Air Quality Assessment

Site: Proposed Industrial Development
Bridge Road, Wrexham
Reference: 16-685-R3-1
Date: May 24



e3p

E3P

Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

+ 44 (0) 161 707 9612
https://e3p.co.uk

Registered in England
CRN: 08725262

QUALITY ASSURANCE

Report reference	16-685-R3-1

REV REF:	DESCRIPTION	AUTHOR	CHECKED	AUTHORISED	DATE
R1-1	First issue	EM	MH	JR	15/05/24

This report has been prepared for the sole benefit, use, and information of the client. The liability of Environmental Engineering Partnership Limited T/A E3P with respect to the information contained in the report will not extend to any third party. This report has been prepared by the qualified persons as listed below.

WRITTEN BY	QUALIFICATIONS	POSITION
Emily Macey	BSc MSc MIAQM MIEnvSc	Consultant

REVIEWED BY	QUALIFICATIONS	POSITION
Megan Hall	BSc AMIEnvSc	Consultant

AUTHORISED BY	QUALIFICATIONS	POSITION
Jethro Redmore	BEng MSc CEnv PIEMA MIEnvSc MIAQM	Consultant

Table of Contents

1. INTRODUCTION 4
1.1. Background 4
1.2. Site Location and Context 4
1.3. Assessment Scope 4
1.4. Limitations 4
1.5. Confidentiality 4

2. LEGISLATION AND POLICY 5
2.1. Legislation 5
2.2. Local Air Quality Management 6
2.3. Dust 6
2.4. National Planning Policy 7
2.5. Local Planning Policy 7

3. METHODOLOGY 9
3.1. Introduction 9
3.2. Construction Phase Assessment 9
3.2.1. Step 1 9
3.2.2. Step 2 9
3.2.3. Step 3 13
3.2.4. Step 4 13
3.3. Operational Phase Assessment 13

4. BASELINE 15
4.1. Introduction 15
4.2. Local Air Quality Management 15
4.3. Air Quality Monitoring 15
4.4. Background Pollutant Concentrations 16
4.5. Sensitive Receptors 16

5. ASSESSMENT 18
5.1. Introduction 18
5.2. Construction Phase Assessment 18
5.2.1. Step 1 18
5.2.2. Step 2 18
5.2.3. Step 3 19
5.2.4. Step 4 21
5.3. Operational Phase Assessment 21

6. CONCLUSION 22

APPENDIX I LIMITATIONS 23

APPENDIX II GLOSSARY 25

APPENDIX III DRAWINGS 27

1. INTRODUCTION

1.1. BACKGROUND

E3P has been commissioned by Hydro Aluminium Deeside Ltd to produce an Air Quality Assessment in support of the extension of the existing Hydro Aluminium Deeside site on Bridge Road, within the Wrexham Industrial Estate, Wrexham.

The development may lead to adverse impacts at sensitive locations during construction and operation. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and consider potential impacts associated with the scheme.

1.2. SITE LOCATION AND CONTEXT

Hydro Aluminium Deeside is located on Bridge Road, within Wrexham Industrial Estate, Wrexham, at approximate National Grid Reference (NGR): 337535, 349235. Reference should be made to Figure 1 for a map of the site and surrounding area.

The proposals comprise the extension of the existing industrial unit to provide a recycling material sorting facility and covered raw material sorting bays.

1.3. ASSESSMENT SCOPE

The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions and consider potential impacts associated with the scheme. This is detailed in the following report.

1.4. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.5. CONFIDENTIALITY

E3P 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 E3P; a charge may be levied against such approval.

2. LEGISLATION AND POLICY

2.1. LEGISLATION

The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide (NO_2);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM_{10});
- Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$);
- Benzene; and,
- Carbon monoxide.

Air Quality Target Values were also provided for several additional pollutants. It should be noted that the AQLV for $PM_{2.5}$ stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).

The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published on July 2007[1]. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

Table 2.1 presents the AQOs and AQLV for pollutants considered within this assessment.

TABLE 2.1 AIR QUALITY OBJECTIVES/AQLV

POLLUTANT	AIR QUALITY OBJECTIVE/INTERIM TARGET	
	Concentration (µg/m^3)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM_{10}	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
$PM_{2.5}$	25	Annual mean

Table 2.2 summarises the advice provided in DEFRA guidance[2] on where the AQOs for pollutants considered within this report apply.

1 The AQS for England, Scotland, Wales and Northern Ireland, DEFRA, 2007.

2 Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

TABLE 2.2 EXAMPLES OF WHERE THE AIR QUALITY OBJECTIVES APPLY

AVERAGING PERIOD	OBJECTIVE SHOULD APPLY AT	OBJECTIVE SHOULD NOT APPLY AT
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools (including all of playgrounds), hospitals (and their grounds), care homes (and their grounds) 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. 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	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping street). 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 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

2.2. LOCAL AIR QUALITY MANAGEMENT

Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2.2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3. DUST

The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

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

Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

2.4. NATIONAL PLANNING POLICY

Planning Policy Wales[3] was published in February 2024 and sets out the land use planning policies of the Welsh Government, including air quality. Chapter 6, Section 6.7 - Air Quality and Soundscape, provides a framework for addressing air quality and states that:

> *"The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.*
>
> *[…]*
>
> *In proposing new development, planning authorities and developers must, therefore:*
>
> *• address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
> *• not create areas of poor air quality or inappropriate soundscape; and,*
> *• seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes."*

This has been considered throughout this assessment.

2.5. LOCAL PLANNING POLICY

The Wrexham County Borough Local Development Plan 2013-2028[4] was adopted by Wrexham County Borough Council (WCBC) on 20th December 2023. A review of the document indicated the following policies of relevance to this assessment:

> *"Policy DM1: Development Management Considerations*
>
> *Development proposals, where relevant, must:*
>
> *[…]*
>
> *iii. Safeguard the environment from the adverse effects of pollution of water, land, noise, light or air, or land instability, arising from development;*

[3] Planning Policy Wales Edition 12, Welsh Assembly Government, 2024.

[4] WCBC Local Development Plan 2013-2028, WCBC, 2023.

[…]"

"Policy SP15: Natural Environment
Development will only be permitted where it protect, conserve and enhance the natural environment including:

[…]

- *The quality of natural services including water, soundscape, air and soils*

[…]"

The above policies have been considered throughout the undertaking of this assessment.

3. METHODOLOGY

3.1. INTRODUCTION

The proposed development has the potential to cause air quality impacts during the construction and operational phases. These have been assessed in accordance with the following methodology.

3.2. 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 Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V2.2'[5].

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 were 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}.

The assessment steps are detailed below.

3.2.1. STEP 1

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

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

3.2.2. STEP 2

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

[5] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

- 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 3.1.

TABLE 3.1 CONSTRUCTION DUST - MAGNITUDE OF EMISSION

MAGNITUDE	ACTIVITY	CRITERIA
LARGE	Earthworks	Total site area greater than 110,000m^2 Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) More than 10 heavy earth moving vehicles active at any one time Formation of bunds greater than 6m in height
	Construction	Total building volume greater than 75,000m^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	Earthworks	Total site area 18,000m^2 to 110,000m^2 Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time Formation of bunds 3m to 6m in height
	Construction	Total building volume 12,000m^3 to 75,000m^3 Potentially dusty construction material (e.g. concrete) On site concrete batching
	Trackout	20 to 50 HDV trips per day Moderately dusty surface material (e.g. high clay content) Unpaved road length 50m to 100m
SMALL	Earthworks	Total site area less than 18,000m^2 Soil type with large grain size (e.g. sand) Less than 5 heavy earth moving vehicles active at any one time Formation of bunds less than 3m in height
	Construction	Total building volume less than 12,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 20 HDV trips per day Surface material with low potential for dust release Unpaved road length less than 50m

Step 2B defines the sensitivity of the area around the development to potential dust impacts. The sensitivities of specific receptors are shown in Table 3.2.

TABLE 3.2 CONSTRUCTION DUST - SENSITIVITIES OF PEOPLE AND ECOLOGICAL RECEPTORS

RECEPTOR SENSITIVITY	EXAMPLES	
	HUMAN RECEPTORS	ECOLOGICAL RECEPTORS
HIGH	Users expect high levels of amenity High aesthetic or value property People expected to be present continuously for extended periods of time Locations where members of the public are exposed over a time period relevant to the AQO for PM_{10}. e.g. residential properties, hospitals, schools and residential care homes	Internationally or nationally designated site e.g. Special Area of Conservation
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, farmland, short term car parks and roads	Locally designated site e.g. Local Nature Reserve

The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 3.3.

TABLE 3.3 CONSTRUCTION DUST - 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 250
HIGH	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
MEDIUM	More than 1	Medium	Low	Low	Low
LOW	More than 1	Low	Low	Low	Low

Table 3.4 outlines the criteria for determining the sensitivity of the area to human health impacts.

TABLE 3.4 CONSTRUCTION DUST - SENSITIVITY OF THE AREA TO HUMAN HEALTH IMPACTS

RECEPTOR SENSITIVITY	ANNUAL MEAN BACKGROUND PM_{10} CONCENTRATION	NUMBER OF RECEPTORS	DISTANCE FROM THE SOURCE (m)			
			Less than 20	Less than 50	Less than 100	Less than 250
HIGH	Greater than 32µg/m^3	More than 100	High	High	High	Medium
		10 - 100	High	High	Medium	Low
		1 - 10	High	Medium	Low	Low
	28 - 32µg/m^3	More than 100	High	High	Medium	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low
	24 - 28µg/m^3	More than 100	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	<24µg/m^3	More than 100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
MEDIUM	Greater than 32µg/m^3	More than 10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	28 - 32µg/m^3	More than 10	Medium	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	24 - 28µg/m^3	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	<24µg/m^3	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
LOW	-	More than 1	Low	Low	Low	Low

Table 3.5 outlines the criteria for determining the sensitivity of the area to ecological impacts.

TABLE 3.5 CONSTRUCTION DUST - SENSITIVITY OF THE AREA TO ECOLOGICAL IMPACTS

RECEPTOR SENSITIVITY	DISTANCE FROM THE SOURCE	
	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 3.6 outlines the risk category from earthworks, construction and trackout activities.

TABLE 3.6 CONSTRUCTION DUST - DUST RISK CATEGORY FROM EARTHWORKS, CONSTRUCTION AND TRACKOUT ACTIVITIES

RECEPTOR SENSITIVITY	**DUST EMISSION MAGNITUDE**		
	Large	**Medium**	**Small**
HIGH	High	Medium	Low
MEDIUM	Medium	Medium	Low
LOW	Low	Low	Negligible

3.2.3. STEP 3

Step 3 requires the identification of site specific mitigation measures within the IAQM guidance[6] 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.

3.2.4. 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**.

The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. The IAQM guidance[7] suggests the provision of details of the assessor's qualifications and experience. These can be provided upon request.

3.3. OPERATIONAL PHASE ASSESSMENT

The development has the potential to increase concentrations of NO_2, PM_{10} and $PM_{2.5}$ as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. A screening assessment was therefore undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'[8] guidance to determine the potential for trips generated by the development to affect local air quality.

6 Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

7 Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

8 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

The following criteria are provided to help establish when an assessment of potential road traffic impacts on the local area is likely to be considered necessary:

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

Should these criteria not be met, then the IAQM guidance[9] considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

[9] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

4. BASELINE

4.1. INTRODUCTION

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

4.2. LOCAL AIR QUALITY MANAGEMENT

As required by the Environment Act (1995), as amended by the Environment Act (2021), WCBC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that concentrations of all pollutants considered within the AQS are currently below the relevant AQOs. As such, no AQMAs have been designated within the borough.

4.3. AIR QUALITY MONITORING

Monitoring of pollutant concentrations is undertaken by WCBC throughout their area of jurisdiction. Recent annual mean NO_2 concentrations recorded in the vicinity of the development are shown in Table 4.1.

TABLE 4.1 MONITORING RESULTS

MONITORING SITE		MONITORED NO_2 CONCENTRATION ($\mu g/m^3$)			
		2019	2020	2021	2022
41	Marchwiel	13.9	10.3	13	12.2
59	Cross Lanes	11.2	8.4	9.7	8.4

As shown in Table 4.1, annual mean NO_2 concentrations were below the AQO of 40$\mu g/m^3$ at both monitoring locations in recent years. Reference should be made to Figure 2 for a map of the survey positions.

Pollutant concentrations during 2020 and 2021 were lower than previous years due to a reduction in traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution. However, monitoring results for 2022 are now considered representative of post-pandemic conditions. This is supported by the IAQM[10], who have adopted the following position:

> *"ambient air quality monitoring data for the year 2022 and beyond is generally considered to represent the current post-pandemic baseline."*

WCBC do not undertake monitoring of PM_{10} and $PM_{2.5}$ in the vicinity of the site.

[10] Use of 2020 and 2021 Monitoring Datasets - IAQM Position Statement V1.1, IAQM, 2023.

4.4. BACKGROUND POLLUTANT CONCENTRATIONS

Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square NGR: 337500, 349500. Data for this location was downloaded from the DEFRA website[11] for the purpose of the assessment and is summarised in Table 4.2.

TABLE 4.2 BACKGROUND POLLUTANT CONCENTRATIONS

POLLUTANT	PREDICTED 2024 BACKGROUND POLLUTANT CONCENTRATION (µg/m^3)
NO_2	9.77
PM_{10}	12.46
$PM_{2.5}$	7.21

As shown in Table 4.2, predicted background NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant AQOs and Interim Target at the development site.

4.5. 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. Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 250m from the development boundary. These are summarised in Table 4.3.

TABLE 4.3 EARTHWORKS AND CONSTRUCTION DUST SENSITIVE RECEPTORS

DISTANCE FROM SITE BOUNDARY (m)	APPROXIMATE NUMBER OF HUMAN RECEPTORS	APPROXIMATE NUMBER OF ECOLOGICAL RECEPTORS
Up to 20	10 - 100	0
Up to 50	More than 100	0
Up to 100	More than 100	-
Up to 250	More than 100	-

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 250m of the site access. These are summarised in Table 4.4.

TABLE 4.4 TRACKOUT DUST SENSITIVE RECEPTORS

DISTANCE FROM SITE ACCESS ROUTE (m)	APPROXIMATE NUMBER OF HUMAN RECEPTORS	APPROXIMATE NUMBER OF ECOLOGICAL RECEPTORS
Up to 20	10 - 100	0
Up to 50	More than 100	0

There are no ecological receptors within 50m of the development boundary or the access route within 250m of the site entrance. As such, ecological impacts have not been assessed further within this report.

Dust sensitive receptors within 250m of the development site include places of work and residential dwellings. These are considered to be of **medium** and **high** sensitivity, respectively. It should be noted that only receptors of **medium** sensitivity are present within 50m of the boundary.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 4.5.

[11] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018.

TABLE 4.5 SENSITIVITY OF THE SURROUNDING AREA TO POTENTIAL DUST IMPACTS

POTENTIAL IMPACT	SENSITIVITY OF THE SURROUNDING AREA		
	Earthworks	**Construction**	**Trackout**
Dust Soiling	Medium	Medium	Medium
Human Health	Low	Low	Low

5. ASSESSMENT

5.1. INTRODUCTION

There is the potential for air quality impacts as a result of the construction and operation of the proposed development. These are assessed in the following Sections.

5.2. CONSTRUCTION PHASE ASSESSMENT

5.2.1. STEP 1

The undertaking of activities such as excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from haul road and highway surfaces.

The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 250m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

5.2.2. STEP 2

EARTHWORKS

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed development site covers an area between 18,000m^2 and 110,000m^2. In accordance with the criteria outlined in Table 3.1, the magnitude of potential dust emissions from earthworks is therefore **medium**.

Table 4.5 indicates the sensitivity of the area to dust soiling effects on people and property is **medium**. In accordance with the criteria outlined in Table 3.6, the development is considered to be a **medium** risk site for dust soiling as a result of earthworks.

Table 4.5 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 3.6, the development is considered to be a **low** risk site for human health impacts as a result of earthworks.

CONSTRUCTION

Due to the size of the development, the total building volume is likely to be between 12,000m^3 and 75,000m^3. In accordance with the criteria outlined in Table 3.1, the magnitude of potential dust emissions from construction is therefore **medium**.

Table 4.5 indicates the sensitivity of the area to dust soiling effects on people and property is **medium**. In accordance with the criteria outlined in Table 3.6, the development is considered to be a **medium** risk site as a result of construction activities.

Table 4.5 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 3.6, the development is considered to be a **low** risk site as a result of construction activities.

TRACKOUT

Based on the site area, it is anticipated that the unpaved road length will be between 50m and 100m. In accordance with the criteria outlined in Table 3.1, the magnitude of potential dust emissions from trackout is therefore **medium.**

Table 4.5 indicates the sensitivity of the area to dust soiling effects on people and property is **medium**. In accordance with the criteria outlined in Table 3.6, the development is considered to be a **medium** risk site as a result of trackout activities.

Table 4.5 indicates the sensitivity of the area to human health impacts is **low**. In accordance with the criteria outlined in Table 3.6, the development is considered to be **low** risk site as a result of trackout activities.

SUMMARY OF THE RISK OF DUST EFFECTS

A summary of the risk from each dust generating activity is provided in Table 5.1.

TABLE 5.1 SUMMARY OF POTENTIAL UNMITIGATED DUST RISKS

POTENTIAL IMPACT	RISK		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium
Human Health	Low	Low	Low

As indicated in Table 5.1, the potential risk of dust soiling is **medium** from earthworks, construction and trackout. The potential risk of human health effects is **low** from earthworks, construction and trackout.

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.

5.2.3. STEP 3

The IAQM guidance[12] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 5.2. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the LA.

TABLE 5.2 FUGITIVE DUST EMISSION 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 Display the head or regional office contact information

[12] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

	Develop and implement a Dust Management Plan, which may include measures to control other emissions, approved by the LA
SITE MANAGEMENT	Record all dust 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 LA upon request Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
MONITORING	Carry out regular site inspections, record inspection results, and make an inspection log available to the LA on request Increase the frequency of site inspections when activities with a high potential to produce dust emissions are being carried out and during prolonged dry or windy conditions
SITE PREPARATION	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 they are active for an extensive period Keep site fencing, barriers and scaffolding clean using wet methods Avoid site runoff of water or mud Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used Cover, seed or fence stockpiles to prevent wind whipping
OPERATING VEHICLE/MACHINERY AND SUSTAINABLE TRAVEL	Ensure all vehicles switch off engines when stationary - no idling vehicles Avoid the use of diesel or petrol powered generators by using mains electricity as a power source as far as practicable
OPERATIONS	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques Ensure an adequate water supply on site for effective dust suppression techniques Use enclosed chutes and conveyors and covered skips Minimise drop heights and use fine water sprays wherever appropriate Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
WASTE MANAGEMENT	Avoid bonfires and burning of waste materials
CONSTRUCTION	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
TRACKOUT	Use water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of site Avoid dry sweeping of large areas Ensure vehicles entering and leaving site are covered to prevent escape of materials Implement a wheel washing system, if required

5.2.4. STEP 4

Assuming the relevant mitigation measures outlined in Table 5.2 are implemented, the residual impact from all dust generating activities is predicted to be not significant, in accordance with the IAQM guidance[13].

5.3. OPERATIONAL PHASE ASSESSMENT

Any vehicle movements associated with the development will generate exhaust emissions on the local and regional road networks. The Transport Statement[14] for the scheme prepared by AMNI Transportation, the Transport Consultants for the project, indicated the development is predicted to generate 53 daily HDV movements.

Based on the above information, the proposal is not predicted to result in an increase of LDV flows of more than 500 AADT or HDV flows of more than 100 AADT on any individual road link. Additionally, the proposals do not include significant highway realignment or the introduction of a junction. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM[15] screening criteria shown in Section 3.3.

13 Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

14 Application for Development of Land for Manufacturing Facility, Hydro Aluminium Deeside Ltd, Bridge Road, Wrexham Industrial Estate, Wrexham, Transport Statement, AMNI Transportation, 2024.

15 Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

6. CONCLUSION

E3P has been commissioned by Hydro Aluminium Deeside Ltd to produce an Air Quality Assessment in support of the extension of the existing Hydro Aluminium Deeside site on Bridge Road, within the Wrexham Industrial Estate, Wrexham.

The proposals have the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the scheme.

During the construction phase of the 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 significance of potential air quality impacts from dust generated by earthworks, construction and trackout activities was predicted to be **not significant**.

Potential impacts during the operational phase of the proposed development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the IAQM[16] guidance. Due to the low number of vehicle movements generated by the site, impacts were predicted to be **not significant**.

Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development.

END OF REPORT

[16] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered concerning the terms of reference and objectives agreed upon between E3P and the client, as indicated in Section 1.3.

2. For the work, reliance has been placed on publicly available data from the sources identified. The information is not necessarily exhaustive, and further information relevant to the Site may be available from other sources. When using the information, it has been assumed that it is correct. No attempt has been made to verify the information.

3. This report has been produced following current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and require advice from legal professionals.

4. During the site walkover, a reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the Site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the Site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys.

8. The report's executive summary, conclusions and recommendations sections provide an overview and guidance only. They should not be relied on explicitly without fully considering the report's context.

9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that it was prepared for. The copyright in this report and other plans and documents designed by E3P is owned by them, and no such plans or documents may be reproduced, published or adapted without written consent. However, complete copies of this may be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied. Still, no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement.

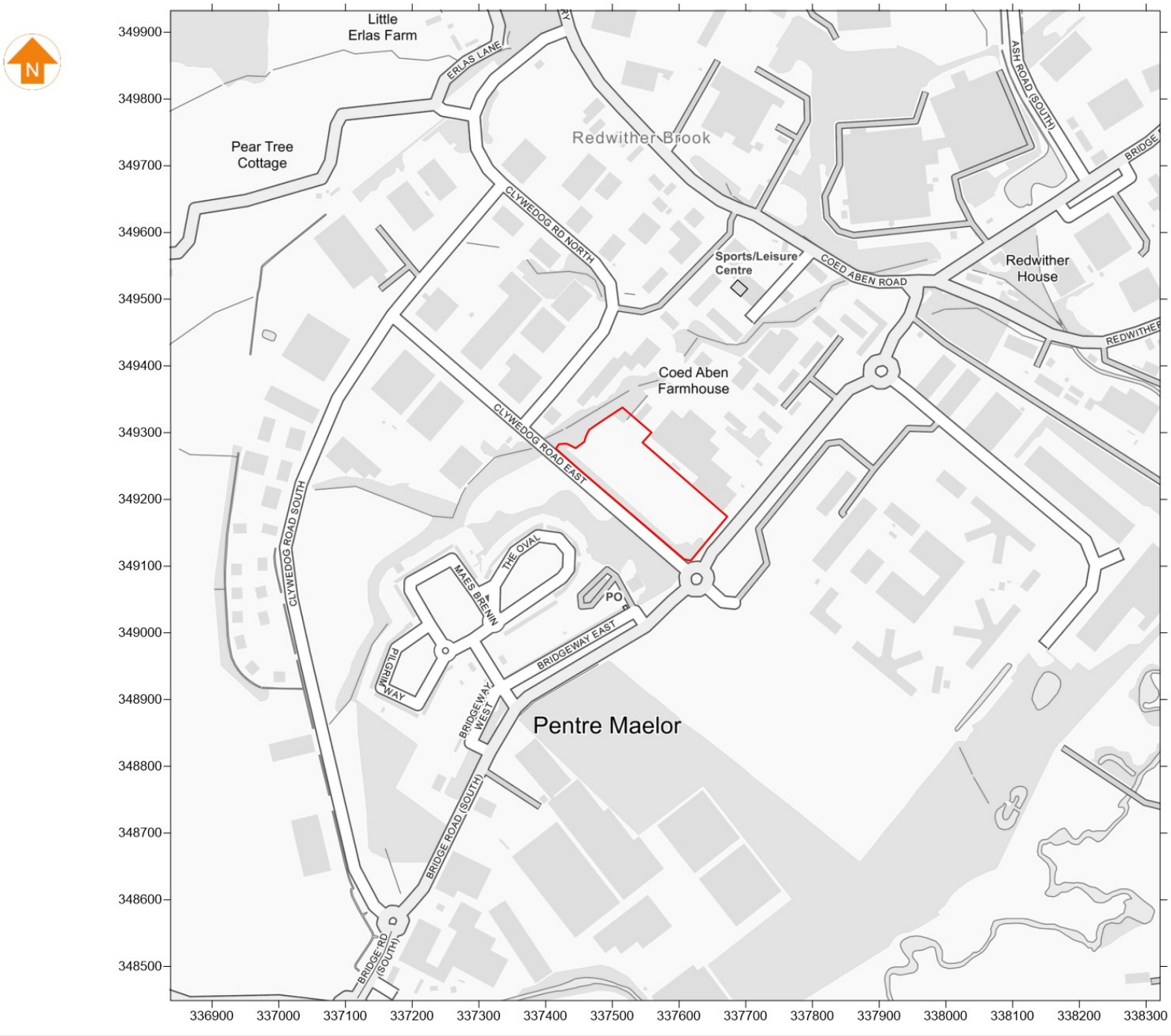
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II
GLOSSARY

TERMS

AADT	Annual Average Daily Traffic
AQLV	Air Quality Limit Value
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
DEFRA	Department for Environment, Food and Rural Affairs
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
NGR	National Grid Reference
NO_2	Nitrogen dioxide
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10µm
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5µm
WCBC	Wrexham County Borough Council

APPENDIX III
DRAWINGS



Legend

Site Boundary

Title

Figure 1 - Site Location Plan

Project

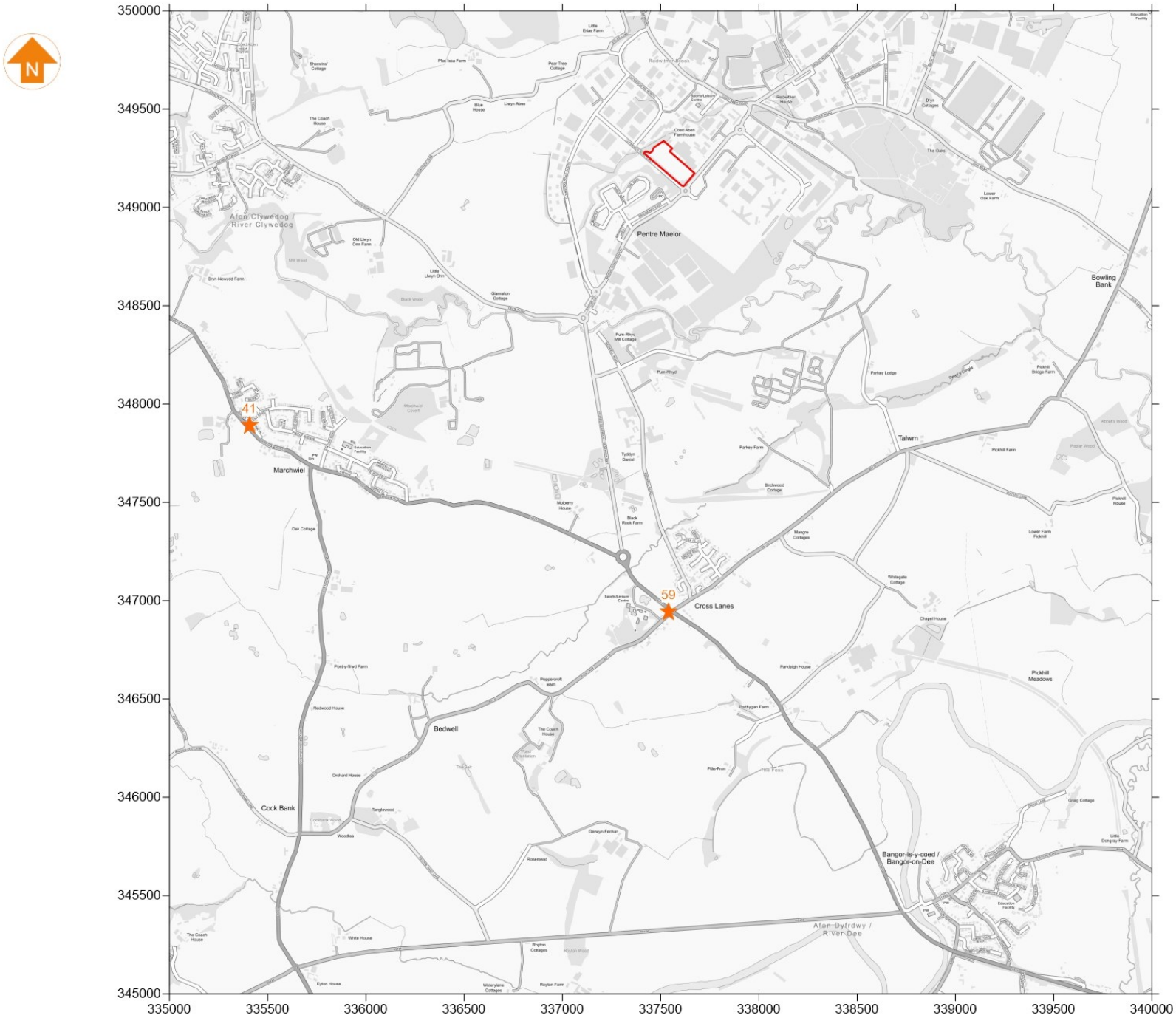
Air Quality Assessment
Bridge Road, Wrexham

Client

Hydro Aluminium Deeside Ltd

Contains Ordnance Survey Data
© Crown Copyright and Database Act 2023

e3p



Legend

Site Boundary

Monitor

Title

Figure 2 - Monitoring Locations

Project

Air Quality Assessment
Bridge Road, Wrexham

Client

Hydro Aluminium Deeside Ltd

Contains Ordnance Survey Data
© Crown Copyright and Database Act 2023

e3p