



Bold Forest Garden Village: Air Quality Appraisal

Air Quality Baseline Appraisal

St Helens Borough Council

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Basis of Report

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Table of Contents

1.0 Introduction	1
1.1 Scope of Work.....	1
2.0 Appraisal Methodology.....	2
2.1 Legislative Summary	2
2.2 Operational Phase Appraisal	3
3.0 Baseline Environment.....	4
3.1 Air Quality Management Areas	4
3.2 Air Quality Monitoring	4
3.3 Defra Mapped Background Concentrations	5
3.4 Summary.....	5
4.0 Operational Phase Appraisal.....	7
4.1 Review of Potential Constraints.....	7
4.2 Design Considerations	11
5.0 Summary.....	12

Tables in Text

Table 2-1: Relevant Ambient AQALs (England)	2
Table 2-2: Human Health Relevant Exposure	2
Table 3-1: Diffusion Tube Monitoring Sites: Details	4
Table 3-2: Diffusion Tube Monitoring Sites: Results	5
Table 3-3: Maximum 2024 Defra Mapped Background Pollutant Concentrations	5
Table 4-1: SHBC Historical Odour Complaints (Past 4 Years)	7
Table 4-2: Potential Constraints	8

Figures in Text

Figure A: Baseline Review	6
Figure B: Overview of Potential Air Quality Constraints.....	10



1.0 Introduction

SLR Consulting Ltd (SLR) has been commissioned by St Helens Borough Council (SHBC) to provide various environmental consultancy services to inform the design of a residential development ('Proposed Development') at Bold Forest Garden Village, Bold, St Helens (the 'Site').

The Site currently comprises agricultural land and is located to the south of Sutton in southern St Helens and is bounded by:

- Reginald Road Industrial Estate, the B5204 and residential dwellings within Sutton to the north of the Site;
- Bold Industrial Park, woodland, an equestrian centre and residential dwellings within Bold to the east of the Site;
- Gorsey Lane and residential dwellings associated with Clock Face and Abbotsfield to south of the Site Clock Face Country Park beyond; and
- Residential dwellings and recreational land to the east of the Site within Clock Face.

1.1 Scope of Work

A qualitative air quality appraisal of the Site has been undertaken to evaluate its suitability for residential development. Key air quality considerations including review of baseline air quality conditions and potential sources of local emissions are appraised to determine whether any design enhancements are necessary to minimise exposure during the operational phase or whether further investigation is required.

The scope of works has been undertaken based on relevant guidance, as well as established best practice.



2.0 Appraisal Methodology

2.1 Legislative Summary

The ambient air quality standards of relevance to this appraisal (collectively termed Air Quality Assessment Levels (AQALs)) are provided in Table 2-1. These are primarily based upon the Air Quality Objectives Local Authorities are responsible for achieving as stipulated within the Air Quality (England) Regulations 2000 (as amended) ('the Regulations') – reflective of the Local Planning Authority's duties. The fine particulate matter (PM_{2.5}) AQAL has, however, also been included for completeness, to provide an indicative assessment.

The AQALs apply at locations where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period (referred to as 'relevant exposure'). Table 2-2 provides an indication of those locations.

Where any of the prescribed Air Quality Objectives are not likely to be achieved, the authority must designate an Air Quality Management Area (AQMA).

Table 2-1: Relevant Ambient AQALs (England)

Pollutant	AQAL (µg/m ³)	Averaging Period
Nitrogen Dioxide (NO ₂)	40	Annual mean
	200	1-hour mean (not to be exceeded on more than 18 occasions per annum)
Particulate Matter (PM ₁₀)	40	Annual mean
	50	24-hour mean (not to be exceeded on more than 35 occasions per annum)
Particulate Matter (PM _{2.5})	20	Annual mean

Table 2-2: Human Health Relevant Exposure

AQAL Averaging Period	AQALs Should Apply At	AQALs Should Not Apply At
Annual mean	Building facades of residential properties, schools, hospitals etc.	Facades of offices Hotels Gardens of residences Kerbside sites
24-hour mean	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure is expected to be short term
1-hour mean	As above together with kerbside sites of regular access, car parks, bus stations etc.	Kerbside sites where public would not be expected to have regular access

2.1.1 Statutory Nuisances

The Environmental Protection Act 1990¹ sets out provisions for the regulation of statutory nuisances. Section 79 sets out this statutory nuisance as, '*any dust, steam, smell or other*

¹ The Environmental Protection Act 1990. Available at <http://www.legislation.gov.uk/ukpga/1990/43/contents>.



effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance’.

Proposed developments which result in the introduction of future sensitive receptors are subject to the Agent of Change principle. This principle places responsibility on new developments to ensure potential interactions with the existing environment and operations are assessed and mitigated to minimise restrictions being placed on existing businesses.

2.2 Operational Phase Appraisal

A qualitative air quality appraisal has been undertaken to evaluate the Site’s suitability for residential development, with consideration given to potential health and environmental impacts on future residents.

The air quality baseline environment was established through a review of publicly available air quality datasets.

Potential local sources of emissions were identified through review of satellite imagery, consultation with SHBC and review of other publicly available information including the Environment Agency (EA) permit register and historical odour complaints. The potential for these emissions sources to pose a potential constraint to development was considered through a risk-based approach, informed by professional judgment.

The findings informed the need for design considerations or enhancements and identified where further investigation may be required following design.



3.0 Baseline Environment

A review of both local and national datasets has been undertaken to characterise the baseline environment.

SHBC (the 'Council'), in fulfilment of statutory requirements, have conducted an on-going exercise to review and assess air quality within their administrative area. The latest publicly available report is the 2024 Annual Status Report (ASR)², i.e. 2019-2023 monitoring data.

Pollutant concentrations monitored during 2020 and 2021 (i.e. affected by the COVID-19 pandemic) are expected to be atypical and not representative of the local environment. However, this data has been presented for completeness.

3.1 Air Quality Management Areas

The closest AQMA to the Site is the Warrington Borough Council (WBC) 'Warrington AQMA No 1' located approximately 1.2km to the southeast and encompassing a 50m continuous strip on both sides of the M6, M62 and M56 motorway corridors. The AQMA was declared in 2001 for exceedances of the annual mean NO₂ AQAL (40µg/m³) at locations of relevant exposure.

The Council currently has four AQMAs within their administrative area. The 'AQMA No. 3 Borough Rd' and the 'AQMA No.4 (Reflection Court)' encompassing sections of the A58 within central St Helens are located within 3.7km and 3.2km from the Site respectively. Both AQMAs were declared in 2011 for exceedances of the annual mean NO₂ AQAL (40µg/m³) at locations of relevant exposure.

While not located near the Site, the AQMAs highlight the sensitivity of the wider environment.

3.2 Air Quality Monitoring

A review of air quality monitoring conducted by Central and Local Government Authorities has been conducted.

There are no automatic monitors located within 3km of the Site.

Non-automatic monitoring is currently undertaken by the Council. The details and results of these monitoring locations relevant to the Site are presented in Table 3-1 and Table 3-2 respectively, whilst their locations are illustrated in Figure A. All monitoring data presented has been ratified by the Council.

Table 3-1: Diffusion Tube Monitoring Sites: Details

Site ID	Site Type	NGR (m)		Height (m)	Within AQMA?	Distance to the Site (km)
		X	Y			
13	Roadside	352391	390301	1.8	No	1.3
30	Roadside	352262	390226	1.9	No	1.5
33	Roadside	350386	389936	1.9	No	3.0

² SHBC, 2024 Air Quality Annual Status Report, June 2024.



Table 3-2: Diffusion Tube Monitoring Sites: Results

Site ID	2023 Data Capture %	Annual Mean NO ₂ Concentration (µg/m ³)				
		2019	2020	2021	2022	2023
13	92.6	22.2	19.0	22.5	15.2	18.1
30	100	19.8	17.4	20.4	14.7	16.1
33	92.6	30.7	27.1	30.4	22.8	27.3

As shown in Table 3-2, all of the considered diffusion tube monitoring sites recorded annual mean NO₂ concentrations well-below (i.e. <75%) the AQAL (40µg/m³) during the period presented, except at site 33 in 2019 (30.7µg/m³).

Monitoring site 33 is located roadside of the Rainhill Stoops Interchange, junction within 200m of the M62 as shown in Figure A. Concentrations recorded are anticipated to be elevated relative to those anticipated across the Site.

The empirical relationship given in LAQM.TG22 states that exceedances of the 1-hour mean AQAL for NO₂ is unlikely to occur where annual mean concentrations are <60µg/m³. This indicates that an exceedance of the 1-hour mean AQAL was unlikely to have occurred at the above diffusion tube monitors for the period assessed.

3.3 Defra Mapped Background Concentrations

Defra maintains a nationwide model of existing and future background air quality concentrations at a 1km grid square resolution. The data sets include annual average concentration estimates for NO₂, PM₁₀ and PM_{2.5} using a reference year of 2021 (the year in which comparisons between modelled and monitored concentrations are made).

The maximum Defra mapped annual mean background concentrations for a base year of 2024 across the Site are presented in Table 3-3 for the grid squares which cover the Site boundary.

Table 3-3: Maximum 2024 Defra Mapped Background Pollutant Concentrations

Input	Annual Mean Concentration (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
Site	11.3	13.1	7.4
AQAL	40	40	20

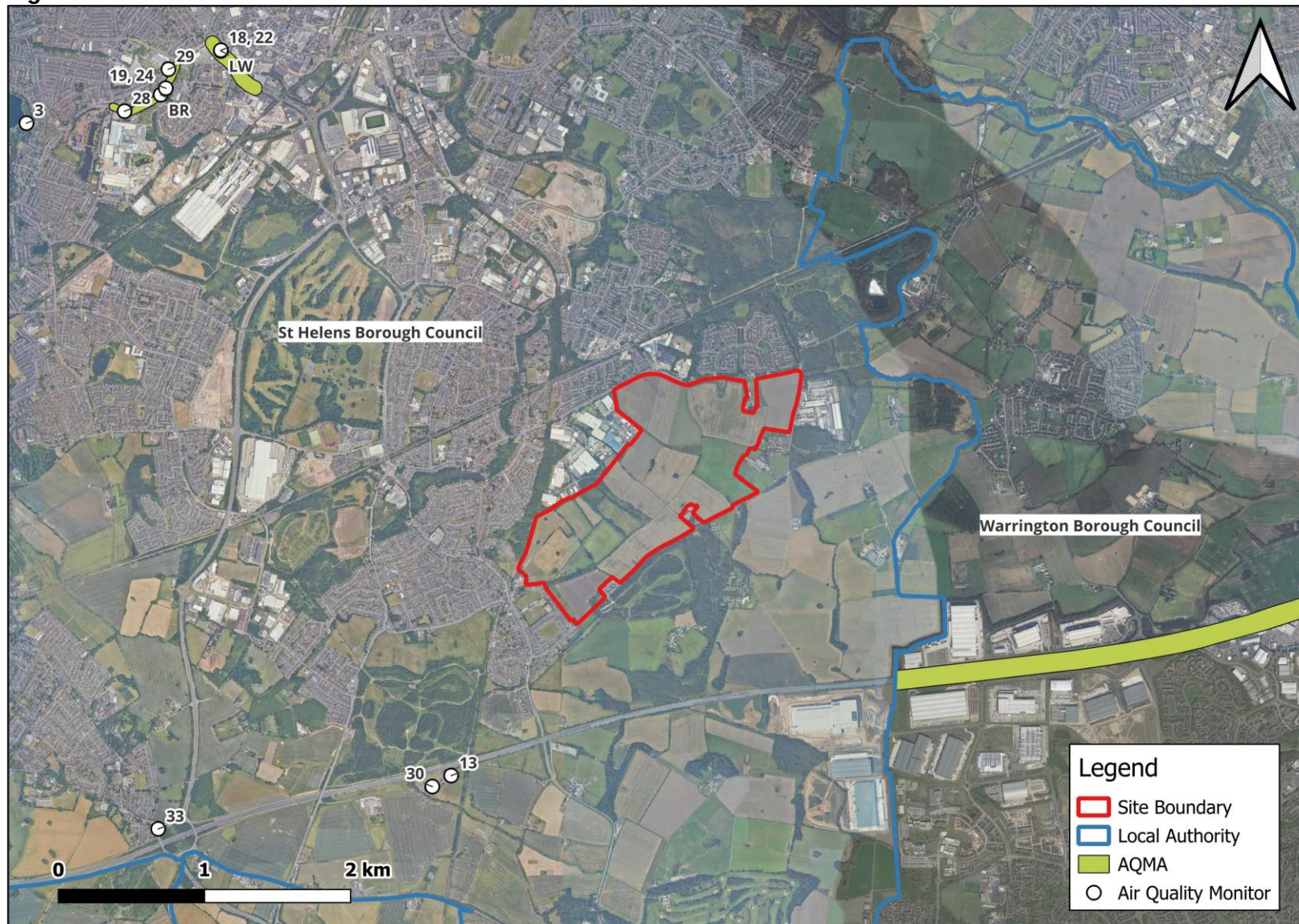
All of the mapped background concentrations presented are well-below (i.e. <75%) the respective annual mean AQALs.

3.4 Summary

Baseline conditions at the Site are anticipated to be well-below the respective AQALs and are therefore considered suitable for the proposed residential use.



Figure A: Baseline Review



4.0 Operational Phase Appraisal

4.1 Review of Potential Constraints

A review of satellite imagery and publicly available information was undertaken to identify localised emissions sources near the Site that could pose design constraints.

This included consultation with the Environmental Health Officer (EHO) at the Council³. The EHO noted the main air quality issues relate to the four declared AQMAs (discussed in Section 3.1) and that they could not locate any history of odour complaints.

An Environmental Information Regulation request for the last four years of odour complaint data around the Site was also issued to the Council⁴. The response⁵ detailed three historical odour complaints which are summarised in Table 4-1.

Table 4-1: SHBC Historical Odour Complaints (Past 4 Years)

Date	Location	Detail	Ongoing?
2020	Unknown	Complaint from a business alleging another business nearby was burning. No evidence of recurrence.	No
2021	Normans Road Industrial Estate (ES5 Figure B)	Report from a business that another business was burning waste in a steel container with smoke and odour produced. Complaint was not substantiated by officer visits. No further complaint raised.	No
2022	Reginald Road Industrial Estate (ES4 Figure B)	Complaint of odour and smoke from burning. Matter resolved following a warning letter.	No
2023	No complaints		
2024			

Each complaint relates to an isolated incident which has subsequently been resolved. The data does not indicate that there are any ongoing odour issues experienced by existing receptors (i.e. residential and business users).

The details of the identified local emission sources (potential constraints) relative to the Site are presented in Table 4-2, whilst their locations are presented in Figure B. Land-uses have been clustered.

³ Email correspondence from Emma Woodrow, SHBC Environmental Health department to SLR, dated 4th December 2024.

⁴ Environmental Information Regulation request to SHBC, reference 5490-9022-0186-1232, dated 12th November 2024.

⁵ SHBC response to Environmental Information Regulation, reference 5490-9022-0186-1232, dated 12th December 2024.



Table 4-2: Potential Constraints

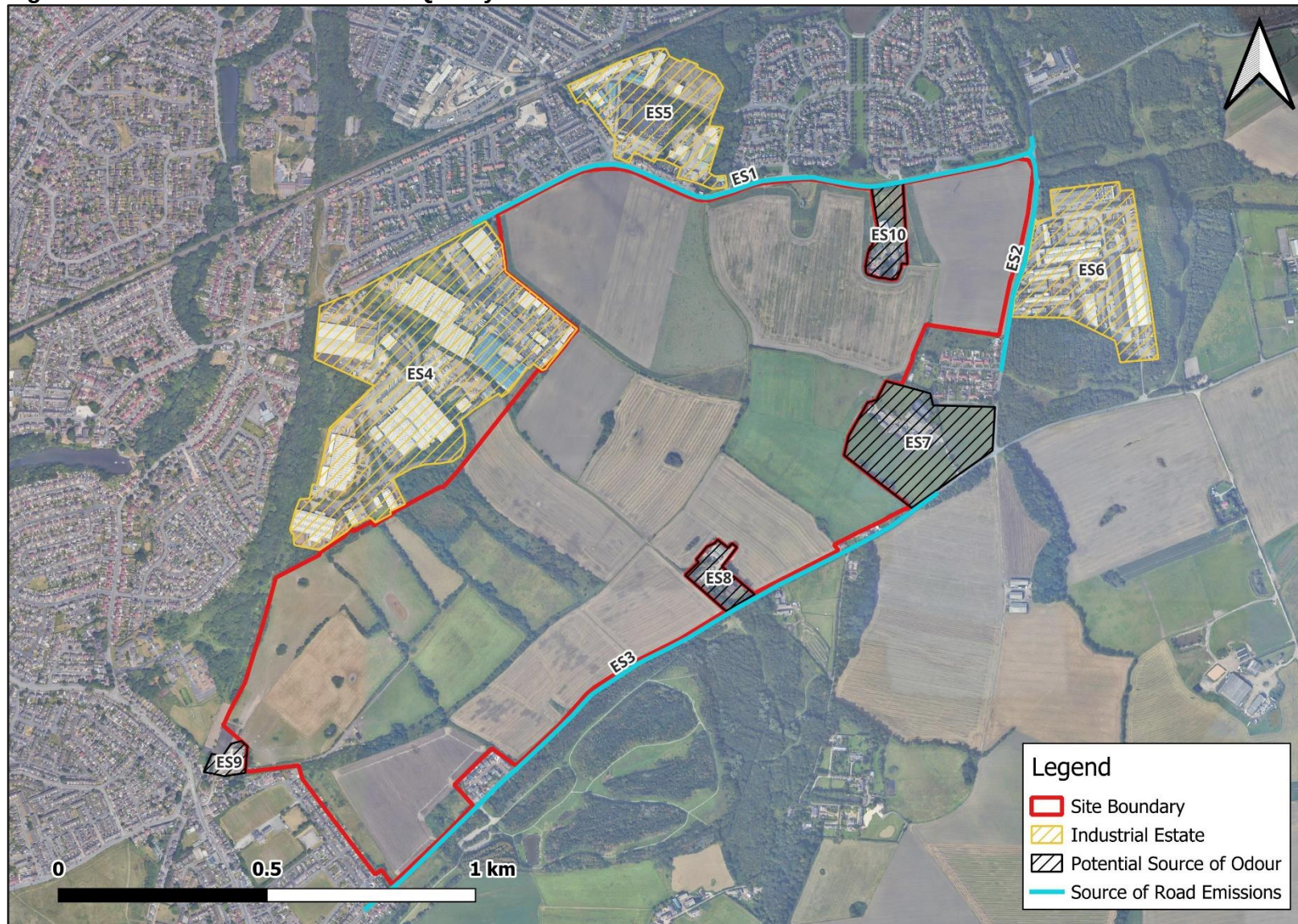
Source ID	Source Description	Emissions Type	Air Quality Constraint to Design?
ES1	B5204 Reginald Road	Road	No – Roadside monitoring local to the Site presented in Section 3.0 indicates roadside concentrations at ES1, ES2 and ES3 are likely to be well-below (i.e. <75%) of annual mean NO ₂ AQAL when the development opens.
ES2	Neills Road	Road	
ES3	Gorsey Lane	Road	
ES4	Reginald Road Industrial Estate	Industrial and Odour	The industrial estate comprises a number of commercial business operations. The following operations are considered to have the potential to release pollutant emissions and/or odours: • St Helens Waste Skip Hire Limited – EA permitted small-scale (<75,000 tonnes/annum) waste storage operation; • St Helens Waste Recycling Limited – EA permitted small-scale (<75,000 tonnes/annum) waste storage operation; • X Metals Ltd (formerly Abbotsfield Metals Limited) – EA permitted metals recycling site. Located approximately 240m from the Site boundary but approximately 170m from existing residential properties - no historical complaints; • West Lancashire Steel – SHBC permitted metal coating (solvent activities) operation; • Schur Flexibles Uni UK – SHBC permitted flexible packaging printer (solvent activities) operation; • C & O Powder Coatings – Spray powdering/painting operation. Located approximately 50m from the Site boundary at a similar setback distance as located from existing residential properties - no historical complaints; and • Linpac Packaging – Plastic manufacturing operation. Located approximately 140m from the Site boundary but approximately 55m from existing residential properties at nearest point - no historical complaints. Activities at St Helens Waste Skip Hire Limited, St Helens Waste Recycling Limited, West Lancashire Steel and Schur Flexibles Uni UK are therefore considered to have the potential to impact future users within the Site. Best practice design principles are presented in Section 4.2 for consideration to minimise exposure of future receptors. Further assessment will be undertaken following the design stage.
ES5	Normans Road Industrial Estate	Industrial	No - The industrial estate comprises a number of commercial business operations. The following operations are considered to have the potential to release pollutant emissions and/or odours:



Source ID	Source Description	Emissions Type	Air Quality Constraint to Design?
			- Kris Motor Spares Limited – EA permitted metals recycling Site (Vehicle Dismantler); and - Cheshire Mouldings – SHBC permitted timber product manufacturer; and The industrial estate is located adjacent to existing residential land uses to the east and west (i.e. closer relative to the Site). Given that there have been no historical odour complaints, activities are not considered to represent a constraint to the Site.
ES6	Bold Industrial Park	Industrial and Odour	The industrial estate comprises a number of commercial business operations. The following operations are considered to have the potential to release pollutant emissions and/or odours: - Universal Tanker Solutions Ltd – EA permitted waste water treatment facility. Located approximately 140m from the Site boundary; - Bold Skips Recycling and Reclamation Limited - EA permitted waste storage operation; - Steelcote Ltd – SHBC permitted metal coating (solvent activities) operation. Located approximately 185m from the Site boundary; - Pentre Steel Drums – SHBC permitted metal coating (solvent activities) operation; - St Helens Plant Limited – equipment manufacturer and metals fabrication operation. Located approximately 145m from the Site boundary; - Budget Cases – wood manufacturer operation. Located approximately 210m from the Site boundary; - Extract-it – manufacture and testing of extraction equipment operation; and - Rosehill Diner – small café. Activities at these sites have the potential to impact future users within the Site, though it is noted that they are located upwind of the prevailing wind direction relative to the Site. Best practice design principles are presented in Section 4.2 for consideration to minimise exposure of future receptors. Further assessment will be undertaken following the design stage.
ES7	Northfield Riding Centre	Odour	No – Given the limited odour source potential, odour is not considered likely to represent a design constraint.
ES8	Abbotsfield Farm	Odour	No – The associated fields are within the proposed Site boundary. The scale of the farming activities is therefore considered to be reduced with limited farm proposing to remain (comprising farmhouse and a small number of farm buildings). Any remnant farming activities would be limited and small scale. Due to the low odour source potential, odour is unlikely to pose a design constraint.
ES9	Tunstalls Farm	Odour	
ES10	Travers Farm	Odour	



Figure B: Overview of Potential Air Quality Constraints



4.2 Design Considerations

It is considered best practice to consider air quality in the early stages of the planning process including carefully considering the location of development and future receptors.

Given the potential pollution sources identified in Section 4.1 (including potentially constraining sources from Reginald Road Industrial Estate and Bold Industrial Park), best practice would be to plan more sensitive land use (i.e. residential dwellings) away from these sources where possible. Alternative land uses (i.e. green space) could be utilised to provide a buffer.

This accords to advice within the Environmental Policy Implementation Community (EPIC) (previously Environmental; Protection UK (EPUK)) and the Institute of Air Quality Management (IAQM): Land-Use Planning and Development Control: Planning for Air Quality⁶ guidance:

“[...] New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads, or directing combustion generated pollutants through well sited vents or chimney stacks.”

Further suggestions are outlined within the guidance for consideration throughout the design lifecycle:

“Wherever possible, new developments should not create a new “street canyon”, or a building configuration that inhibits effective pollution dispersion;

Delivering sustainable development should be the key theme of any application [...].”

⁶ EPIC & IAQM, Land-Use Planning and Development Control: Planning for Air Quality, v1.2, 2017.



5.0 Summary

Following review of baseline air quality and local emission sources, emissions associated with operations located within Reginald Road Industrial Estate and Bold Industrial Park are considered to have the potential to impact future users of the Site.

Examples of best practice measures to be considered throughout the development of the design are provided within Section 4.2. Following implementation of these measures, it is considered the Site would be suitable for the proposed residential use.

A full assessment of air quality will be undertaken during the planning application process. This will explore interactions with existing and proposed receptors. The methodology will be agreed with statutory consultees to ensure it meets regulatory expectations.





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