FI Real Estate Management

Oak Road, Wrexham

Air Quality Scoping Input

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1 Introduction

Bureau Veritas UK Ltd has been commissioned by FI Real Estate Management ("the Client") to provide air quality scoping input in support of a planning application for the proposed development of an 80,000sqft warehouse and associated office space at Oak Road, Wrexham Industrial Estate, Wrexham, LL13 9RG.The site is situated on the southern edge of Wrexham Industrial Estate. Surrounding the site is further industrial development to the north and east, farmland to the south and industrial units and HMP Berwyn to the west.

The proposed development site is a green eco-heritage zone and single employment unit with integral offices (for HIAB), new vehicular access, car and HGV parking, servicing and storage, landscaping, heritage and ecology mitigation and ancillary development.

The purpose of this air quality scoping is to provide the proposed air quality assessment methodology to support the planning application and therefore, determine any potential air quality impacts associated with the proposed development.

2 Baseline Conditions

This section sets out the baseline data that will be relied upon to produce a detailed assessment of baseline conditions that will be contained within the Air Quality Assessment (AQA).

Baseline data has been collated to determine the existing air quality conditions in the area that is likely to be affected by the proposed development. A desk-based review of the existing baseline has been undertaken to establish an understanding of the baseline air quality environment, to identify areas that are likely to be sensitive to changes in emissions as a result of the proposed development. Baseline information on air quality has been collected from the following sources:

- Defra UK Air website – to establish predicted background concentrations for nitrogen dioxide (NO_2), particulate matter less than 10µm (PM_{10}) and particulate matter less than 2.5µm ($PM_{2.5}$).
- Wrexham County Borough Council – to determine pollutants of concern and smoke control areas.
- Wrexham County Borough Council website and North Wales Authorities Collaborative Project 2023 Air Quality Progress Report (APR) – to determine existing Air Quality Management Areas (AQMAs) and local air quality monitoring results.
- MAGIC website – to identify ecological sites within the air quality study area.

2.1 Local Air Quality Management

2.1.1 Wrexham County Borough Council

Wrexham County Borough Council (WCBC) manages air quality in the context of Local Air Quality Management. WCBC do not have any declared Air Quality Management Areas (AQMAs). As stated in North Wales Authorities Collaborative Project 2024 Air Quality Progress Report (APR)[1], the council monitored air quality at 33 diffusion tube monitoring sites across Wrexham during 2023. The most recent air quality APR produced states that during 2023, none of these monitoring sites exceeded the annual or hourly mean NO_2 Air Quality Strategy (AQS) objective. The maximum concentration, which was recorded on Wrexham Road, was 27.4µg/m^3.

WCBC has three automatic monitoring sites and across all sites there were no NO_2 exceedances recorded. These sites also measure $PM_{2.5}$ and PM_{10}. All of these sites were compliant with the national air quality objectives in 2023.

2.2 Air Quality Monitoring

WCBC have seven passive NO_2 monitoring sites within 5km of the proposed development. Table 2.1 presents the five most recent years of available air quality monitoring results at these sites. The location of each site is presented in Figure 2.1. In the past five years, all the sites within 5km of the development have monitored concentrations well below the AQS objective.

[1] North Wales Authorities Collaborative Project 2023 Air Quality Progress Report. Available at: https://www.conwy.gov.uk/en/Resident/Environmental-problems/assets-Air-Quality/documents/NW-Annual-Progress-Report-2023.pdf

Figure 2.1: Local Air Quality Monitoring Locations



Table 2.1: 2019 - 2023 Annual Mean NO_2 Concentrations within 5km of the Proposed Development Boundary

Monitoring Location ID	Easting	Northing	Annual Mean NO_2 Concentration (µg/m^3)				
			2019	2020	2021	2022	2023
60 - St Pauls School	340016	349982	7.7	6.8	7.4	5.8	6.0
59 - Cross Lanes	337541	346942	11.2	8.4	9.7	8.4	9.6
41 - Marchwiel	335407	347890	13.9	10.3	13.0	12.2	11.1
58 - St Annes School	334954	350090	12.7	10.5	10.7	9.7	11.8
42 - Llan-Y-Pwll	335359	352178	20.6	17.1	19.6	18.3	17.4
43 - Hightown	333966	349691	17.0	14.4	16.5	17.5	16.5
33 - Smithfield Road	333981	350171	15.6	19.3	21.0	17.4	17.6

2.3 Background Concentrations

A review of the available modelled background concentrations for the proposed development and surrounding area has been carried out using Defra predicted annual mean background concentrations provided in 1km x 1km grid squares. The grid square representing the highest background concentration across all the entirety of the site is shown in Table 2.2 for all pollutants in 2025. The concentrations are well below the relevant AQS objective for each pollutant.

Table 2.2: Maximum 2025 Background Concentrations Across the Proposed Site

X, Y	Local Area	Background Concentrations (µg/m^3)			
		NO_2	NO_x	$PM_{2.5}$	PM_{10}
338500, 349500	Wrexham	8.3	10.8	5.8	10.7

3 Assessment Methodology

The approach applied to the assessment will be based on the following:

- Qualitative assessment of the impacts from the construction phase on air quality through emission of dust and particulates in accordance with the IAQM guidance[2]; and
- Assessment of the effect of emissions from road traffic during the operational phase of the proposed development in accordance with the EPUK/IAQM guidance[3].

3.1 Construction Effects

The assessment of potential dust effects associated with the construction phase will be undertaken qualitatively in accordance with the IAQM guidance[4]. The guidance proposes a method to assess the significance of construction dust impacts by considering the annoyance due to dust soiling, potential harm to ecological receptors and the risk of health effects.

Construction phase activities are divided into four types to reflect their different potential impacts. These activities are:

- Demolition – an activity involved with the removal of any existing structure or structures;
- Earthworks – the processes of soil-stripping, ground-levelling, excavation, and landscaping;
- Construction – an activity involved in the provision of a new structure; and
- Trackout – the transport of dust and dirt from the site onto the public road network. This arises when lorries leave site with dusty materials or transfer dust and dirt onto the road having travelled over muddy ground on-site.

An assessment is required where a sensitive human receptor is located within 250m from the site boundary and/or within 50m of the routes used by vehicles on the public highway, up to 250m from the site entrances. There are places of work and related car parking within 20m of the proposed development site boundary as well as residential dwellings within 250m. As such, a construction dust assessment is required to consider impacts associated with demolition, earthworks, construction and trackout.

An assessment is also required where ecologically sensitive receptors are located within 50m of the site boundary and/or 50m of the routes used by vehicles on the public highway, up to 250m from the site entrances. In accordance with the IAQM methodology, these are defined as legislatively protected areas such as Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC). According to Defra's Magic Maps natural environment mapping tool, the nearest ecologically sensitive receptor, River Dee and Bala Lake, is located more than 50m from the Site and more than 50m from the nearest Site access route. Therefore, further assessment is not required.

The first step of the detailed assessment is to assess the risk of dust impacts. This is undertaken separately for each activity and takes account of:

- The scale and nature of the works, which determines the potential dust emission magnitude as small, medium, or large; and,
- The sensitivity of the area to dust impacts, which is defined as low, medium, or high sensitivity.

These two factors are combined to give an estimate of the risk of dust impacts occurring with no mitigation applied. Risks are described in terms of there being a low, medium, or high risk of dust impact; the risk category assigned to the site can be different for each of the demolition and construction activities. Where there are low, medium, or high risks of an impact, then site specific mitigation will be required, proportionate to the level of risk.

Based on the threshold criteria and professional judgment, one or more of the groups of activities may be assigned a 'negligible' risk. Such cases could arise, for example, because the scale is very small and there are no receptors near to the associated activity.

[2] IAQM (2024) Guidance on the assessment of dust from demolition and construction. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

[3] EPUK/IAQM (2017). 'Land-Use Planning & Development Control: Planning for Air Quality' Guidance. Available at: https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

[4] IAQM (2024) Guidance on the assessment of dust from demolition and construction. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

Site-specific mitigation for each of the demolition and construction activities is then determined based on the risk of dust impacts identified. Where a local authority has issued guidance on measures to be adopted at demolition and construction sites, these should also be taken into account. Professional judgment is employed to examine the residual dust effects assuming mitigation to determine whether or not they are significant.

Given the short-term nature of the construction phase and the comparatively low volume of vehicle movements that will likely arise, there is not considered to be any potential for significant air quality effects from development related road traffic emissions during the construction phase. Therefore, further assessment is not required.

3.2 Operational Effects – Road Traffic Emissions

The assessment of air quality effects in relation to the operational phase will be undertaken in accordance with the EPUK/IAQM guidance[5]. Should a proposed development exceed the indicative criteria outlined below, a detailed Air Quality Assessment may be required:

- A change in 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 Vehicles (HDV) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of existing roads by 5m or more within an AQMA;
- Introduction of a new junction or removal of an existing junction near to relevant receptors;
- Introduction or change to a bus station; and/or,
- An underground car park with extraction system.

There is the potential for an increase in vehicle movements on the local road network as a result of the proposed development. As such, anticipated daily vehicle movements were provided by the Transport Consultants for the development, Prime Transport Planning.

There are less than 500 LDVs and 100 HDVs predicted which is below the EPUK/IAQM indicative criteria. It is therefore expected that the Site will not have a significant impact on air quality in the local area in accordance with the EPUK/IAQM guidance[6].

[5] EPUK/IAQM (2017). 'Land-Use Planning & Development Control: Planning for Air Quality' Guidance. Available at: https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

[6] EPUK/IAQM (2017). 'Land-Use Planning & Development Control: Planning for Air Quality' Guidance. Available at: https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

4 Conclusion

Bureau Veritas UK Ltd has been commissioned by FI Real Estate Management (“the Client”) to provide air quality scoping input in support of a planning application for the proposed development of an 80,000sqft warehouse and associated office space at Oak Road, Wrexham Industrial Estate, Wrexham, LL13 9RG.The site is situated on the southern edge of Wrexham Industrial Estate. Surrounding the site is further industrial development to the north and east, farmland to the south and industrial units and HMP Berwyn to the west.

The proposed development site is a green eco-heritage zone and single employment unit with integral offices (for HIAB), new vehicular access, car and HGV parking, servicing and storage, landscaping, heritage and ecology mitigation and ancillary development.

Monitoring undertaken by WCBC shows concentrations of NO_2 were below the annual mean AQS objectives between 2019 and 2023 and the Site is not within an existing AQMA. Defra’s background maps estimate that background concentrations of NO_2, PM_{10} and $PM_{2.5}$ remain considerably lower than the annual mean AQS objectives for all pollutants for the baseline year of 2024.

Construction phase activities associated with the scheme such as earthworks and trackout (the transport of dust and dirt from the construction site onto the public road network) can give rise to adverse impacts from fugitive emissions of dust such as nuisance and health impacts if left unmitigated.

A construction dust assessment will be undertaken to determine the risk of dust impacts and identify appropriate mitigation measures. There may also be increases in NO_2, PM_{10} and $PM_{2.5}$ concentrations due to emissions from non-road mobile machinery (NRMM) used during construction. However, these impacts are likely to be temporary in nature and have the potential to be well controlled through best practice mitigation measures.

Traffic trips associated with the operation of the scheme are anticipated to be below the IAQM indicative criteria for potential significant effects. Therefore, air quality impacts associated with operational phase vehicle emissions are proposed to be not significant.