Applicant: Kirklees Council
Building: George Hotel
L054-AHR-XX-XX-RP-A-08810
Air Quality Assessment (With addendum)
Revision P1 (Planning and LBC)

April 2025

Kirklees Council
George Hotel

Air Quality Assessment
(With Addendum)

Revision P1

Addendum Statement

This report was originally prepared on behalf of Kirklees Council to accompany application ref: 2023/65/90112/E

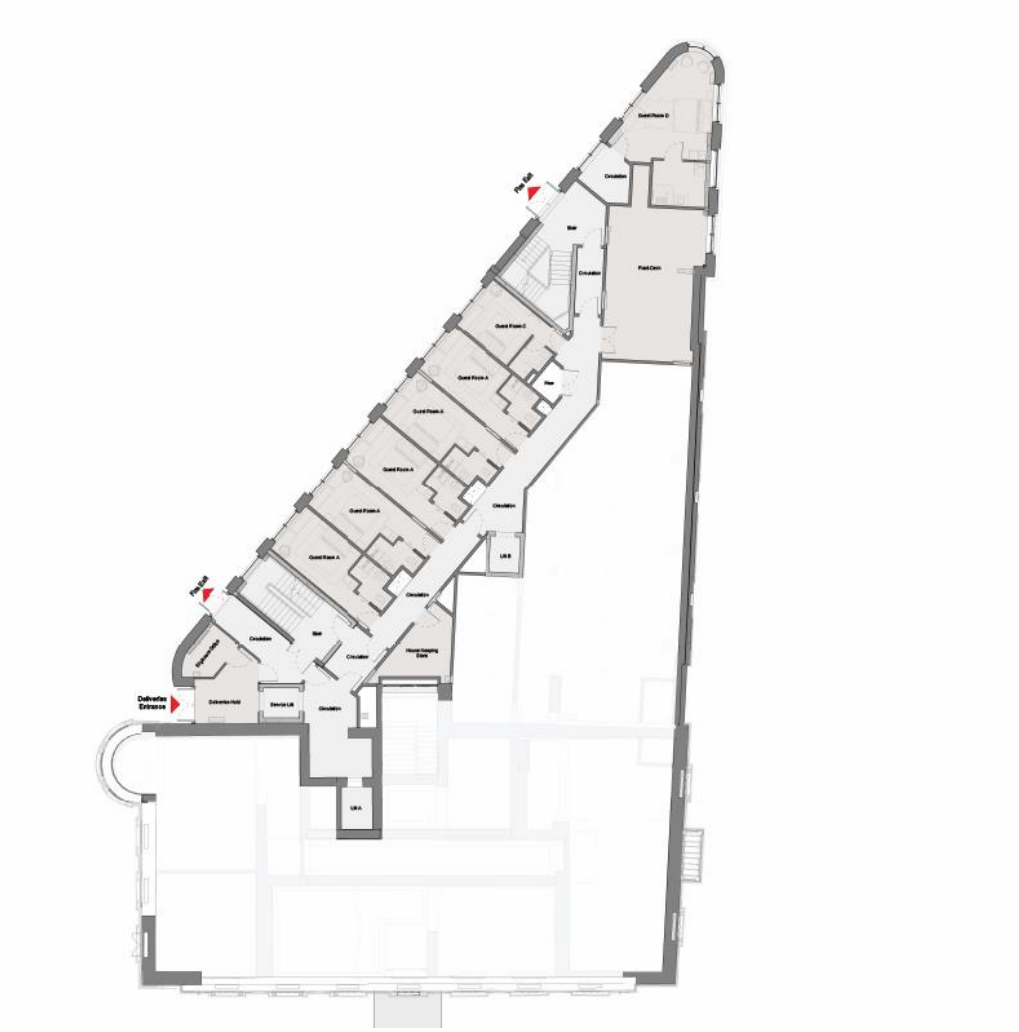
The applicant has requested that this be resubmitted with addendum to schedule and clarify relevant design and commitment changes which may be pertinent to relevant statutory consulting parties.

We confirm the following addendum/ amendments to this previous submission:

- 2.3 – Redacted – replace with:
    - **2.3 Proposed Development -** The Proposed Development comprises retention of Block A, rebuilding Block B entirely and rebuilding the internal walls of Block C (And deconstruction/ reconstruction of the John William St Block B Façade). In total 108 bedrooms will be provided across four floors alongside a banqueting/events space, a bar/restaurant, gym, and conferencing facilities. There will be no car parking provision. The ground floor development layout is show in Figure 7-1.

- 6.1 – Redacted – Replace with
    - **6.1 Construction Stage Assessment – Introduction.** A 68 week construction programme is proposed for the development to be completed by July 2026. There are sensitive receptors in close proximity to the site including the Huddersfield Train Station Car Park where cars may be affected by dust soiling but it is noted the car park is currently part of the Northern Trans-Pennine upgrades site setup and likely to be so for the duration of the works. It is noted that other receptors to construction dust are St Georges square and places of work along John William St where people would expect to enjoy a reasonable level of amenity.

- 7.2 – Redacted – Replace with:
    - **Figure 7-1 Proposed Ground Floor Layout**
    - A total of 108 bedrooms are proposed with five bedrooms on the ground floor (mezzanine between Ground and First Floor), all of which are located away from John William Street as shown in Figure 7-1



- **Figure 7-1 Proposed Ground / Mezzanine Floor Layout**

Revised Air Quality Assessment (Redacted)

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GEORGE HOTEL
AIR QUALITY ASSESSMENT

RAMBOLL

GEORGE HOTEL
AIR QUALITY ASSESSMENT

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Ramboll
Cornerblock
Two Cornwall Street
Birmingham
B3 2DX
United Kingdom
T +44 121 230 1650
www.ramboll.co.uk

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EXECUTIVE SUMMARY

Ramboll UK Limited has been commissioned to undertake an air quality assessment in support if the planning application for the Proposed Development of George Hotel in Huddersfield. The Site is an existing grade II listed hotel.

The assessment of potential impacts to air quality during the construction phase has identified that construction activities, together with the location of nearby sensitive receptors results in a low risk for dust soiling effects in relation to demolition, earthworks, construction, and trackout activities. The dust risk for health effects is predicted to be negligible for demolition, earthworks and construction activities and low risk for trackout activities.

Dust impacts would be effectively controlled through the use of suitable mitigation measures outlined in this report which should be implemented through the provision of a Construction Environmental Management Plan which should be agreed with Kirklees Metropolitan Council prior to the start of construction. With mitigation in place the construction effects would not be significant

The Proposed Development does not provide car parking on Site. Therefore, development vehicle emissions have been scoped out of this assessment. Hotel guests would be expected to travel to Site either by sustainable modes such as train or park off-site in existing car parks throughout Huddersfield, thereby spreading the impacts across a wide area.

The energy strategy for the building proposes air source heat pumps and mechanical ventilation with heat recovery. As assessment of combustion plant/energy centre emissions has therefore been scoped out.

The suitability of the Site for its proposed use as a hotel has been assessed with reference to the short-term National Air Quality Objectives which are applicable for the interned use.

Available monitoring data indicates that concentrations of NO_2 are likely to be below 60 µg/m^3 and therefore meet the short term national air quality objectives at the development Site when it is operational in 2024. The Site is suitable for the proposed use without the need for mitigation.

INTRODUCTION

Ramboll UK Limited (Ramboll) has been commissioned by Bowman Riley Architects to undertake an air quality assessment of the Proposed Development at The George Hotel in Huddersfield (the 'Site'). The Proposed Development comprises a façade retention scheme for a 91-bedroom hotel with air source heat pumps and mechanical ventilation with heat recovery. There will be no parking provision.

1.1 Key Air Quality Considerations

Key air quality considerations include potential air quality impacts associated with the construction and operational phases of the Proposed Development which are outlined below.

- Construction Stage: Construction activities have the potential to generate fugitive dust emissions which may give rise to annoyance due to the soiling of surfaces, risk of health effects due to the increase in exposure to PM_{10} concentrations and damage to vegetation and ecosystems (where very high levels of soiling occur).

  Operational Stage: Future users of the Proposed Development may be exposed to elevated pollutant concentrations and mitigation may necessary if air quality objectives are exceeded.

1.2 Scope of Assessment

This report describes existing air quality within the study area, assesses the impact of the construction and operation of the development on air quality in the surrounding area, and considers the suitability of the Site for the Proposed Development. The assessment focuses on NO_2 and particulate matter PM_{10} and $PM_{2.5}$.

In summary, the assessment includes:

- Establishment of baseline air quality with the available monitoring data and information presented in the Council's Air Quality Review and Assessment reports;
- Qualitative assessment of construction dust impacts, based on Institute of Air Quality Management (IAQM) guidance, identifying appropriate construction mitigation measures based on the identified level of risk; and
- Comparison of traffic generation with recognised thresholds to demonstrate that the development will have an insignificant impact on local air quality; and
- A qualitative assessment to demonstrate that the Site is suitable for the proposed use based on baseline conditions, identify whether mitigation is required and propose appropriate mitigation measures where necessary. Annual mean air quality objectives (NAQOs) do not generally apply at Hotels unless used as a permanent residence, however short-term objectives would apply.

A number of elements were scoped out of this assessment as detailed in the following section.

1.1.1 Elements Scoped Out of the Assessment

Construction Stage Traffic Emissions

At the time of writing, detailed information regarding the construction methodology for the development, specific activities and traffic movements are not available. However, it is recommended that outline measures to control and minimise the risk of adverse effects from construction activities are outlined in a Construction Environmental Management Plan (CEMP). The CEMP will be submitted to Kirklees Metropolitan Council (KMC) or their approval. The CEMP will consider Heavy Goods Vehicles (HGV) and other construction traffic movements, including details of routing and times of day of movements. HGV access will be prevented or minimised,

where possible, on traffic sensitive roads, residential streets, congested roads, or unsuitable junctions.

Vehicle movements associated with access, demolition and construction will vary through the construction programme, with short periods of peak HGV movements associated with demolition and the delivery of materials during the construction phase. However, when the HGV movements are averaged over a full year period (Annual Average Daily Traffic - AADT), these will be significantly lower than peak movements. Together with the implementation of the CEMP, the construction vehicle movements impact on human health receptors in the area are likely to be temporary and not significant and have therefore been scoped out of this assessment.

Combustion Plant Emissions

No centralised heat and energy plant are proposed for the Development and the energy strategy proposes air source heat pumps and mechanical ventilation with heat recovery. As the development does not include any substantial combustion processes an assessment of combustion plant emissions was not required.

Odour Emissions

Any potential odour impacts generated through the movement of contaminated materials during construction stage have also been scoped out of this assessment as they are likely to be insignificant would be managed by a Construction Environmental Management Plan (CEMP). There are no odour emissions associated with the Proposed Development once it is operational and no significant odour sources near the Site that may affect future Site users, therefore an assessment of odour emissions was not undertaken.

Ecological Receptors

There are no designated habitats, near the Proposed Development or the surrounding road network. The impact of construction activities on ecological receptors has therefore been scoped out of the dust risk assessment.

2. SITE DESCRIPTION

2.1 Site Location

The Site is located in Huddersfield Town Centre immediately east of Huddersfield train station. It is bound to the north and west by a car park for the train station, to the east by John William Street and to the south by a pedestrianised area (St Georges Square) as shown in Figure 2-1.

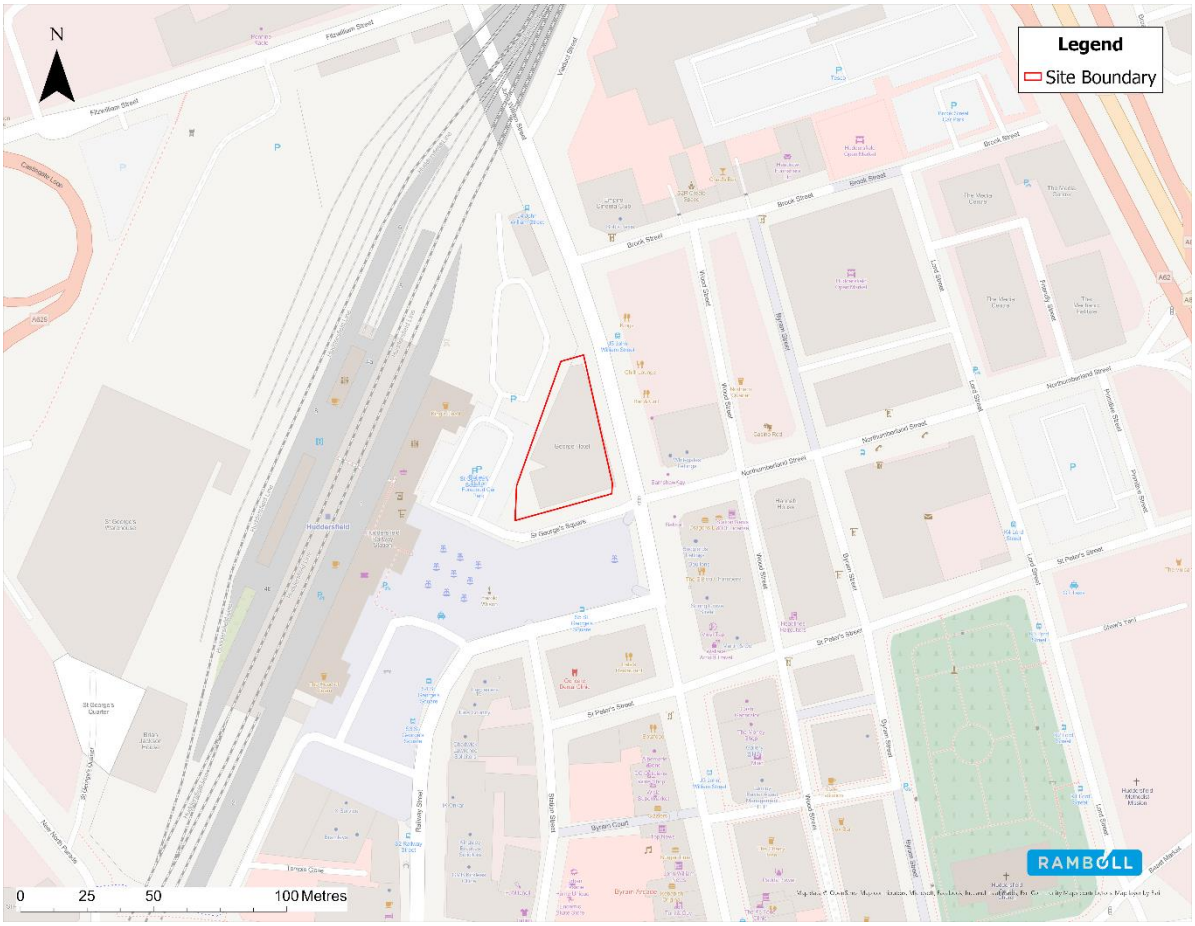

Figure 2-1: Site Location

2.2 Existing Site

The Site currently contains an existing grade II listed hotel building comprising three blocks: Block A consisting of four floors and a basement, Block B consisting of three floors, a mezzanine and a partial basement, and Block C consisting of three floors and a basement. The blocks are connected with two additional areas, a courtyard, kitchen, and public toilets.

2.3 The Proposed Development

The Proposed Development comprises retention of Block A, rebuilding Block B entirely and r floors a There w 1.

Redacted - see addendum

2.4 Site Characteristics and Designations

Huddersfield Town Centre has been declared an Air Quality Management Area (AQMA) for exceedances of the annual mean nitrogen dioxide (NO_2) objective. The main source of air pollution is from road traffic emissions.

3. LEGISLATION AND POLICY

This section outlines the legislation, policies, and published guidance which have informed the assessment.

3.1 International Legislation and Policy

EU Directive 2008/50/EC[1] on ambient air quality and cleaner air for Europe (the CAFE directive) sets out the ambient air quality standards for nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of less than 10 µm (PM_{10}) to be achieved by 1 January 2010 and 2005 respectively. The Air Quality Standards Regulations 2010[2] implements the requirements of the Directive into United Kingdom (UK) legislation.

Defra published a new Clean Air Strategy 2019[3] in January 2019, setting out how the UK will significantly reduce harmful air pollutant emissions by 2020 and 2030. The Clean Air Strategy contains an intention of working towards the World Health Organisation guideline value for $PM_{2.5}$ of 10µg/m^3.

The Environment Act[4] requires the government to set a target for annual mean $PM_{2.5}$ concentrations as well as a long-term target for air quality. Targets were to be set by 31st October 2022, however this deadline was not met and proposals remain:

- An annual mean concentration target of 10µg/m^3 to be met across England by 2040; and
- A Population Exposure Reduction target of a 35% reduction in population exposure by 2040 compared to a base year of 2040.

3.2 Local Air Quality Management

Part IV of the Environment Act 1995[5], requires the UK Government to publish an Air Quality Strategy and local authorities to review, assess and manage air quality within their areas. This is known as Local Air Quality Management (LAQM).

The 2007 Air Quality Strategy[6] establishes the policy for ambient air quality in the UK. It includes the NAQOs for the protection of human health and vegetation for 11 pollutants. Those NAQOs included as part of LAQM are prescribed in the Air Quality (England) Regulations 2000[7], the Air Quality (Amendment) (England) Regulations 2002[8] and the Air Quality Standards (Amendment) Regulations 2016[9]. Table 3-1 presents the NAQOs for NO_2 and PM_{10} the two pollutants of most concern in urban areas.

[1] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe
[2] Statutory Instrument 2010 No. 1001, Air Quality Standards Regulations 2010. HMSO.
[3] Defra, 2019. Clean Air Strategy.
[4] Secretary of State, 2021, The Environment Act Chapter 30. HMSO
[5] Secretary of State, 1995. The Environment Act part IV Air Quality, HMSO.
[6] Department for Environment, Food and Rural Affairs, 2007. Air Quality Strategy for England, Scotland, Wales and Northern Ireland. HMSO.
[7] Statutory Instrument 2000, No 921. The Air Qual ty (England) Regulations 2000. HMSO.
[8] Statutory Instrument 2002, No 3034. The Air Quality (England) (Amendment) Regulations 2002. HMSO.
[9] Statutory Instrument 2016, No 1184. The Air Quality Standards (Amendment) Regulations 2016. HMSO.

Table 3-1: Objectives Included in Air Quality Regulations (England) 2000 for Purpose of Local Air Quality Management

Pollutant	Air Quality Objective		
	Concentration	Measured As	Date to be Achieved By
NO_2	200 micrograms per metre cubed (µg/m³) not to be exceeded more than 18 times per year	1 hour	31 December 2005
	40 µg/m³	Annual mean	
PM_{10}	50 µg/m³ not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 µg/m³	Annual mean	

Analysis of long-term monitoring data suggests that if the annual mean NO_2 concentration is less than 60 µg/m³ then the one-hour mean NO_2 objective is unlikely to be exceeded where road transport is the main source of pollution. Therefore, in this assessment this concentration has been used to screen whether the one-hour mean objective is likely to be achieved (Defra, 2016). Similar to NO_2, a PM_{10} annual mean below 32 µg/m³ is used to screen whether the 24-hour PM_{10} mean objective is likely to be achieved (Defra, 2016).

The 2007 Air Quality Strategy also introduced a new policy framework for tackling $PM_{2.5}$ which included an exposure reduction target and a 'backstop' annual mean NAQO. The exposure reduction target is focussed on reducing average concentrations across the most polluted urban areas and is therefore not applicable to individual schemes, whilst the annual mean NAQO can be considered a concentration cap to ensure environmental compliance. The UK NAQO for $PM_{2.5}$ are provided in Table 3-2.

Table 3-2: UK Objectives for $PM_{2.5}$

Averaging Period	Objective	Target Date
Annual mean	20 µg/m³	January 2020
3 year running annual mean	20 % reduction in concentrations measured at urban background sites	Between 2010 and 2020

The NAQOs apply to external air where there is relevant exposure to the public over the associated averaging periods within each NAQO. Guidance is provided within LAQM.TG (22)[10] issued by Defra for Local Authorities, on where the NAQOs apply, as detailed in Table 3-3. The NAQOs do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e., centre of roadways).

[10] Department for Environment, Food and Rural Affairs, 2022. Local Air Quality Management Techn cal Guidance LAQM.TG (22). HMSO.

Table 3-3: Locations Where National Air Quality Objectives Apply

Averaging Period	Objectives should apply at	Objectives should generally not apply at
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties.
24 Hour Mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties. All locations where the annual mean and: 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets).	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1 Hour Mean	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 expect to spend one hour or longer.	

It should be noted that the EU Limit Values are numerically the same as the NAQO values but differ in terms of compliance dates, locations where they apply and legal responsibility. The compliance date for the NO_2 Limit Values was 1 January 2010, which is five years later than the date for the NAQO.

The Limit Values are mandatory whereas the NAQOs are policy objectives. Local authorities are not required to achieve them but have to demonstrate effort of working towards their achievement. In addition, the Limit Values apply in all locations except:

- where members of the public do not have access and there is no fixed habitation;
- on factory premises or at industrial installations; and
- on the carriageway/central reservation of roads except where there is normally pedestrian access.

Where a local authority's review and assessment of its air quality identifies that air quality is likely to exceed the NAQOs, it must designate these areas as AQMAs and draw up an Air Quality Action Plan (AQAP) setting out measures to reduce pollutant concentrations with the aim of meeting the NAQOs.

3.3 Planning Policy

The National Planning Policy Framework (NPPF) (2021)[11] sets out the Government's planning policies for England and how they are expected to be applied (Ministry of Housing, Communities

[11] Ministry of Housing, Commun ties and Local Government, 2021. National Planning Policy Framework. HMSO.

& Local Government, 2019). In relation to achieving sustainable development, paragraph 8 states that:

"Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):…

c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development. Paragraph 11 states that plans and decisions should apply a presumption in favour of sustainable development, which for decision-taking means:

"… d) where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless: …

ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."

Paragraph 54 on planning conditions and obligations states:

"Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition."

Paragraph 102 on promoting sustainable transport states:

"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that: …

d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; …"

Paragraph 170 on conserving and enhancing the natural environment states:

"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 stability. 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, and…"

Paragraph 180 within ground conditions and pollution 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."

Paragraph 181 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."

Paragraph 182 states that:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.".

3.4 Local Policy

3.4.1 Kirklees Local Plan

The Kirklees Local Plan[12] was adopted in February 2019 and outlines the vision and strategy for the future development of Kirklees up to 2031. Policies relating to air quality include:

- Policy LP47 Healthy, active and safe lifestyles:

"The council will, with its partners, create an environment which supports healthy, active and safe communities and reduces inequality.

Healthy, active and safe lifestyles will be enabled by:

g. ensuring that the current air quality in the district is monitored and maintained and, where required, appropriate mitigation measures included as part of new development proposals;"

- Policy LP51 Protection and improvement of local air quality:

"1. Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air pollution which would have an unacceptable impact on the natural and built environment or to people.

2. Proposals that have the potential to increase local air pollution either individually or cumulatively must be accompanied by evidence to show that the impact of the development has been assessed in accordance with the relevant guidance. Development which has the potential to cause levels of local air pollution to increase must incorporate sustainable mitigation measures that reduce the level of this impact. If sustainable measures cannot be introduced the development will not be permitted.

3. Where the development introduces new receptors into Air Quality Management Areas or Areas of Concern or near other areas of relatively poor air quality, for example near roads or junctions, the development must incorporate sustainable mitigation measures that protect the new receptors from unacceptable levels of air pollution. Where sustainable mitigation measures

[12] Kirklees Council, 2019. Kirklees Local Plan Strategy and Policies.

cannot be introduced which prevent receptors from being exposed to unsafe levels of air pollution, development will not be permitted."

3.4.2 Kirklees Local Air Quality Strategy

The Kirklees Local Air Quality Strategy[13] sets out strategies to achieve and maintain good air quality in Kirklees to benefit the health of people living and working in Kirklees as well as the health of the environment.

3.4.3 Kirklees Council Air Quality Action Plan

The Kirklees Council Air Quality Action Plan[14] was adopted in September 2019 and lays out actions for improving the air quality in Kirklees Council to positively impact the health and quality of life for residents and visitors within the local authority's jurisdiction. Within the Huddersfield Town Centre AQMA actions include improving and promoting sustainable public transport, cycling and walking facilities, working towards a sustainable heat network scheme, improving flow of traffic, and providing electric vehicle charging points.

3.4.4 West Yorkshire Low Emissions Strategy Technical Planning Guidance

The West Yorkshire Low Emissions Strategy Air Quality and Emissions Technical Planning Guidance[15] provides guidance for integrating air quality considerations within new developments with the overall aim of reducing road transport emissions. Within the air quality assessment process, developments must be classified as either minor, medium, or major based on criteria set out in the guidance. Minor and medium developments require an air pollution exposure assessment and acceptable mitigation, major developments require an air pollution exposure assessment for construction and operational phases following the requirements set out in Defra's Local Air Quality Management Technical Guidance[14], as well as a pollutant emissions costs calculation. Depending on the outcome of the air pollutant exposure assessment, appropriate mitigation measures are determined based on the Defra Air Quality Guidance and must be outlined in a mitigation statement alongside a proposed demolition and construction management plan.

3.5 Additional Guidance

3.5.1 Planning Practice Guidance Air Quality (PPG), 2019[16]

The Air Quality PPG provides guidance on how planning can take account of the impact of new development on air quality.

3.5.2 Defra's Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))

LAQM.TG(22)[14] provides advice as to where the national AQOs apply and support to local authorities in carrying out their duties under the Environment Act 1995[5] and subsequent regulations.

[13] Kirklees Council, 2007. Kirklees Air Quality Strategy.
[14] Kirklees Council, 2019. Kirklees Council Air Quality Action Plan.
[15] West Yorkshire Low Emissions Group, 2016. West Yorkshire Low Emissions Strategy Air Quality and Emissions Technical Planning Guidance.
[16] Air quality - GOV.UK (www.gov.uk)

3.5.3 Institute of Air Quality Management: Construction Dust Guidance, 2016 v1.1

The IAQM produced guidance[17] to assist in the assessment of air quality impacts from demolition and construction activities. This guidance provides a consistent methodology for assessing the risks of dust impacts from demolition and construction activities and for identifying the correct level of mitigation which should be applied to avoid significant air quality effects.

3.5.4 Environmental Protection UK/Institute of Air Quality Management Guidance, Land-Use Planning Guidance, 2017

Environmental Protection UK (EPUK), together with the IAQM, produced updated guidance in 2017 [18] on how air quality impacts should be assessed within the land-use planning and development control process. This guidance provides clear criteria to determine when a detailed air quality assessment is required and a methodology for assessing the significance of air quality effects.

[17] Holman et al, 2016. IAQM Gu dance on the assessment of dust from demolition and construction V1.1. Institute of Air Quality Management, London.
Available: http://www.iaqm.co.uk/text/guidance/construction-dust-2014

[18] Institute of Air Quality Management and Environmental Protection UK, 2017. Land-Use Planning & Development Control: Planning for Air Quality. Available: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

4. METHODOLOGY

4.1 Study Area

The study area for the baseline assessment extended to include appropriate local monitoring sites shown in Figure 5-1.

Potential air quality impacts during the construction phase were considered in line with the IAQM guidance document[18], at human receptor locations up to 350 m from the Site boundary or within 50 m of the route used by construction vehicles on a public highway, up to 500 m from the Site entrance, depending on the nature and scale of the construction activities. Figure 4-1 shows the study areas for the demolition and construction stage assessment.

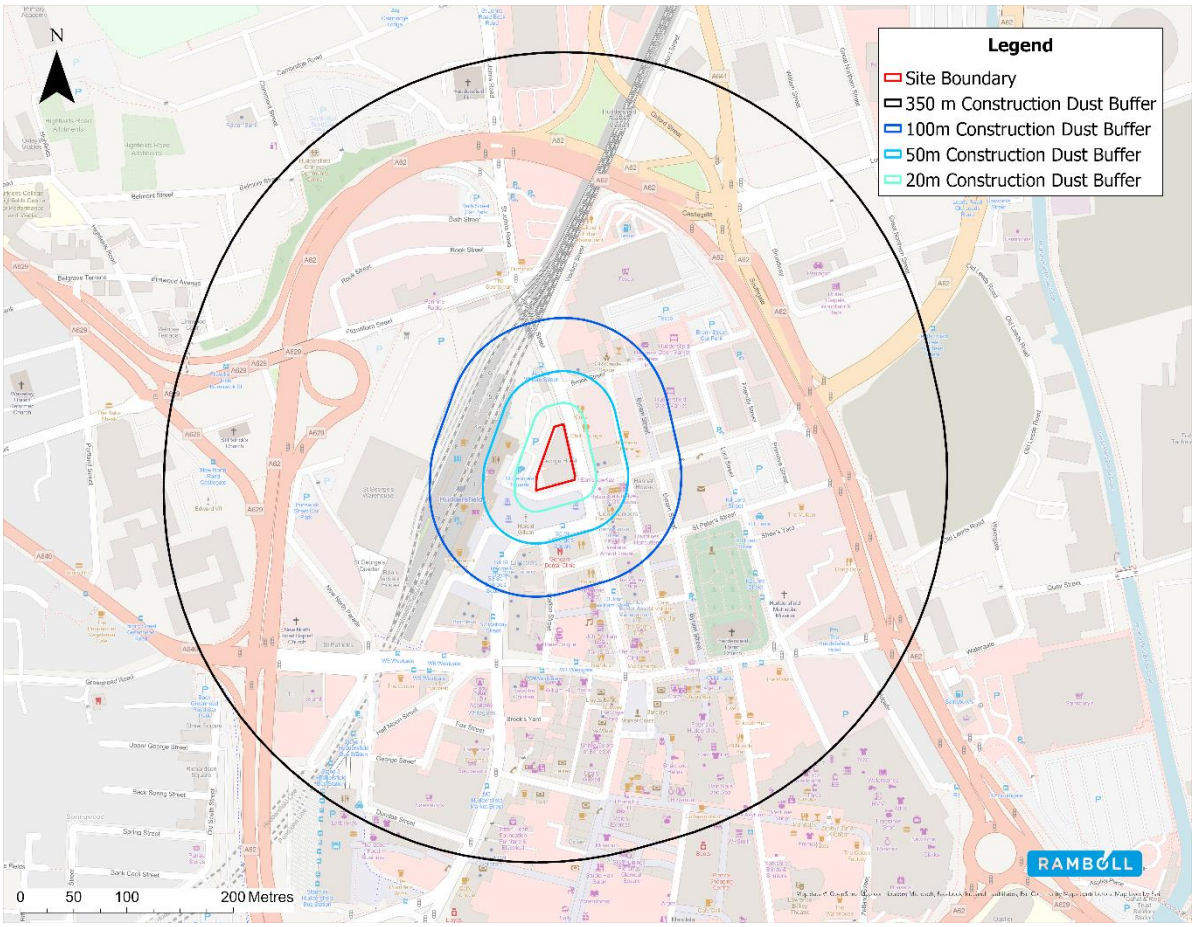

Figure 4-1: Dust Risk Assessment Boundaries

4.2 Baseline Assessment

To establish the existing baseline air quality in the vicinity of the Site, relevant data was reviewed and assessed. Data was obtained from the following sources:

- Air Quality monitoring operated by KMC; and
- Department of Environment, Food and Rural Affairs (Defra) background maps[19].

Sufficient local authority monitoring information was available to allow the assessment to be completed and therefore a Site-specific air quality monitoring survey was not undertaken.

[19] https://uk-air.defra.gov.uk/data/laqm-background-home

4.3 Construction Stage Assessment

4.3.1 Construction Dust

Likely effects associated with demolition and construction dust emissions, unlike other air borne pollutants, cannot be accurately predicted, and quantified because they are highly dependent on local weather conditions and mitigation measures implemented at source.

The assessment of potential construction impacts follows the guidance published by the IAQM on the assessment of the impacts of construction on air quality[17]. The IAQM assessment methodology considers three separate dust effects and defines their significance according to the sensitivity of the surrounding area, as follows:

- 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}.

The construction impact significance criteria are based on the IAQM guidance. The guidance recommends that no assessment of the significance of effects is made without mitigation in place, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations.

With appropriate mitigation in place, the residual effect of construction impacts on air quality is assessed as not significant. The purpose of the construction dust assessment is therefore to identify the appropriate level of mitigation to employ.

Full details of the dust risk assessment methodology which includes the assessment criteria are provided in Appendix 3 Dust Risk Assessment Methodology**.**

4.4 Operational Stage Assessment

The operational stage assessment followed guidance published by IAQM**Error! Bookmark not defined.**. Annual Average Daily Traffic (AADT) flows associated with operation of the Proposed Development were reviewed to determine whether they would result in significant increases in traffic on the local road network and therefore require an air quality assessment. The following IAQM screening criteria were used:

- A change of Light Duty Vehicles (LDVs) flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- A change of Heavy-Duty Vehicles (HDVs) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere.

4.5 Significance Criteria

4.5.1 Construction Stage

Once the risk of dust impacts is determined and the appropriate dust mitigation measures identified significant effects on receptors are unlikely and the residual effect is 'not significant'.

4.5.2 Operational Stage

Human Health Impacts at Future Receptors (Site Users)

There is no official guidance in the UK on how to assess the significance of air quality impacts of existing sources on a new development. The assessment has been limited to reviewing NO_2, PM_{10} and $PM_{2.5}$ concentrations within the vicinity of the Proposed Development Site to determine whether the NAQOs for each pollutant are exceeded or not.

Annual mean NAQOs do not generally apply at Hotels unless used as a permanent residence, however short-term objectives would apply.

4.6 Assumptions and Limitations

The assessment has relied on data provided by the KMC and Defra to characterise baseline conditions. It has been assumed that these data have been reported correctly and the instruments used have been calibrated.

Brexit and Covid have had a short-term impact on traffic levels which are likely to continue in the longer term. Interim observations suggest that traffic levels are now at a similar level to those before the pandemic, but the make-up of traffic is different. There has been a reduction in the frequency of travel to work, as more working from home has taken place and an increase in work travel by car as people have migrated from Public Transport. Additionally, recreation travel has increased as people holiday in the UK. How this is reflected in population growth, employment growth, social wellbeing and mobility, and ultimately long-term traffic growth, is difficult to say at present. There is, however, no reason to suspect that there will be a significant downturn in traffic volumes in future years.

The assessment has assumed air quality at background and roadside locations is expected to improve in future years due to the gradual renewal of the vehicle fleet with less polluting and more efficient models. Air Quality Consultants (AQC) have published three studies that support the overall assumption that air quality is anticipated to improve in the future and that the tools and methodology used in this assessment are conservative. In 2020, AQC published a study looking at trends in nitrogen oxides in the UK between 2013 to 2019[20]. The study concluded that there is an overall reduction trend in NO_x concentrations that have continued through 2019, stating "NO_x concentrations at roadside sites have reduced by an average of 5.14 % per year since 2013". Another study by AQC shows that EFT is most likely to over-predict drive-cycle average NO_x emissions from Euro 6 diesel cars in the future[21]. A further study concluded that the latest version of the EFT was suitable for the prediction of future pollutant concentrations without the need to undertake a sensitivity test.

[20] Air Quality Consultants, 2020. Nitrogen Oxides Trends in the UK 2013 to 2019. January 2020. Available at: https://www.aqconsultants.co.uk/resources

[21] Air Quality Consultants, 2020. Performance of Defra's Emiss on Factor Toolkit 2013-2019. February 2020. Available at: https://www.aqconsultants.co.uk/resources

5. BASELINE ASSESSMENT

5.1 Local Air quality Management

KMC has investigated air quality within its area as part of its responsibilities under the LAQM regime. To date, ten AQMAs have been declared due to exceedances of the annual mean NO_2 and the 24-hour PM_{10} objectives. The application Site is located within the Huddersfield Town Centre AQMA, declared for exceedances of the annual mean NO_2 NAQOs.

The most recent Air Quality Annual Status Report (ASR) available at the time of this assessment[22] confirmed that the NO_2 concentrations are gradually falling across the district. NO_2 concentrations in some areas are still exceeding the objectives, however Kirklees Council adopted a new Air Quality Strategy and 5-year Action Plan in 2019[23] to improve local air quality and is continuing to implement measures with the aim of meeting objectives across the district in future years.

Kirklees does not undertake PM_{10} monitoring but started monitoring $PM_{2.5}$ in 2020. $PM_{2.5}$ monitoring results indicate that the annual mean and short-term objectives for $PM_{2.5}$ are being met. PM_{10} monitoring data from other Local Authorities suggest that the annual mean and short-term objectives for PM_{10} are being met in West Yorkshire.

5.2 Monitoring

5.2.1 Nitrogen Dioxide

KMC operates both continuous automatic monitoring and passive diffusion tube monitoring of air quality at a number of locations within its jurisdiction. A summary of the closest and most representative monitoring locations to the Site (which are all diffusion tubes) is shown in Figure 5-1 and described in Table 5-1. 2020 monitoring data will have been affected by the Covid-19 pandemic and may therefore not be representative of long-term conditions.

[22] Kirklees Council, 2021. 2021 Air Quality Annual Status Report.
[23] Kirklees Council, 2019. Kirklees Council Air Quality Action Plan.

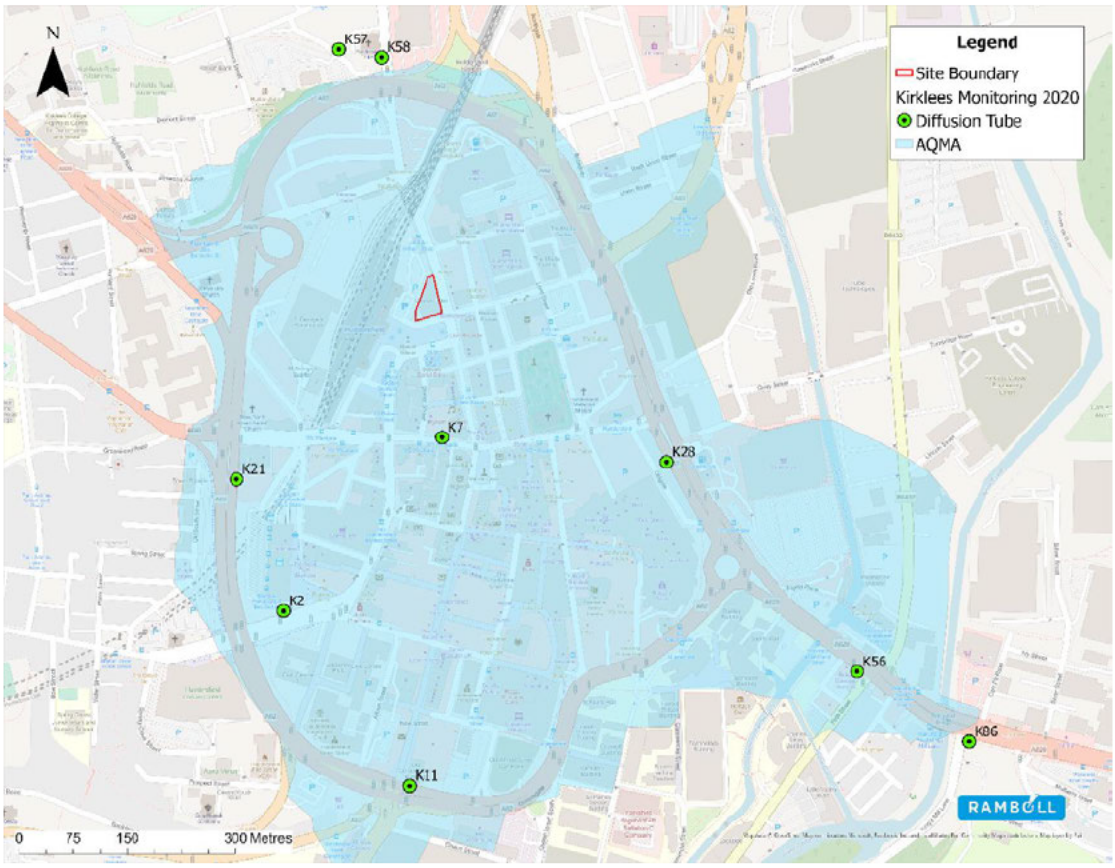

Figure 5-1: Monitoring Locations in the Vicinity of the Site

Table 5-1: Measured NO_2 Concentrations Error! Bookmark not defined.

Site ID	Site Type	Within AQMA	Annual Mean (µg/m³)				
			2016	2017	2018	2019	2020
Diffusion Tubes							
K2	O	Yes	**41.6**	**42.3**	39.3	38.5	34.1
K7	UC	Yes	38.8	35.4	38.6	**40.8**	28.9
K11*	R	Yes	37.8	36.5	39.6	35.0	31.8
K21	R	Yes	**45.1**	**40.1**	**42.5**	34.7	33.4
K28	R	Yes	**53.1**	**55.9**	**43.2**	**46.4**	37.6
K56	R	Yes	40.0	39.6	39.5	34.9	30.3
K57	R	No	**46.9**	27.2	29.7	22.2	18.5
K58	R	No	30.4	**41.7**	**44.9**	39.6	34.9
K86	R	No	-	-	32.6	29.1	22.8
Objective			**40**				

Notes:

Exceedances of the objective highlighted in **bold**

O = Other: Bus Station Huddersfield

R = Roadside

UC = Urban Centre

*Data capture below 75%

Elevated NO_2 concentrations were measured at the majority of monitoring sites between 2016 and 2019 with exceedances of the annual mean NAQO at some sites. As these monitoring sites are located within an AQMA for NO_2 elevated concentrations would be expected.

Diffusion tubes only monitor long term exposure and therefore results from this monitoring cannot be used for direct comparison with the short term 1-hour objective for NO_2. However, studies conducted into the relationship between long term monitored concentrations and short-term concentrations have indicated that where annual mean concentrations of more than 60 µg/m3 are recorded an exceedance of the hourly NO_2 objective is likely. On this basis, it is unlikely that exceedances of the short term one-hour objective have occurred at diffusion tube monitoring locations within the vicinity of the Site between 2016 and 2020.

AQOs do not generally apply at hotels unless used as a permanent residence. Therefore, only the short-term objectives apply for the Site.

5.2.2 Particulate Matter

There is no PM monitoring undertaken within close proximity of the Proposed Development Site. However, available monitored $PM_{2.5}$ data within Kirklees shows that levels have been under the NAQOs in 2020 (the first year for which monitoring data are available).

5.3 Background Concentrations

In addition to measured concentrations, estimated background concentrations from the national maps provided by Defra[19] were obtained for the existing baseline [2019], and the year the Proposed Development will become operational [2024], and are provided in Table 5-2. The mapped background concentrations were not calibrated against background concentrations measured at local monitoring stations, as no suitable background stations were being operated by KMC at the time of this assessment.

The background concentrations are all well below the relevant objectives.

Table 5-2: Estimated Annual Mean Background Concentrations

Year	Location	Annual Mean (µg/m³)			
		NO_x	NO_2	PM_{10}	$PM_{2.5}$
2019	414500, 416500	31.8	21.6	12.3	8.4
2024	414500, 416500	26.1	18.2	11.6	7.8
Objectives		-	**40**	**40**	**20**

5.4 Sensitive Receptors

In accordance with IAQM guidance receptors with the highest sensitivity to dust within the study area are cars which may be parked in the Huddersfield Train Station car park, and which may be affected by dust soiling. There are also place of work near the Site. There are no local, national, or European designated habitat sites within 50m of the Site boundary or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the Site entrance(s) which would be sensitive to dust deposition.

5.5 Assessment of Baseline Data

Available monitoring data indicates that concentrations of NO_2 are likely to be close to the long term NO_2 NAQO and meet the short term NO_2 NAQO at the development Site.

Estimated NO_2, PM_{10} and $PM_{2.5}$ background concentrations are all well below the long-term objectives. The Site is therefore expected to meet the long and short term NAQOs.

Pollutant concentrations at background and roadside locations are predicted to decrease in future years due to the gradual improvement in vehicle emissions associated with the introduction of Euro 6/VI vehicle emission standards. Roadside concentrations alongside the road network adjacent to the application Site would be expected to improve as potential increases in road traffic volume would be more than offset by the gradual renewal of the road transport fleet with less polluting models. National policies such as the intention to ban new combustion engine private vehicle sales by 2030 will hasten and enforce this process.

6. CONSTRUCTION STAGE ASSESSMENT

6.1 Introduction

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reasonable level of amenity.

6.2 Assessment of Impacts

Using the evaluation criteria within the IAQM's Guidance the potential dust emission magnitude has been identified for each stage of the Proposed Development as shown in Table 6-1 below.

Table 6-1: Dust Emissions Magnitude for Each Construction Activity

Activity	Dust Emission Magnitude	Justification
Demolition	Small	<20,000 m³ of material expected to be demolished
Earthworks	Small	<20,000 tonnes of earthworks material expected to be removed across a total area of <2,500 m²
Construction	Small	<25,000 m³ expected building volume
Trackout	Medium	10-50 one-way HDV trips expected from the Site per day

The next stage of the process is to define the sensitivity of the assessment area to dust soiling and human health impacts. This process combines the sensitivity of the receptor with distance from the source to determine the overall sensitivity as summarised in Table 6-2.

Table 6-2: Sensitivity of Area to Dust Impacts

Sensitivity to Dust Soiling	Sensitivity to Human Health Impacts
Medium – The Site is in an area with 1 to 10 high sensitivity receptors within 20 m	**Low** – Defra PM_{10} concentrations would be expected to be below 24 µg/m³ and there would be no highly sensitive receptors within 20 m.

The dust emission magnitude determined in Table 6-1 has been combined with the sensitivity assessment in Table 6-2 to define the risk of impacts for each construction activity of the Proposed Development in the absence of mitigation, as shown in Table 6-3.

Table 6-3: Risk of Dust Impacts in Absence of Mitigation

Sensitivity of Surrounding Area to Impacts	Dust Emission Magnitude			
	Demolition (Small)	Earthworks (Small)	Construction (Small)	Trackout (Medium)
Dust Soiling (Medium)	Low	Low	Low	Low
Human Health (Low)	Negligible	Negligible	Negligible	Low

The overall dust risk from the Application Site is predicted to be low for dust soiling effects in relation to all activities. The dust risk for health effects is predicted to be negligible for demolition, earthworks, and construction and low for track-out. This is due to the scale of

operations and the absence of high sensitivity receptors in the surrounding area, combined with the low ambient concentration of PM_{10}.

Demolition, earthworks, construction and track out have equal potential to give rise to disamenity dust and health effects. Common disamenity dust effects may include the soiling of neighbouring windows, cars, and street furniture.

Appropriate mitigation measures will help to negate most of the potential negative air quality impacts resulting from the construction phase of the Proposed Development and will avoid significant dust effects. This is further discussed in Section 8.1.

6.3 Demolition and Construction Cumulative Effects

Consented developments in the vicinity of the Proposed Development have not been identified. However, based on the assumption that all construction sites near the Proposed Development Site would adopt best practice guidance and industry guidance and implementing an adequate Construction Environmental Management Plan (CEMP), the potential for an increase in dust impacts to occur because of the combined emissions from cumulative schemes and the Proposed Development is considered unlikely.

Cumulative demolition and construction traffic flow information cannot be accurately predicted given the complexities and variations in construction schedules of nearby developments. Given the scale of development currently under construction in the study area, it is considered that the impact of traffic from cumulative schemes has been captured within the local monitoring data included to characterise the existing baseline. It is likely that construction traffic from nearby construction sites would be managed through a construction traffic environmental management plan to limit impacts.

On this basis it can be concluded that the residual effects on air quality from cumulative demolition and construction works would be temporary and not significant

6.4 Significance of Demolition and Construction Stage Emissions

The IAQM guidance recommends that no assessment of the significance of demolition and construction stage effects is made without mitigation in place. With the implementation of a Construction Environmental Management Plan (CEMP) and measures outlined in Section 8, the construction and demolition stage dust effects in the study area would be temporary and not significant.

7. OPERATIONAL STAGE ASSESSMENT

7.1 Vehicle Emissions

The Proposed Development does not include a car park and users would be expected to travel to Site by public transport (the Site is next to the train station) or if by car parking off Site in one of the existing car parks in Huddersfield. The anticipated trip generation associated with the Development would be 230 AADT including 6 HDVs (servicing vehicles), however these would be spread widely across the Huddersfield road network as off-site car parks would be used. The operational stage traffic impacts on human health in the area are considered (based on professional judgement) to be not significant.

7.2 Proposed Human Health Receptors (Future Site Users)

Pollutant concentrations generally decrease with increased distance from the road and with height. Monitored NO_2 concentrations reported in Chapter 5 are from monitoring sites located closer to the kerbside (0.5 to 5.5 m) than the Proposed Development façade (approximately 3.5 to 7 m), and the proposed ground floor bedrooms (approximately 14 m). NO_2 concentrations at the Proposed Development are therefore likely to be lower than those reported in Chapter 5.

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Figure 7-1 Proposed Ground Floor Layout

Annual mean NAQOs do not generally apply at hotels unless used as a permanent residence, however short-term objectives would apply. Available monitoring data indicates that concentrations of NO_2 are likely to meet the short term NAQO at the development Site when it is operational in 2024. The Site is suitable for the Proposed Development without the need for mitigation.

8. MITIGATION MEASURES

8.1 Construction Stage

Under best-practice guidance, the Proposed Development will constitute a low dust risk for trackout, demolition, earthworks, and construction activities. For this Site the general mitigation measures applicable to a low risk site should be applied.

The control of dust emissions from construction sites relies upon good site management and mitigation techniques to reduce emissions of dust and limit dispersion. A summary of the mitigation measures recommended in the IAQM guidance to reduce impacts from low risk sites is provided in Table 8-1. It is recommended that these measures are included within a Construction Environmental Management Plan (CEMP) which could be secured through an appropriately worded planning condition. The proposed mitigation provided below are tried and tested and standard measures included in CEMPs on a regular basis.

Table 8-1: Recommended Dust Mitigation for Low Risk Sites

Stage	Mitigation Measure
Communications	Display name and contact details of responsible person for dust issues on Site boundary in addition to head/regional office contact information. Display the head or regional office contact information
Dust Management Plan	Develop and implement a Dust Management Plan (DMP) which would be included as part of the CEMP, to be approved by the Local Authority.
Site Management	Record all complaints and incidents in a Site log. Take appropriate measures to reduce emissions in a timely manner, and record the measures taken within the log. Make the complaints log available to the Local Authority if requested. Record any exceptional dust incidents on or off Site.
Monitoring	Undertake daily on and off-site visual inspections where there are nearby receptors. Carry out regular inspections to ensure compliance with the DMP and record results in the Site logbook. Increase the frequency of inspections during activities with a high potential to create dust or in prolonged dry weather.
Preparing and Maintaining the Site	Plan Site layout to locate dust generating activities as far as possible from receptors. Use solid screens around dusty activities and around stockpiles. Avoid Site runoff of water and mud. Fully enclose the Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period. Keep Site fencing barriers and scaffolding clean using wet methods. Remove dusty materials from Site as soon as possible. Minimise emissions from stockpiles by covering, seeding, fencing or damping down. Cover, seed or fence stockpiles to prevent wind whipping.
Operating Vehicle/Machinery and Sustainable Travel	Ensure vehicles switch off engines when stationary. Avoid use of generators where possible.
Operations	Cutting, grinding, or sawing equipment only to be used with suitable dust suppression equipment or techniques.

Stage	Mitigation Measure
	Ensure adequate water supply for effective dust and particulate matter suppression. Use enclosed chutes, conveyors, and covered skips. Minimise drop heights of materials. Ensure suitable cleaning material is always available to clean up spills.
Waste Management	Avoid bonfires on-site. Avoid explosive blasting using appropriate manual or mechanical techniques. Use appropriate storage and removal of waste in line with National legislation.
Measures Specific to Demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. Avoid explosive blasting, using appropriate manual or mechanical alternatives. Bag and remove any biological debris or damp down such material before demolition.
Measures Specific to Construction	Ensure aggregates are stored in bunded areas and are not allowed to dry out. Avoid concrete scabbling where possible.
Measures Specific to Trackout	Use water-assisted dust sweepers to clean access and local roads. Avoid dry sweeping of large areas. Ensure vehicles entering and leaving the Site are appropriately covered. Implement a wheel washing system.

The IAQM guidance recommends that no assessment of the significance of demolition and construction stage effects is made without mitigation in place. With the effective implementation and monitoring of the above mitigation measures, the construction dust and vehicle emissions effects in the area are temporary and not significant.

8.2 Operational Stage

The NO_2, PM_{10} and $PM_{2.5}$ short term air quality objectives are expected to be met at all on Site receptors when the Proposed Development is operational. Air quality mitigation measures to protect future Site users from poor air quality are therefore not required.

9. CONCLUSIONS

The air quality assessment has determined the following:

- The dust risk assessment has identified that construction activities pose a low dust risk. However, with the implementation of the mitigation measures detailed in Chapter 8, the activities are not expected to result in significant effects on local receptors.
- NO_2 one-hour mean, and PM_{10} 24-hour mean concentrations are expected to meet the NAQOs in 2024 at all floor levels when the Proposed Development is operational.
- The Site is considered suitable for the development type proposed from an air quality perspective and no additional air quality mitigation is required to protect future Site users from poor air quality.

The Proposed Development would not result in significant effects on air quality and new receptors introduced by the development are unlikely to be exposed to pollutant concentrations that breach NAQOs.

Overall, it is concluded that there are no air quality constraints to the Proposed Development.

APPENDIX 1
GLOSSARY

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
ADMS	Air Dispersion Modelling System
APIS	Air Pollution Information System
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
CHP	Combined Heat and Power
CEMP	Construction Environmental Management Plan
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
Diffusion Tube	A passive sampler used for collecting NO_2 in the air
EA	Environmental Agency
EFT	Emission Factor Toolkit
EHO	Environmental Health Officer
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes. Includes Heavy Goods Vehicles and buses
IAQM	Institute of Air Quality Management
KMC	Kirklees Metropolitan Council
LAQM	Local Air Quality Management
NAQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NO_2	Nitrogen Dioxide
NO_x	Nitrogen oxides, generally considered to be nitric oxide and NO_2
NPPF	National Planning Policy Framework
$PM_{10}/PM_{2.5}$	Small airborne particles less than 10/2.5 microns in aerodynamic diameter
PPG	Planning Practice Guidance
Receptor	A location where the effects of pollution may occur
SPG	Supplementary Planning Guidance
SSSI	Site of Special Scientific Interest

APPENDIX 2
DUST RISK ASSESSMENT METHODOLOGY

DETERMINING DUST EMISSION MAGNITUDE

Large	Medium	Small
Demolition		
• Total building volume >50,000 m3 • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities >20 m above ground level	• Total building volume 20,000 m3 – 50,000 m3 • Potentially dusty construction • Demolition activities 10 m-20 m above ground level	• Total building volume <20,000 m3 • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <10 m above ground • During wetter months
Earthworks		
• Total site area >10,000 m2 • 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 >8 m in height • Total material moved >100,000 t	• Total site area 2,500 m2-10,000 m2 • Moderately dusty soil type (e.g. silt) • Five-10 heavy earth moving vehicles active at any one time • Formation of bunds 4 m-8 m in height • Total material moved 20,000 t-100,000 t	• Total site area <2,500 m2 • Soil type with large grain size (e.g. sand) • <Five heavy earth moving vehicles active at any one time • Formation of bunds <4 m in height • Total material moved <20,000 t • Earthworks during wetter months
Construction		
• Total building volume >100,000 m3 • Piling • On-site concrete batching • Sandblasting	• Total building volume 25,000 m3-100,000 m3 • Potentially dusty construction material (e.g. concrete) • Piling • On-site concrete batching	• Total building volume <25,000 m3 • Construction material with low potential for dust release (e.g. metal cladding or timber)
Trackout		
• >50 HDV (>3.5 t) movements in any one day • Potentially dusty surface material (e.g. high clay content) • Unpaved road length >100 m	• 10-50 HDV (>3.5 t) movements in any one day • Moderately dusty surface material (e.g. high clay content) • Unpaved road length 50 m–100 m	• <10 HDV (>3.5 t) movements in any one day • Surface material with low potential for dust release • Unpaved road length <50 m

DETERMINING RECEPTOR SENSITIVITY

High	Medium	Low
Sensitivities of People to Dust Soiling Effects		
• Users can reasonably expect a enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected a to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.	• Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or • The appearance, aesthetics or value of their property could be diminished by soiling; or • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • Indicative examples include parks and places of work.	• the enjoyment of amenity would not reasonably be expected; or • Property would not reasonably be expected to be • Diminished in appearance, aesthetics or value by soiling; or • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. • Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short-term car parks and roads.
Sensitivities of People to the Health Effects of PM_{10}		
• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include residential properties, Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	• Locations where the people exposed are workers, and • Exposure is over a time period relevant to the air quality • Objective for PM10 (in the case of the 24-hour objectives, • A relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM10, as protection is covered by Health and Safety at Work legislation.	• Locations where human exposure is transient. • Indicative examples include public footpaths, playing fields, parks and shopping streets.
Sensitivities of Receptors to Ecological Effects		
• Locations with an international or national designation and the designated features may be affected by dust soiling; or • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. • Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.	• Locations with a local designation where the features may be affected by dust deposition. • Indicative example is a local Nature Reserve with dust sensitive features.

High	Medium	Low
site containing concrete (alkali) buildings.		

DETERMINING SENSITIVITY OF THE AREA

Dust Soiling Effects on People and Property

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

Human Health Impacts

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

Ecological Impacts

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

DETERMINING RISK OF DUST IMPACTS

Demolition

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

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

Earthworks

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

Construction

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

Trackout

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