



Glass Recycling UK, Barnsley Air Quality Assessment

JMI Planning

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October 2021

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Report to: **JMI Planning**

Report Title: **Glass Recycling UK, Barnsley – Air Quality Assessment**

Version: **V2.0**

Issue Date: **21/10/2021**

Report Ref:

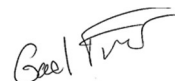
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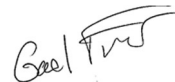


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Version	Author	Description	Date
0.1	DS	Draft 1	18/10/2021
0.2	GLF	QA1	19/10/2021
0.3	DS	Corrected	19/10/2021
1.0	GLF	Approve and Issue to Client	20/10/2021
2.0	GLF	Revision	21/10/2021

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1. Introduction

1.1 Instruction

- 1.1.1 This air quality assessment has been undertaken by Ecus in connection with a planning application for the proposed industrial development at 418 Carlton Road, Barnsley, S71 3HX.
- 1.1.2 JMI Planning are in the process of putting together a planning submission for the erection of a new industrial building on an existing industrial site. The site is located on Carlton Road, Barnsley in Carlton industrial estate.
- 1.1.3 The building is to house additional capacity in processing equipment to recover more glass from existing deliveries. The new building will provide more floorspace to improve efficiency and process reliability.

1.2 Project Background

- 1.2.1 The site lies within a predominantly industrial area. The closest residential properties are to the South West and North East of the proposed development as presented in Figure 1.

Figure 1: Site Setting

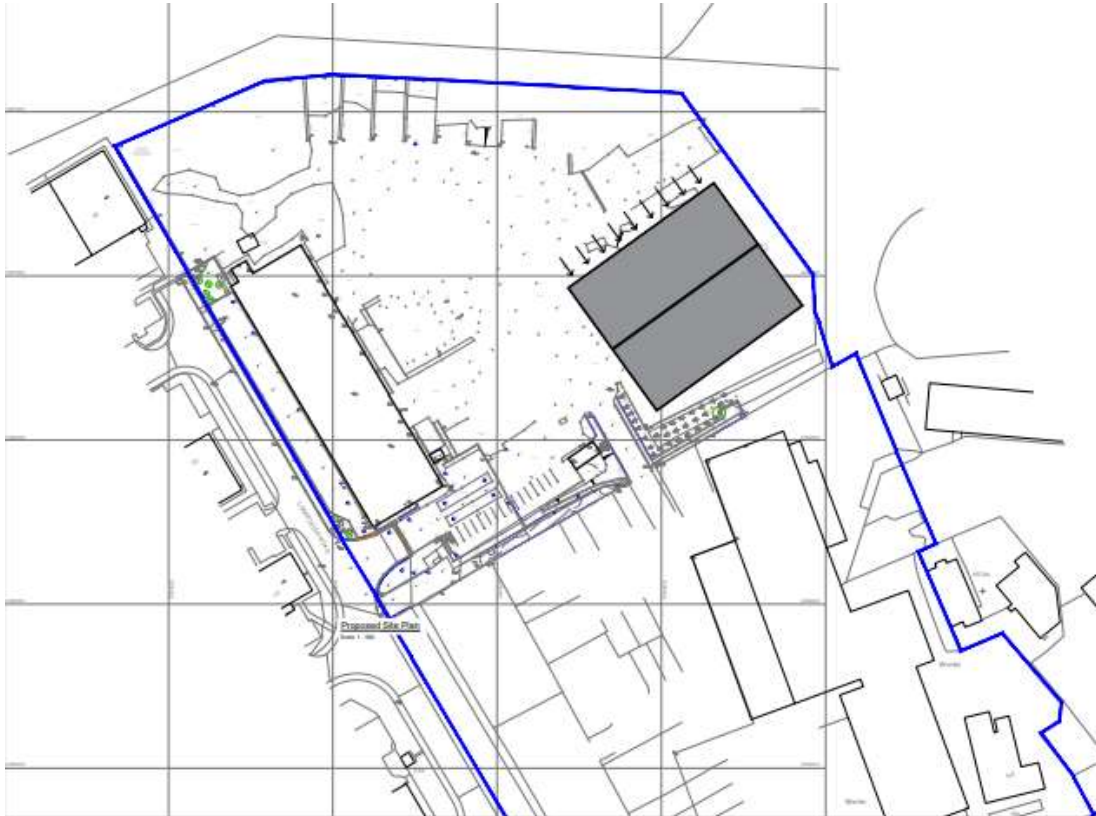


- 1.2.2 The glass recycling operations on the site are undertaken in several large buildings, and in addition there are areas of hardstanding, storage, and parking on site. The processing includes receipt of glass materials, and the site has a license with the Environment Agency (Permit Number: EA/EPR/GP3792ZE/V004) to process up to 400,000 tonnes per year, which will remain same with these proposals.
- 1.2.3 Once the glass has arrived on site, it is stored in bays until it is ready to be processed. Conveyor belt systems are used within the site to carry the glass through each part of the factory and through the sorting processes. Once the glass has been sorted it goes through several processing stages, including crushing and screening; ferrous metal removal; stone and ceramic removal; vacuuming; non-ferrous metal removal; small

ceramic and stone removal and then final checks. Once the processing has been completed the end products are ready of delivery to clients and customers off-site.

- 1.2.4 The proposed new building (54m x 45m x 17m) will be located within the north-east part of the site as presented in presented in Figure 2.

Figure 2: New Building Location



- 1.2.5 There are no combustion process / furnaces associated with the new building.
- 1.2.6 The proposals will not result in any increase in HGV / lorry movements as a result of the proposed building. The existing level of activity of approximately 450 movements per week, will remain the same.
- 1.2.7 There could be a potential minor increase in traffic associated with the increased number of staff (up to 12) at the site.
- 1.2.8 There are no designated ecological sites near the proposed development.

1.3 Scope of Assessment

- 1.3.1 This air quality assessment provides the following information:

- A review of relevant planning policy and air quality legislation and policy;
- Information on existing air quality in the area near to the proposed development;
- Consultation with the relevant officer at Barnsley Metropolitan Borough Council to agree the scope and approach to the assessment;
- Assessment of the construction impacts using the Institute of Air Quality Management (IAQM qualitative method);
- Assessment of the significance of the effect using the Environmental Protection UK (EPUK) /IAQM criteria; and

- The assessment of the operational impacts will consider both the impact on future users of the proposed development and the impact of air emissions from the traffic associated with the proposed development.

2. Legislation, Policy and Guidance

2.1 Air Quality Strategy

- 2.1.1 The Air Quality Strategy published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK.
- 2.1.2 It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives.
- 2.1.3 Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date.
- 2.1.4 If this is not the case, the authority must declare an AQMA, and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

2.2 Planning

National Planning Policy Framework

- 2.2.1 The National Planning Policy Framework (NPPF), last updated in June 2019, sets out planning policy for England. It places a general presumption in favour of sustainable development, stressing the importance of local development plans and states that the planning system has a role in minimising pollution. The effects, including cumulative effects, of pollution on health or amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account when the local planning authority is making development control decisions.
- 2.2.2 Local planning authorities should focus on whether the development is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes.
- 2.2.3 The need for compliance with statutory air quality limit values and national objectives is stressed, and the presence of Air Quality Management Areas (AQMAs) and Clean Air Zones (CAZs) must be taken into account, and the cumulative impacts on air quality from individual sites in local areas. New developments in AQMAs should be consistent with local air quality action plans.
- 2.2.4 The Planning Practice Guidance on air quality was last updated in November 2019. This states that it is important that the potential impact of new development on air quality is taken into account where Defra's national assessment indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified.
- 2.2.5 This notes that the local planning authority might take into consideration whether the proposed development will:
 - Lead to an unacceptable risk from air pollution;
 - Prevent sustain compliance with limit values or national objectives for pollutants; or

- Fail to comply with the requirements of the Habitats Regulations, or other environmental policies and duties, taking into account the presence of AQMAs and CAZs, and the cumulative impacts from individual sites in the local area.
- 2.2.6 If these criteria are not met the local planning authority could consider how the proposal could be amended to make it acceptable, or, where not practicable, whether planning permission should be refused.
- 2.2.7 The Planning Practice Guidance on air quality notes that “*Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts*”.

Local Planning Policy

- 2.2.8 The Local Plan for Barnsley was adopted in January 2019 and provides local planning policy for the future development of Barnsley up to the year 2033.
- 2.2.9 The Local Plan sets out the key elements of the planning framework for Barnsley, and the approach to its long term physical development to achieve the Council’s vision of what sort of place Barnsley wants to become.
- 2.2.10 The plan includes sites to be allocated for different types of development, such as housing and employment in order to meet the area’s needs, as well as identifying areas of land which must be protected from development. It also covers a wide range of other planning policies which, once adopted, can be used to judge planning applications.
- 2.2.11 In particular, the document highlights the need for new developments to provide air quality assessments in accordance with policy Poll 1 to quantify the impact of any development together with robust mitigation proposals to off-set impacts.

Barnsley MBC Air Quality and Emissions Good Practice Planning Guidance

- 2.2.12 The Barnsley MBC Air Quality and Emissions Good Practice Planning Guidance provides a template for integrating air quality considerations into land-use planning and development management policies that can influence the reduction of road transport emissions through cost effective service planning.
- 2.2.13 This guidance is therefore included in the Barnsley MBC Air Quality Action Plan
- 2.2.14 The air quality assessments follow a three stage process:
- Stage 1: Determining the classification of the development proposal;
 - Stage 2: Assessing and quantifying the impact on local air quality; and
 - Stage 3: Determining the level of a mitigation required by the proposal to meet Local Development Plan requirements.
- 2.2.15 This guidance has been developed by the West Yorkshire Low Emissions Group. This Group consists of West Yorkshire local authorities, and permission has been issued by the Group for Barnsley MBC to use this guidance.

Air Quality Legislation and Policy

European

- 2.2.16 The Air Quality Directive (2008/50/EC) sets out a series of air quality limit values, with information on how to assess compliance and where the limits apply. The limit values for NO₂ and PM₁₀ are numerically the same as the air quality objectives described below (see Table 1), although there are some differences as to when and where they must be achieved. The limit values for the protection of human health apply at all locations except:

- a) Any locations situated within areas where members of the public do not have access and there is no fixed habitation.
- b) Where health and safety at work provisions apply.
- c) In the carriageway of roads, and on the central reservation of roads except where there is normally pedestrian access to the central reservation.

2.2.17 For PM_{2.5} the Directive has set a national exposure reduction target which, for the UK, is 15% reduction of 2010 levels by 2020.

2.2.18 The EU limit values are mandatory.

2.2.19 The Air Quality Standards Regulations 2010, as amended, implement into UK legislation the requirements of the Directive. Defra is the competent authority responsible for ensuring compliance with the requirements and produced an annual national assessment of compliance.

National

2.2.20 Part IV of the Environment Act 1995 requires the UK Government to publish an Air Quality Strategy and local authorities to review, assess and manage air quality within their areas. The latter has become known as Local Air Quality Management (LAQM).

2.2.21 The latest Strategy, published in 2007, establishes the policy for ambient air quality management and assessment in the UK. It includes the national Air Quality Objectives (AQOs) for key pollutants for the protection of human health and vegetation.

2.2.22 '*Standards*' are concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant.

2.2.23 The '*objectives*' set out the extent to which the Government expects the standards to be achieved by a certain date. Those AQOs included as part of LAQM are prescribed in the Air Quality (England) Regulations 2000 and the Air Quality (Amendment) (England) Regulations 2002. The AQOs for nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5}¹ are shown in Table 1.

Table 1: Air Quality Objectives for Nitrogen Dioxide and Particulate Matter

Pollutant	Air Quality Objective		
	Concentration	Measured as	Date to be achieved by and maintained thereafter
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 µg/m ³	Annual mean	31 December 2005
Particles (PM ₁₀)	50 µg/m ³ not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 µg/m ³	Annual mean	31 December 2004

¹ PM₁₀ and PM_{2.5} are defined as particulate matter which passes through a size-selective inlet with 50% efficiency at 10 microns and 2.5 microns respectively.

Pollutant	Air Quality Objective		
	Concentration	Measured as	Date to be achieved by and maintained thereafter
PM _{2.5} *	25 µg/m ³	Annual mean	2020
Notes: *There is also an exposure reduction target for PM_{2.5} of 15% at urban background locations to be achieved between 2010 and 2020 Source: Air Quality Regulations (England) 2000			

2.2.24 Local authorities are required to work towards achieving the AQOs but are not statutorily required to achieve them. This recognises that measures are required at the national and international levels as well as locally to control air pollution. If a local authority's review and assessment shows that an AQO may not be achieved it must declare an Air Quality Management Area (AQMA) and produce an Air Quality Action Plan.

2.2.25 The AQOs apply to external air where there is relevant exposure to the public over the associated averaging periods. Guidance on where the AQOs apply is provided in statutory Local Air Quality Management Technical Guidance 2016 (LAQM.TG(16)) issued by the Department for Environment, Food and Rural Affairs (Defra) (see Table 2). The objectives do not apply in workplaces, inside buildings or where people are unlikely to be regularly exposed (e.g. centre of roadways).

2.2.26 The EU critical levels for the protection of vegetation and ecosystems have also been adopted as UK objectives.

Barnsley Borough Council

2.2.27 Barnsley Borough Council (BBC) currently has 6 AQMAs, all declared for exceedances of NO₂ annual mean AQO, and however are looking to revoke two of them.

2.2.28 BBC has put together a plan to improve the air quality following the declarations – this is called a Local Air Quality Action Plan (LAQP)². The Local Plan is based around five key themes, with an aim assigned to each them.

2.2.29 The key themes and their aims are:

- Reduce Traffic - improve air quality by promoting public transport and other travel alternatives to the use of the private car;
- Behavioural Change - improve air quality by encouraging people who live, work or learn in Barnsley to take steps to reduce their impact;
- Increase Efficiency - to improve air quality by ensuring our transport networks operate as efficiently as possible by smoothing traffic flows and reducing congestion;
- Improve Fleet - improve air quality by reducing emissions from our Barnsley MBC fleet and other assets; and
- Regulation - to improve air quality by ensuring that industrial and domestic air pollution is correctly and fairly regulated, and ensuring that businesses are aware of their statutory requirements.

² Barnsley MBC Air Quality Action Plan (updated 2019)

Other Guidance

Local Air Quality Management Technical guidance (LAQM TG.16) (February 2018)

- 2.2.30 Statutory technical guidance is provided by Defra to assist local authorities undertaking their local air quality management duties. This provides advice on a range of issues including action plans, dispersion modelling and monitoring.
- 2.2.31 LAQM.TG(16) states that exceedances of the objectives should be assessed in relation to *“the quality of the air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present”*.
- 2.2.32 To assist local authorities, some examples of where the objectives should, and should not apply, are provided as shown in Table 2.

Table 2: Examples of Where the Air Quality Objectives Should Apply (Source LAQM.TG(16))

Averaging period	Objectives should apply at:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes 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. 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.
24-hour and 8-hour means	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.

Guidance on the Assessment of Dust from Demolition and Construction

- 2.2.33 The Institute of Air Quality Management (IAQM) provide guidance on the assessment of dust from demolition and construction sites. This document provides a risk-based methodology for assessing construction impacts, including demolition, earthworks and track-out.

Guidance on the Assessment of Operational Impact of New Developments

- 2.2.34 Guidance produced by Environmental Protection UK (EPUK) and the IAQM in January 2017 entitled '*Land-Use Planning & Development Control: Planning for Air Quality*', aims to ensure that air quality is properly accounted for in the development control process. The main foci of the guidance are the assessment of the impact of traffic and combustion plant emissions and advice on how to describe air quality impacts and their significance.

Descriptors for Air Quality Impacts and Assessment of Significance

Operational Significance

- 2.2.35 There is no official guidance in the UK in relation to development control on how to describe air quality impacts, nor how to assess their significance. The approach developed jointly by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) has therefore been used. The overall significance of the air quality impacts is determined using professional judgement, taking account of the impact descriptors.

3. Assessment Methodology

3.1 Consultation

- 3.1.1 Emails were exchanged with Barnsley Council to ascertain the approach for this AQ assessment. Chris Shields (Technical Officer (Pollution Control), Regulatory Services) and John Scott (Service Manager (Pollution Control) – Regulatory Services) confirmed the approach.

3.2 Barnsley MBC Air Quality and Emissions Good Practice Planning Guidance

- 3.2.1 The air quality assessments follow a three stage process:
- Stage 1: Determining the classification of the development proposal;
 - Stage 2: Assessing and quantifying the impact on local air quality; and
 - Stage 3: Determining the level of a mitigation required by the proposal to meet Local Development Plan requirements.

Stage 1: Development Type Classification

- 3.2.2 The development classification was determined using adapted criteria from the Department for Transport.

Table 3: Criteria for Development Classification

Land Use	Description	TA Required
Food Retail (A1)	Retail sale of food goods to the public – supermarkets, superstore, convenience food store	>800 m ² (GFA)
Non-Food Retail (A1)	Retail sale of non-food goods to the public; but includes sandwich bars or other cold food purchased and consumed off site	>1500 m ² (GFA)
Financial and professional services (A2)	Banks, building societies and bureaux de change, professional services, estate agents, employment agencies, betting shops.	>2500 m ² (GFA)
Restaurants and Cafes (A3)	Use for the sale of food for consumption on the premises.	>2500 m ² (GFA)
Drinking Establishments (A4)	Use as a public house, wine-bar for consumption on or off the premises.	>600 m ² (GFA)
Hot Food Takeaway (A5)	Use for the sale of hot food for consumption on or off the premises.	>500 m ² (GFA)
Business (B1)	(a) Offices other than in use within Class A2 (financial & professional). (b) Research & development – laboratories, studios. (c) Light industry	>2500 m ² (GFA)
General industrial (B2)	General industry (other than B1).	>4000 m ² (GFA)
Storage or Distribution (B8)	Storage or distribution centres – wholesale warehouses, distribution centres & repositories.	>5000 m ² (GFA)
Hotels (C1)	Hotels, boarding houses & guest houses	>100 bedrooms
Residential Institutions (C2)	Hospitals, nursing homes used for residential accommodation and care.	>50 beds
Residential Institutions (C2)	Boarding schools and training centres	>150 students
Residential institutions (C2)	Institutional hostels, homeless centres.	>400 residents
Dwelling Houses (C3)	Dwellings for individuals, families or not more than six people in a single household.	>50 units
Non-Residential Institutions (D1)	Medical & health services, museums, public libraries, art galleries, non-residential education, places of worship and church halls.	>1000 m ² (GFA)
Assembly and Leisure (D2)	Cinemas, dance & concert halls, sports halls, swimming, skating, gym, bingo, and other facilities not involving motorised vehicles or firearms.	>1500 m ² (GFA)
Other		
1. Any development generating 30 or more two-way vehicle movements in any hour		
2. Any developments generating 100 or more two-way vehicle movements per day		
3. Any development proposing 100 or more parking spaces		
4. Any relevant development proposed in a location where the local transport infrastructure is inadequate		
5. Any relevant development proposed in a location adjacent to an Air Quality Management Area (AQMA)		

3.2.3 The erection of the build falls below the above criteria presented in Table 3 hence this is a minor proposal. The proposal has a surface of less than 2,500m², will not generate more than 30 or more two-way vehicle movements in any hour, will not generate 100 or more two-way vehicle movement per day and will use the existing car parking facilities.

3.3 Existing Air Quality

3.3.1 A baseline air quality review was undertaken to determine the existing air quality in the vicinity of the site. This desk-top study drew on the following data sources:

- Aerial photography from Google Maps;
- Air quality monitoring data from Barnsley Council and Defra;
- Defra's modelled background concentrations; and
- Defra's modelling of compliance with the EU limit value for NO₂.

3.4 Construction Phase

3.4.1 The Institute of Air Quality Management (IAQM) qualitative assessment methodology³

³ IAQM, 2016, Guidance on the assessment of dust from demolition and construction, version 1.1.

has been used to assess the demolition and construction impacts. This assesses the risk of an adverse impact and recommends mitigation measures commensurate with the risk.

- 3.4.2 The risk is identified for four activities, namely demolition, earthworks, construction and track-out. The latter relates to the track-out of mud from construction sites by dirty vehicles which is deposited on the public highway. As vehicles drive over the mud dust is suspended into the air, potentially causing an impact on local amenity and human health due to exposure to airborne particles.
- 3.4.3 For each of the four activities the impact on local amenity and ecology (due to dust soiling) and human health (due to increased PM₁₀ concentrations) is assessed. The risk is determined from a combination of the potential magnitude of dust emissions and the sensitivity of the area as set out in the IAQM document.
- 3.4.4 The potential dust emission magnitude was defined based on the scale of the anticipated works. The sensitivity of the area was defined based on the receptor sensitivity, number of receptors, the existing PM₁₀ concentration in the area and the distance from the source.
- 3.4.5 The potential dust emission magnitude and the sensitivity of the area are combined to define the risk of impacts.
- 3.4.6 The methodology requires the use of professional judgement. A brief biography of the author of this report is presented in Appendix 1. The IAQM matrix for the definition of the sensitivity of an area to dust soiling and PM₁₀ exposure is reproduced in Appendix , together with the matrices used to define the risk of an adverse impact.

3.5 Operational Phase

- 3.5.1 The aim of an air quality assessment for the operational phase is to demonstrate the likely change in air quality or exposure to air pollution as a result of a proposed development. The EPUK/IAQM guidance notes that where an air quality assessment is identified as being required, this may be either a Simple or a Detailed Assessment.
- 3.5.2 A Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that is completed with the aid of a predictive technique, such as a dispersion model. The use of a Simple Assessment is appropriate in cases where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality.

Impact of Development Traffic

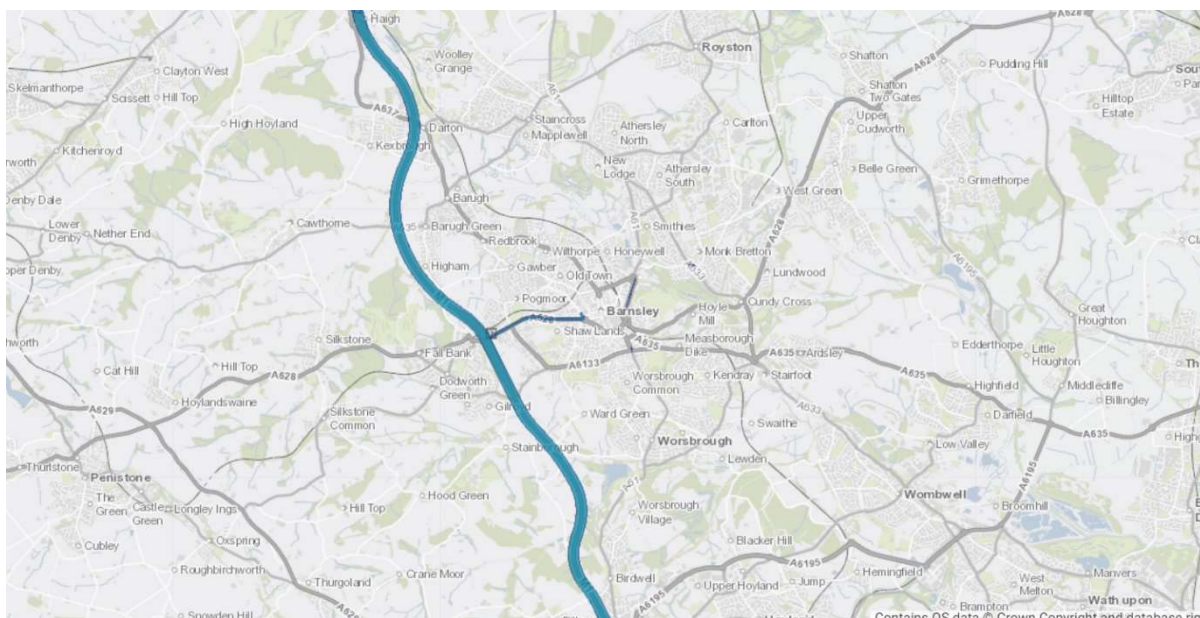
- 3.5.3 The EPUK/IAQM guidance provides a series of criteria to identify when an air quality assessment is likely to be required. These criteria are precautionary, should be treated as indicative and not be applied rigidly. Their aim is to identify situations where there may be a significant effect on local air quality.
- 3.5.4 These criteria include developments that cause a significant change in light duty vehicle traffic flows on local roads with relevant receptors. A significant change is given as:
 - more than 100 annual average daily traffic flows (AADT) within or adjacent to an AQMA;
 - More than 500 AADT elsewhere.

4. Baseline Conditions

4.1 Local Authority Data

4.1.1 Barnsley Council has six declared AQMAs which are summarised in Figure 3.

Figure 3: Map of Barnsley's Air Quality Management Areas⁴



4.1.2 The development does not lie within an AQMA.

4.1.3 Barnsley Council monitors air quality by non-automatic (passive) monitoring of NO₂ at 64 roadside sites during 2019.

4.1.4 4 passive roadside monitors are within 2 km of the development; DT 34, DT 35, DT50 and 51. 2019 monitoring results for these locations are presented in Table 4.

Table 4: Annual Mean NO₂ Concentrations (µg/m³)

	DT34	DT35	DT50	DT51
NO ₂ (Bias) ¹	32.2	35.9	37.4	31.0
NO ₂ (Distance) ²	26.1	-	28.7	31.0

Notes:

1. Bias adjustment and annualisation.

2. Distance corrected to nearest relevant public exposure.

4.1.5 In accordance with Defra LAQM.TG(16) the 2019 results indicate that an exceedance of the 1-hour mean objective is likely to have occurred within 2019 as there were concentrations reported of 60µg/m³ or above. The locations where the elevated concentrations were monitored are not deemed relevant to this assessment.

4.2 Defra Modelled Background Data

4.2.1 Defra provides modelled background concentrations on a 1km by 1km grid across the UK. The concentrations for the grid relevant to the site (436500, 409500) of NO₂, PM₁₀

⁴ <https://uk-air.defra.gov.uk/aqma/maps/barnsley>

and PM_{2.5} for the last 5 years is presented in Table 5.

- 4.2.2 The 2020 data is deemed not representative due to unprecedented activities associated with COVID across the country, however, has been projected based upon 2018 concentrations.

Table 5: Defra Background Concentrations from 2016 - 2020 (µg/m³)

Pollutant	2016	2017	2018	2019	2020
PM _{2.5}	8.43	7.19	7.65	9.07	7.28
PM ₁₀	13.19	10.97	11.74	13.98	11.26
NO ₂	16.47	13.48	12.83	10.67	11.72
NO _x	24.83	18.86	17.36	18.36	15.68

- 4.2.3 Background concentrations in the area are well below the air quality objectives for all pollutants.

4.3 Defra Modelled Roadside Concentrations

- 4.3.1 Defra is the competent authority for ensuring compliance with the EU Directive limit values, and models roadside concentrations alongside approximately 9,600 road links.
- 4.3.2 The 2020 measured concentrations will be significantly affected by the Covid lockdowns and the Defra models are being adapted to try and take account of this.
- 4.3.3 The NO₂ concentrations at selected locations near the Site are predicted to be below the EU limit value of 40 µg/m³.

5. Impacts

5.1 Construction Phase

- 5.1.1 The impact of construction activities is dependent on the distance from the works. As a precautionary approach, the distances have been calculated including the boundary of the site.

Earthworks

- 5.1.2 Any earthworks on the site is likely to be minimal due to it being a developed site and therefore the dust emission magnitude will be small.

Construction

- 5.1.3 The potential dust emission magnitude is considered to be medium. This is based on an estimate of the volume of new build for the proposed units.

Track-out

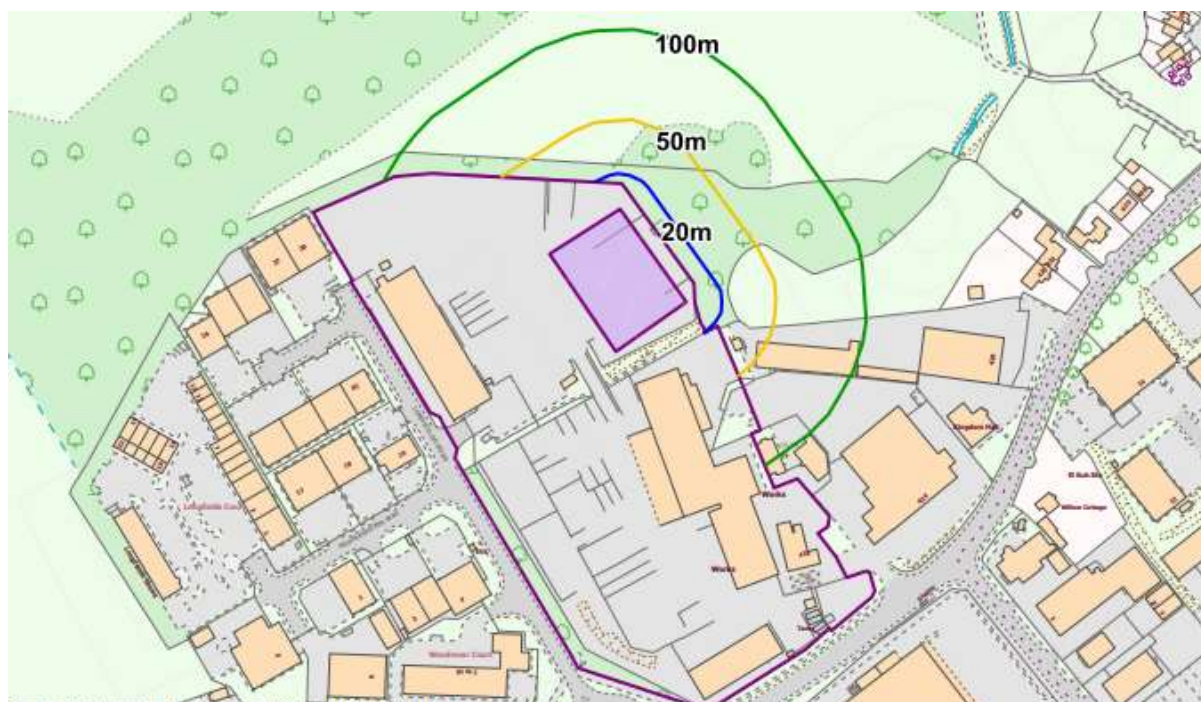
- 5.1.4 The greatest risk of dust emissions due to track-out is during the removal of the spoil from the site. During this phase of the development it is considered possible that there will be less than 10 heavy duty vehicle movements per day (IAQM small class), however given that there will be no demolition activities it is likely that the unpaved haul roads on the site will be less than 50m long (IAQM small class). As the local soil is moderately dusty⁵ the potential dust emissions magnitude is considered to be medium.

Sensitivity of the area with respect to amenity

- 5.1.5 Figure 4 shows the 20m, 50m, and 100m distances from the proposed development used to identify the sensitivity of the area. The area is predominantly industrial which is considered to be a low sensitivity land use. Other land uses are described below.
- 5.1.6 Within 20-50m to the east are the Barnsley Gymnastic Club, the Kingdom Hall of Jehovah's Witnesses and a car park; to the west are City Plumbing and Storm Commercials; this are considered to be a medium sensitive receptor. There are less than 10 highly sensitive receptors within 20m of the development site and therefore, based on the IAQM criterion, the area around the site has medium sensitivity to disamenity due to dust soiling during earthworks and construction.

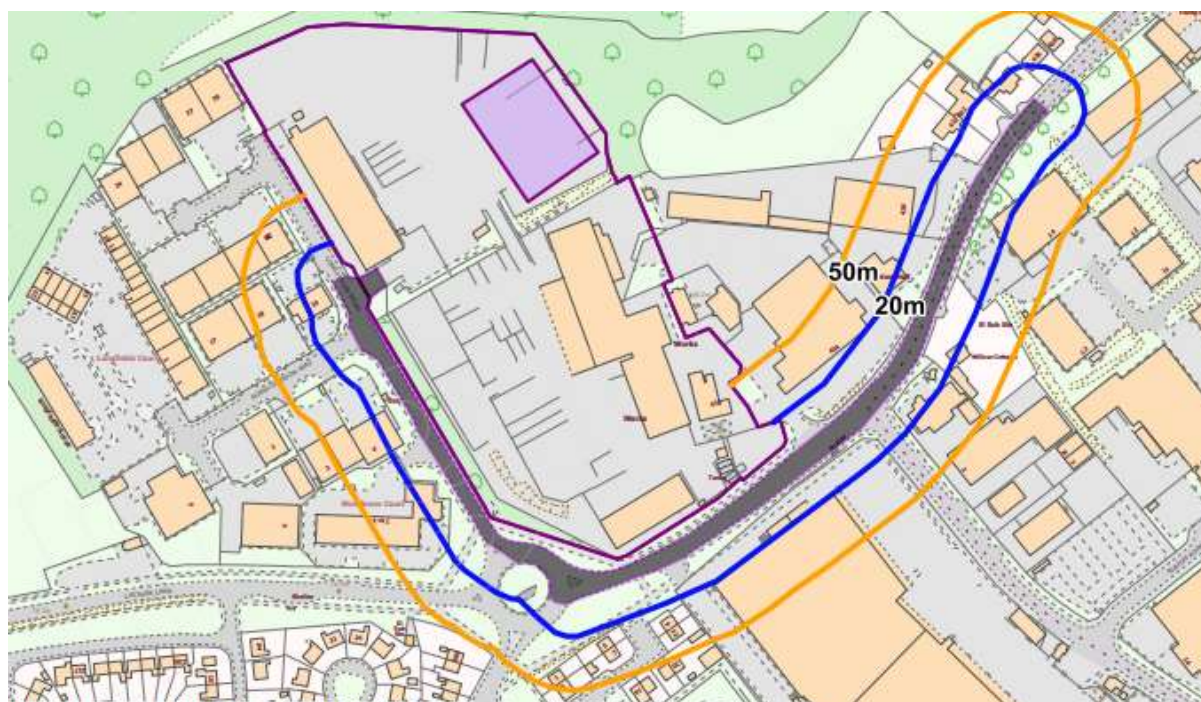
⁵ <http://www.landis.org.uk/soilscapes/>

Figure 4: Area Considered for Defining the Sensitivity of the Area During Earthworks and Construction



5.1.7 Figure 5 shows 20m and 50m from the roads where track-out needs to be considered. There are a number of medium sensitivity receptors (i.e. businesses) within 20m and therefore the area where there may be disamenity due to trackout is also considered to be of medium sensitivity.

Figure 5: Area Considered for Defining the Sensitivity of the Area During Track-Out



Sensitivity of the area with respect to human health

- 5.1.8 The monitored and modelled roadside PM₁₀ concentrations in the vicinity of the proposed development are all below 40 µg/m³, a concentration at which it is considered unlikely that construction works will give rise to an exceedance of the 24-hour mean objective. Therefore, the local area has a low sensitivity to effects on human health.

Risk assessment

- 5.1.9 Table 5 provides a summary of the potential dust emission magnitude, the sensitivity of the area and the identified risk of an adverse impact during the construction phase of the proposed development.

Table 5: Summary of the Construction Phase Impacts

Activity	Potential dust emission magnitude	Sensitivity of area		Risk	
		Dust soling	Human Health	Dust soling	Human Health
Earthworks	Small	Medium	Medium	Medium	Low
Construction	Small			Medium	Low
Track-out	Small			Medium	Low

- 5.1.10 The aim of the risk assessment is to identify mitigation measures commensurate with the identified risk. The mitigation measures are set out in Section 6.

5.2 Operational phase

Impact of Proposed Development

- 5.2.1 No emissions of criteria pollutants are expected from the development as no combustion process, furnace or oven will take place in the new building.

Impact of Proposed Development Traffic

- 5.2.2 The precautionary, indicative, criterion for an air quality assessment in the EPUK/IAQM guidance⁶ for light duty vehicles is an AADT of 100 or more.
- 5.2.3 It can be concluded that there will be a negligible impact on air quality as a result of the traffic generated by the proposed development. No further assessment is deemed necessary.

Impact on Exposure at the Development

- 5.2.4 There are two factors that determine whether there will be unacceptable exposure to air quality at the proposed development:
1. Whether the public are likely to be present over the relevant averaging period, and
 2. Whether the concentrations exceed the objective values.
- 5.2.5 For the pollutants considered in this assessment the relevant averaging periods are the annual mean (all three pollutants), 24-hour (PM₁₀) and 1-hour (NO₂). There is no evidence that the 24-hour or 1-hour objectives are being exceeded from the local monitoring data.
- 5.2.6 LAQM.TG(16) provides relationships between annual mean and 24-hour PM₁₀ concentrations, and between annual mean and 1-hour NO₂ concentrations. For PM₁₀

if the annual mean concentration is less than $31.5 \mu\text{g}/\text{m}^3$ the 24-hour objective is unlikely to be exceeded. When the annual mean NO_2 concentration is less than $60 \mu\text{g}/\text{m}^3$ the 1-hour objective is unlikely to be exceeded. The available monitoring and modelling data show that neither of these annual mean concentrations are exceeded close to the proposed development.

- 5.2.7 Therefore, it is concluded that the short term objectives do not need to be considered further.
- 5.2.8 There will be no relevant exposure to annual mean concentrations at the proposed development as there will be no live-in staff. The annual mean objective therefore does not apply at this location.
- 5.2.9 The monitoring and modelling (see section 4) show that the annual mean objectives for PM_{10} and $\text{PM}_{2.5}$ are achieved in the area, and therefore these pollutants do not need further consideration; leaving just exposure to future annual mean NO_2 concentrations to be considered further.

5.3 Summary of Impacts

- 5.3.1 In summary, there are potential for impacts during the construction phase of the development. Recommended mitigation measures are provided in the next section.
- 5.3.2 There will be no material impact of the proposed development on air quality during its operation, nor will local air quality have an impact on the proposed development.

6. Mitigation Measures

- 6.1.1 Barnsley Council's Air Quality and Emissions Good Practice Planning Guidance, Page 12⁷ presents "Standard Mitigation Requirements" that apply to this project following the classification process; these are presented in Table 6.

Table 6: MBC Air Quality Standard Mitigation Requirements

Residential: 1 Electric Vehicle charging point* per dwelling with dedicated parking or 1 charging point per 10 spaces (unallocated parking)
Commercial/Retail/Industrial: 10% of parking spaces to be provided with Electric Vehicle charge points* which may be phased with 5% initial provision and the remainder at an agreed trigger level
Demolition/Construction: Mitigation in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction

- 6.1.2 A dust management plan (DMP) should be agreed with the local planning authority, prior to construction works commencing, to minimise the risk of disamenity due to dust soiling. This DMP should be prepared by the Principal Contractor once details of the construction to be used are known.
- 6.1.3 It is likely that the measures in Table 6, from the IAQM guidance document, will need to be included in the DMP.

Table 6: Mitigation Measures for the Construction Phase.

Category	Mitigation Measures
Dust Management Plan	Develop and implement a Dust Management Plan (DMP) approved by Barnsley Council.
Site Management	- Display the name and contact details of person(s) accountable for the DMP, and the head office or region office contact on the site boundary. - Record all dust and air quality 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 Local Authority when asked. - Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the logbook.
Monitoring	- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Barnsley Council when asked. This should include regular dust soiling check of surfaces such as street furniture and cars, within 100m of the site boundary, with cleaning to be provided if necessary. - Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked.

⁷ Barnsley Council's Air Quality and Emissions Good Practice Planning Guidance, March 2020

Category	Mitigation Measures
	• Increase the frequency of site inspections by the person accountable for the DMP on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Preparing and maintaining the site	• 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 the site is active for an extensive period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicles/ machinery and sustainable travel	• Ensure all vehicles switch off engines when stationary – no idling vehicles. • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. • Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas. • Produce a construction logistics plan to manage the sustainable delivery of goods and materials.
Operations	• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • Use enclosed chutes and conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Category	Mitigation Measures
Waste management	• Avoid bonfires and burning of waste materials.
Mitigation specific to construction	• Avoid scrabbling (roughening of concrete surfaces) if possible. • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • 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. • For smaller supplies of fine powder material ensure bags are sealed after use and stored appropriately to prevent dust.
Mitigation specific to trackout	• Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Record all inspections of haul routes and any subsequent action in a site logbook. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

6.1.4 Mitigations measures during the operational phase of the development are summarised in Table 7.

6.1.5 These mitigation measures would be recommended as best practice but would not be required based on the results of the risk assessment.

Table 7: Mitigation Measures for the Operational Phase.

Category	Mitigation Measures
Air Quality	• Provision of Electric Vehicle Recharging; • Improved facilities to encourage cycling or other non-motorised travel (shower facilities, secure cycle storage etc.); • Pedestrianised areas and infrastructure to support low emission modes of transport.

7. Summary and Conclusions

- 7.1.1 The air quality impacts associated on the proposed industrial development alongside Carlton Road have been assessed.
- 7.1.2 The IAQM methodology has been used to assess the risk of adverse impacts on amenity and human health during the construction phase of the development. There is a medium risk of disamenity due to dust soiling during construction and track-out, but a low risk during earthworks. Appropriate mitigation measures commensurate with the risk have been recommended. There is a negligible risk to human health for all construction activities.
- 7.1.3 The need for an assessment of the impact of the traffic associated with the development has been screened out using the AADT criterion in the EPUK/IAQM guidance.
- 7.1.4 A simple assessment has been undertaken, proportionate to the risk, to determine if occupiers of residential properties near the proposed development are likely to be exposed to unacceptable air quality.
- 7.1.5 In conclusion, with the recommended mitigation there will not be a significant impact on local air quality, or amenity, as a result of the proposed development, nor will there be exposure to unacceptable air quality by future users of the proposed development.
- 7.1.6 The development therefore is consistent with the local plan with respect to air quality.

Appendix 1: Professional Experience

Gael Forest, BSc (Hons), MSc, CEng, DIC, CEnv, MIEEnvSc, MIAQM

Gael is a Regional Director and Head of Air Quality of Ecus and has nearly 25 years of experience of air quality management. He is a Chartered Environmentalist, Chartered Engineer and a full member of the Institute of Air Quality Management (IAQM).

He has advised national governments in Europe, Asia and the Middle East, as well as the European Commission (EC) on a range of strategic air quality and climate change issues.

Gael led a 3 year programme on behalf of the former UK Department of the Environment, Transport and the Regions (DETR) and developed atmospheric emissions inventories for 10 urban areas in the UK:

- Greater London
- West Midlands
- Southampton
- Port Talbot
- Belfast
- Greater Manchester
- Liverpool
- Glasgow
- Leeds and Kirklees
- Teesside

Subsequently, Gael directed the development of the UK National Atmospheric Emission Factors Database and contributed to the development of the European Environment Agency (EEA) EMEP/CORINAIR Atmospheric emission inventory guidebook.

Gael has acted as an air quality expert witness for legal cases and arbitration issues related to nuisance on housing estates (Chiswick, BP), Hastings Power Station fire (Hastings CC), Trichloroethylene (TCE) emissions (Birmingham CC) and Oil fields Operations (Kuwait, United Nations (UN) / EXXON).

Appendix 2: IAQM Demolition and Construction Assessment – Receptor Sensitivity

IAQM Sensitivity of an Area due to Dust Soiling on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m) ^c			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B, Box 6** and **Box 9**.

^b Estimate the total number of receptors within the stated distance. Only the *highest level* of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 m is 102. The sensitivity of the area in this case would be high.

^c For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

IAQM Sensitivity of an Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ concentration ^c	Number of Receptors ^d	Distance from the Source (m) ^a				
			<20	<50	<100	<200	<350
High	>32 µg/m ³ (>18 µg/m ³ in Scotland)	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³ (16-18 µg/m ³ in Scotland)	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³ (14-16 µg/m ³ in Scotland)	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³ (<14 µg/m ³ in Scotland)	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³ (>18 µg/m ³ in Scotland)	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³ (16-18 µg/m ³ in Scotland)	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³ (14-16 µg/m ³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³ (<14 µg/m ³ in Scotland)	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B, Box 7** and **Box 9**.

^b Estimate the total within the stated distance (e.g. the total within 350 m and not the number between 200 and 350 m), noting that only the **highest level** of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 m is 102. If the annual mean PM₁₀ concentration is 29 µg/m³, the sensitivity of the area would be high.

^c Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32 µg/m³ being the annual mean concentration at which an exceedance of the 24-hour objective is likely in England, Wales and Northern Ireland. In Scotland there is an annual mean objective of 18 µg/m³.

^d In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.

^e For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Risk of Dust Impacts During Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Risk of Dust Impacts During Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Risk of Dust Impacts During Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Risk of Dust Impacts During Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible