A CAF GROUP COMPANY

ENVIRONMENT

Homes by Honey (Siteco 2)
Barnburgh Lane
Goldthorpe
Air Quality Assessment

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EXECUTIVE SUMMARY

BWB Consulting Limited was appointed by Homes by Honey (Siteco 2) to undertake an air quality assessment for submission as part of planning application for a proposed residential development comprising 95 dwellings at land off Barnburgh Lane, Goldthorpe.

The Site is located within the administrative area of Barnsley Metropolitan Borough Council. The Site is not located within, or in the vicinity of, an existing Air Quality Management Area.

A qualitative construction phase dust assessment was undertaken in accordance with Institute of Air Quality Management guidance and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions was considered to be 'not significant' in accordance with Institute of Air Quality Management guidance.

The proposed development trip generation was screened using the Institute of Air Quality Management and Environmental Protection UK two stage screening process, to determine whether a detailed road traffic emissions impact assessment was required. Consideration was also given to the Barnsley Metropolitan Borough Council Air Quality and Emissions Good Practice Planning Guidance. The proposed development was classified as a 'Medium' development and agreed with Barnsley Metropolitan Borough Council. It was confirmed that the proposed development trip generation, once distributed east and west out of the Site onto Barnburgh Lane, would fall below the relevant screening criteria and therefore impacts associated with road traffic emissions were considered to be insignificant in accordance with Institute of Air Quality Management and Environmental Protection UK guidance.

Mitigation measures such as electric vehicle charging points and the provision of a Travel Plan are included within the development proposals, in accordance with the Barnsley Metropolitan Borough Council Air Quality and Emissions Good Practice Planning Guidance and therefore no further mitigation with regard to road traffic emissions was required.

A qualitative Site suitability assessment was also undertaken, utilising local monitoring data, to consider exposure of future users of the Site. The assessment concluded that pollutant concentrations at the Site are likely to be below the current relevant air quality objectives and the Site was considered to be suitable for the proposed residential end use.

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1. INTRODUCTION

1.1 BWB Consulting Limited (BWB) was instructed by Homes by Honey (Siteco 2) (the Client) to undertake an air quality assessment for a proposed residential development comprising 95 dwellings at land off Barnburgh Lane, Goldthorpe ('the Site').

1.2 The assessment considers construction phase dust impacts and operational phase road traffic emissions. A qualitative construction phase dust assessment was undertaken in accordance with relevant guidance. An operational phase road traffic emissions screening assessment was undertaken to consider the requirement for a detailed assessment of additional vehicles generated by the proposed development. In addition, a Site suitability assessment was undertaken to determine the suitability of the Site for its proposed residential use with regard to the current relevant air quality objectives for England.

1.3 This report is necessarily technical in nature so to assist the reader a glossary of air quality terminology can be found in **Appendix A**.

Site Setting

1.4 The Site is located at land to the north of Barnburgh Lane, Goldthorpe and lies within the administrative area of Barnsley Metropolitan Borough Council (BMBC).

1.5 **Figure 1.1** details the location of the proposed development. The Site currently comprises agricultural land.

1.6 Barnburgh Lane is located along the southern boundary of the Site with residential dwellings and agricultural land beyond. To the north of the Site is a small wooded area with residential dwellings beyond. The A635 is located approximately 710m north. To the west of the Site are existing residential dwellings and allotments. To the east of the Site is a small wooded area with the Barnburgh sub station located further east.

1.7 Principal air pollution sources in the vicinity of the Site are likely to comprise road traffic. The Site is currently not located within an existing Air Quality Management Area (AQMA).

Proposed Development

1.8 The proposed development comprises a residential development involving the construction of 95 dwellings. The proposed development masterplan is detailed in **Appendix B**.

Figure 1.1: Site Location

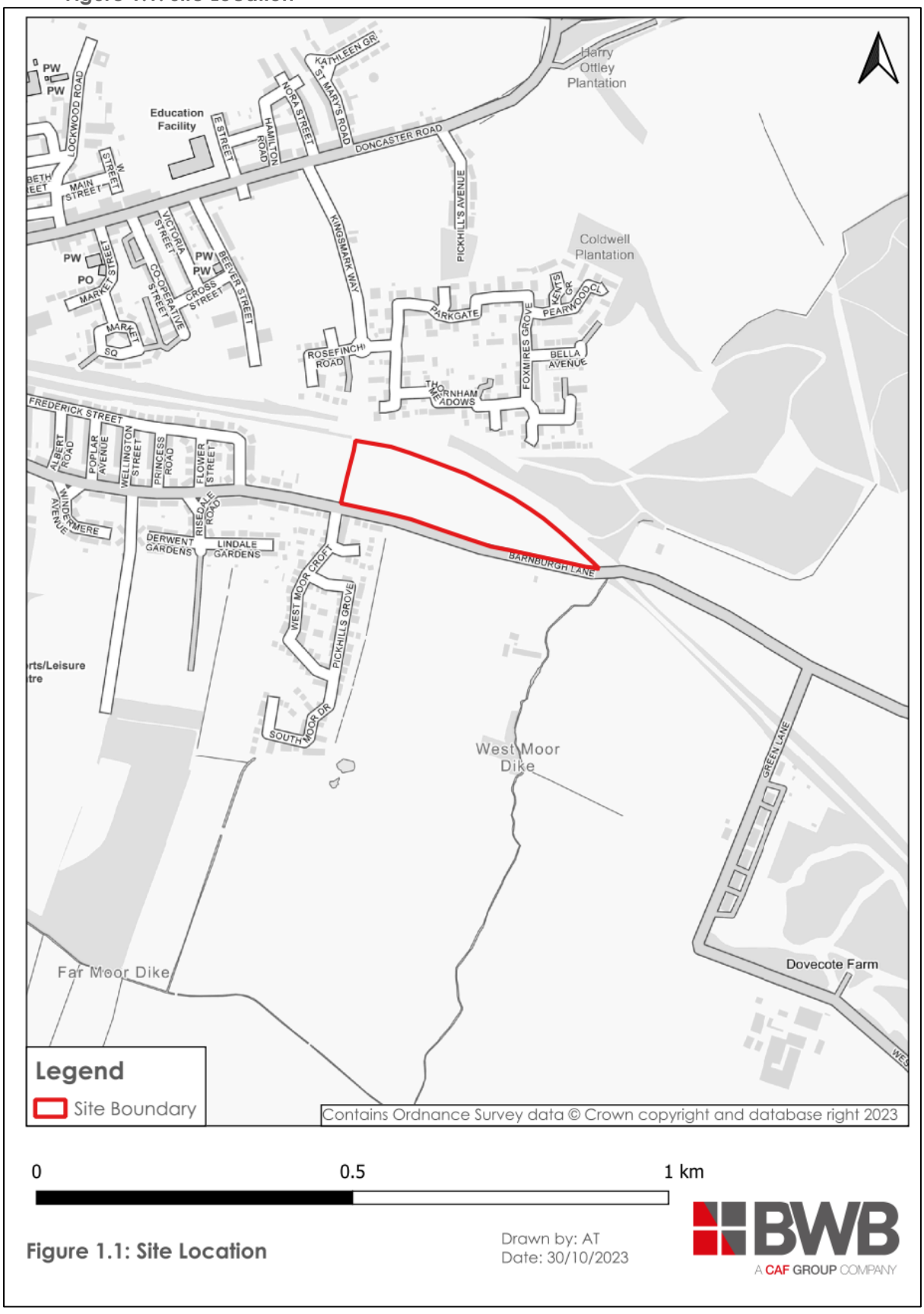


Figure 1.1: Site Location

2. LEGISLATION, PLANNING POLICY & GUIDANCE

National Legislation and Planning Policy

2.1 The following national legislation and planning policy is relevant to air quality and was considered in the undertaking of the assessment. A summary of the relevant national legislation and planning policy is provided in **Appendix C**:

- European Parliament, EU 2008 ambient Air Quality Directive (2008)[1];
- HMSO, Air Quality (England) Regulations (2000)[2];
- HMSO, Environment Act (1995)[3];
- HMSO, Environment Act (2021)[4];
- HMSO, Air Quality (England) Regulations (2002)[5];
- HMSO, Air Quality Standards Regulations (2010)[6];
- Department for Environment, Air Quality Strategy (1997)[7];
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2007)[8];
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2023)[9];
- Department for the Environment, Food and Rural Affairs, The Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020)[10];
- HMSO, The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023)[11];
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework (NPPF) (2023)[12]; and
- Ministry for Housing, Communities and Local Government, Planning Practice Guidance (PPG) for air quality (2019)[13].

Local Planning Policy

2.2 The following local planning policy was considered in the undertaking of the assessment and a summary is provided in **Appendix C**:

- Barnsley Metropolitan Borough Council, Barnsley Local Plan (2019)[14].

[1] European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe
[2] HMSO (2000) Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000 (as amended), London: HMSO
[3] HMSO (1995) The Environment Act 1995, London: TSO
[4] HMSO (2021) The Environment Act 2021, London: TSO
[5] HMSO (2002) Statutory Instruments 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002, London: HMSO
[6] HMSO (2010) Statutory Instruments 2010 No. 1001 Air Quality Standards Regulations 2010. London: HMSO
[7] Department of the Environment (DoE) (1997) The UK National Air Quality Strategy, London: HMSO
[8] Department of the Environment, Food and Rural Affairs (Defra) (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, London: HMSO
[9] Department of the Environment, Food and Rural Affairs (Defra) (2023) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, London: HMSO
[10] Department of the Environment, Food and Rural Affairs (Defra) (2020) The Environment (Miscellaneous Amendments) (EU Exit) Regulations, London: HMSO
[11] HMSO (2023) Statutory Instruments 2023 No. 96 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023
[12] Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework, HMSO London
[13] Ministry for Housing, Communities and Local Government (2019) Planning Practice Guidance Air Quality
[14] Barnsley Metropolitan Borough Council (2019) Barnsley Local Plan

Air Quality Assessment Guidance

2.3 The following guidance was utilised in the air quality assessment:

- Defra, Local Air Quality Management Technical Guidance (LAQM.TG(22)) (2022)[15];
- Institute of Air Quality Management, Guidance on the assessment of dust from demolition and construction (2023)[16];
- Institute of Air Quality Management and Environmental Protection UK, Land-Use Planning and Development Control: Planning for Air Quality (2017)[17]; and
- Barnsley Metropolitan Borough Council, Air Quality and Emissions Good Practice Planning Guidance (2021)[18].

[15] Defra (2021) Local Air Quality Management Technical Guidance LAQM.TG(22)
[16] Institute of Air Quality Management (2023) Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London
[17] Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality
[18] Barnsley Metropolitan Borough Council (2021) Air Quality and Emissions Good Practice Planning Guidance

3. METHODOLOGY

Consultation with Barnsley Metropolitan Borough Council

3.1 Consultation was undertaken with BMBC on 13th November 2023 via email. A response was received via email on the same day and the proposed methodology was accepted. The following methodology was provided:

- Construction Phase - A construction phase dust assessment was undertaken and relevant measures to mitigate construction phase dust emissions were recommended. The assessment was undertaken in accordance with guidance provided by the Institute of Air Quality Management (IAQM)[16].
- Operational Phase – An operational phase road traffic emissions screening assessment was undertaken in accordance with IAQM and Environmental Protection UK (EPUK) guidance[17]. In addition, a qualitative site suitability assessment was undertaken to determine the suitability of the Site for the proposed residential use.
- BMBC Air Quality and Emissions Good Practice Planning Guidance – consideration was given to the BMBC Air Quality and Emissions Good Practice Guidance and the development was classified as 'Medium'. The proposed development is not located within an AQMA or within 20m of roads identified in the DEFRA GIS modelled maps. However, a site suitability assessment was undertaken and mitigation measures in accordance with BMBC Air Quality and Emissions Good Practice Guidance were included.

3.2 Full details of the methodology used in the assessment, as agreed with BMBC, are provided below.

Construction Phase Dust Assessment

3.3 An assessment of the potential impacts arising from the construction of the proposed development was undertaken in accordance with IAQM guidance[16]. The full assessment methodology is not reproduced within this report but a summary of the assessment steps are provided below:

- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no receptors within a certain distance of the works.
- Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).
    - Step 2A – determine the potential dust emission magnitude for each of the four activities;
    - Step 2B – determine the sensitivity of the area;
    - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
- Step 3 – determine the site-specific mitigation for each of the four activities; and
- Step 4 – examine the residual effects and determine significance.

Operational Phase Road Traffic Emissions – Screening Assessment

BMBC Air Quality and Emissions Good Practice Planning Guidance

3.4 BMBC has adopted the BMBC Air Quality and Emissions Good Practice Planning Guidance[18] and therefore the development classification process detailed in the guidance[18] was undertaken and mitigation measures recommended accordingly.

3.5 The BMBC Air Quality and Emissions Good Practice Planning Guidance[18] provides a three stage assessment process as follows:

- Stage 1 – development type classification;
- Stage 2 – air quality impact assessment; and
- Stage 3 – mitigation and compensation.

IAQM and EPUK Guidance

3.6 Guidance published by the IAQM and EPUK in 2017[17] provides a two-stage approach to determine the level of assessment required in the consideration of the impact of development-generated road traffic emissions on local air quality.

Stage 1

3.7 The Stage 1 criteria requires that the assessment progress to Stage 2 if any of the following apply:

- The development comprises:
  - 10 or more residential units or a site area of more than 0.5ha; or
  - More than 1,000m^2 of floor space for all other uses or a site area greater than 1ha;
- Coupled with any of the following:
  - The development has more than 10 parking spaces; or
  - The development will have a centralised energy facility or other centralised combustion process.

Note: Consideration should be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Stage 2

3.8 The IAQM and EPUK guidance[17] provides the following indicative criteria to determine whether a detailed road traffic emissions assessment is required for a proposed development.

3.9 The Stage 2 criteria relevant to the proposed development are:

- A change in Light Duty Vehicles (LDV) of more than 500 vehicles as a 24 hour Annual Average Daily Traffic (AADT) flow outside of an AQMA; and

- A change in Heavy Duty Vehicles (HDV) flow of more than 100 vehicles as a 24 hour AADT flow outside of an AQMA.

Site Suitability Assessment

3.10 Monitored concentrations undertaken by BMBC were compared to the relevant air quality objectives[7]. The current relevant air quality standards and objectives for England are detailed in **Table 3.1**.

Table 3.1: Air Quality Standards and Objectives (England)

Pollutant	Averaging Period	Air Quality Objective ($\mu g.m^{-3}$)	Date to Achieve by
NO_2	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more than 18 times per year	200	31 December 2005
PM_{10}	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004
$PM_{2.5}$	Annual mean	20	1 January 2020
	Annual mean interim target as detailed within the Environmental Improvement Plan[19]	*12*	*31 January 2028*
	Annual mean	*10*	*31 December 2040*

Italics denotes future air quality objectives published by the UK Government that will come into force in the future

[19] Defra (2023) Environmental Improvement Plan 2023, First revision of the 25 Year Environment Plan

4. CONSTRUCTION PHASE DUST ASSESSMENT

4.1 The construction phase of the proposed development will involve a number of activities which have the potential to impact on local air quality. These include emissions of dust generated through excavation, construction, earthworks and trackout activities, exhaust pollutant emissions from construction traffic on the local highways network, and exhaust emissions from non-road mobile machinery (NRMM) within the construction site itself.

4.2 The location of sensitive receptors in relation to construction activities will affect the potential for such construction activities to cause dust soiling, nuisance and local air quality impacts. Meteorological conditions and the use of control measures will also contribute to the effects experienced.

Step 1: Screen the Need for a Detailed Assessment

4.3 Step 1 of the IAQM guidance[16] involves a screening assessment to consider whether a more detailed construction phase dust assessment is required.

4.4 In accordance with the guidance[16], a detailed assessment is required if:

- Human receptors are located within 250m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 250m from the Site entrances; or
- Ecological receptors are located within 50m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 250m from the Site entrances.

4.5 From a review of the Multi Agency Geographic Information for the Countryside (MAGIC) website[20], no ecological designations were identified within the above screening distance and therefore the impact on ecological designations was not considered further. However human receptors are located within the above screening distances, with the closest of these receptors located off Barnburgh Lane. A construction phase assessment was therefore undertaken.

Step 2: Assess the Risk of Dust Impacts

Step 2A: Define the Potential Dust Emission Magnitude

4.6 The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance[16] as detailed in **Table 4.1**. Demolition is not proposed as part of the development and therefore wasn't considered further in the assessment.

[20] Defra, Multi Agency Geographic Information for the Countryside (MAGIC) [http://magic.Defra.gov.uk/]

Table 4.1: Dust Emission Magnitude Criteria and Definition

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
Earthworks	Large	Total site area >110,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
	Medium	Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height.
	Small	Total site area <2,500m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	Large	Total building volume >75,000m^3, on site concrete batching, sandblasting.
	Medium	Total building volume 12,000m^3 – 75,000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.
	Small	Total building volume <12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	20 - 50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

4.7 The following dust emissions magnitudes were defined for the proposed development:

- Earthworks – The Site has a total area between 18,000m^2 and 110,000m^2. The dust emissions magnitude for earthworks was therefore defined as **Medium**.
- Construction – The proposed development will require the construction of 95 dwellings with a total building volume between 12,000m^3 and 75,000m^3. The dust emissions magnitude for construction was therefore defined as **Medium.**
- Trackout – Due to the scale of the proposed development, it is unlikely that more than 20 outward HDV movements will take place in any one day. The dust emissions magnitude for trackout was therefore defined as **Small.** In accordance with IAQM Guidance[16], a trackout distance of 50m was used.

4.8 A summary of the defined dust emissions magnitudes for the development are provided in **Table 4.2**.

Table 4.2: Summary of Project Defined Dust Emissions Magnitudes

Activity	Dust Emissions Magnitude
Earthworks	Medium
Construction	Medium
Trackout	Small

Step 2B: Define the Sensitivity of the Area

4.9 The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling and human health impacts. The sensitivity of the study area takes into account the specific receptors in the vicinity of the Site, the proximity and number of those receptors, the local background concentration of PM_{10} and site-specific factors. **Figure 4.1** was utilised to determine the number of receptors located within the distance bands provided in the IAQM guidance[16] for determining receptor sensitivity.

4.10 The sensitivity of the area is defined below, in accordance with IAQM criteria[16] and summarised in **Table 4.3.**

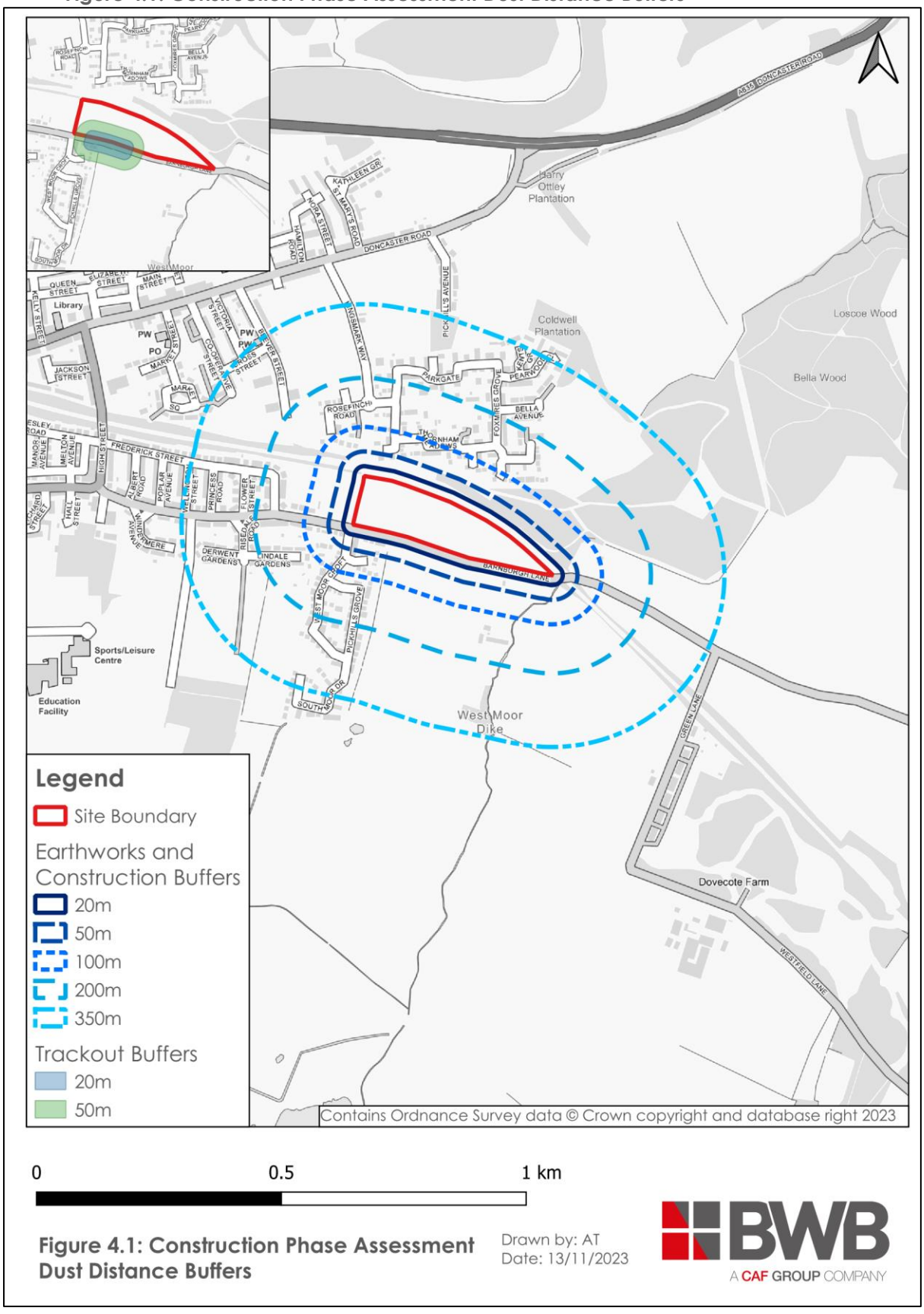
- Dust Soiling – There are between one and 10 highly sensitive residential receptors located within 20m of the proposed Site boundary. The sensitivity of the area to dust soiling impacts was therefore defined as **Medium.** There are between one and 10 highly sensitive residential receptors located within 20m of the assumed construction vehicle routes. The sensitivity of the area to dust soiling impacts associated with trackout was defined as **Medium.**
- Human Health – There are between one and 10 highly sensitive residential receptors located within 20m of the proposed Site boundary and assumed construction vehicle routes. The background PM_{10} concentration at the Site is also below 24µg.m^{-3} as defined in the DEFRA background maps[21]. The sensitivity of the area to human health impacts was therefore defined as **Low.**

Table 4.3: Determination of the Sensitivity of the Area

Potential Impact	Sensitivity		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium
Human Health	Low	Low	Low

[21] Defra (2018) background pollutant concentration maps [https://uk-air.Defra.gov.uk/data/laqm-background-maps?year=2018

Figure 4.1: Construction Phase Assessment Dust Distance Buffers



Step 2C: Define the Risk of Impacts

4.11 The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no mitigation applied. The results of this assessment are detailed in **Table 4.4.**

Table 4.4: Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
Dust Soiling Effects on People and Property			
Earthworks	Medium	Medium	Medium Risk
Construction	Medium	Medium	Medium Risk
Trackout	Small	Medium	Negligible Risk
Human Health Impacts			
Earthworks	Medium	Low	Low Risk
Construction	Medium	Low	Low Risk
Trackout	Small	Low	Negligible Risk

Step 3: Site-Specific Mitigation

4.12 The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the mitigation measures required to minimise the emission of dust during construction phase activities. The IAQM guidance[16] provides details of highly recommended and desirable mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for construction, earthworks and trackout activities. Where the mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance[16]. The highest risk category identified was 'Medium Risk' and the recommended mitigation taken from the IAQM guidance[16] is detailed in **Table 4.5** and **Table 4.6**.

Table 4.5: Mitigation Measures for a Medium Risk Site

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	None
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	**Desirable**
	be the environmental manager/engineer or the site manager.	
	Display the head or regional office contact information.	
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	
Site Management	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.	None
	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 log book.	
Monitoring	Carry out regular site inspections to monitor compliance with the DMP, record inspections results, and make an inspection log available to the local authority when asked.	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 local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided as necessary.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues 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 the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	None
	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 extended 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 on-site cover as described below.	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	**Desirable**
	Cover, seed or fence stockpiles to prevent wind whipping.	
Operating vehicle/ machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
	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.	None
	Ensure an adequate water supply on 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 and dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Waste Management	Avoid bonfires and burning of waste materials.	None

Table 4.6: Mitigation Measures Specific to Demolition, Earthworks, Construction and Trackout

Category	Mitigation Measures	
	Highly Recommended	Desirable
Earthworks (Medium Risk Site)	None	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
		Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
		Only remove the cover in small areas during work and not all at once.
Construction (Medium Risk Site)	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.	Avoid scabbling (roughening of concrete surfaces) if possible.
		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 power materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout (Low Risk Site)	None	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any materials tracked out of the site. This may require the sweeper being continuously in use.
		Avoid dry sweeping of large areas.
		Ensure vehicles entering and leaving the sites are covered to prevent escape of materials during transport.
		Record all inspections of haul routes and any subsequent action in a site log book.
		Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Step 4: Determine Significant Effects

4.13 In accordance with IAQM guidance[16], with the implementation of the mitigation measures detailed in Step 3, the residual impacts from the construction phase are considered to be 'not significant'.

5. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS SCREENING ASSESSMENT

BMBC Air Quality and Emissions Good Practice Planning Guidance

5.1 BMBC has published its Air Quality and Emissions Good Practice Planning Guidance (2021)[18] and the three stage process detailed in the guidance[18] was undertaken.

Stage 1: Development Type Classification

5.2 The proposed development comprises more than 50 dwellings. Therefore, it meets the criteria set out in the BMBC Air Quality and Emissions Good Practice Planning Guidance for a 'Medium' development. The proposed development does not meet any additional criteria for a 'Major' development and was therefore classified as 'Medium'. In accordance with the BMBC Air Quality and Emissions Good Practice Planning Guidance[18], an exposure assessment is required if the Site is located within an AQMA or within 20m of a road identified as having annual mean NO_2 concentrations at, or above, the current relevant air quality objectives detailed within the DEFRA GIS modelled maps[22].

Stage 2: Air Quality Impact Assessment

5.3 The Site is not located within, or adjacent to, an AQMA and Barnburgh Lane is not identified as a road at or above the current relevant air quality objectives detailed within the DEFRA GIS modelled maps[23]. However in order to provide a conservative assessment, a Site suitability assessment was undertaken to consider exposure for future users of the Site to relevant pollutant concentrations and to determine the suitability of the Site for the proposed residential use.

Qualitative Site Suitability Assessment

5.4 A qualitative assessment was undertaken to consider the potential exposure of the future users of the proposed development to elevated air pollutant concentrations. This was undertaken through a review of local air quality monitoring data and a review of local emissions sources.

5.5 The Site is not located within an existing AQMA. The closest AQMA is located approximately 1.5km north east of the Site along the A635 Doncaster Road. This AQMA is AQMA 7, designated by the neighbouring authority of City of Doncaster Council (CoDC) for potential exceedances of the current annual and hourly mean NO_2 air quality objectives for England.

[22] https://uk-air.Defra.gov.uk/data/gis-mapping/
[23] https://uk-air.Defra.gov.uk/data/gis-mapping/

Nitrogen Dioxide

5.6 BMBC undertake NO_2 monitoring within their administrative areas using a network of continuous monitoring sites and passive diffusion tubes. The closest monitoring location to the Site is DT45. Bias adjusted NO_2 monitoring results are detailed in **Table 5.1**.

5.7 At the time of writing, 2022 monitoring data was not available. Due to the influence of COVID-19 lockdown restrictions on road traffic levels, 2020 and 2021 monitoring data are not considered representative of normal conditions and therefore 2019 monitoring data is considered to be the most representative of 'normal' conditions as detailed in the IAQM position statement[24]. Exceedances of the current air quality objective for England are highlighted in **bold**.

Table 5.1: BMBC NO_2 Monitoring Data in 2015 – 2021

ID	Grid Reference	Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration ($\mu g.m^{-3}$)						
				2015	2016	2017	2018	2019	2020	2021
DT45 (BMBC)	445699 402140	Urban Background	2.1km south west	26.0	24.1	24.8	21.7	22.6	-	-

- Indicates years where no data was available. Data is presented to available accuracy.

5.8 As shown in **Table 5.1**, monitored annual mean NO_2 concentrations were below the current air quality objective of 40µg.m^{-3} between 2015 and 2019, when monitoring data was available to review, and an overall decrease in NO_2 concentrations was identified.

Particulate Matter (PM_{10} and $PM_{2.5}$)

5.9 No PM_{10} or $PM_{2.5}$ monitoring is undertaken within the vicinity of the Site.

Exposure at the Site

5.10 DT45 is classified as an urban background location and is also located on the outskirts of the town of Goldthorpe and away from any major A road. It is therefore considered that the annual mean NO_2 concentrations recorded at DT45 are likely to be representative of the Site. In 2019, which is considered to be the most recent year with representative monitoring data, annual mean NO_2 concentrations are well below the current air quality objective and therefore it is considered that annual mean NO_2 concentrations at the Site will also be below the current air quality objective.

5.11 With regard to PM_{10} and $PM_{2.5}$ no monitoring is undertaken within the vicinity of the Site however background concentrations predicted by Defra[21] for the 1km by 1km grid square that the Site is located in indicate that both PM_{10} and $PM_{2.5}$ background concentrations are below the current relevant air quality objectives for the current year

[24] Institute of Air Quality Management (2018) Position Statement: Dealing with Uncertainty in Vehicle NOx Emissions within Air Quality Assessments, Version 1.1

of 2023. Furthermore, background $PM_{2.5}$ concentrations were below the interim target of 12µg.m^{-3} and the future objective of 10µg.m^{-3}.

5.12 Based on the above, it was considered that the Site is therefore suitable for the proposed residential end use with regard to the current relevant air quality objectives for England.

Stage 3: Mitigation and Compensation

5.13 In accordance with the mitigation guidance provided for 'Medium' developments in the Air Quality and Emissions Good Practice Planning Guidance, Type 1 and Type 2 mitigation is required.

5.14 As defined in the BMBC Air Quality and Emissions Good Practice Planning Guidance[18] , Type 1 mitigation requires one electric vehicle (EV) charging point per dwelling with dedicated parking or one charging point per 10 spaces for unallocated parking. Type 2 mitigation requires a Travel Plan. The proposed development will therefore include one EV charging point per dwelling and the implementation of a Travel Plan.

IAQM AND EPUK Guidance

5.15 The trip generation for the proposed development was screened using IAQM and EPUK Stage 1 and Stage 2 criteria[17] to determine whether a detailed air quality assessment was required.

Stage 1

5.16 The proposed development comprises more than 10 residential units and proposes more than 10 parking spaces; it was therefore necessary to proceed to Stage 2.

Stage 2

5.17 The trip generation for the proposed development was provided by AMA, the Transport Consultants for the project.

5.18 The total trip generation for the proposed development is 513 vehicles as 24- hourAADT flow. This is above IAQM and EPUK criteria[17] however it was confirmed by AMA that, once distributed east and west out of the Site onto Barnburgh Lane, the predicted trip generation will be below the relevant criteria and therefore no single road link will experience an increase in vehicles above the IAQM and EPUK criteria[17] with the proposed development in place. In accordance with IAQM and EPUK guidance, when none of these criteria are met impacts from the development *"can be considered as having an insignificant effect"* on local air quality and a detailed air quality assessment is not required. This approach was agreed with BMBC during consultation.

6. CONCLUSION

6.1 An air quality assessment was undertaken for the proposed residential development comprising 95 dwellings at land off Barnburgh Lane, Goldthorpe.

6.2 A qualitative construction phase assessment was undertaken and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions is considered to be 'not significant' in accordance with IAQM guidance[16].

6.3 The trip generation associated with the proposed development was screened using the two-stage screening approach detailed in the IAQM and EPUK guidance[17]. It was confirmed that, once distributed east and west out of the Site onto Barnburgh Lane, the proposed development trip generation would fall below the relevant criteria. A detailed road traffic emissions assessment was therefore not required, as agreed with BMBC during consultation. The impact of the proposed development on local air quality was determined to be 'not significant', in accordance with IAQM and EPUK guidance[17].

6.4 Following a review of local air quality monitoring data, it was considered that the current relevant air quality objectives for England are unlikely to be exceeded within the Site. The Site was therefore considered to be suitable for the proposed residential use with regard to these objectives.

6.5 Consideration was also given to the BMBC Air Quality and Emissions Good Practice Planning Guidance[18] and the development was categorised and mitigation recommended in accordance with the guidance. Measures included in the development include the provision of a Travel Plan and one Electric Vehicle charging point per dwelling. This is in accordance with the requirements of the BMBC Air Quality and Emissions Good Practice Planning Guidance[18].

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

Term	Definition
AADT	Annual Average Daily Traffic flow.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between two years, which is useful for pollutants that have higher concentrations during the winter months.
AQAP	Air Quality Action Plan.
AQMA	Air Quality Management Area.
AQS	Air Quality Strategy.
Defra	Department for Environment, Food and Rural Affairs.
EPUK	Environmental Protection UK.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
HDV	Heavy Duty Vehicles (HGVs + buses and coaches)
HGV	Heavy Goods Vehicles.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
LDV	Light Duty Vehicles (motorbikes, cars, vans and small trucks)
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides.
Percentile	The percentage of results below a given value.
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
micrograms per cubic metre ($\mu g.m^{-3}$)	A measure of concentration in terms of mass per unit volume. A concentration of $1\mu g.m^{-3}$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

APPENDIX B: PROPOSED DEVELOPMENT MASTERPLAN

Key

- Indicative landscaping
- Existing trees to be retained
- Existing trees to be removed
- Indicates brindle block paviors
- Indicates grey block paviors
- Application boundary
- Indicates affordable housing
- Wall and Fence

Central Green

Arrival Green

Green Corridor

Pumping Station

Shared Drive

Mown Path

Existing Privat

Sub Station

55m

BURGH LANE

MSTEADS

TK

Accommodation Schedule

House Type Name	House Type		NDSS	Sq Ft	Beds	No. of Plots	Total Sq Ft	Bed Percentages	
Affordable Housing									
Avacado	AVDO	Semi/Terr	NDSS	757	2	6	4,542	8	80%
Blueberry	BLUE	Semi/Terr	NDSS	854	2	2	1,708		
Beechwood	BEED	Semi/Terr		835	3	2	1,670	2	20%
				Sub-Total		10	7,920	10	11%
Market Housing									
Acacia	ACIA	Semi/Terr		676	2	5	3,380	17	20%
Avacado	AVA	Semi/Terr	NDSS	757	2	12	9,084		
Beechwood	BAS	Semi		835	3	8	6,680	39	46%
Buckwheat	BUC	Semi/Terr		854	3	3	2,562		
Dandelion	DAN	Semi		995	3	4	3,980		
Chestnut	CHE	Semi		859	3	14	12,026		
Clover	CLO	Semi/Det	NDSS	954	3	4	3,816		
Eucalyptus	EUC	Det	NDSS	1,054	3	6	6,324		
Jamun	JAM	Det	NDSS	1,198	4	0	0	29	34%
Jarrah	JAR	Det	NDSS	1,209	4	3	3,627		
Lavender	LAV	Det	NDSS	1,239	4	10	12,390		
Linden	NEE	Det	NDSS	1,274	4	4	5,096		
Rosemary	ROS	Det	NDSS	1,359	4	12	16,308		
				Sub-Total		85	85,273	85	89%
					Grand Total	95	93,193		

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nineteen47
CHARTERED TOWN PLANNERS & URBAN DESIGNERS

Project
Barnburgh Lane, Goldthorpe

Drawing Title
Planning Layout

Project Code	Drawing Nr	Rev	Drawing Scale
n1982	008	C	1:500 @ A1

APPENDIX C: PLANNING POLICY AND LEGISLATION

National Legislation and Planning Policy

The UK Air Quality Strategy

European Union (EU) legislation forms the basis of air quality policy and legislation in the UK. The EU 2008 ambient Air Quality Directive[1] sets limits for ambient concentrations of air pollutants including nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). The air quality standards and objectives are prescribed through the Air Quality (England) Regulations 2000[2], as amended, for the purpose of the Local Air Quality Management Framework. The Air Quality (England) Regulations were amended in 2002[5] and again in 2010[6], with miscellaneous amendments added in 2020[10] following the UK exit from the EU. Additionally, an updated $PM_{2.5}$ objective was published in 2023[11] with an interim target to be achieved by 2028[11].

The UK Government are required under the Environment Act 1995[3] to produce a national Air Quality Strategy (AQS). The AQS was first published in 1997[7], reviewed and updated in 2007[8] and most recently reviewed and updated in 2023[9]. The AQS provides an overview of the Government's ambient air quality policy and sets out the air quality standards and objectives to be achieved and measures to improve air quality.

The Environment Act 2021[4] was granted Royal Assent in November 2021 and contains amendments to Part IV of the Environment Act 1995[3] with regard to the Local Air Quality Management regime. Under the Environment Act 2021[4], the Secretary of State must lay a statement before Parliament setting out progress made in meeting air quality objectives and standard in England and steps taken towards achieving the standards. The Environment Act 2021[4] also places responsibility on local authorities to co-operate with air quality partners in the preparation of Air Quality Action Plans and identification of measures which should be monitored within the Plan and dates by which they should be implemented.

Part IV of the Environment Act[3] requires local authorities in the UK to review local air quality within their administrative area and, if relevant air quality standards and objectives are likely to be exceeded, designate Air Quality Management Areas (AQMAs). Following the designation of an AQMA, local authorities are required to publish an Air Quality Action Plan (AQAP) detailing measures to be taken to improve local air quality and work towards meeting the relevant air quality standards and objectives.

National Planning Policy Framework

The National Planning Policy Framework (NPPF)[12] was amended in September 2023 and sets out the Government's planning policies for England and how these are expected to be applied.

The NPPF[12] recognises air quality within Section 15: Conserving and enhancing the natural environment, and states that:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *[…]*

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

[…]

Ground conditions and pollution

[…]

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

[…]
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."

With regard to assessing cumulative effects the NPPF[12] states:

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

[...]"

Planning Practice Guidance

The Planning Practice Guidance (PPG) for air quality[13] was updated in November 2019 and provides guiding principles on how the planning process can take account of the impacts of new development on air quality.

The PPG[13] sets out the following with regard to air quality and planning:

- *"What air quality considerations does planning need to address;*
- *What is the role of plan-making with regard to air quality;*

- *Air quality concerns relevant to neighbourhood planning;*
- *What information is available about air quality;*
- *When could air quality considerations be relevant to the development management process;*
- *What specific issues may need to be considered when assessing air quality impacts;*
- *How detailed does an air quality assessment need to be; and*
- *How can an impact on air quality be mitigated*".

The PPG[13] sets out the pollutants for which there are legally binding limits for concentrations and those which the UK also has national emissions reduction commitments.

The PPG[13] states that development plans may need to consider:

- "*what are the observed trends shown by recent air quality monitoring data and what would happen to these trends in light of proposed development and / or allocations;*
- *the impact of point sources of air pollution (pollution that originates from one place);*
- *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments, including their implications for vehicle emissions;*
- *ways in which new development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example, entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable; and*
- *opportunities to improve air quality or mitigate impacts, such as through traffic and travel management and green infrastructure provision and enhancement*".

The PPG[13] also states what may be considered relevant to determining a planning application and these include whether a development would:

- "*Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;*
- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or*

plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;

- *Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value".*

The PPG[13] provides guidance regarding what should be included within an air quality assessment. Examples of potential air quality mitigation measures are also provided.

Local Planning Policy

BMBC adopted the Local Plan in January 2019 which outlines BMBC's planning framework and approach to development. The following policies are relevant in relation to air quality.

Barnsley Local Plan (2019)[14]

'Policy AQ1 Development in Air Quality Management Areas…
Development which impacts on areas sensitive to air pollution in air quality management areas will be expected to demonstrate that it will not have a harmful effect on the health or living conditions of any future users of the development in terms of air quality (including residents, employees, visitors and customers), taking into account any suitable and proportionate mitigation required for the development.

We will only allow residential development which impacts on areas sensitive to air pollution, where the developer provides an assessment that shows living conditions will be acceptable for future residents, subject to any required mitigation.

We will only allow development which impacts on areas sensitive to air pollution which could cause more air pollution, where the developer provides an assessment that shows there will not be a significantly harmful effect on air quality, subject to any required mitigation.

Furthermore, development which impacts on areas sensitive to air pollution due to traffic emissions will be expected to demonstrate suitable and proportionate mitigation relative to the increased traffic emissions generated by the development.`

The above policy was taken into consideration throughout the undertaking of the assessment.

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