Air Quality Assessment

Summerland Street Co-living Accommodation, Exeter

10268.3

16th March 2023

Revision A

Summerland Street Co-living Accommodation, Exeter

Air Quality Assessment

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1 Contents

2 Summary

2.1 This report has been prepared in support of a proposed residential-led development on land off Summerland Street, Exeter.

2.2 The development may lead to adverse impacts at sensitive positions during the construction and operational phases, as well as the exposure of future residents to poor air quality. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions, consider location suitability for the proposed end-use and assess potential effects as a result of the scheme.

2.3 Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of demolition, earthworks, construction and trackout activities. The results were utilised to identify suitable mitigation for inclusion in a Construction Environmental Management Plan or similar. It is considered that the use of these good practice control measures would ensure impacts are minimised throughout construction.

2.4 During the operational phase of the development there is the potential for air quality impacts as a result of traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the relevant screening criteria. As the development does not include any car parking provision, road traffic exhaust impacts were not predicted to be significant. Additional mitigation is therefore not required.

2.5 The potential for the exposure of future residents to poor air quality was assessed based on the results of a desk-top study. This indicated that concentrations are likely to be below the relevant criteria at the development location. As such, the site is considered suitable for the proposed use from an air quality perspective without the inclusion of specific mitigation.

2.6 Based on the assessment results, air quality issues are not considered a constraint to planning consent for the proposal.

3 Introduction

3.1 Background

3.2 This report relates to a proposed residential-led development on land off Summerland Street, Exeter.

3.3 The development may lead to adverse impacts at sensitive positions during the construction and operational phases, as well as the exposure of future residents to poor air quality. As such, an Air Quality Assessment was undertaken to determine baseline conditions, assess potential effects associated with the scheme and consider the suitability of the site for the proposed end-use.

3.4 Site Location and Context

3.5 The site is located on land off Summerland Street, Exeter, at approximate National Grid Reference (NGR): 292655, 93089. Reference should be made to Figure 1 for a map of the site and surrounding area.

3.6 The proposals comprise demolition of the existing structures and subsequent construction of a seven-storey building to provide three commercial units at ground floor level and 199 studio flats with co-living/co-working space from first floor and above.

3.7 The development has the potential to cause impacts at sensitive locations. These may include fugitive dust emissions during construction and road traffic exhaust emissions from vehicles travelling to and from the site during operation. There is also the potential for the exposure of future residents to any existing air quality issues at the site. An Air Quality Assessment was therefore undertaken in order to determine baseline conditions, assess potential effects associated with the scheme and consider the suitability of the site for the proposed end-use. This is detailed in the following report.

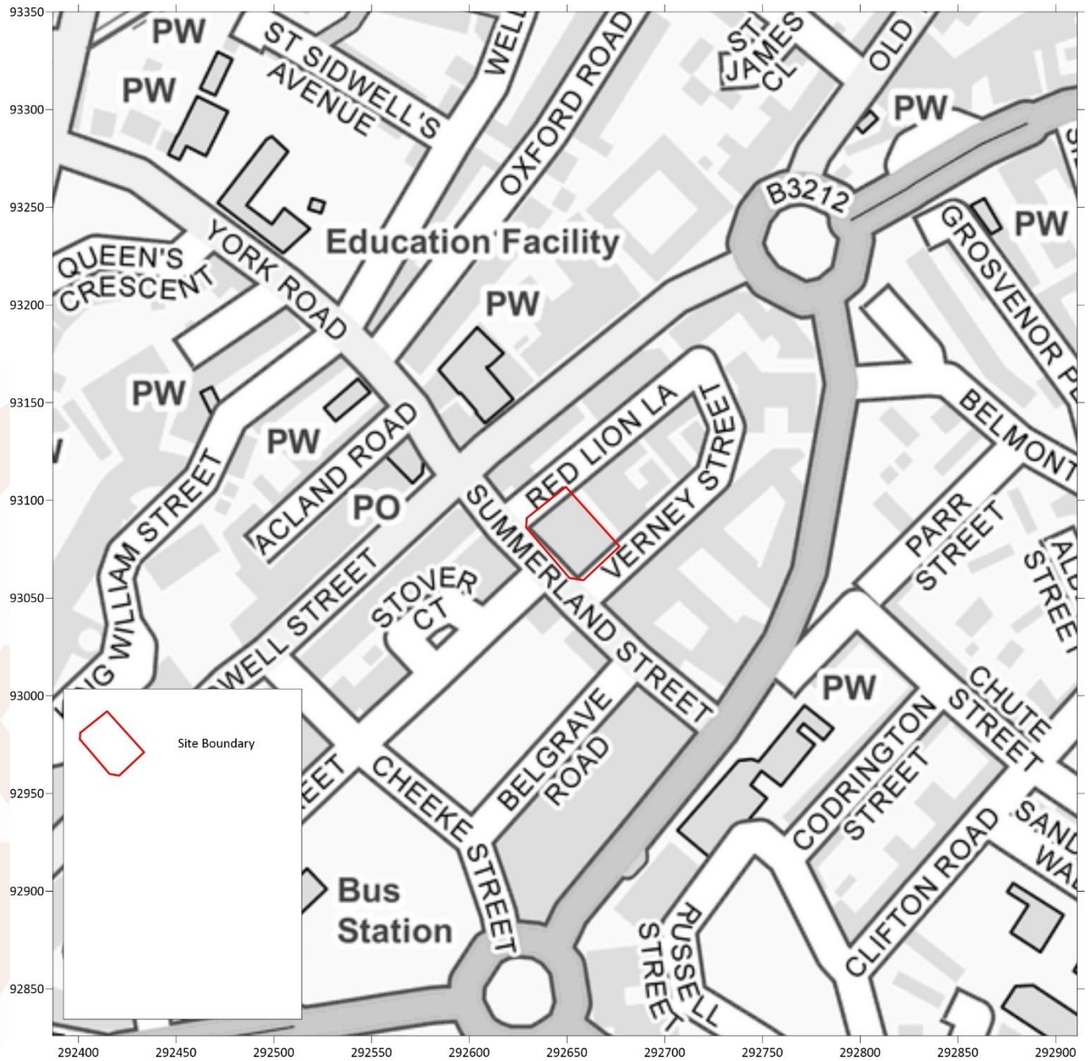

Figure 1: Site Location Plan

4 Legislation and Policy

4.1 UK Legislation

4.2 The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide (NO_2);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM_{10});
- Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$);
- Benzene; and,
- Carbon monoxide.

4.3 Air Quality Target Values were also provided for several additional pollutants. It should be noted that the AQLV for $PM_{2.5}$ stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).

4.4 The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007[1]. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

4.5 The Environmental Improvement Plan 2023[2] was published in January 2023, providing long term and Interim Targets in order to reduce population exposure of $PM_{2.5}$. The concentration target for 2040 was subsequently adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

4.6 Note: (a) Interim Target to be achieved by end of January 2028.

4.7 Table 1 presents the AQOs and Interim Target for pollutants considered within this assessment.

Pollutant	Air Quality Objective/Interim Target	
	Concentration (µg/m^3)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM_{10}	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
$PM_{2.5}$	12[(a)]	Annual mean

Note: (a) Interim Target to be achieved by end of January 2028.

Table 1: Air Quality Objectives/Interim Target

4.8 Table 2 summarises the advice provided in DEFRA guidance[3] on where the AQOs for pollutants considered within this report apply.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of 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 mean	All locations where the annual mean objective would apply, together with hotels	Kerbside sites (as opposed to locations at the building façade), or any other location

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
	Gardens of residential properties	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

Table 2: Examples of Where the Air Quality Objectives Apply

4.9 **Local Air Quality Management**

4.10 Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

4.11 **Dust**

4.12 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

"any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

4.13 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

4.14 **National Planning Policy**

4.15 The revised National Planning Policy Framework[4] (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

4.16 The purpose of the planning system is to contribute to the achievement of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

"c. An environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

4.17 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It 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 […]"

4.18 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

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

4.20 **National Planning Practice Guidance**

4.21 The National Planning Practice Guidance (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019[5] to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

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

4.23 **Local Planning Policy**

4.24 Exeter City Council (ECC) adopted the Core Strategy[6] on 21st February 2012. The document sets out the policies used to guide future development and change in the city for the period up to 2026. A review of the Core Strategy identified the following policy of relevance to this report:

"CP11: Development should be located and designed so as to minimise and if necessary, mitigate against environmental impacts. Within the Air Quality Management Area shown on the following map, measures to reduce pollution and meet air quality objectives, that are proposed by the Local Transport Plan and the Air Quality Action Plan, will be brought forward."

4.25 The Core Strategy replaced a significant number of policies included in the Local Plan First Review 1995-2011[7]. However, a number of policies were saved. These included the following of relevance to the report:

"EN1: Development that may be liable to cause pollution, including proposals which allow the use, movement or storage of hazardous substances will only be permitted if:

The health, safety and amenity of users of the site or surrounding land are not put at risk; and

The quality and enjoyment of the environment would not be damaged or put at risk, development on or in the vicinity of the site that may be liable to cause pollution will only be permitted if there is no unacceptable risk to the health and safety of its users."

"EN3: Development that would harm air or water quality will not be permitted unless mitigation measures are possible and are incorporated as part of the proposal."

4.26 The above policies have been considered as necessary throughout the assessment.

5 Methodology

5.1 The proposed development has the potential to cause air quality impacts during the construction and operational phases, as well as expose future residents to any existing air quality issues at the site. These factors have been assessed in accordance with the following methodology, which was agreed with Alex Bulleid, Senior Environmental Technical Officer at ECC, on 23rd November 2022.

5.2 **Construction Phase Fugitive Dust Emissions**

5.3 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V1.1'[8].

5.4 Activities on the proposed construction site have been divided into four types to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and,
- Trackout.

5.5 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and,
- The risk of health effects due to a significant increase in exposure to PM_{10}.

5.6 The assessment steps are detailed below.

Step 1

5.7 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 350m of the boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route, then the assessment also proceeds to Step 2.

5.8 Should sensitive receptors not be present within the relevant distances then **negligible** impacts would be expected and further assessment is not necessary.

Step 2

5.9 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

5.10 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

5.11 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 3.

Magnitude	Activity	Criteria
Large	Demolition	Total volume of building to be demolished greater than 50,000m^3 Potentially dusty material (e.g. concrete) On-site crushing and screening Demolition activities more than 20m above ground level
	Earthworks	Total site area greater than 10,000m^2 Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) More than 10 heavy earth moving vehicles active at any one time Formation of bunds greater than 8m in height More than 100,000 tonnes of material moved
	Construction	Total building volume greater than 100,000m^3 On site concrete batching

Magnitude	Activity	Criteria
		Sandblasting
	Trackout	More than 50 Heavy Duty Vehicle (HDV) trips per day Potentially dusty surface material (e.g. high clay content) Unpaved road length greater than 100m
Medium	Demolition	Total volume of building to be demolished between 20,000m^3 - 50,000m^3 Potentially dusty construction material Demolition activities more than 10 - 20m above ground level
	Earthworks	Total site area 2,500m^2 to 10,000m^2 Moderately dusty soil type (e.g. silt) 5 to 10 heavy earth moving vehicles active at any one time Formation of bunds 4m to 8m in height Total material moved 20,000 tonnes to 100,000 tonnes
	Construction	Total building volume 25,000m^3 to 100,000m^3 Potentially dusty construction material (e.g. concrete) On site concrete batching
	Trackout	10 to 50 HDV trips per day Moderately dusty surface material (e.g. high clay content) Unpaved road length 50m to 100m
Small	Demolition	Total volume of building to be demolished less than 20,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities less than 10m above ground and during wetter months
	Earthworks	Total site area less than 2,500m^2 Soil type with large grain size (e.g. sand) Less than 5 heavy earth moving vehicles active at any one time Formation of bunds less than 4m in height Total material moved less than 20,000 tonnes Earthworks during wetter months
	Construction	Total building volume less than 25,000m^3 Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	Less than 10 HDV trips per day Surface material with low potential for dust release Unpaved road length less than 50m

Table 3: Construction Dust - Magnitude of Emission

5.12 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors are shown in Table 4.

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	Users expect of high levels of amenity High aesthetic or value property People expected to be present continuously for extended periods of time Locations where members of the public are exposed over a time period relevant to the AQO for PM_{10}. e.g. residential properties, hospitals, schools and residential care homes	Internationally or nationally designated site e.g. Special Area of Conservation
Medium	Users would expect to enjoy a reasonable level of amenity Aesthetics or value of their property could be diminished by soiling People or property wouldn't reasonably be expected to be present here continuously or regularly for	Nationally designated site e.g. Sites of Special Scientific Interest

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
	extended periods as part of the normal pattern of use of the land e.g. parks and places of work	
Low	Enjoyment of amenity would not reasonably be expected Property would not be expected to be diminished in appearance Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads	Locally designated site e.g. Local Nature Reserve

Table 4: Construction Dust - Factors Defining Sensitivity of an Area

5.13 The guidance also provides the following factors to consider when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

5.14 These factors were considered during the undertaking of the assessment.

5.15 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 5.

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

Table 5: Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

5.16 Table 6 outlines the criteria for determining the sensitivity of the area to human health impacts.

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
High	Greater than 32µg/m³	More than 100	High	High	High	Medium	Low
		10 - 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32µg/m³	More than 100	High	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28µg/m³	More than 100	High	Medium	Low	Low	Low
		10 - 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	Less than 24µg/m³	More than 100	Medium	Low	Low	Low	Low
		10 - 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	Greater than 32µg/m³	More than 10	High	Medium	Low	Low	Low

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			Less than 20	Less than 50	Less than 100	Less than 200	Less than 350
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32µg/m^3	More than 10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	Less than 24µg/m^3	More than 10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low	Low

Table 6: Construction Dust - Sensitivity of the Area of Human Health Impacts

5.17 Table 7 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Receptor Sensitivity	Distance from the Source (m)	
	Less than 20	Less than 50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table 7: Construction Dust - Sensitivity of the Area to Ecological Impacts

5.18 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

5.19 Table 8 outlines the risk category from demolition activities.

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Medium
Medium	High	Medium	Low
Low	Medium	Low	Negligible

Table 8: Construction Dust - Dust Risk Category from Demolition Activities

5.20 Table 9 outlines the risk category from earthworks and construction activities.

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Table 9: Construction Dust - Dust Risk Category from Earthworks and Construction Activities

5.21 Table 10 outlines the risk category from trackout activities.

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Low	Negligible
Low	Low	Low	Negligible

Table 10: Construction Dust - Dust Risk Category from Trackout Activities

Step 3

5.22 Step 3 requires the identification of site specific mitigation measures within the IAQM guidance[8] to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4

5.23 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be **not significant**.

5.24 **Operational Phase Road Vehicle Exhaust Emissions**

5.25 The development has the potential to impact on existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site. A screening assessment was therefore undertaken using the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'[9] document to determine the potential for trips generated by the development to affect local air quality.

5.26 The following criteria are provided to help establish when an assessment of potential impacts on the local area is likely to be considered as necessary:

A. If any of the following apply:

- 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.

B. 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.

5.27 Should these criteria not be met, then the IAQM guidance[9] considers air quality impacts associated with a scheme to be **not significant** and no further assessment is required.

5.28 Should screening of the relevant data indicate that any of the above criteria are met, then potential impacts at sensitive receptor locations can be assessed by calculating the change in pollutant concentrations as a result of the proposed development. The significance of predicted impacts can then be determined in accordance with the methodology outlined in the IAQM guidance[9].

5.29 **Operational Phase Potential Future Exposure**

5.30 The proposed development comprises residential land use. This is considered a location of relevant exposure for long term and short term AQOs in accordance with the advice provided within DEFRA guidance[3], as summarised in Table 2. Existing air quality conditions at the site were therefore assessed through consideration of the following factors:

- AQMA designations;
- Proximity to significant pollution sources;
- Local monitoring results; and,
- Background pollutant concentration predictions.

5.31 The findings were subsequently used to determine the potential for AQO exceedence at the development location. Should the assessment indicate significant uncertainty over air quality conditions at the site then further quantitative methods, such as detailed dispersion modelling, could be utilised to refine the predictions.

6 Baseline

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

6.2 **Local Air Quality Management**

6.3 As required by the Environment Act (1995), as amended by the Environment Act (2021), ECC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that 1-hour and annual mean concentrations of NO_2 are above the relevant AQOs within the city. As such, one AQMA has been declared. This is described as follows:

"An area encompassing the radial routes into the city and other major routes"

6.4 The AQMA is located approximately 30m north-west of the development site. As such, there is the potential for vehicles travelling to and from the development to increase pollution levels in this sensitive area. This has been considered throughout the assessment.

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

6.6 **Air Quality Monitoring**

6.7 Monitoring of pollutant concentrations is undertaken by ECC throughout their area of jurisdiction. Recent NO_2 results recorded in the vicinity of the development are shown in Table 11.

Monitoring Site		Monitored NO_2 Concentration (µg/m³)		
		2019	2020	2021
DT38	York Road School	27.7	18.1	23.0
DT39	York Road	36.2	23.3	31.2
DT77	Sidwell Street	31.1	18.6	23.8

Table 11: Monitoring Results

6.8 As shown in Table 11, annual mean NO_2 concentrations were below the AQO of 40µg/m³ at all monitoring locations in 2019. Reference should be made to Figure 2 for a map of the survey positions.

6.9 Pollutant concentrations during 2020 and 2021 were lower than previous years due to a reduction in traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.

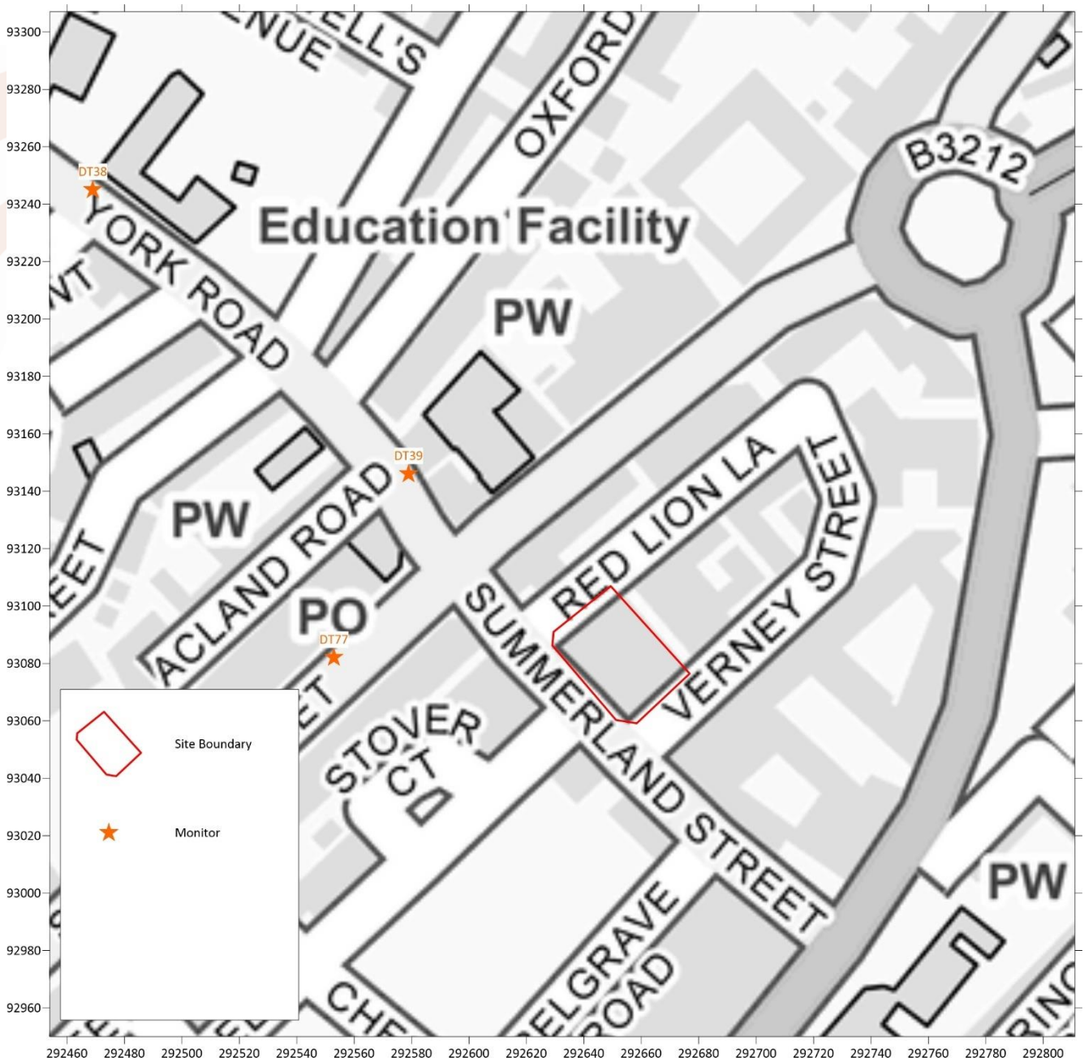

Figure 2: Monitoring Locations

6.10 Background Pollutant Concentrations

6.11 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is located in grid square: 292500, 93500. Data for this location was downloaded from the DEFRA website[10] for the purpose of the assessment and is summarised in Table 12.

Pollutant	Predicted 2023 Background Concentration (µg/m³)
NO_2	8.93
PM_{10}	10.72
$PM_{2.5}$	7.08

Table 12: Background Pollutant Concentrations

6.12 As shown in Table 12 predicted background NO_2, PM_{10} and $PM_{2.5}$ concentrations are well below the relevant AQOs and Interim Target at the development site.

7 Assessment

7.1 Introduction

7.2 There is the potential for air quality impacts as a result of the construction and operation of the proposed development, as well as exposure of future residents to any existing air quality issues at the site. These factors are assessed in the following Sections.

7.3 Construction Phase Fugitive Dust Emissions

Step 1

7.4 The undertaking of activities such as demolition, excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from haul roads and highway surfaces.

7.5 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

7.6 Receptors sensitive to potential dust impacts during demolition, earthworks and construction were identified from a desk-top study of the area up to 350m from the development boundary. These are summarised in Table 13.

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Less than 20	More than 100	0
Less than 50	More than 100	0
Less than 100	More than 100	-
Less than 350	More than 100	-

Table 13: Demolition, Earthworks and Construction Dust Sensitive Receptors

7.7 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 500m of the site access. These are summarised in Table 14.

Distance from Site Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Less than 20	More than 100	0
Less than 50	More than 100	0

Table 14: Trackout Dust Sensitive Receptors

7.8 There are no ecological receptors within 50m of the development boundary or access route within 500m of the site entrance. As such, ecological impacts have not been assessed further within this report.

7.9 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 15.

Guidance	Comment
Whether there is any history of dust generating activities in the area	A review of Google Maps imagery indicated a number of developments are currently being constructed within the vicinity of the site. It is therefore possible that these may have caused dust generation in the area over recent months
The likelihood of concurrent dust generating activity on nearby sites	A review of the planning portal indicated a number of developments within 700m of the site have been granted planning permission. It is therefore possible that these schemes will result in concurrent dust generation in the area should the construction phases overlap with that of the proposals
Pre-existing screening between the source and the receptors	There is no significant screening around the site boundary
Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place	As shown in 3, the predominant wind bearing at the site is from the south with significant frequencies from north-west. As such, receptors to the north and south-east of the development are most likely to be affected by dust releases

Guidance	Comment
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion
Duration of the potential impact, as a receptor may become more sensitive over time	Currently it is unclear as to the duration of the construction phase. However, it is possible that it will extend over one year. The sensitivity of nearby receptors is unlikely to change during this time
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities identified during the baseline assessment

Table 15: Additional Area Sensitivity Factors to Potential Dust Impacts

7.10 Dust sensitive receptors within 350m of the development site include residential properties. These are considered to be of **high** sensitivity in accordance with the criteria outlined in Table 4.

7.11 The sensitivity of the receiving environment to specific potential dust impacts, based on the criteria shown in Section 5, is shown in Table 16.

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Medium	Medium	Medium	Medium

Table 16: Sensitivity of the Surrounding Area to Potential Dust Impacts

7.12 The potential risk of dust impacts at the identified receptors is considered in the following Sections.

Step 2

Demolition

7.13 Demolition will be undertaken at the start of the construction phase and will involve clearance of existing buildings on site. It is estimated that the total building volume to be demolished is less than 20,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from demolition is therefore **small**.

7.14 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 8, the development is considered to be a **medium** risk site for dust soiling as a result of demolition.

7.15 Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 8, the development is considered to be a **low** risk site for human health impacts as a result of demolition activities.

Earthworks

7.16 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed development site covers an area of less than 2,500m^2. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **small**.

7.17 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for dust soiling as a result of earthworks.

7.18 Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for human health impacts as a result of earthworks.

Construction

7.19 It is estimated that the total building volume will be less than 25,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **small**.

7.20 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for dust soiling as a result of construction activities.

7.21 Table 16 indicates the sensitivity of the area to human health impacts is **medium**. In accordance with the criteria outlined in Table 9, the development is considered to be a **low** risk site for human health impacts as a result of construction activities.

Trackout

7.22 Due to the existing hard standing provision, it is anticipated that the unpaved road length is likely to be less than 50m. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **small**.

7.23 Table 16 indicates the sensitivity of the area to dust soiling effects on people and property is **high**. In accordance with the criteria outlined in Table 10, the development is considered to be a **low** risk site for dust soiling as a result of trackout activities.

7.24 Table 16 indicates the sensitivity of the area to human health impacts is **medium.** In accordance with the criteria outlined in Table 10, the development is considered to be a **negligible** risk site for human health impacts as a result of trackout activities.

Summary of Potential Unmitigated Dust Risks

7.25 A summary of the risk from each dust generating activity is provided in Table 17.

Potential Impact	Unmitigated Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Low	Low	Low
Human Health	Low	Low	Low	Negligible

Table 17: Summary of Potential Unmitigated Dust Risks

7.26 As indicated in Table 17, the potential risk of dust soiling is **medium** from demolition and **low** from earthworks, construction and trackout. The potential risk of human health impacts is **low** from demolition, earthworks and construction and **negligible** from trackout.

7.27 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase.

Step 3

7.28 The IAQM guidance[8] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 18. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan if required by the LA.

Issue	Control Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary 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 LA
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 Make the complaints log available to the LA upon request Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
Monitoring	Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
Site preparation	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 they are active for an extensive period Keep site fencing, barriers and scaffolding clean using wet methods Avoid site runoff of water or mud Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used Cover, seed or fence stockpiles to prevent wind-whipping

Issue	Control Measure
Operating vehicle/ machinery and sustainable travel	Ensure all construction related 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
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques Ensure an adequate water supply on site for effective dust suppression techniques Use enclosed chutes and conveyors and covered skips Minimise drop heights and use fine water sprays wherever appropriate Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
Waste management	Avoid bonfires or burning of waste materials
Demolition	Ensure water suppression is used during demolition operations Avoid explosive blasting, using appropriate manual or mechanical alternatives Bad and remove any biological debris or damp down such material before demolition
Construction	Avoid scabbling, if possible Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out 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
Trackout	Use water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of site Avoid dry sweeping of large areas Ensure vehicles entering and leaving site are covered to prevent escape of materials

Table 18: Fugitive Dust Emission Mitigation Measures

Step 4

7.29 Assuming the relevant mitigation measures outlined in Table 18 are implemented, the residual impact from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance[8].

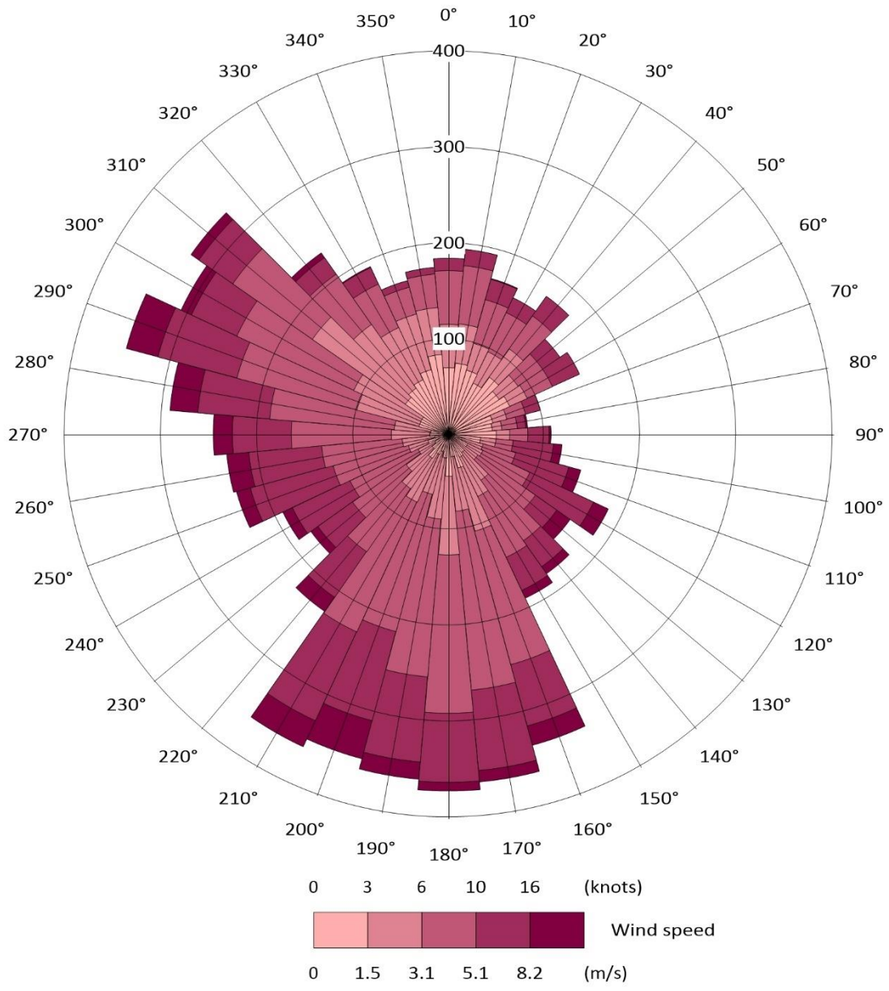

Figure 3: Wind Rose of 2019 Exeter Meteorological Data

7.30 **Operational Phase Road Vehicle Exhaust Emissions**

7.31 Any traffic generated by the development will produce exhaust emissions on the local and regional road networks. However, the proposals do not include any car parking spaces. As such, potential air quality impacts associated with operational phase road vehicle exhaust emissions are predicted to be **not significant**, in accordance with the IAQM screening criteria shown in Section 3.3.

7.32 **Operational Phase Potential Future Exposure**

7.33 The scheme comprises residential land use and therefore may introduce new receptors into an area of poor air quality. As such, existing conditions at the site are considered in the following Sections.

7.34 *AQMA Designations*

7.35 The site is located approximately 30m north-west of the AQMA which has been declared due to exceedences of the 1-hour and annual mean AQOs for NO_2. The designation does not cover annual or 24-hour mean PM_{10} concentrations, indicating exceedences of these AQOs have not been identified within the city. As such, they have not been considered further in the context of this assessment.

7.36 As the proposed development is located within a residential area it would be anticipated that there would be a need for an AQMA to cover nearby housing if exceedences of the AQOs had been recorded or predicted locally. As this is not the case, it is considered that exceedences of the AQOs are unlikely to occur at the development location.

7.37 *Proximity to Significant Pollution Sources*

7.38 A desk-top study was undertaken in order to identify any significant pollution sources within the vicinity of the site. The findings are provided in Table 19.

Source	Distance to Site (m)	Comment
Summerland Street	Adjacent	Summerland Street is an unclassified minor road and volumes of traffic are likely to be low
Red Lion Lane/Verney Street	Adjacent	Red Lion Lane/ Verney Street is an unclassified minor road and volumes of traffic are likely to be very low
Western Way	90	Western Way is a classified minor B Road with an Annual Average Daily Traffic Flow (AADT) of 21,191 and HDV proportion of fleet of 1.9% in 2019[11]
Sidwell Street	30	Sidwell Street is an unclassified minor road and volumes of traffic are likely to be low

Table 19: Significant Pollution Sources

7.39 As shown in Table 19, there are a number of road vehicle emission sources within the vicinity of the site. Summerland Street, Red Lion Lane/Verney Street and Sidwell Street are all minor in nature and are unlikely to contribute significantly to pollution levels above background. Western Way is likely to contribute to elevated concentrations close to the kerb. However, given the distance between the aforementioned road and the development, levels are likely to be significantly lower and closer to background concentrations across the site.

7.40 *Local Monitoring Results*

7.41 There are three monitors located within the vicinity of the site. The DT38 and DT39 monitors are located approximately 220m and 75m north-west of the site boundary, respectively. Additionally, the DT77 monitor is positioned on a minor road, approximately 75m west of the site. As shown in Table 11, the recorded annual mean concentrations at these locations were below the AQO of 40µg/m^3 during 2019. As the site is located on Summerland Street, which is also minor in nature, similar concentrations would be anticipated for the development location.

7.42 Based on the above, exceedences of the annual mean AQO for NO_2 are not predicted at the development.

7.43 *Background Pollutant Concentrations*

7.44 As shown in Table 12, predicted background pollutant concentrations for the grid square containing the site are below the annual mean AQOs for NO_2 and PM_{10} during 2023.

7.45 Based on the predicted concentrations, exceedences of the relevant criteria are considered unlikely at the development location.

7.46 *Summary*

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

- The site is not located within an AQMA;
- The site is distanced from major pollutant sources;
- Local monitoring results indicate annual mean NO_2 concentrations below the relevant AQO; and,
- Predicted background concentrations are below the relevant AQOs.

7.48 Based on the assessment results, exposure of future residents to exceedences of the relevant AQOs is not considered likely. As such, the site is considered suitable for the proposed end-use from an air quality perspective without the inclusion of mitigation.

8 Conclusion

8.1 This report has been prepared in support of a proposed residential-led development on land off Summerland Street, Exeter.

8.2 The proposed development has the potential to cause air quality impacts during the construction and operational phases, as well as expose future residents to any existing air quality issues. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions, consider location suitability for the proposed end-use and assess potential effects as a result of the scheme.

8.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by demolition, earthworks, construction and trackout activities was predicted to be **not significant**.

8.4 Potential impacts during the operational phase of the proposed development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. These were assessed against the screening criteria provided within the IAQM[7] guidance document. As the development does not include any car parking provision, road traffic exhaust impacts were predicted to be **negligible**.

8.5 The potential for exposure of future residents to exceedences of the AQOs was assessed based on AQMA designations, proximity of pollution sources to the site, local monitoring results and background pollutant concentration predictions. This indicated that concentrations of NO_2 and PM_{10} are likely to be below the relevant AQOs at the development location. As such, the site is considered suitable for the proposed use from an air quality perspective without the inclusion of specific mitigation.

8.6 Based on the assessment results, air quality issues are not considered a constraint to planning consent for the development.

9 References

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

2 Environmental Improvement Plan 2023, DEFRA, 2023

3 Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022

4 NPPF, Ministry of Housing, Department for Communities and Local Government, 2021

5 http://www.gov.uk/guidance/air-quality--3

6 Exeter Core Strategy, ECC, 2012

7 Local Plan First Review 1995-2011, ECC, 2005.

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

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

10 http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

11 Department for Transport, https://roadtraffic.dft.gov.uk/manualcountpoints/809622