



Air Quality Assessment

Proposed Industrial Development
Wilson Road, Liverpool

Reference: 5666-R1-1
Date: June 2022



AIR QUALITY ASSESSMENT

Proposed Industrial Development
Wilson Road
Liverpool

Prepared for:

Derwent Development Management Ltd

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1. INTRODUCTION

1.1. BACKGROUND

E3P has been commissioned by Derwent Development Management Ltd to produce an Air Quality Assessment in support of a proposed industrial development at Huyton Business Park, Wilson Road, Liverpool.

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

The site is located at Huyton Business Park, Wilson Road, Liverpool, at approximate National Grid Reference (NGR): 345396, 390072. Reference should be made to Figure 1 for a map of the site and surrounding area.

The proposals comprise demolition of the existing buildings and subsequent construction of two industrial units with associated parking.

The development has the potential to cause air quality impacts at sensitive locations. These may include fugitive dust emissions during construction and road traffic exhaust emissions from 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 effects as a result of the proposals. This is detailed in the following report.

1.3. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.4. 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) came into force on 11th June 2010 and include Air Quality Limit Values (AQLVs) for the following pollutants:

- ✳ Nitrogen dioxide (NO₂);
- ✳ Sulphur dioxide;
- ✳ Lead;
- ✳ Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
- ✳ Particulate matter with an aerodynamic diameter of less than 2.5µm (PM_{2.5});
- ✳ Benzene; and,
- ✳ Carbon monoxide.

Air Quality Target Values have also been 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).

Part IV of the Environment Act (1995) 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 the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007¹. 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 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/AIR QUALITY LIMIT VALUES

POLLUTANT	AIR QUALITY OBJECTIVE/ AIR QUALITY LIMIT VALUES	
	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}	20	Annual mean

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



Table 2.2 summarises the advice provided in DEFRA guidance² on where the AQOs for pollutants considered within this report apply.

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

Under Section 82 of the Environment Act (1995) (Part IV) 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 (AQAP), 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:

² Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.



"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

The revised National Planning Policy Framework³ (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

The purpose of the planning system is to contribute to the achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

"c) An environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality

[...]"

The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new

³ NPPF, Ministry of Housing, Communities and Local Government, 2021.



development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

The implications of the NPPF have been considered throughout this assessment.

2.5. NATIONAL PLANNING PRACTICE GUIDANCE

The National Planning Practice Guidance⁴ (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

- ✿ What air quality considerations does planning need to address?
- ✿ What is the role of plan-making with regard to air quality?
- ✿ Are air quality concerns relevant to neighbourhood planning?
- ✿ What information is available about air quality?
- ✿ When could air quality considerations be relevant to the development management process?
- ✿ What specific issues may need to be considered when assessing air quality impacts?
- ✿ How detailed does an air quality assessment need to be?
- ✿ How can an impact on air quality be mitigated?

These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

2.6. LOCAL PLANNING POLICY

The Knowsley Local Plan: Core Strategy⁵ was adopted by Knowsley Metropolitan Borough Council (KMBC) on 6th January 2016. Review of the document indicated the following policy of relevance to this report:

"Policy CS2

Development Principles

1) New development in Knowsley and the preparation of subsequent stages of the Local Plan will be expected to support the following development principles:

Principal 4: Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote air quality of place by:

e) Mitigating potential negative impacts of traffic growth and road traffic on highway safety, air quality, noise and health;

⁴ <https://www.gov.uk/guidance/air-quality-3>.

⁵ Knowsley Local Plan: Core Strategy, KMBC, 2016.



[...]

j) Minimising negative impact upon flood risk, air quality, water quality, land quality, soil quality, and noise or vibration levels and ensuring any negative impacts are appropriately mitigated."

The Knowsley Replacement Unitary Development Plan (UDP)⁶ was adopted in June 2006. Under the transitional arrangements for moving to the Local Plan system, 39 UDP Policies have been saved, these include the following in relation to air quality:

"Policy Env1: Control of Pollution in New Development

Development will not be permitted which is likely to cause significant harm to amenity as a result of impact on any of the following:

Air quality; [...]"

The above policies have been taken into consideration throughout the undertaking of the assessment.

⁶

Knowsley Replacement UDP, KMBC, 2006.



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 the 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 V1.1'⁷.

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

-  Demolition;
-  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 PM₁₀.

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 350m from the boundary or 50m from the construction vehicle route up to 500m 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 500m 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.

⁷ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.



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:

- ✳ 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	Demolition	Total volume of building to be demolished greater than 50,000m ³ Potentially dusty material (e.g. concrete) On-site crushing and screening Demolition activities more 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 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 volume of building to be demolished between 20,000m ³ and 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



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MAGNITUDE	ACTIVITY	CRITERIA
		Moderately dusty surface material (e.g. high clay content) Unpaved road length 50m to 100m
Small	Demolition	Total volume of building to be demolished less than 20,000m ³ Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities less than 10m above ground and 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	Less than 10 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 influencing factors are shown in Table 3.2.

TABLE 3.2 CONSTRUCTION DUST - EXAMPLES OF FACTORS DEFINING SENSITIVITY OF AN AREA

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

- ✳ 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 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 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 OF 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 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 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



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 200	Less than 350
	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
		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	-	1 or More	Low	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 (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 3.6 outlines the risk category from demolition activities.

TABLE 3.6 CONSTRUCTION DUST - DUST RISK CATEGORY FROM DEMOLITION ACTIVITIES

RECEPTOR SENSITIVITY	DUST EMISSION MAGNITUDE		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Medium	Low	Negligible



Table 3.7 outlines the risk category from earthworks and construction activities.

TABLE 3.7 CONSTRUCTION DUST - DUST RISK CATEGORY FROM EARTHWORKS AND CONSTRUCTION ACTIVITIES

RECEPTOR SENSITIVITY	DUST EMISSION MAGNITUDE		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Table 3.8 outlines the risk category from trackout activities.

TABLE 3.8 CONSTRUCTION DUST - DUST RISK CATEGORY FROM TRACKOUT ACTIVITIES

RECEPTOR SENSITIVITY	DUST EMISSION MAGNITUDE		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

3.2.3. STEP 3

Step 3 requires the identification of site specific mitigation measures within the IAQM guidance⁸ 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 guidance⁹ suggests the provision of details of the assessor's qualifications and experience. These can be provided upon request.

⁸ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

⁹ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.



3.3. OPERATIONAL PHASE ASSESSMENT

The development has the potential to increase concentrations of NO₂, PM₁₀ 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'¹⁰ guidance to determine the potential for trips generated by the development to affect local air quality.

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 guidance¹¹ considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance¹².

¹⁰ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

¹¹ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

¹² 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 proposed development site 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), KMBC 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 KMBC throughout their area of jurisdiction. Recent NO₂ results recorded in the vicinity of the development are shown in Table 4.1. Exceedences of the AQO are shown in **bold**.

TABLE 4.1 MONITORING RESULTS - NO₂

MONITORING SITE		MONITORED NO ₂ CONCENTRATION (µg/m ³)		
		2017	2018	2019
Huyton	Cronton Road	36.2	37.4	37.6
H1	Station co-location	40.0	37.5	37.4
H2	Outside 2 Whitefield Lane	39.9	41.0	40.8
H3	Outside1 Whitefield Lane	47.7	49.3	48.0
H4	Opp Smithford Walk	26.7	29.8	31.4
H5	Sevenoak Grove	25.1	26.8	27.4
H6	Wilson Rd Jct	29.2	30.0	32.1
H7	Tarbock Island	36.2	36.8	37.2
H8	Natruscot	26.7	26.6	29.3
H9	Outside 29 Southford Walk	26.3	25.0	26.4
H10	Outside 9 Ribchester Way	22.9	23.3	23.9

As shown in Table 4.1, annual mean NO₂ concentrations were above the AQO at H1, H2 and H3 in recent years. As the monitors are located at roadside positions, elevated concentrations are to be expected. Levels are below the AQO at all remaining locations.

Recent PM₁₀ results recorded in the vicinity of the development are shown in Table 4.2.



TABLE 4.2 MONITORING RESULTS - PM₁₀

MONITORING SITE		MONITORED PM ₁₀ CONCENTRATION (µg/m ³)		
		2017	2018	2019
Huyton	Cronton Road	22.5	21.8	22.9

As shown in Table 4.2, PM₁₀ concentrations were below the annual mean AQO at the Huyton monitoring site in recent years.

Recent PM_{2.5} results recorded within the vicinity of the development are shown in Table 4.3.

TABLE 4.3 MONITORING RESULTS PM_{2.5}

MONITORING SITE		MONITORED PM _{2.5} CONCENTRATION (µg/m ³)		
		2017	2018	2019
Huyton	Cronton Road	9.5	9.1	10.8

As shown in Table 4.3, PM_{2.5} concentrations were below the AQLV at the Huyton monitoring site in recent years.

Reference should be made to Figure 2 for a map of the survey positions.

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: 345500, 390500. Data for this location was downloaded from the DEFRA website¹³ for the purpose of the assessment and is summarised in Table 4.4.

TABLE 4.4 BACKGROUND POLLUTANT CONCENTRATIONS

POLLUTANT	PREDICTED 2022 BACKGROUND POLLUTANT CONCENTRATION (µg/m ³)
NO ₂	15.23
PM ₁₀	12.40
PM _{2.5}	8.28

As shown in Table 4.4, predicted background NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant AQOs and AQLV 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 demolition, earthworks and construction were identified from a desk-top study of the area up to 350m from the development boundary. These are summarised in Table 4.5.

¹³ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>.



TABLE 4.5 DEMOLITION, EARTHWORKS AND CONSTRUCTION DUST SENSITIVE RECEPTORS

DISTANCE FROM SITE BOUNDARY (m)	APPROXIMATE NUMBER OF HUMAN RECEPTORS	APPROXIMATE NUMBER OF ECOLOGICAL RECEPTORS
Up to 20	More than 100	0
Up to 50	More than 100	0
Up to 100	More than 100	-
Up to 350	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 500m of the site access. These are summarised in Table 4.6.

TABLE 4.6 TRACKOUT DUST SENSITIVE RECEPTORS

DISTANCE FROM SITE ACCESS ROUTE (m)	APPROXIMATE NUMBER OF HUMAN RECEPTORS	APPROXIMATE NUMBER OF ECOLOGICAL RECEPTORS
Up to 20	More than 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 500m of the site entrance. As such, ecological impacts have not been assessed further within this report.

A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 4.7.

TABLE 4.7 ADDITIONAL AREA SENSITIVITY FACTORS TO POTENTIAL DUST IMPACTS

GUIDANCE	COMMENT
Whether there is any history of dust generating activities in the area	A review of the planning portal and Google Maps imagery indicated a residential development has recently been completed approximately 60m south-east of the site. It is therefore possible that the construction works may have caused dust generation in the area over recent months
The likelihood of concurrent dust generating activity on nearby sites	Review of the planning portal indicated consent has recently been granted for the part-demolition and reconfiguration of 2 industrial units (reference: 21/00432/FUL) approximately 480m south-east of the site. An application has also been submitted for the demolition of existing buildings and erection of a logistics warehouse (reference:22/00284/OUT) approximately 210m east of the site. It is therefore possible that these schemes may result in concurrent dust generation should the construction phases overlap with that of the proposals



GUIDANCE	COMMENT
Pre-existing screening between the source and the receptors	Trees and shrubs are located along the northern boundary of the site. These may act as a barrier between emission sources and receptors should they be retained during construction
Conclusions drawn from analysing local meteorological data which accurately represent the area, and if relevant the season which works will take place	As shown in Figure 3, the predominant wind bearing is from the north-west. As such, receptors to the south-east of the site are most likely to be affected by dust releases
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year. The sensitivity of nearby receptors is unlikely to change during this time
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

Based on the criteria shown in Table 3.2, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties.

The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 3.2, is shown in Table 4.8.

TABLE 4.8 SENSITIVITY OF THE SURROUNDING AREA TO POTENTIAL DUST IMPACTS

POTENTIAL IMPACT	SENSITIVITY OF THE SURROUNDING AREA			
	DEMOLITION	EARTHWORKS	CONSTRUCTION	TRACKOUT
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Medium



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 demolition, ground works, cutting, construction and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements on the local road network also have the potential to result in the re-suspension of dust from 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 350m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

5.2.2. STEP 2

DEMOLITION

Demolition will be undertaken at the start of the construction phase and will involve clearance of existing buildings on site. It is estimated that the building volume to be demolished is between 20,000m³ and 50,000m³. In accordance with the criteria outlined in Table 3.1, the magnitude of potential dust emissions from demolition is therefore **medium**.

Table 4.8 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. 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 demolition activities.

Table 4.8 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 3.6, the development is considered to be a **medium** risk site for human health impacts as a result of demolition activities.

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 greater than 10,000m². In accordance with the criteria outlined in Table 3.1, the magnitude of potential dust emissions from earthworks is therefore **large**.

Table 4.8 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 3.7, the development is considered to be a **high** risk site for dust soiling as a result of earthworks.



Table 4.8 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 3.7, the development is considered to be a **medium** 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 50,000m³ and 100,000m³. In accordance with the criteria outlined in Table 3.1, the magnitude of potential dust emissions from construction is therefore **medium**.

Table 4.8 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 3.7, the risk development is considered to be a **medium** risk site as a result of construction activities.

Table 4.8 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 3.7, the development is considered to be a **medium** risk site as a result of construction activities.

TRACKOUT

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

Table 4.8 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 3.8, the development is considered to be a **low** risk site as a result of trackout activities.

Table 4.8 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 3.8, the development is considered to be **negligible** 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	UNMITIGATED DUST RISK			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	High	Medium	Low
Human Health	Medium	Medium	Medium	Negligible

As indicated in Table 5.1, the potential risk of dust soiling is **high** from earthworks, **medium** from demolition and construction and **low** from trackout. The potential risk of human health effects is **medium** from demolition, earthworks and construction and **negligible** from 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 guidance¹⁴ 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 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	Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the LA when asked 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 Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials

¹⁴

Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.



ISSUE	CONTROL MEASURE
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 or burning of waste materials
Demolition	Ensure effective water suppression is used during demolition activities Avoid explosive blasting, using appropriate manual or mechanical alternatives Bag and remove any biological debris or damp down such material before demolition
Earthworks	Re-vegetate earthworks and exposed areas 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
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 Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery
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 guidance¹⁵.

5.3. OPERATIONAL PHASE ASSESSMENT

Any vehicle movements associated with the development will generate exhaust emissions on the local and regional road networks. Information provided by Systra, the Transport Consultants for the project, indicated the scheme is predicted to produce 294 LDV daily vehicle movements. The predicted distribution of these trips across the local road network is as follows:

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



Land off Wilson Road, Liverpool

Air Quality Assessment

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-  181 trips west of the site access along Wilson Road; and,
-  113 trips east of the site access along Wilson Road.

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 IAQM¹⁶ screening criteria shown in Section 3.3.

¹⁶

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



6. CONCLUSION

E3P has been commissioned by Derwent Development Management Ltd to produce an Air Quality Assessment in support of a proposed industrial development at Huyton Business Park, Wilson Road, Liverpool.

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 demolition, 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 IAQM¹⁷ 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

¹⁷ Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.



APPENDIX I

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained 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 it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with 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 requires advice from legal professionals.
4. During the site walkover, 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 do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, 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, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.
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

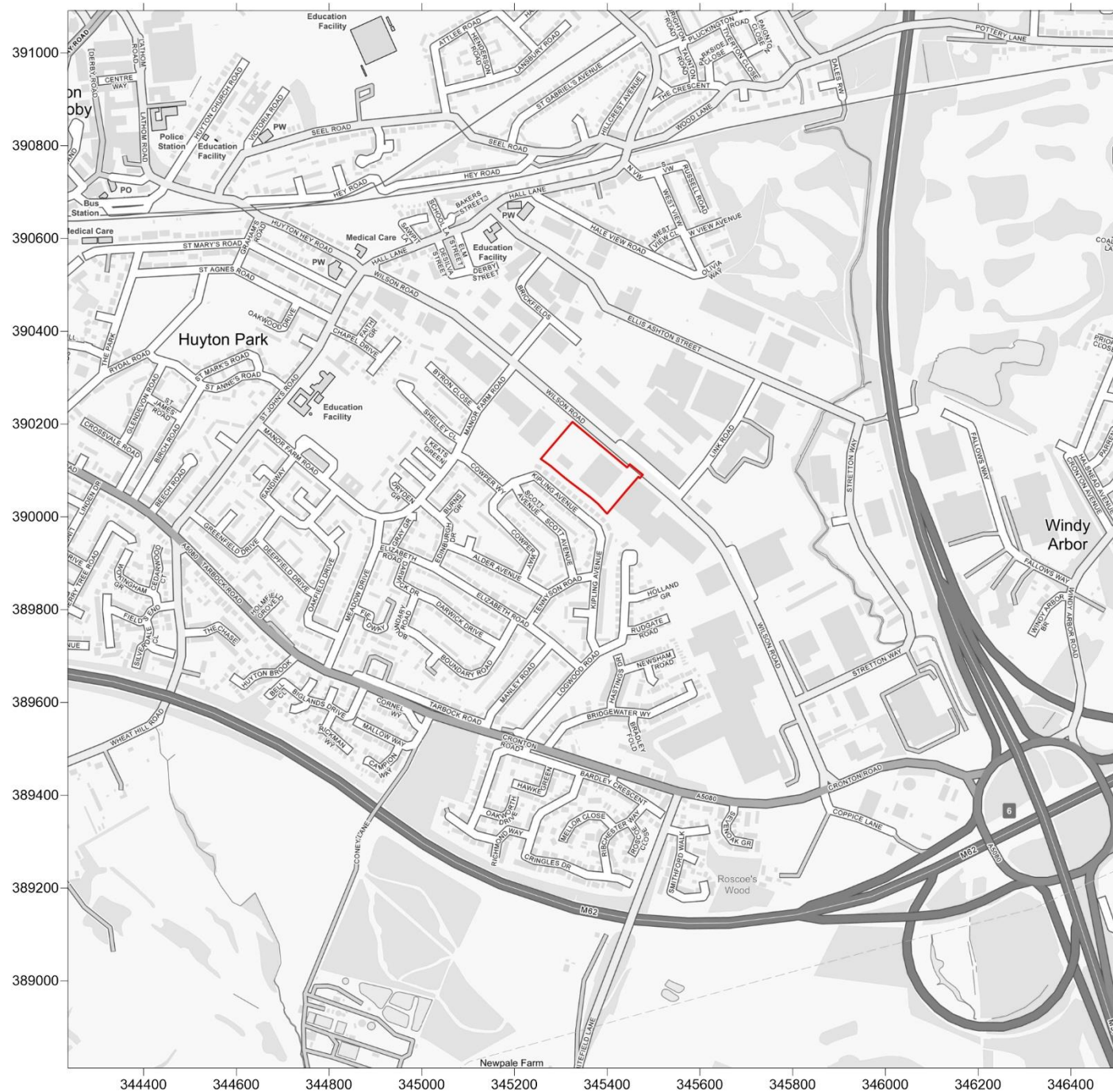
TERMS

AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
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
KMBC	Knowsley Metropolitan Borough Council
LA	Local Authority
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
NGR	National Grid Reference
NO₂	Nitrogen dioxide
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
PM₁₀	Particulate matter with an aerodynamic diameter of less than 10µm
PM_{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5µm
UDP	Unitary Development Plan



APPENDIX III

DRAWINGS



Legend



Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Wilson Road, Liverpool

Project Number

5666

Client

Derwent Development Management Ltd

Contains Ordnance Survey Data
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Legend



Site Boundary



Monitor

Title

Figure 2 - Monitoring Locations

Project

Air Quality Assessment
Wilson Road, Liverpool

Project Number

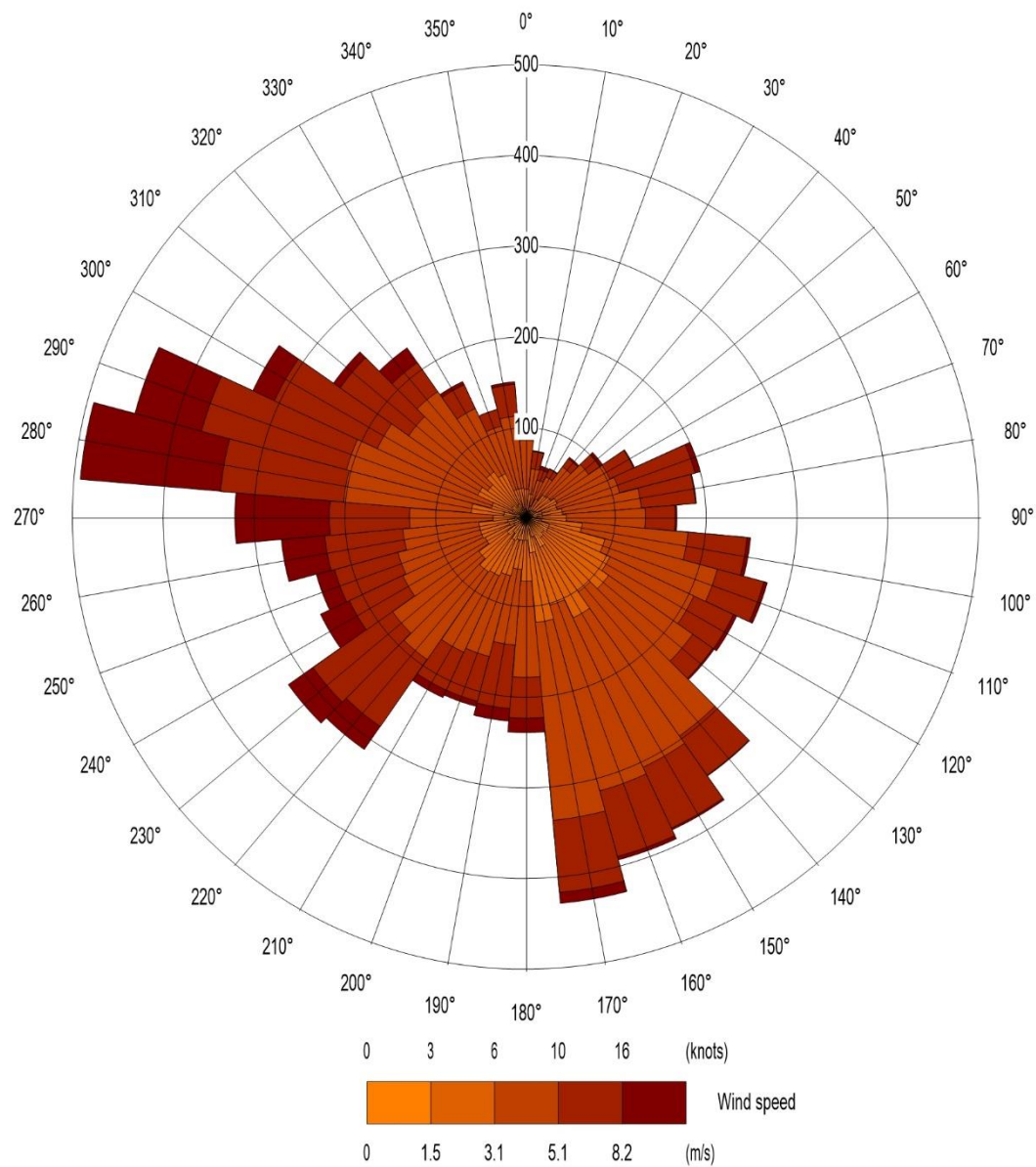
5666

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Legend

Title
Figure 3 - Wind Rose of 2019
Liverpool Airport Meteorological Data

Project
Air Quality Assessment
Wilson Road, Liverpool

Project Number
5666

Client
Derwent Development Management Ltd



