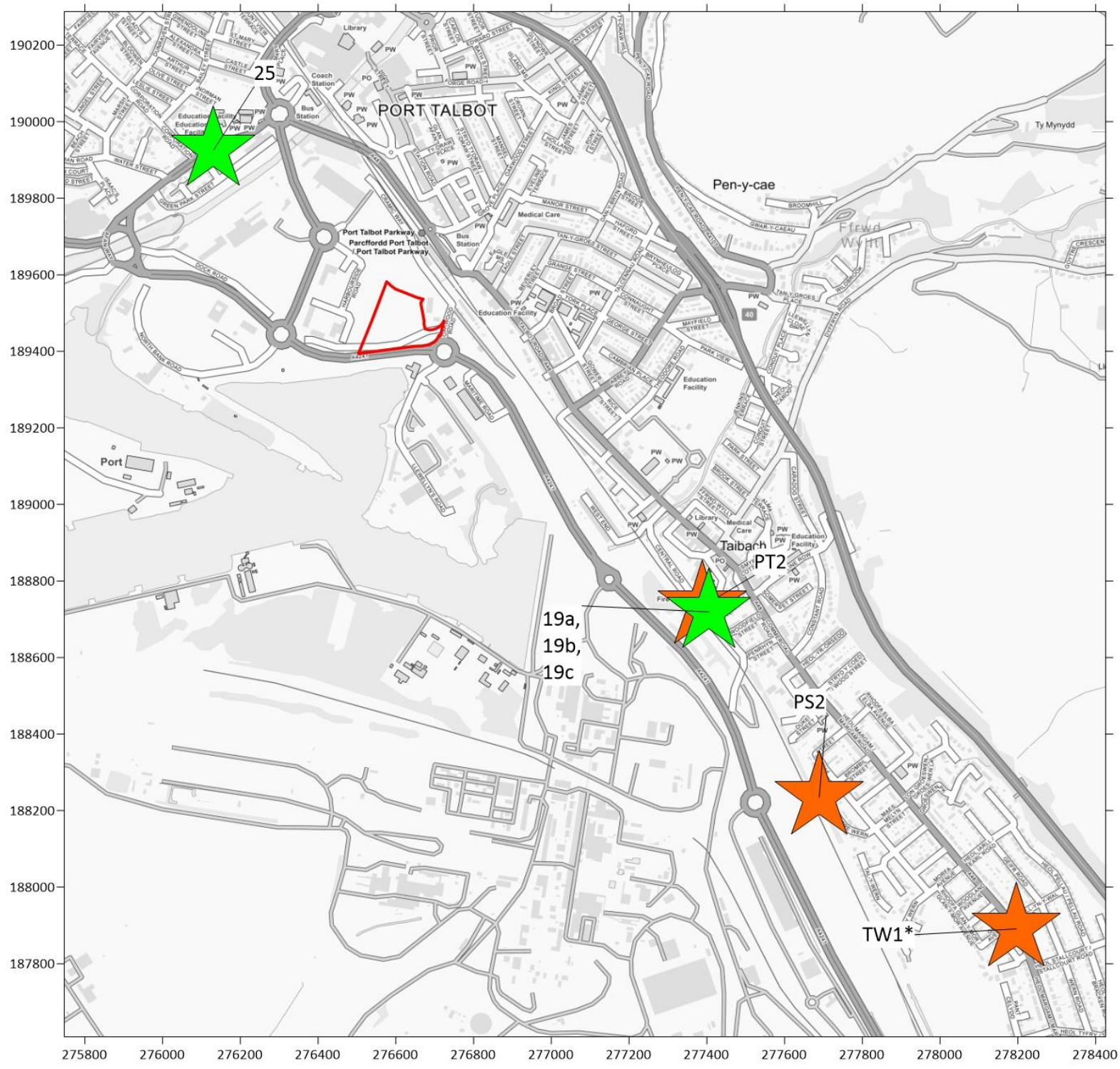
Switch, Port Talbot

Project Number

AQ12561

Air Quality Solutions

AQSConsultants
186 Wilford Grove
Nottingham, NG2 2DW
Tel – 07933 885642
www.aqsconsultants.com



Legend

Site Boundary

Diffusion Tube Monitoring Locations

Automatic Analyser Monitoring Location

Title

Figure 2

Diffusion Tube and Automatic Analyser Monitoring Locations

Project

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Project Number

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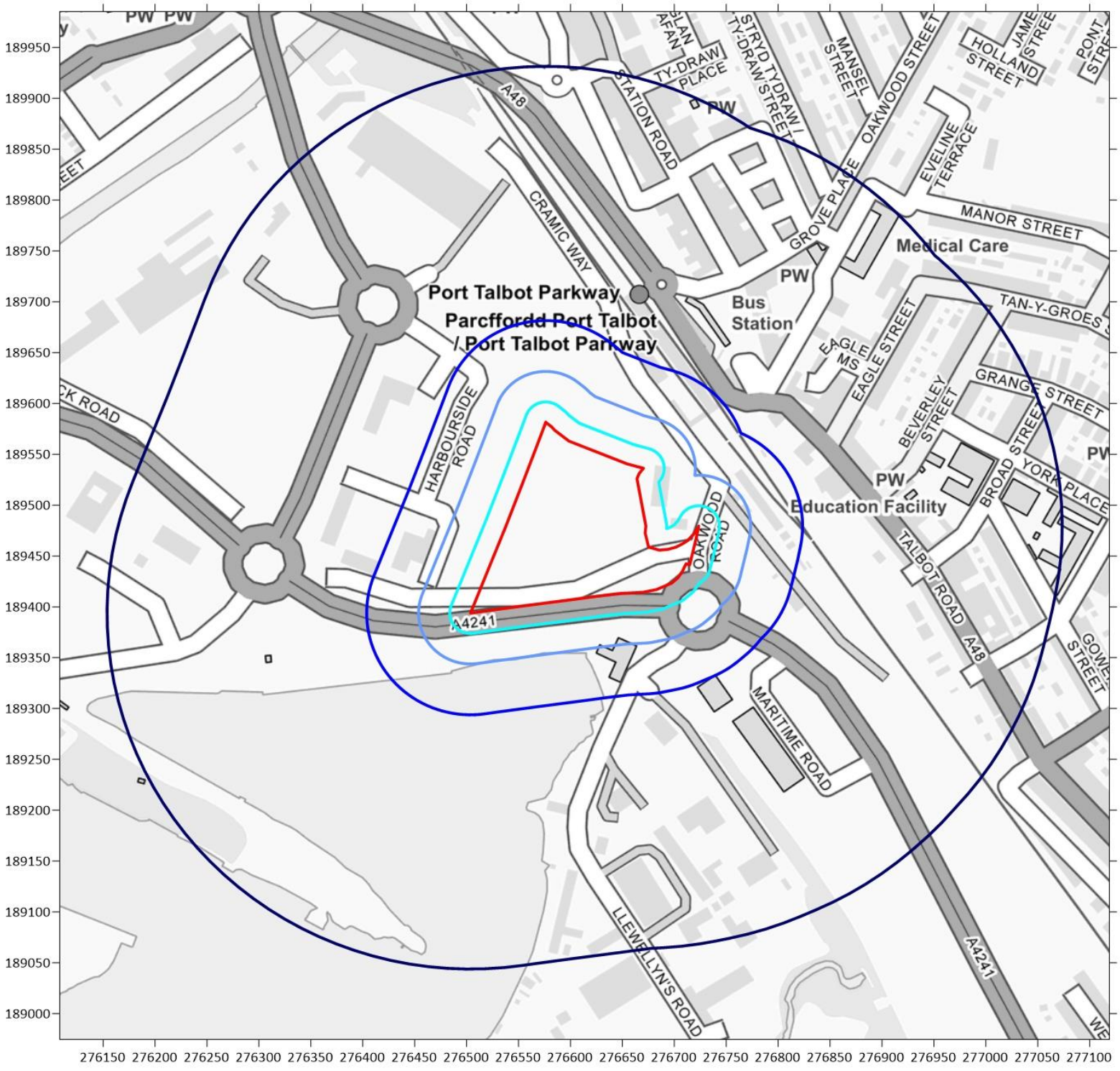

Legend

- Site Boundary
- 20m from Site Boundary
- 50m from Site Boundary
- 100m from Site Boundary
- 350m from Site Boundary

Title

Figure 3

Earthworks and Construction
Dust Buffer Zones

Project

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Project Number

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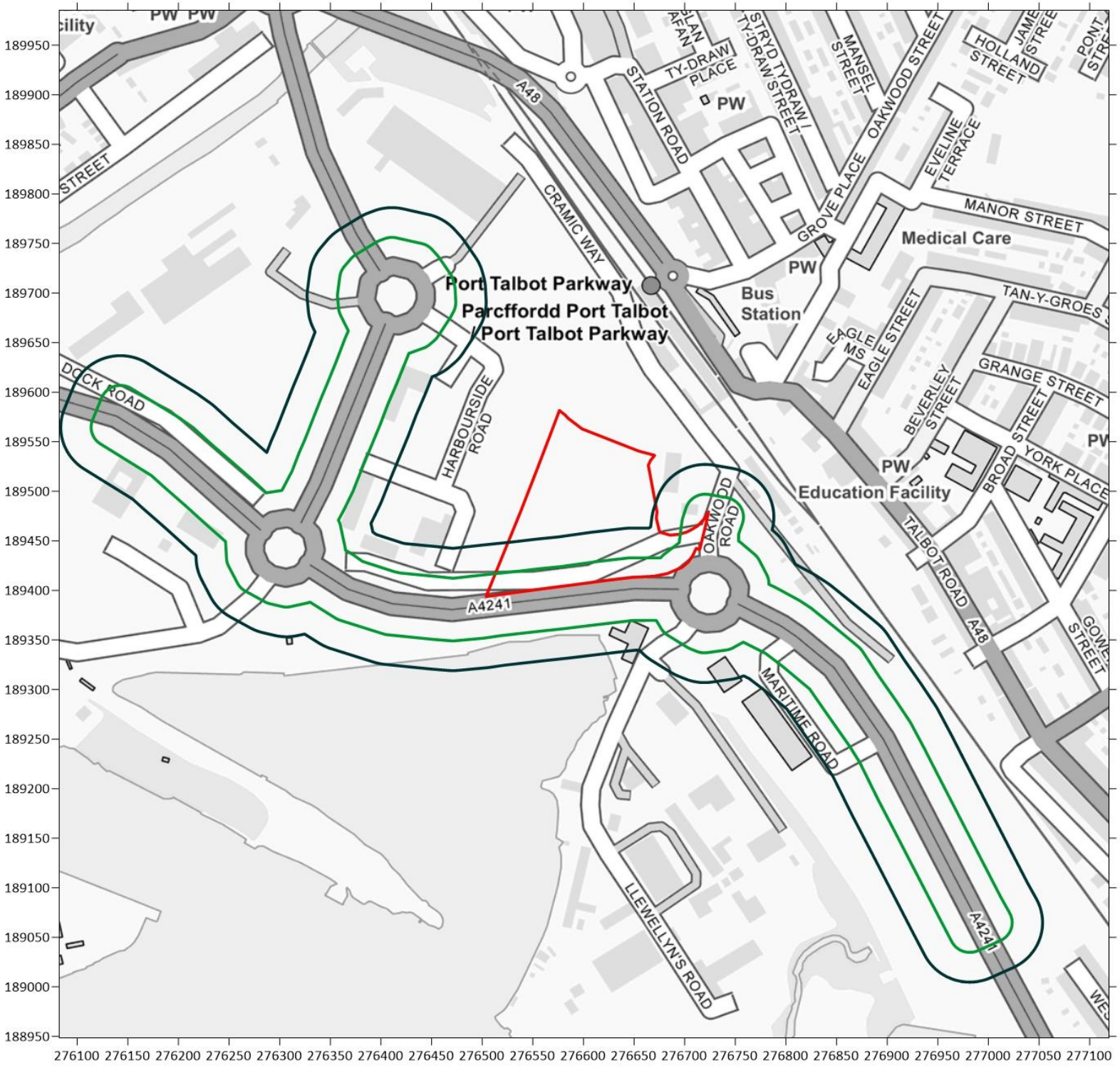

Legend

Site Boundary

20m from Site Access Route

50m from Site Access Route

Title

Figure 4

Trackout Dust Buffer Zones

Project

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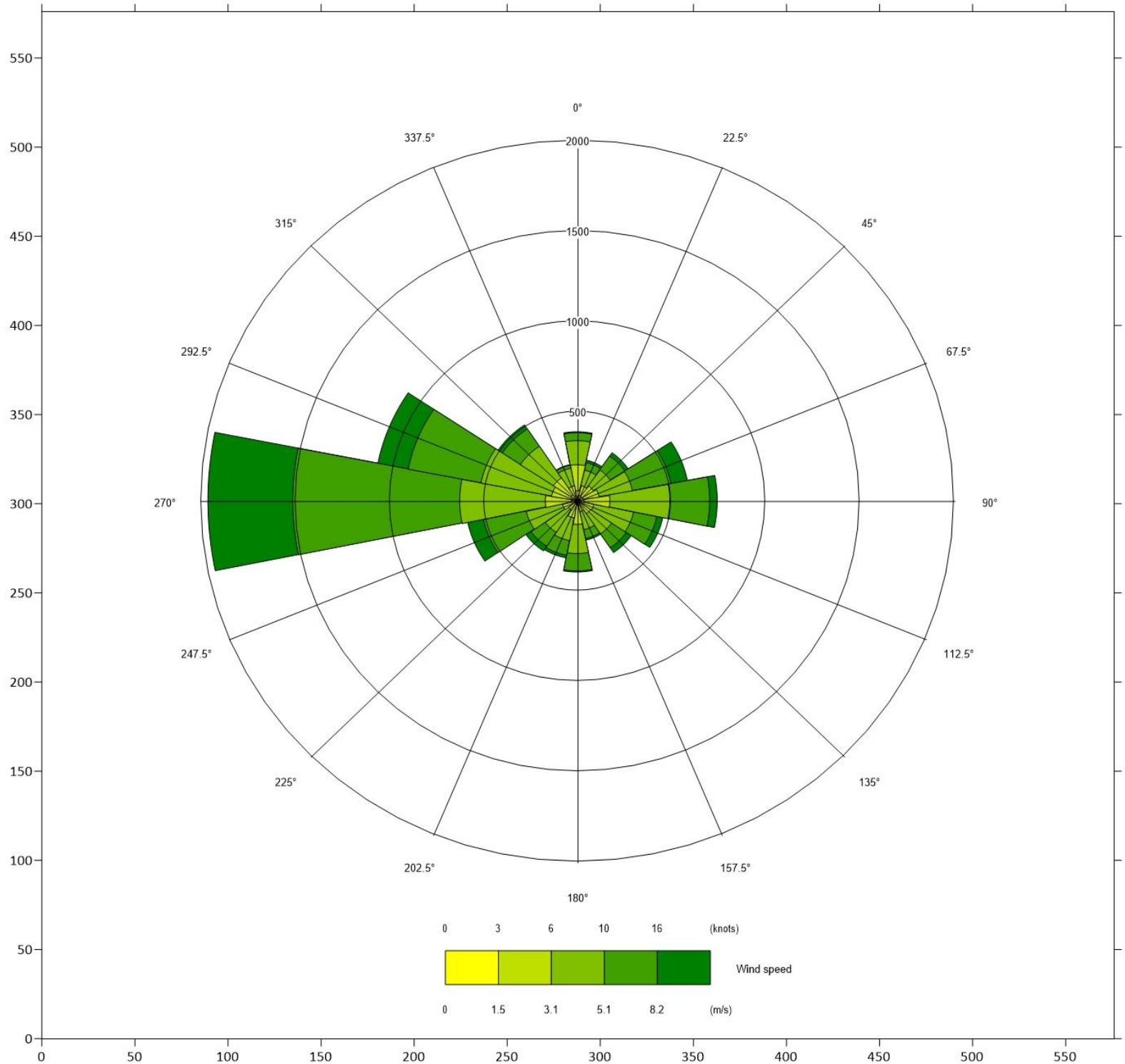

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Title

Figure 5

Wind Rose
Cardiff-Rhoose
Meteorological Station

Project

Switch, Port Talbot

Project Number

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Air Quality Solutions

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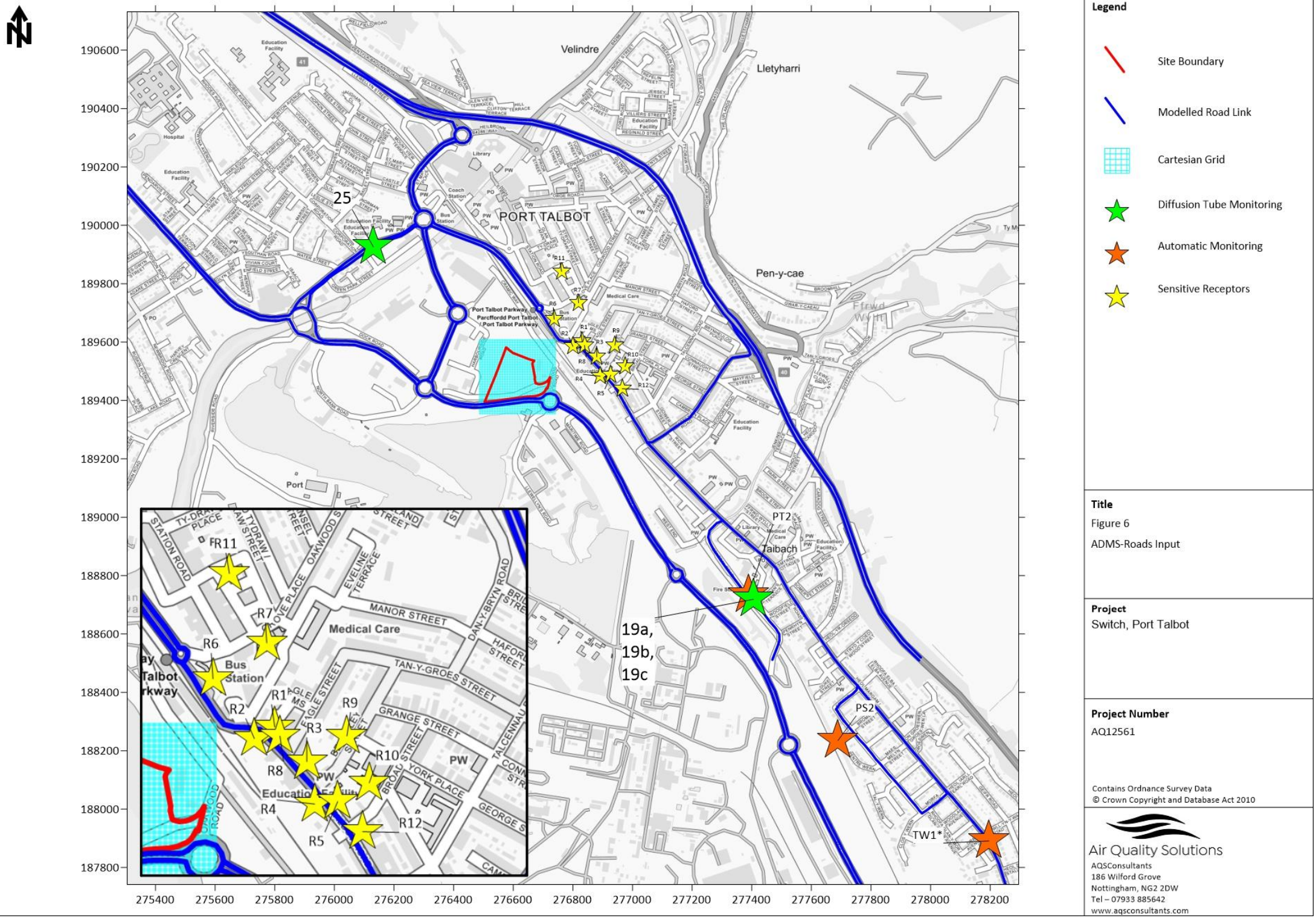

Title

Figure 6

ADMS-Roads Input

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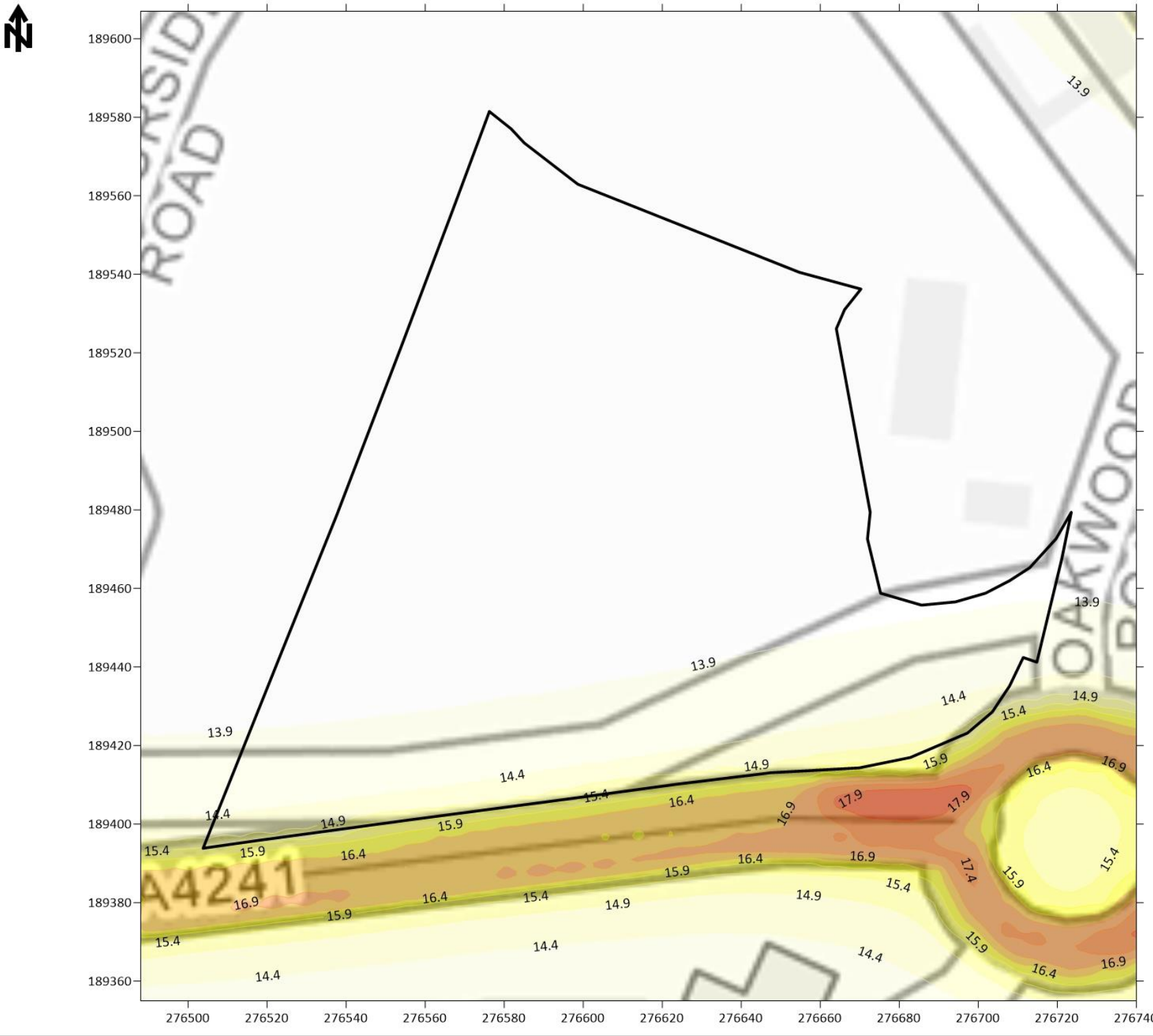

Legend

Site Boundary

18.4
17.9
17.4
16.9
16.4
15.9
15.4
14.9
14.4
13.9
13.4

Predicted Annual Mean NO_2 Concentration (µg/m³)

Title

Figure 7

Predicted Annual Mean NO_2 Concentrations (µg/m³)

Project

Switch, Port Talbot

Project Number

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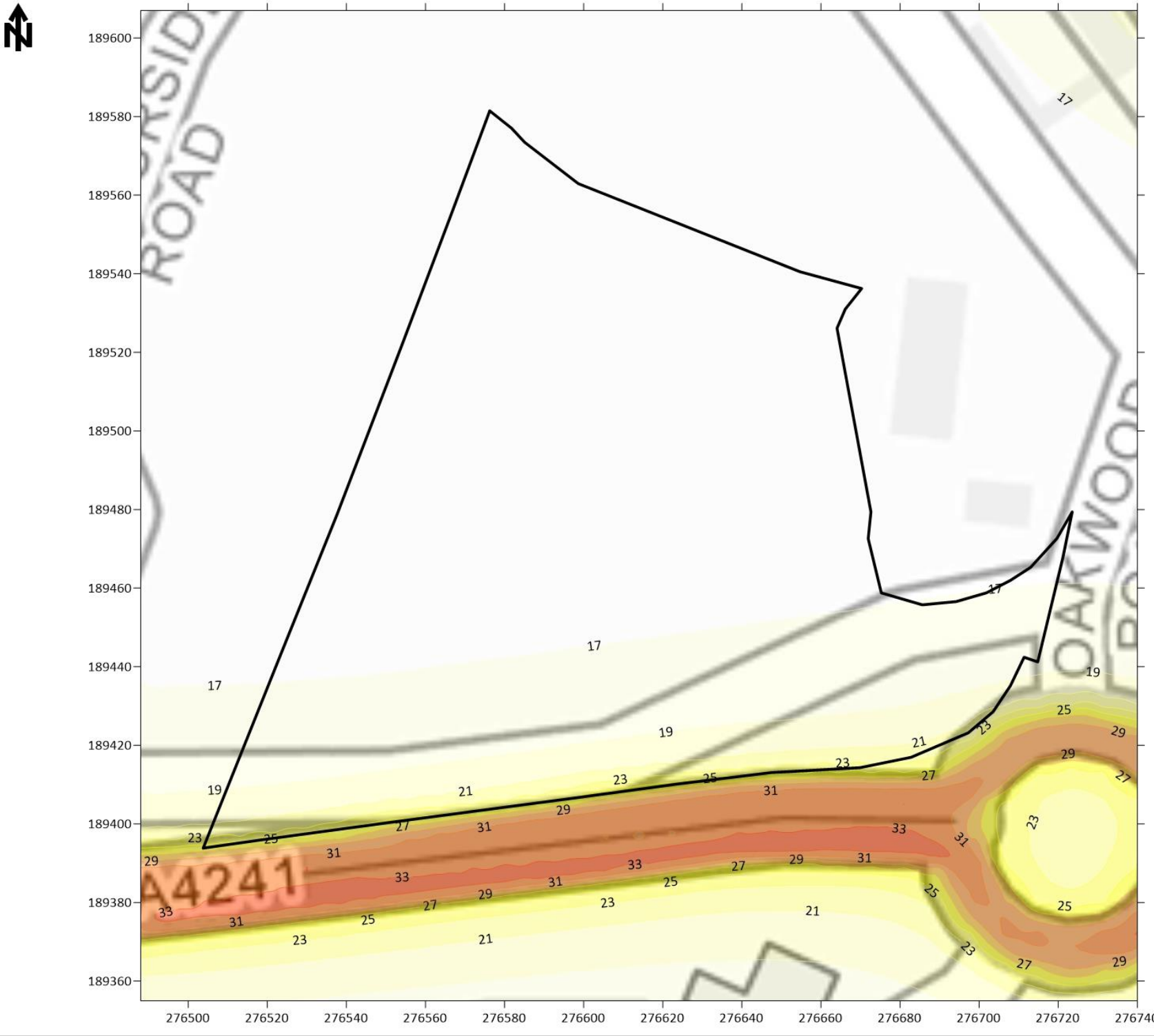

Legend

Site Boundary

35
33
31
29
27
25
23
21
19
17
15

Predicted Annual Mean PM_{10} Concentration (µg/m³)

Title

Figure 8

Predicted Annual Mean PM_{10} Concentrations (µg/m³)

Project

Switch, Port Talbot

Project Number

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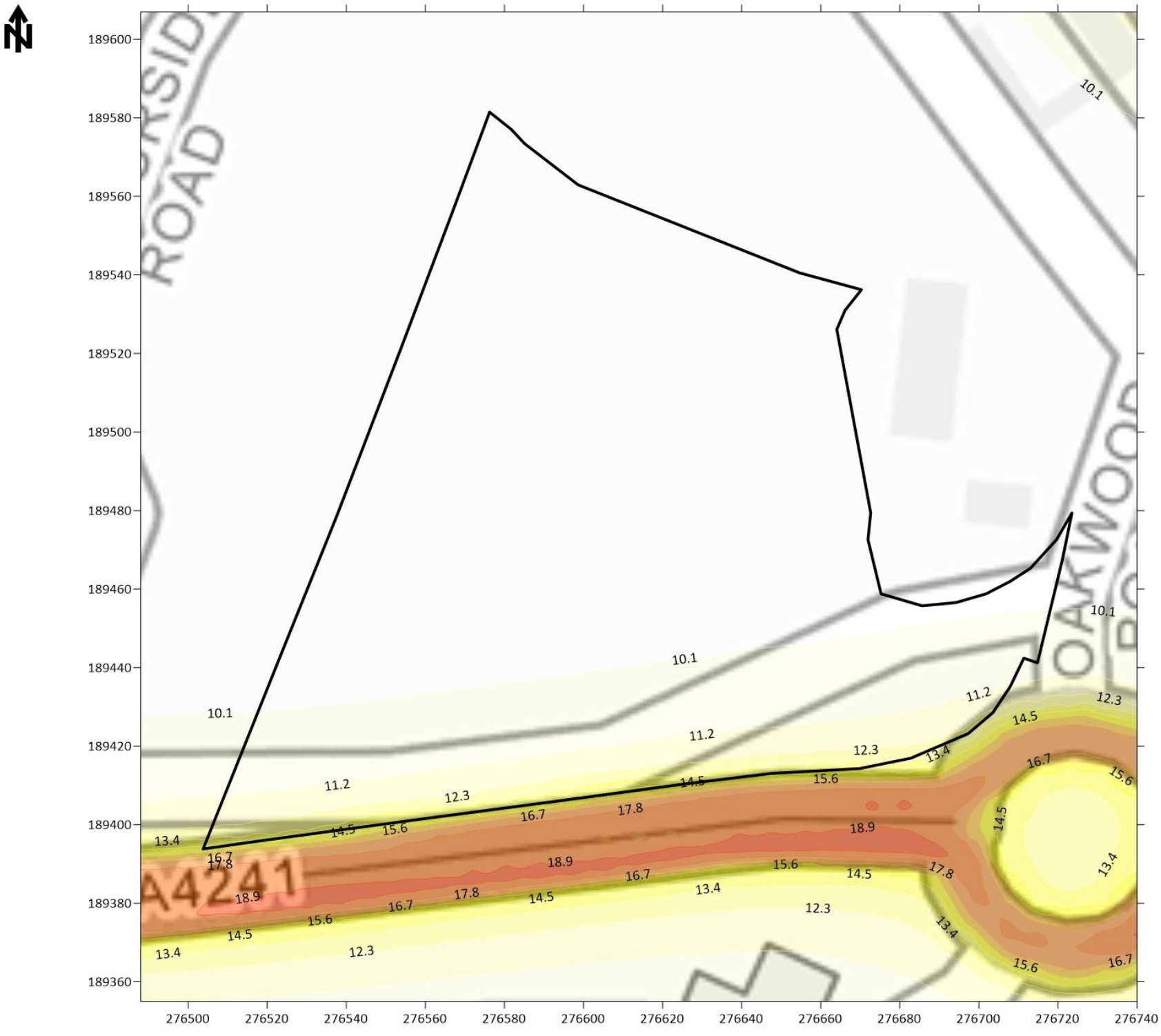

Legend

Site Boundary

Predicted Annual Mean $PM_{2.5}$ Concentration (µg/m³)

20
18.9
17.8
16.7
15.6
14.5
13.4
12.3
11.2
10.1
9

Title

Figure 9

Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m³)

Project

Switch, Port Talbot

Project Number

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APPENDIX B – ASSESSMENT INPUTS

ASSESSMENT INPUTS

The Proposed Development has the potential to introduce future site users to poor air quality. Dispersion modelling using ADMS Roads was therefore undertaken to predict pollutant concentrations across the site to consider site suitability for the proposed end-use.

The assessment was undertaken in accordance with the guidance contained within the DEFRA document LAQM.TG(16)[2] and the EPUK and IAQM guidance[4].

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

- Assessment area;
- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length; and
- Monin-Obukhov length.

Assessment Area

Ambient concentrations were predicted over the Proposed Development site and surrounding highway network. One Cartesian grid was included in the model over the area at approximately NGR: 276500, 189500 at height of 1.5m to represent the proposed ground floor level for the 2025 opening year scenario.

Results were subsequently used to produce contour plots within the Surfer software package. Reference should be made to Figure 6 within Appendix A for a graphical representation of the verification inputs and operation phase DS extents, respectively.

Traffic Flow Data

Development flow traffic data and associated network distribution was provided by Hydrock, the appointed Transport Consultants for the scheme, and indicated that a total flow generation of 123 AADT is anticipated as a result of the Purposed Development.

Baseline traffic data for the following road links were obtained from the Department for Transport (DfT):

- L1 – L94

The Dft Matrix web tool enables the user to view and download traffic flows on every link of the A-road and motorway network in Great Britain for the years 1999 to 2019. The DfT matrix is referenced in DEFRA guidance LAQM.TG(16)[2] as being a suitable source of data for air quality assessments and is therefore considered to provide a reasonable representation of traffic flows in the vicinity of the site.

Growth factors provided by the Trip End Model Presentation Program (TEMPRO) software package were utilised to allow for conversion from the obtained 2019 traffic flow to 2025 which was used to represent the opening year scenario. Vehicle speeds were estimated based on the free flow potential of each link and local speed limits. Road widths were estimated from aerial photography and UK highway design standards.

A summary of the traffic data used in the verification scenario is provided in Table B1.

Table B1: 2019 Verification Traffic Data

Road Link		Road Width (m)	24 Hour AADT Flow	HDV Pop (%)	Mean Vehicle Speed (km/hr)	Data Source
L1	Harbourway Roundabout (Oakwood Road)	10.1	9,830	7.0	16	DfT
L2	Harbourway	7.5	9,830	7.0	48	DfT
L3	Harbourway	8	9,830	7.0	12.8	DfT
L4	Harbourway Roundabout (Lower West End)	9.64	9,830	7.0	16	DfT
L5	Harbourway	7.03	9,830	7.0	48	DfT
L6	Harbourway	9.91	9,830	7.0	12.8	DfT
L7	Harbourway Roundabout (Central Road)	9.82	9,830	7.0	16	DfT
L8	Harbourway	7.28	9,830	7.0	48	DfT
L9	Harbourway	6.8	9,830	7.0	48	DfT
L10	Harbourway	10.1	9,830	7.0	12.8	DfT
L11	Harbourway	8.3	9,830	7.0	48	DfT
L12	Harbourway	8.25	9,830	7.0	12.8	DfT
L13	Harbourway	7.53	9,830	7.0	48	DfT
L14	Harbourway	9.5	9,830	7.0	12.8	DfT
L15	Harbourway	6.91	9,705	2.5	48	DfT
L16	Harbourway	7.29	9,705	2.5	12.8	DfT
L17	Harbourway Roundabout (N Bank Rd)	9.36	8,694	2.4	16	DfT
L18	Harbourway	7.5	9,705	2.5	48	DfT
L19	Affan Way	8.32	9,705	2.5	12.8	DfT
L20	Affan Way	9.9	9,705	2.5	16	DfT
L21	Harbourway	7.41	9,705	2.5	16	DfT
L22	Harbourway	6.72	9,705	2.5	48	DfT
L23	Harbourway	9.28	9,705	2.5	12.8	DfT
L24	Harbourway	6.65	9,705	2.5	48	DfT
L25	Harbourway	6.96	9,705	2.5	12.8	DfT
L26	Affan Way	10.05	18,059	1.9	16	DfT
L27	Harbourway	6.79	9,705	2.5	16	DfT
L28	Harbourway	6.83	9,705	2.5	48	DfT
L29	Harbourway	8.01	9,705	2.5	12.8	DfT
L30	Harbourway	8.05	9,705	2.5	48	DfT
L31	Harbourway	9.52	9,705	2.5	12.8	DfT

L32	A4241	7.4	6,546	4.9	24	DfT
L33	A4241	7.43	6,546	4.9	48	DfT
L34	A4241	7.5	6,546	4.9	12.8	DfT
L35	A4241 Roundabout (Harbourside Road)	9.6	6,546	4.9	16	DfT
L36	A4241	8.1	6,546	4.9	16	DfT
L37	A4241	7.3	6,546	4.9	48	DfT
L38	A4241	7.71	6,546	4.9	12.8	DfT
L39	A4241	6.9	6,546	4.9	16	DfT
L40	A4241	6.9	6,546	4.9	48	DfT
L41	A4241	7.24	6,546	4.9	12.8	DfT
L42	A4241 Roundabout (Water Street)	9.65	14,028	2.7	16	DfT
L43	A4241	7	6,546	4.9	12.8	DfT
L44	A4241	6.93	6,546	4.9	40	DfT
L45	A4241	7.25	6,546	4.9	12.8	DfT
L46	A48	7.65	20,931	2.7	16	DfT
L47	A48	7.6	20,931	2.7	48	DfT
L48	A48	7.83	20,931	2.7	12.8	DfT
L49	A48 Roundabout (HeilBronn Way)	9.62	20,931	2.7	24	DfT
L50	A48	7.9	20,931	2.7	40	DfT
L51	A48	7.4	20,931	2.7	12.8	DfT
L52	Affan Way	4.26	18,059	1.9	16	DfT
L53	Affan Way	4.3	18,059	1.9	40	DfT
L54	Affan Way	8.39	18,059	1.9	12.8	DfT
L55	Affan Way	3.42	18,059	1.9	40	DfT
L56	Affan Way	8.47	18,059	1.9	12.8	DfT
L57	A48	7.08	10,575	2.9	40	DfT
L58	A48	7	10,575	2.9	12.8	DfT
L59	A48 Roundabout (Grove Pl)	8.8	10,575	2.9	19.2	DfT
L60	A48	7.7	10,575	2.9	40	DfT
L61	A48	7.4	10,575	2.9	12.8	DfT
L62	A48	6.74	10,575	2.9	32	DfT
L63	A48	9.7	10,575	2.9	16	DfT
L64	A48	9.63	10,575	2.9	32	DfT
L65	A48	9.5	10,575	2.9	12.8	DfT
L66	A48	6	10,575	2.9	32	DfT
L67	Margam Road	10.53	8,793	2.0	12.8	DfT
L68	Margam Road	7.1	8,793	2.0	32	DfT
L69	Margam Road	10.61	8,793	2.0	12.8	DfT

L70	A48	5.46	20,931	2.7	48	DfT
L71	M4	6.8	69,935	7.0	80	DfT
L72	M4	3.58	69,935	7.0	48	DfT
L73	M4	6.8	69,935	7.0	80	DfT
L74	M4	6.69	69,935	7.0	80	DfT
L75	M4	7.29	69,205	7.1	80	DfT
L76	M4	7.5	69,205	7.1	80	DfT
L77	M4	7.21	69,205	7.1	80	DfT
L78	M4	7.4	69,205	7.1	80	DfT
L79	M4	7.21	69,935	7.0	80	DfT
L80	Abbey Road	6.5	7,198	4.3	32	DfT
L81	Abbey Road	5.37	7,198	4.3	12.8	DfT
L82	Abbey Road	4.15	7,198	4.3	40	DfT
L83	Margam Road	7.1	8,793	2.0	32	DfT
L84	Margam Road	6.9	8,793	2.0	12.8	DfT
L85	Central Road	3.77	798	0.6	16	DfT
L86	Central Road	6.36	798	0.6	16	DfT
L87	Central Road	6.36	798	0.6	16	DfT
L88	Central Road	7.01	798	0.6	16	DfT
L89	Prince Street	3.75	798	0.6	16	DfT
L90	Prince Street	4.69	798	0.6	16	DfT
L91	Prince Street	6.11	798	0.6	16	DfT
L92	Prince Street	4.92	798	0.6	12.8	DfT
L93	Morfa Avenue	5.08	798	0.6	16	DfT
L94	Morfa Avenue	4.95	798	0.6	12.8	DfT

Reference should be made to Figure 6 within Appendix A for a graphical representation of the road link locations used within the verification assessment. The road width and mean vehicle speed shown in Table B1 remained the same for the 2025 scenarios.

A summary of the 2025 traffic data is shown in Table B2.

Table B2: 2025 Traffic Data

Road Link		**DM Scenario**		**DS Scenario**	
		24 Hr AADT Flow	**HDV Prop (%)**	**24 Hr AADT Flow**	**HDV Prop (%)**
L1	Harbourway Roundabout (Oakwood Road)	10,244	7.0	10,244	8.3
L2	Harbourway	10,244	7.0	10,244	8.3
L3	Harbourway	10,244	7.0	10,244	8.3
L4	Harbourway Roundabout (Lower West End)	10,244	7.0	10,244	8.3
L5	Harbourway	10,244	7.0	10,244	8.3

Road Link		DM Scenario		DS Scenario	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L6	Harbourway	10,244	7.0	10,244	8.3
L7	Harbourway Roundabout (Central Road)	10,244	7.0	10,244	8.3
L8	Harbourway	10,244	7.0	10,244	8.3
L9	Harbourway	10,244	7.0	10,244	8.3
L10	Harbourway	10,244	7.0	10,244	8.3
L11	Harbourway	10,244	7.0	10,244	8.3
L12	Harbourway	10,244	7.0	10,244	8.3
L13	Harbourway	10,244	7.0	10,244	8.3
L14	Harbourway	10,244	7.0	10,244	8.3
L15	Harbourway	10,114	2.5	10,114	3.7
L16	Harbourway	10,114	2.5	10,114	3.7
L17	Harbourway Roundabout (N Bank Rd)	9,060	2.4	9,060	3.8
L18	Harbourway	10,114	2.5	10,114	3.7
L19	Affan Way	10,114	2.5	10,114	3.7
L20	Affan Way	10,114	2.5	10,114	3.7
L21	Harbourway	10,114	2.5	10,114	3.7
L22	Harbourway	10,114	2.5	10,114	3.7
L23	Harbourway	10,114	2.5	10,114	3.7
L24	Harbourway	10,114	2.5	10,114	3.7
L25	Harbourway	10,114	2.5	10,114	3.7
L26	Affan Way	18,819	1.9	18,819	2.6
L27	Harbourway	10,114	2.5	10,114	3.7
L28	Harbourway	10,114	2.5	10,114	3.7
L29	Harbourway	10,114	2.5	10,114	3.7
L30	Harbourway	10,114	2.5	10,114	3.7
L31	Harbourway	10,114	2.5	10,114	3.7
L32	A4241	6,822	4.9	6,822	6.7
L33	A4241	6,822	4.9	6,822	6.7
L34	A4241	6,822	4.9	6,822	6.7
L35	A4241 Roundabout (Harbourside Road)	6,822	4.9	6,822	6.7
L36	A4241	6,822	4.9	6,822	6.7
L37	A4241	6,822	4.9	6,822	6.7
L38	A4241	6,822	4.9	6,822	6.7
L39	A4241	6,822	4.9	6,822	6.7
L40	A4241	6,822	4.9	6,822	6.7

Road Link		DM Scenario		DS Scenario	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L41	A4241	6,822	4.9	6,822	6.7
L42	A4241 Roundabout (Water Street)	14,618	2.7	14,618	3.6
L43	A4241	6,822	4.9	6,822	6.7
L44	A4241	6,822	4.9	6,822	6.7
L45	A4241	6,822	4.9	6,822	6.7
L46	A48	21,812	2.7	21,812	3.2
L47	A48	21,812	2.7	21,812	3.2
L48	A48	21,812	2.7	21,812	3.2
L49	A48 Roundabout (HeilBronn Way)	21,812	2.7	21,812	3.2
L50	A48	21,812	2.7	21,812	3.2
L51	A48	21,812	2.7	21,812	3.2
L52	Affan Way	18,819	1.9	18,819	2.6
L53	Affan Way	18,819	1.9	18,819	2.6
L54	Affan Way	18,819	1.9	18,819	2.6
L55	Affan Way	18,819	1.9	18,819	2.6
L56	Affan Way	18,819	1.9	18,819	2.6
L57	A48	11,020	2.9	11,020	4.0
L58	A48	11,020	2.9	11,020	4.0
L59	A48 Roundabout (Grove Pl)	11,020	2.9	11,020	4.0
L60	A48	11,020	2.9	11,020	4.0
L61	A48	11,020	2.9	11,020	4.0
L62	A48	11,020	2.9	11,020	4.0
L63	A48	11,020	2.9	11,020	4.0
L64	A48	11,020	2.9	11,020	4.0
L65	A48	11,020	2.9	11,020	4.0
L66	A48	11,020	2.9	11,020	4.0
L67	Margam Road	9,163	2.0	9,163	3.4
L68	Margam Road	9,163	2.0	9,163	3.4
L69	Margam Road	9,163	2.0	9,163	3.4
L70	A48	21,812	2.7	21,812	3.2
L71	M4	72,879	7.0	72,879	7.1
L72	M4	72,879	7.0	72,879	7.1
L73	M4	72,879	7.0	72,879	7.1
L74	M4	72,879	7.0	72,879	7.1
L75	M4	72,119	7.1	72,119	7.3

Road Link		DM Scenario		DS Scenario	
		24 Hr AADT Flow	HDV Prop (%)	24 Hr AADT Flow	HDV Prop (%)
L76	M4	72,119	7.1	72,119	7.3
L77	M4	72,119	7.1	72,119	7.3
L78	M4	72,119	7.1	72,119	7.3
L79	M4	72,879	7.0	72,879	7.1
L80	Abbey Road	7,501	4.3	7,501	5.9
L81	Abbey Road	7,501	4.3	7,501	5.9
L82	Abbey Road	7,501	4.3	7,501	5.9
L83	Margam Road	9,163	2.0	9,163	3.4
L84	Margam Road	9,163	2.0	9,163	3.4
L85	Central Road	832	0.6	955	0.5
L86	Central Road	832	0.6	955	0.5
L87	Central Road	832	0.6	955	0.5
L88	Central Road	832	0.6	955	0.5
L89	Prince Street	832	0.6	955	0.5
L90	Prince Street	832	0.6	955	0.5
L91	Prince Street	832	0.6	955	0.5
L92	Prince Street	832	0.6	955	0.5
L93	Morfa Avenue	832	0.6	955	0.5
L94	Morfa Avenue	832	0.6	955	0.5

Reference should be made to Figure 6 within Appendix A for a graphical representation of the road link locations used within the operation phase assessment.

Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 11.0) released in November 2021, which incorporates updated COPERT 5.3 vehicle emissions factors for NO_x, PM_{10} and $PM_{2.5}$ and EURO 6 vehicle fleet sub-categories.

NO_x to NO_2 Conversion

Predicted annual mean NO_x concentrations from the dispersion model were converted to NO_2 concentrations using the NO_x to NO_2 Calculator (v.8.1) provided by DEFRA, which is the method detailed within LAQM.TG(16)[2].

Meteorological Data

Meteorological data used in this assessment was taken from Cardiff-Rhoose meteorological station over the period 1st January 2019 to 31st December 2019 (inclusive).

Cardiff-Rhoose meteorological station is located at approximate NGR: 306452,167413 which is approximately 37km South East of the Proposed Development. Although there is a large distance between the application site and Cardiff-Rhoose the use of this data is considered to provide a reasonable representation of conditions at the development site.

All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 5 within Appendix A for a wind rose of utilised meteorological data.

Roughness Length

The specific roughness length (z_0) values used to represent conditions during the verification process, DM/DS scenario, as well as conditions at the Cardiff-Rhoose meteorological station are summarised in Table B3.

Table B3: Utilised Roughness Lengths

Scenario	Roughness Length (m)	ADMS Description
Verification, DM and DS Scenarios	1.0	Cities and Woodlands
Cardif-Rhoose Met Station	1.0	Cities and Woodlands

These values of z_0 are considered appropriate for the morphology of the assessment area.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere within certain urban or rural contexts. The specific length values used to represent conditions during the verification process, DM/DS scenario, as well as conditions at the Cardiff-Rhoose are summarised in Table B4.

Table B4: Utilised Monin-Obukhov Lengths

Scenario	Monin-Obukhov Length (m)	ADMS Description
Verification, DM and DS Scenarios	30	Cities and large urban areas
Cardiff-Rhoose	30	Cities and large urban areas

This Monin-Obukhov value is considered appropriate for the morphology of the assessment area.

Background Concentrations

The 2019 annual mean background concentrations detailed in Table 6, was used in the dispersion modelling assessment to represent annual mean pollutant levels at the Proposed Development site and local monitoring sites.

Table B5 displays the specific background concentrations as predicted by DEFRA, utilised to represent the condition at the monitoring locations used within the verification process.

Table B5: Predicted Background Pollutant Concentrations for Monitoring Locations

Monitoring Location	DEFRA Grid Square	Pollutant	2019 Predicted Background Concentration (µg/m³)
25	276500,189500	NO_x	20.92
		NO_2	15.10
		PM_{10}	13.30
		$PM_{2.5}$	8.09
PT2	277500,188500	NO_x	17.53
		NO_2	13.04

		PM_{10}	13.34
		$PM_{2.5}$	8.20
19a,19b,19c	277500,188500	NO_x	17.53
		NO_2	13.04
		PM_{10}	13.34
		$PM_{2.5}$	8.20
PS2	277500,188500	NO_x	17.53
		NO_2	13.04
		PM_{10}	13.34
		$PM_{2.5}$	8.20
TW1*	278500,187500	NO_x	23.20
		NO_2	16.62
		PM_{10}	14.45
		$PM_{2.5}$	9.18

Table B6 displays the predicted background concentrations by DEFRA used in the operational phase assessment for the sensitive receptor locations.

Table B6: Predicted Background Pollutant Concentrations at Sensitive Receptors

Monitoring Location	DEFRA Grid Square	Pollutant	2025 Predicted Background Concentration (µg/m³)
R1 – R12	276500, 189500	NO_x	17.57
		NO_2	12.92
		PM_{10}	12.50
		$PM_{2.5}$	7.44

2019 background concentrations for each receptor location have been used for the sensitivity analysis. The results of this are detailed in Appendix D.

Verification

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and
- Uncertainties associated with monitoring data, including locations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

For the purpose of this assessment model verification was undertaken for 2019, using traffic data, meteorological data and monitoring results from this year.

NPTC undertakes periodic monitoring of NO_2 concentrations at 3 roadside monitoring location within the assessment extents. The road contribution to total NO_x concentration was calculated from the monitored NO_2 result for use in the verification process. This was undertaken following the methodology contained within DEFRA guidance LAQM.TG(16)[2]. The monitored annual mean NO_x concentration and calculated road NO_x concentration are summarised in Table B7.

Table B7: NO_x Concentrations

Site ID	Monitored Road NO_x Concentration (µg/m³)	Modelled Road NO_x Concentration (µg/m³)	% Difference ((Monitored - Modelled)/Monitored)) * 100
25	24.24	22.82	6
19a,19b,19c	4.86	2.39	51
PT2	3.57	2.38	33

According to LAQM.TG(16), no adjustment is necessary where the results of the model all lie within 10% of the monitored concentrations or provide systematic overpredictions (25). Subsequently, specific monitors have not been included within the calculation of the NO_x adjustment factor.

The monitored and modelled NO_x road contribution concentrations were compared and this indicated that a verification factor of 1.0774 was required to be applied to all NOx modelling results.

An adjustment factor of 1 has been applied where modelled concentrations are observed within 10% of monitored NO_x concentrations, or in cases where systematic overpredictions occur. This method ensures that over adjustment is avoided at locations where the initial modelling provides suitable correlation to monitored concentrations.

Graph 1 is provided below.

Graph 1 - Verification Adjustment Factor

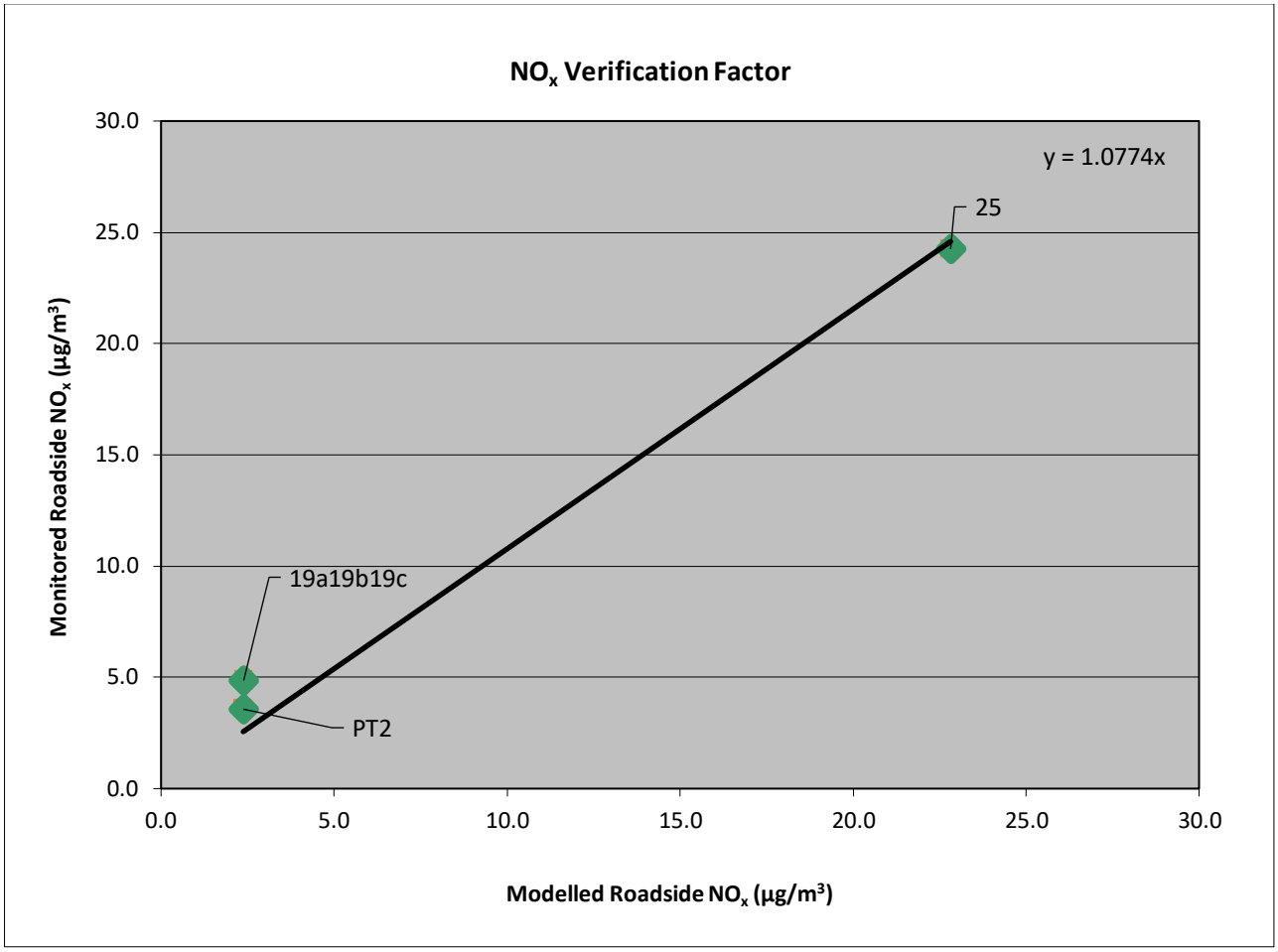


Table B8 presents the monitored annual mean NO_2 concentrations and the adjusted modelled total NO_2 concentration based on the above verification factor. Exceedances of the annual mean NO_2 AQO are highlighted in **bold**.

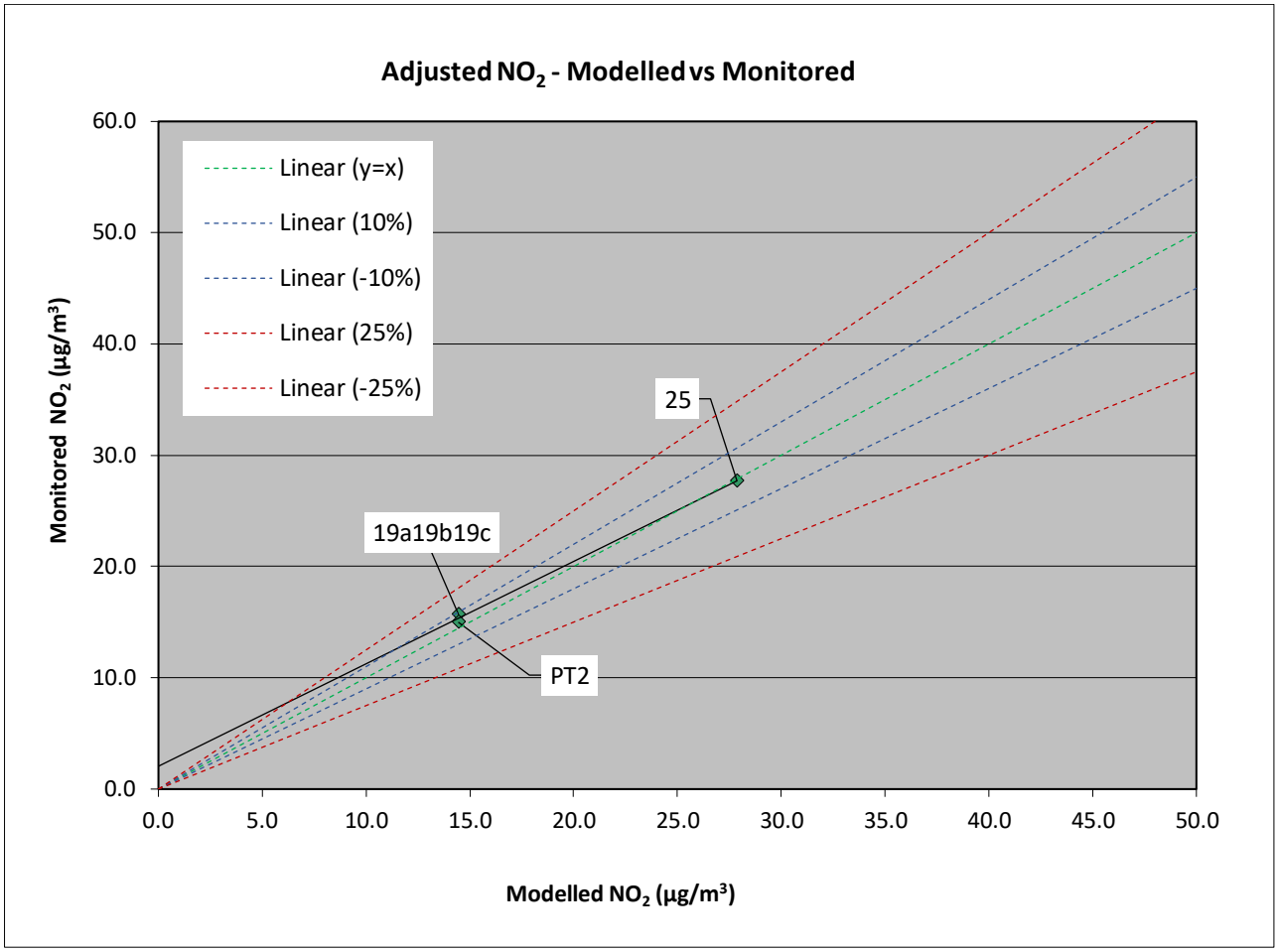
Table B8: NO_2 Concentrations

Site ID	Monitored Road NO_2 Concentration (µg/m³)	Adjusted Modelled Road NO_2 Concentration (µg/m³)	% Difference ((Monitored - Modelled)/Monitored)) * 100
25	27.70	27.87	-1%
19a19b19c	15.70	14.45	8%
PT2	15.00	14.44	4%

As demonstrated in Table B8, the percentage difference between modelled and monitored concentrations is deemed acceptable and is less than 10% in all cases. This reduces uncertainties in the model predictions and provide a robust representation of pollutant concentrations in accordance with the guidance suggested in LAQM.TG(16)[2].

A graphical representation of the adjusted NO_2 concentrations is provided within Graph 2.

Graph 2 – Modelled vs Monitored NO_2



NPTC also undertakes monitoring of annual mean PM_{10} concentrations at two monitoring locations within the assessment extents, it was therefore possible to provide a separate PM_{10} verification factor. The dispersion model was run with the traffic input data previously detailed for 2019 to predict the 2025 concentration at the monitoring locations. The results are shown in Table B9.

Table B9: PM_{10} Concentrations

Site ID	Modelled Road PM_{10} Concentration (µg/m³)[a]	Monitored Road PM_{10} Concentration (µg/m³)[b]	Background PM_{10}	Monitored PM_{10}	Adjustment Factor[c]
PT2	0.28	6.6578	13.34	20.00	23.5208
PS2	0.16	7.6600	13.34	21.00	46.6010
TW1	0.55	6.5500	14.45	21.00	12.0042

Where:

[a] *Raw modelled road contribution from ADMS model file (.plt)*

[b] *Calculated by subtracting the background concentration from the monitored concentration in line with LAQM.TG(16)*

[c] *Adjustment Factor applied to modelled total PM_{10} results [Monitored Road PM_{10}/Modelled Road PM_{10}]*

The monitored and modelled PM_{10} road contribution concentrations were compared. This indicated that a verification factor of **16.5922** was required to be applied to all PM_{10} modelling results, showing the model has a tendency to underestimate pollutant concentrations throughout the assessment extents. As $PM_{2.5}$ monitoring is not undertaken within the assessment extents, a PM_{10} adjustment factor of **16.5922** was utilised to adjust model predictions of $PM_{2.5}$ in accordance with the guidance provided within LAQM.TG(16)[2].

Air Quality Solutions

APPENDIX C – ASSESSMENT RESULTS

Predicted Concentrations at Sensitive Receptors

Nitrogen Dioxide (NO_2)

Annual mean NO_2 concentrations were predicted for 2025 DM and DS scenarios and are summarised in Table C1.

Table C1: Predicted Annual Mean NO_2 Concentrations

Potential Impact		Predicted Annual Mean NO_2 Concentration (µg/m^3)		
		DM	DS	Change
R1	1 Eagle Mews, Port Talbot SA13 1DL	16.40	16.52	0.12
R2	1 Talbot Rd, Port Talbot SA13 1HN	16.77	16.93	0.16
R3	Eagle St, Port Talbot SA13 1HG	16.38	16.50	0.12
R4	29 Talbot Rd, Port Talbot SA13 1HN	16.47	16.60	0.13
R5	22 Talbot Rd, Port Talbot SA13 1HU	16.50	16.63	0.13
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	16.36	16.48	0.12
R7	7 Grove Pl, Port Talbot SA13 1EZ	15.87	15.94	0.07
R8	4 Eagle St, Port Talbot SA13 1AA	16.57	16.71	0.14
R9	13 Beverley St, Port Talbot SA13 1EB	15.86	15.93	0.07
R10	Central Junior School | Ysgol Iau Canolog	15.91	15.98	0.07
R11	14 Courtland Pl, Port Talbot SA13 1JJ	15.89	15.95	0.06
R12	55 Talbot Rd, Port Talbot SA13 1HU	16.44	16.57	0.13

As indicated in Table C1, annual mean NO_2 concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean NO_2 concentrations are summarised in Table C2.

Table C2: Predicted NO_2 Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	1 Eagle Mews, Port Talbot SA13 1DL	0.30	75% or Less of AQO	Negligible
R2	1 Talbot Rd, Port Talbot SA13 1HN	0.40	75% or Less of AQO	Negligible
R3	Eagle St, Port Talbot SA13 1HG	0.30	75% or Less of AQO	Negligible
R4	29 Talbot Rd, Port Talbot SA13 1HN	0.33	75% or Less of AQO	Negligible
R5	22 Talbot Rd, Port Talbot SA13 1HU	0.32	75% or Less of AQO	Negligible
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	0.30	75% or Less of AQO	Negligible
R7	7 Grove Pl, Port Talbot SA13 1EZ	0.18	75% or Less of AQO	Negligible
R8	4 Eagle St, Port Talbot SA13 1AA	0.35	75% or Less of AQO	Negligible
R9	13 Beverley St, Port Talbot SA13 1EB	0.18	75% or Less of AQO	Negligible
R10	Central Junior School | Ysgol Iau Canolog	0.18	75% or Less of AQO	Negligible
R11	14 Courtland Pl, Port Talbot SA13 1JJ	0.15	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R12	55 Talbot Rd, Port Talbot SA13 1HU	0.32	75% or Less of AQO	Negligible

As indicated in Table C2 impacts on annual mean NO_2 concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be not significant at all receptor locations. It is therefore considered that the overall impacts as a result of the proposed development are **negligible.** Further justifications are discussed in Section 5.2.3 of the main report.

Particulate Matter (PM_{10})

Annual mean PM_{10} concentrations were predicted for 2025 DM and DS scenarios and are summarised Table C3.

Table C3: Predicted Annual Mean PM_{10} Concentrations

Potential Impact		Predicted Annual Mean PM_{10} Concentration ($\mu g/m^3$)		
		DM	DS	Change
R1	1 Eagle Mews, Port Talbot SA13 1DL	19.74	19.88	0.14
R2	1 Talbot Rd, Port Talbot SA13 1HN	21.07	21.26	0.19
R3	Eagle St, Port Talbot SA13 1HG	19.87	20.01	0.14
R4	29 Talbot Rd, Port Talbot SA13 1HN	20.33	20.49	0.16
R5	22 Talbot Rd, Port Talbot SA13 1HU	20.49	20.64	0.15
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	19.66	19.80	0.14
R7	7 Grove Pl, Port Talbot SA13 1EZ	17.60	17.67	0.07
R8	4 Eagle St, Port Talbot SA13 1AA	20.62	20.78	0.16
R9	13 Beverley St, Port Talbot SA13 1EB	17.58	17.64	0.06
R10	Central Junior School | Ysgol Iau Canolog	17.78	17.85	0.07
R11	14 Courtland Pl, Port Talbot SA13 1JJ	17.79	17.85	0.06
R12	55 Talbot Rd, Port Talbot SA13 1HU	20.25	20.40	0.15

As indicated in Table C3 annual mean PM_{10} concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean PM_{10} concentrations are summarised in Table C4.

Table C4: Predicted PM_{10} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	1 Eagle Mews, Port Talbot SA13 1DL	0.35	75% or Less of AQO	Negligible
R2	1 Talbot Rd, Port Talbot SA13 1HN	0.48	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R3	Eagle St, Port Talbot SA13 1HG	0.35	75% or Less of AQO	Negligible
R4	29 Talbot Rd, Port Talbot SA13 1HN	0.40	75% or Less of AQO	Negligible
R5	22 Talbot Rd, Port Talbot SA13 1HU	0.38	75% or Less of AQO	Negligible
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	0.35	75% or Less of AQO	Negligible
R7	7 Grove Pl, Port Talbot SA13 1EZ	0.18	75% or Less of AQO	Negligible
R8	4 Eagle St, Port Talbot SA13 1AA	0.40	75% or Less of AQO	Negligible
R9	13 Beverley St, Port Talbot SA13 1EB	0.15	75% or Less of AQO	Negligible
R10	Central Junior School | Ysgol Iau Canolog	0.18	75% or Less of AQO	Negligible
R11	14 Courtland Pl, Port Talbot SA13 1JJ	0.15	75% or Less of AQO	Negligible
R12	55 Talbot Rd, Port Talbot SA13 1HU	0.37	75% or Less of AQO	Negligible

As indicated in Table C4 impacts on annual mean PM_{10} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **not significant** at all receptor locations. It is therefore considered that the overall impacts as a result of the Proposed Development are **negligible.** Further justifications are discussed in Section 5.2.3 of the main report.

Particulate Matter ($PM_{2.5}$)

Annual mean $PM_{2.5}$ concentrations were predicted for 2025 DM and DS scenarios and are summarised Table C5.

Table C5: Predicted Annual Mean $PM_{2.5}$ Concentrations

Potential Impact		Predicted Annual Mean PM_{10} Concentration ($\mu g/m^3$)		
		DM	DS	Change
R1	1 Eagle Mews, Port Talbot SA13 1DL	11.68	11.76	0.08
R2	1 Talbot Rd, Port Talbot SA13 1HN	12.44	12.54	0.10
R3	Eagle St, Port Talbot SA13 1HG	11.75	11.82	0.07
R4	29 Talbot Rd, Port Talbot SA13 1HN	12.00	12.09	0.09
R5	22 Talbot Rd, Port Talbot SA13 1HU	12.09	12.17	0.08
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	11.64	11.71	0.07
R7	7 Grove Pl, Port Talbot SA13 1EZ	10.47	10.50	0.03
R8	4 Eagle St, Port Talbot SA13 1AA	12.17	12.26	0.09

Potential Impact		Predicted Annual Mean PM_{10} Concentration (µg/m^3)		
		DM	DS	Change
R9	13 Beverley St, Port Talbot SA13 1EB	10.46	10.49	0.03
R10	Central Junior School | Ysgol Iau Canolog	10.57	10.61	0.04
R11	14 Courtland Pl, Port Talbot SA13 1JJ	10.57	10.60	0.03
R12	55 Talbot Rd, Port Talbot SA13 1HU	11.96	12.04	0.08

As indicated in Table C5 annual mean $PM_{2.5}$ concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean $PM_{2.5}$ concentrations are summarised in Table C6.

Table C6: Predicted $PM_{2.5}$ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	1 Eagle Mews, Port Talbot SA13 1DL	0.32	75% or Less of AQO	Negligible
R2	1 Talbot Rd, Port Talbot SA13 1HN	0.40	75% or Less of AQO	Negligible
R3	Eagle St, Port Talbot SA13 1HG	0.28	75% or Less of AQO	Negligible
R4	29 Talbot Rd, Port Talbot SA13 1HN	0.36	75% or Less of AQO	Negligible
R5	22 Talbot Rd, Port Talbot SA13 1HU	0.32	75% or Less of AQO	Negligible
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	0.28	75% or Less of AQO	Negligible
R7	7 Grove Pl, Port Talbot SA13 1EZ	0.12	75% or Less of AQO	Negligible
R8	4 Eagle St, Port Talbot SA13 1AA	0.36	75% or Less of AQO	Negligible
R9	13 Beverley St, Port Talbot SA13 1EB	0.12	75% or Less of AQO	Negligible
R10	Central Junior School | Ysgol Iau Canolog	0.16	75% or Less of AQO	Negligible
R11	14 Courtland Pl, Port Talbot SA13 1JJ	0.12	75% or Less of AQO	Negligible
R12	55 Talbot Rd, Port Talbot SA13 1HU	0.32	75% or Less of AQO	Negligible

As indicated in Table C6 impacts on annual mean $PM_{2.5}$ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **not significant** at all receptor locations. It is therefore considered that the overall impacts as a result of the Proposed Development are **negligible**. Further justifications are discussed in Section 5.2.3.

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APPENDIX D – SENSITIVITY ANALYSIS RESULTS

Predicted Concentrations at Sensitive Receptors – 2019 Emissions

Sensitivity analysis was undertaken to assess associated road vehicle exhaust emissions impacts based on the use of 2019 traffic data using 2019 emission factors. The use of 2019 emission factors assumes that vehicle emission factors will not improve in line with current predictions and future emission factors will remain consistent with those predicted for the baseline year. This ensures a worst-case scenario.

The results are detailed in the following Sections.

Nitrogen Dioxide (NO_2)

Annual mean NO_2 concentrations were predicted for 2019 DM and DS scenarios and are summarised in Table D1.

Table D1: Predicted Annual Mean NO_2 Concentrations

Potential Impact		Predicted Annual Mean NO_2 Concentration (µg/m^3)		
		DM	DS	Change
R1	1 Eagle Mews, Port Talbot SA13 1DL	17.78	17.89	0.11
R2	1 Talbot Rd, Port Talbot SA13 1HN	18.52	18.68	0.16
R3	Eagle St, Port Talbot SA13 1HG	17.73	17.83	0.10
R4	29 Talbot Rd, Port Talbot SA13 1HN	17.93	18.03	0.10
R5	22 Talbot Rd, Port Talbot SA13 1HU	17.97	18.08	0.11
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	17.70	17.80	0.10
R7	7 Grove Pl, Port Talbot SA13 1EZ	16.71	16.76	0.05
R8	4 Eagle St, Port Talbot SA13 1AA	18.11	18.24	0.13
R9	13 Beverley St, Port Talbot SA13 1EB	16.70	16.74	0.04
R10	Central Junior School | Ysgol Iau Canolog	16.79	16.83	0.04
R11	14 Courtland Pl, Port Talbot SA13 1JJ	16.75	16.79	0.04
R12	55 Talbot Rd, Port Talbot SA13 1HU	17.87	17.97	0.10

As indicated in Table D1, annual mean NO_2 concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean NO_2 concentrations are summarised in Table D2.

Table D2: Predicted NO_2 Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	1 Eagle Mews, Port Talbot SA13 1DL	0.27	75% or Less of AQO	Negligible
R2	1 Talbot Rd, Port Talbot SA13 1HN	0.40	75% or Less of AQO	Negligible
R3	Eagle St, Port Talbot SA13 1HG	0.25	75% or Less of AQO	Negligible
R4	29 Talbot Rd, Port Talbot SA13 1HN	0.25	75% or Less of AQO	Negligible
R5	22 Talbot Rd, Port Talbot SA13 1HU	0.27	75% or Less of AQO	Negligible
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	0.25	75% or Less of AQO	Negligible

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R7	7 Grove Pl, Port Talbot SA13 1EZ	0.13	75% or Less of AQO	Negligible
R8	4 Eagle St, Port Talbot SA13 1AA	0.32	75% or Less of AQO	Negligible
R9	13 Beverley St, Port Talbot SA13 1EB	0.10	75% or Less of AQO	Negligible
R10	Central Junior School | Ysgol Iau Canolog	0.10	75% or Less of AQO	Negligible
R11	14 Courtland Pl, Port Talbot SA13 1JJ	0.10	75% or Less of AQO	Negligible
R12	55 Talbot Rd, Port Talbot SA13 1HU	0.25	75% or Less of AQO	Negligible

As indicated in Table D2 impacts on annual mean NO_2 concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible at all receptor locations.

Particulate Matter (PM_{10})

Annual mean PM_{10} concentrations were predicted for 2019 DM and DS scenarios and are summarised Table D3.

Table D3: Predicted Annual Mean PM_{10} Concentrations

Potential Impact		Predicted Annual Mean PM_{10} Concentration ($\mu g/m^3$)		
		DM	DS	Change
R1	1 Eagle Mews, Port Talbot SA13 1DL	20.21	20.37	0.16
R2	1 Talbot Rd, Port Talbot SA13 1HN	21.65	21.87	0.22
R3	Eagle St, Port Talbot SA13 1HG	20.32	20.49	0.17
R4	29 Talbot Rd, Port Talbot SA13 1HN	20.82	21.00	0.18
R5	22 Talbot Rd, Port Talbot SA13 1HU	20.99	21.17	0.18
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	20.11	20.27	0.16
R7	7 Grove Pl, Port Talbot SA13 1EZ	17.90	17.97	0.07
R8	4 Eagle St, Port Talbot SA13 1AA	21.14	21.33	0.19
R9	13 Beverley St, Port Talbot SA13 1EB	17.87	17.95	0.08
R10	Central Junior School | Ysgol Iau Canolog	18.08	18.17	0.09
R11	14 Courtland Pl, Port Talbot SA13 1JJ	18.10	18.17	0.07
R12	55 Talbot Rd, Port Talbot SA13 1HU	20.72	20.90	0.18

As indicated in Table D3 annual mean PM_{10} concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean PM_{10} concentrations are summarised in Table D4.

Table D4: Predicted PM_{10} Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	1 Eagle Mews, Port Talbot SA13 1DL	0.40	75% or Less of AQO	Negligible
R2	1 Talbot Rd, Port Talbot SA13 1HN	0.55	75% or Less of AQO	Negligible
R3	Eagle St, Port Talbot SA13 1HG	0.42	75% or Less of AQO	Negligible
R4	29 Talbot Rd, Port Talbot SA13 1HN	0.45	75% or Less of AQO	Negligible
R5	22 Talbot Rd, Port Talbot SA13 1HU	0.45	75% or Less of AQO	Negligible
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	0.40	75% or Less of AQO	Negligible
R7	7 Grove Pl, Port Talbot SA13 1EZ	0.18	75% or Less of AQO	Negligible
R8	4 Eagle St, Port Talbot SA13 1AA	0.47	75% or Less of AQO	Negligible
R9	13 Beverley St, Port Talbot SA13 1EB	0.20	75% or Less of AQO	Negligible
R10	Central Junior School | Ysgol Iau Canolog	0.23	75% or Less of AQO	Negligible
R11	14 Courtland Pl, Port Talbot SA13 1JJ	0.18	75% or Less of AQO	Negligible
R12	55 Talbot Rd, Port Talbot SA13 1HU	0.45	75% or Less of AQO	Negligible

As indicated in Table D4 impacts on annual mean PM_{10} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all receptor locations.

Particulate Matter ($PM_{2.5}$)

Annual mean $PM_{2.5}$ concentrations were predicted for 2019 DM and DS scenarios and are summarised Table D5.

Table D5: Predicted Annual Mean $PM_{2.5}$ Concentrations

Potential Impact		Predicted Annual Mean PM_{10} Concentration ($\mu g/m^3$)		
		DM	DS	Change
R1	1 Eagle Mews, Port Talbot SA13 1DL	12.15	12.25	0.10
R2	1 Talbot Rd, Port Talbot SA13 1HN	13.02	13.17	0.15
R3	Eagle St, Port Talbot SA13 1HG	12.20	12.30	0.10
R4	29 Talbot Rd, Port Talbot SA13 1HN	12.49	12.60	0.11
R5	22 Talbot Rd, Port Talbot SA13 1HU	12.59	12.70	0.11
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	12.09	12.19	0.10

Potential Impact		Predicted Annual Mean PM_{10} Concentration ($\mu g/m^3$)		
		DM	DS	Change
R7	7 Grove Pl, Port Talbot SA13 1EZ	10.76	10.81	0.05
R8	4 Eagle St, Port Talbot SA13 1AA	12.69	12.80	0.11
R9	13 Beverley St, Port Talbot SA13 1EB	10.74	10.79	0.05
R10	Central Junior School | Ysgol Iau Canolog	10.88	10.93	0.05
R11	14 Courtland Pl, Port Talbot SA13 1JJ	10.88	10.91	0.03
R12	55 Talbot Rd, Port Talbot SA13 1HU	12.44	12.54	0.10

As indicated in Table D5 annual mean $PM_{2.5}$ concentrations were below the relevant AQO at all receptor locations considered.

Predicted impacts on annual mean $PM_{2.5}$ concentrations are summarised in Table D6.

Table D6: Predicted $PM_{2.5}$ Impacts

Potential Impact		% Change in Concentration Relative to AQO	Long Term Average Concentration	Impact
R1	1 Eagle Mews, Port Talbot SA13 1DL	0.40	75% or Less of AQO	Negligible
R2	1 Talbot Rd, Port Talbot SA13 1HN	0.60	75% or Less of AQO	Negligible
R3	Eagle St, Port Talbot SA13 1HG	0.40	75% or Less of AQO	Negligible
R4	29 Talbot Rd, Port Talbot SA13 1HN	0.44	75% or Less of AQO	Negligible
R5	22 Talbot Rd, Port Talbot SA13 1HU	0.44	75% or Less of AQO	Negligible
R6	5 Brynbryddan, Cwmavon, Port Talbot SA12 9LD	0.40	75% or Less of AQO	Negligible
R7	7 Grove Pl, Port Talbot SA13 1EZ	0.20	75% or Less of AQO	Negligible
R8	4 Eagle St, Port Talbot SA13 1AA	0.44	75% or Less of AQO	Negligible
R9	13 Beverley St, Port Talbot SA13 1EB	0.20	75% or Less of AQO	Negligible
R10	Central Junior School | Ysgol Iau Canolog	0.20	75% or Less of AQO	Negligible
R11	14 Courtland Pl, Port Talbot SA13 1JJ	0.12	75% or Less of AQO	Negligible
R12	55 Talbot Rd, Port Talbot SA13 1HU	0.40	75% or Less of AQO	Negligible

As indicated in Table D6 impacts on annual mean $PM_{2.5}$ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be **negligible** at all receptor locations.

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APPENDIX E – CONSTRUCTION PHASE ASSESSMENT CRITERIA

CONSTRUCTION PHASE METHODOLOGY

There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction'[3].

Activities are divided into four types to reflect their different potential impacts. These are:

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

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

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in exposure to PM_{10} and $PM_{2.5}$.

The assessment steps are detailed below.

Step 1

Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the site boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment should proceed to Step 2. Additionally, should ecological receptors be identified within 50m of the boundary site or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment should also proceed to Step 2.

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

Step 2

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

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

The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied. Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table E1.

Table E1: Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Demolition	• Total building volume greater than 50,000m^3 • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities greater than 20m above ground level
	Earthworks	• Total site area greater than 10,000m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • More than 10 heavy earth moving vehicles active at any one time

Magnitude	Activity	Criteria
		• Formation of bunds greater than 8m in height • More than 100,000 tonnes of material moved
	Construction	• Total building volume greater than 100,000m^3 • On site concrete batching • Sandblasting
	Trackout	• More than 50 Heavy Duty Vehicle (HDV) trips per day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length greater than 100m
Medium	Demolition	• Total building volume 20,000m^3 to 50,000m^3 • Potentially dusty construction material • Demolition activities 10m to 20m above ground level
	Earthworks	• Total site area 2,500m^2 to 10,000m^2 • Moderately dusty soil type (e.g. silt) • 5 to 10 heavy earth moving vehicles active at any one time • Formation of bunds 4m to 8m in height • Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	• Total building volume 25,000m^3 to 100,000m^3 • Potentially dusty construction material (e.g. concrete) • On site concrete batching
	Trackout	• 10 to 50 HDV trips per day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50m to 100m
Small	Demolition	• Total building volume under 20,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities less than 10m above ground level • Demolition during wetter months
	Earthworks	• Total site area less than 2,500m^2 • Soil type with large grain size (e.g. sand) • Less than 5 heavy earth moving vehicles active at any one time • Formation of bunds less than 4m in height • Total material moved less than 20,000 tonnes • Earthworks during wetter months
	Construction	• Total building volume less than 25,000m^3 • Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	• <10 HDV (3.5t) outward movements in any one day • Surface material with low potential for dust release • Unpaved road length <50m

Step 2B defines the sensitivity of the area around the development site for construction, earthworks and trackout. The factors influencing the sensitivity of the area are shown in Table E2.

Table E2: Examples of Factors Defining Sensitivity of an Area

Sensitivity	Examples	
	Human Receptors	**Ecological Receptors**
High	• Users expect of high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended periods of time	• Internationally or nationally designated site e.g. Special Area of Conservation

Sensitivity	Examples	
	Human Receptors	**Ecological Receptors**
	• Locations where members of the public are exposed over a time period relevant to the AQO for PM_{10} e.g. residential properties, hospitals, schools and residential care homes	
Medium	• Users would expect to enjoy a reasonable level of amenity • Aesthetics or value of their property could be diminished by soiling • People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work	• Nationally designated site e.g. Sites of Special Scientific Interest
Low	• Enjoyment of amenity would not reasonably be expected • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads	• Locally designated site e.g. Local Nature Reserve

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

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

These factors were considered in the undertaking of this assessment.

The sensitivity of the area to dust soiling effects on people and property is shown in Table E3.

Table E3: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	**Less than 50**	**Less than 100**	**Less than 350**
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

Table E4 outlines the sensitivity of the area to human health impacts.

Table E4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
High	Greater than 32µg/m^3	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m^3	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m^3	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m^3	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
	Less than 24µg/m^3	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m^3	More than 10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m^3	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	More than 1	Low	Low	Low	Low	Low

Table E5 outlines the sensitivity of the area to ecological impacts.

Table E5: Sensitivity of the Area to Ecological Impacts

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

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

Table E6 outlines the risk category from demolition activities.

Table E6: Dust Risk Category from Demolition

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

Table E7 outlines the risk category from earthworks and construction activities.

Table E7: Dust Risk Category from Earthworks and Construction

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

Table E8 outlines the risk category from trackout.

Table E8: Dust Risk Category from Trackout

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

Step 3

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

Step 4

Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.