

Air Quality Assessment
Walshaw Garden Neighbourhood

Client: HIMOR, Redrow Homes Ltd and VHW Land Partnership

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Executive Summary

Redmore Environmental Ltd was commissioned by HIMOR, Redrow Homes Ltd and VHW Land Partnership to undertake an Air Quality Assessment in support of the allocation of land for a residential development known as Walshaw Garden Neighbourhood.

The proposals comprise the allocation of the site for circa 1,250 residential units and a primary school within the forthcoming Greater Manchester Spatial Framework.

The development of land for residential use has the potential to cause air quality impacts during construction and operation, as well as expose future occupants to any existing air quality issues. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions at the site, consider its suitability for the proposed end-use and support its allocation within the forthcoming development plan.

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 construction. It is suggested that these are assessed and suitable mitigation techniques identified to reduce releases to an acceptable level. Following the specification of control options, the residual effect of construction dust emissions will normally be not significant. As such, potential impacts are not considered a constraint to the proposals, subject to the completion of a detailed assessment.

The development has the potential to affect existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. Although trip generation information was unavailable to inform the appraisal, it is considered likely that a detailed assessment using dispersion modelling will be required. Based on the results of the assessment, mitigation may be required to reduce effects to an acceptable level.

The potential for exposure of future residents to poor air quality was assessed based on the results of a desk top study. This indicated that pollutant concentrations are likely to be below the relevant criteria at the development location. As such, the site is considered suitable for the proposed use.

Based on the assessment results, air quality issues are not considered a constraint to the allocation of the proposed site for residential use.

Table of Contents

1.0	INTRODUCTION	1
1.1	Background	1
1.2	Site Location and Context	1
2.0	LEGISLATION AND POLICY	2
2.1	European Directives	2
2.2	UK Legislation	2
2.3	Local Air Quality Management	4
2.4	Dust	4
2.5	National Planning Policy	5
2.6	National Planning Practice Guidance	6
3.0	BASELINE	8
3.1	Introduction	8
3.2	Local Air Quality Management	8
3.3	Air Quality Monitoring	8
3.4	Background Pollutant Concentrations	9
4.0	ASSESSMENT	10
4.1	Introduction	10
4.2	Construction Phase Impacts	10
4.3	Operational Phase Impacts	11
	Vehicle Exhaust Emission Impacts	11
	Potential Future Exposure	12
5.0	CONCLUSION	15
6.0	ABBREVIATIONS	17

1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by HIMOR, Redrow Homes Ltd and VHW Land Partnership to undertake an Air Quality Assessment in support of the allocation of land for a residential development known as Walshaw Garden Neighbourhood.

1.2 Site Location and Context

1.2.1 The site is located on land to the east of Walshaw, at approximate National Grid Reference (NGR): 377895, 411740. Reference should be made to Figure 1 for a map of the site and surrounding area. Reference should be made to Figure 1 for a site location plan.

1.2.2 The site extends to circa 64ha of greenfield and brownfield land and is loosely bounded by the urban areas of Tottington to the north, Woolfold and Elton to the east, Lowercroft to the south and Walshaw to the west.

1.2.3 Bordering the site to the west is High Street / Lowercroft Road and a strip of residential development, beyond which lies farmland and open countryside. The site extends to the north and south of Walshaw Road and a number of existing roads, including the B6213 (Bury Road/ Tottington Road), Scobell Street, Dow Lane, and High Street/ Church Street, define the relevant boundaries.

1.2.4 The proposals comprise the allocation of the site for circa 1,250 residential units and a primary school within the forthcoming Greater Manchester Spatial Framework.

1.2.5 The proposed land use has the potential to cause air quality impacts during construction and operation, as well as expose future occupants to any existing air quality issues. As such, an Air Quality Assessment has been undertaken in order to determine baseline conditions at the site, consider its suitability for the proposed end-use and support its allocation within the forthcoming development plan. This is detailed in the following report.

2.0 LEGISLATION AND POLICY

2.1 European Directives

2.1.1 European Union (EU) air quality legislation is provided within Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidated previous legislation which was designed to deal with specific pollutants in a consistent manner and provided new Air Quality Limit Values (AQLVs) for particulate matter with an aerodynamic diameter of less than 2.5µm. The consolidated Directives include:

- Directive 1999/30/EC - the First Air Quality "Daughter" Directive - sets ambient AQLVs for nitrogen dioxide (NO₂), oxides of nitrogen, sulphur dioxide, lead and particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
- Directive 2000/69/EC - the Second Air Quality "Daughter" Directive - sets ambient AQLVs for benzene and carbon monoxide; and,
- Directive 2002/3/EC - the Third Air Quality "Daughter" Directive - seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

2.1.2 The fourth daughter Directive was not included within the consolidation and is described as:

- Directive 2004/107/EC - sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

2.2 UK Legislation

2.2.1 The Air Quality Standards Regulations (2010) came into force on 11th June 2010 and transpose EU Directive 2008/50/EC into UK law. AQLVs were published in these regulations for 7 pollutants, as well as Air Quality Target Values for an additional 5 pollutants.

2.2.2 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.

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

Table 1 Air Quality Objectives

Pollutant	Air Quality Objective	
	Concentration ($\mu\text{g}/\text{m}^3$)	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

2.2.4 Table 2 summarises the advice provided in DEFRA guidance² on where the AQOs for pollutants considered within this report apply.

Table 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 offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term

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

² Local Air Quality Management Technical Guidance (TG16), DEFRA, 2018.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.3 Local Air Quality Management

2.3.1 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, 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.

2.4 Dust

2.4.1 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."

2.4.2 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). Enforcement can insist that there be no dust beyond the boundary of the works. 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.

2.5 National Planning Policy

2.5.1 The revised National Planning Policy Framework³ (NPPF) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied.

2.5.2 A core principle relating to air quality effects from development is that planning should:

"contribute to conserving and enhancing the natural environment and reduce pollution"

2.5.3 In achieving this, it states that:

"The planning system should contribute to and enhance the natural and local environment by:

[...]

preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability [...]"

2.5.4 With regard to assessing cumulative effects the NPPF states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including

³ NPPF, Ministry of Housing, Communities and Local Government, 2019.

cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development"

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

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

2.6 Planning Practice Guidance

2.6.1 The Planning Practice Guidance⁴ 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:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?

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

6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

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

3.0 **BASELINE**

3.1 **Introduction**

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

3.2 **Local Air Quality Management**

3.2.1 As required by the Environment Act (1995), Bury Metropolitan Borough Council (BMBC) has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO₂ are above the AQO within the borough. One AQMA has therefore been declared. This is described as follows:

"This is the part of the Greater Manchester Combined Authority AQMA located within the Bury Council area."

3.2.2 The site is located approximately 1.15km north-west of the AQMA. As such, there is the potential for any emissions associated with the proposals to cause air quality effects within this sensitive area. This has been considered throughout the assessment.

3.2.3 BMBC has concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

3.3 **Air Quality Monitoring**

3.3.1 Monitoring of pollutant concentrations is undertaken by BMBC throughout their area of jurisdiction. Recent results recorded in the vicinity of the proposed site are shown in Table 3. Exceedences of the relevant AQO are shown in **bold**.

Table 3 Monitoring Results

Monitoring Site		Monitored NO ₂ Concentration (µg/m ³)		
		2016	2017	2018
BU6	Bolton Road, Bury	40.8	36.1	36.7

3.3.2 As shown in Table 3, annual mean NO₂ concentrations were above the relevant AQO at BU6 during 2016 and below during 2017 and 2018.

3.3.3 BMBC do not undertake monitoring of PM₁₀ concentrations in the vicinity of the site.

3.4 **Background Pollutant Concentrations**

3.4.1 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 site is located in grid square NGR: 377500, 411500. Data for this location was downloaded from the DEFRA website⁵ for the purpose of the assessment and is summarised in Table 4.

Table 4 Background Pollutant Concentration Predictions

Pollutant	Predicted 2019 Background Pollutant Concentration (µg/m ³)
NO ₂	11.86
PM ₁₀	9.89

3.4.2 As shown in Table 4, predicted background NO₂ and PM₁₀ concentrations are well below the relevant AQOs at the site.

⁵ <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017>.

4.0 ASSESSMENT

4.1 Introduction

4.1.1 The development of land for residential use has the potential to cause air quality impacts during construction and operation. These are considered in the following Sections.

4.2 Construction Phase Impacts

4.2.1 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.

4.2.2 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.

4.2.3 Review of mapping resources has indicated a number of receptors within the vicinity of the site. As such, any emissions may cause adverse impacts at these sensitive locations during construction. These should be assessed in accordance with the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction'⁶ and the findings included within a full Air Quality Assessment which can be submitted in support of the planning application for the development. This should also include identification of suitable mitigation to control potential emissions to an acceptable level.

4.2.4 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step will be 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 possible⁷ through the implementation of suitable measures through a Construction Environmental

⁶ Guidance on the Assessment of Dust from Demolition and Construction V1.1, IAQM, 2016.

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

Management Plan or similar. Hence the residual effect will normally be **not significant**. As such, potential dust impacts are not considered a constraint to the proposals, subject to the completion of a detailed assessment.

4.3 Operational Phase Impacts

Vehicle Exhaust Emission Impacts

4.3.1 The development of land for residential use has the potential to affect existing air quality conditions as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. Although trip generation information was unavailable to inform this appraisal, the quantum of development is relatively large and therefore has the potential to produce a significant number of movements per day.

4.3.2 The proposed location benefits from direct access on to a number of distributor roads. As such, any trips generated by future development are likely to be dispersed onto the wider network without the formation of bottlenecks on local links.

4.3.3 The IAQM 'Land-Use Planning & Development Control: Planning for Air Quality' guidance⁸ provides the following criteria to help establish when an assessment of potential 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 Heavy Duty Vehicle (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.

4.3.4 Should these criteria not be met, then the IAQM guidance⁹ considers air quality impacts associated with a scheme to be **negligible** and no further assessment is required.

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

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

4.3.5 Although trip generation was unavailable to inform this appraisal, based on the number of residential units, there is the potential for the development to produce more than 500 daily vehicle movements on individual road links. As such, it is considered likely that the proposals will exceed the IAQM criteria. A detailed assessment of road vehicle exhaust emission impacts using dispersion modelling may therefore be required. The findings could be included within a full Air Quality Assessment which can be submitted in support of the planning application for the development. If the analysis indicates significant air quality impacts, effects could be mitigated through a number of potential options. These include:

- Production of a Travel Plan;
- Provision of electric vehicle charging points within the development; and,
- Financial off-setting of emissions.

4.3.6 These are considered suitable for a residential development in this location. As such, operational phase road vehicle exhaust emission impacts are not considered a constraint to the proposals, subject to the completion of a detailed assessment.

Potential Future Exposure

4.3.7 The proposals comprise land use sensitive to long and short term pollutant concentrations and as such has the potential to introduce new receptors into an area of poor air quality. Existing conditions at the site are therefore considered in the following Sections.

AQMA Designation

4.3.8 The site is located approximately 1.15km north-west of the closest AQMA, which has been declared for annual mean NO₂ concentrations. As the proposals are located adjacent to a number of existing residential areas it would be anticipated that there would be a need for an AQMA to cover nearby housing if exceedences of the AQOs had been recorded or predicted locally. As this is not the case, it is considered that exceedences of the AQOs are unlikely to occur at the proposed site.

Local Monitoring Results

- 4.3.9 The closest monitor to the site is located approximately 1.3km to the south-east, within the AQMA. As shown in Table 3, annual mean NO₂ concentrations were below the relevant AQO at the survey position during recent years.
- 4.3.10 Based on the local monitoring results, exceedences of the annual mean AQO for NO₂ are considered unlikely at the proposed site.

Background Pollutant Concentration Predictions

- 4.3.11 As shown in Table 4, predicted background pollutant concentrations for the grid square containing the site were well below the annual mean AQOs for NO₂ and PM₁₀ during 2019.
- 4.3.12 Based on the predicted background concentrations, exceedences of the AQOs are considered unlikely at the proposed site.

Summary

- 4.3.13 It is considered likely that pollutant concentrations are below the relevant AQOs at the proposed site for the following reasons:

- The site is not located within an AQMA;
- Local NO₂ monitoring results have been below the AQO during recent years; and,
- Predicted background concentrations are well below the relevant AQOs.

- 4.3.14 Based on the assessment results, exposure of future residents to exceedences of the AQOs is not considered likely. As such, the site is considered suitable for the proposed use from an air quality perspective.

- 4.3.15 The above conclusions could be investigated further through review of the detailed dispersion modelling results outlined previously. The findings could be included within a full Air Quality Assessment which can be submitted in support of the planning application for the development. If the analysis indicates exceedences of the AQOs at the site, future exposure could be mitigated through sensitive layout design. This would ensure residential

units were only positioned within areas where compliance with the relevant criteria was predicted.

5.0 CONCLUSION

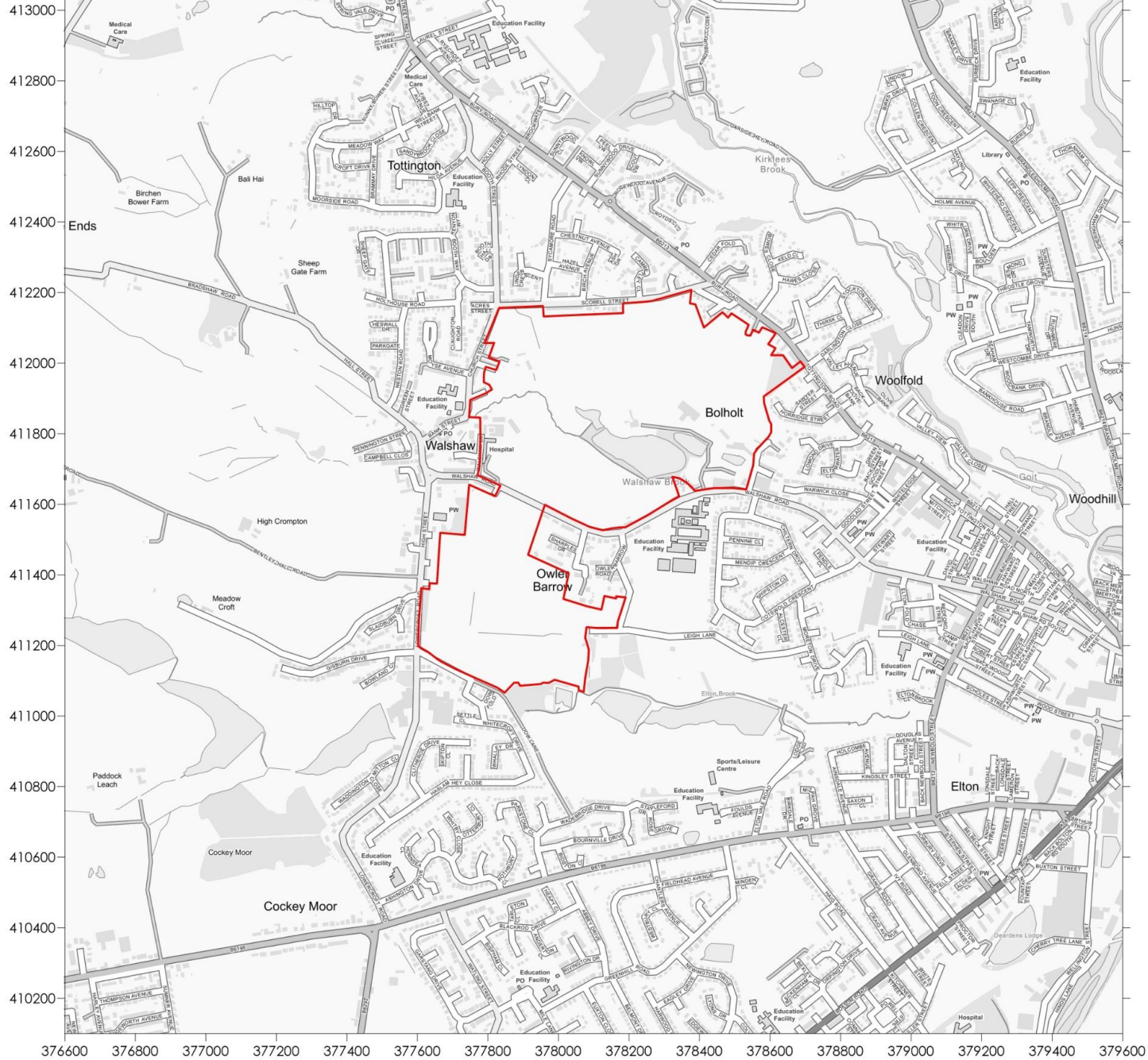
- 5.1.1 Redmore Environmental Ltd was commissioned by HIMOR, Redrow Homes Ltd and VHW Land Partnership to undertake an Air Quality Assessment in support of the allocation of land for a residential development known as Walshaw Garden Neighbourhood.
- 5.1.2 The proposed development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases. As such, an Air Quality Assessment was undertaken in order to define baseline conditions, identify any potential constraints to residential land use and support the site allocation within the forthcoming development plan.
- 5.1.3 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. It is suggested that these are assessed in accordance with the IAQM guidance and suitable mitigation techniques identified to reduce releases to an acceptable level. Following the specification of control options, the residual effect of construction dust emissions will normally be **not significant**. As such, potential impacts are not considered a constraint to the proposals, subject to the completion of a detailed assessment.
- 5.1.4 The proposals have the potential to cause air quality impacts as a result of vehicles travelling to and from the site. Although trip generation information was unavailable to inform the appraisal, it is considered likely that the IAQM criteria for detailed assessment will be exceeded. As such, a dispersion modelling assessment of road vehicle exhaust emission impacts should be undertaken in support of any planning application for the site. Based on the results, mitigation may be required to reduce effects to an acceptable level.
- 5.1.5 The potential for exposure of future occupants to exceedences of the AQOs was assessed based on local AQMA designations, recent monitoring results and predicted background concentrations. This indicated that concentrations of NO₂ and PM₁₀ are likely to be below the relevant AQOs at the development location. As such, the site is considered suitable for the proposed use from an air quality perspective.

5.1.6 Based on the assessment results, air quality issues are not considered a constraint to the allocation of the proposed site for residential use.

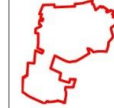
6.0 ABBREVIATIONS

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
BMBC	Bury Metropolitan Borough Council
DEFRA	Department for Environment, Food and Rural Affairs
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NGR	National Grid Reference
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
NPPF	National Planning Policy Framework
PM ₁₀	Particulate Matter with an aerodynamic diameter of less than 10µm
Z ₀	Roughness length

Figures



Legend



Site Boundary

Title

Figure 1 - Site Location

Project

Air Quality Assessment
Walshaw Garden Neighbourhood

Project Reference

2890

Client

HIMOR, Redrow Homes Ltd
and VHW Land Partnership

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