

PLANNING APPLICATION STAGE AIR QUALITY ASSESSMENT

78c HIGH STREET, TONBRIDGE, TN9 1EE

JASPAR GROUP

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1 INTRODUCTION

Anderson Acoustics Ltd was commissioned by Jaspar Group to undertake an air quality assessment the proposed hotel and residential development at 78c High Street, Tonbridge, TN9 1EE. The assessment has been requested to inform the design of the proposed development and the determination of the planning application. The proposed development is within the authority of Tonbridge and Malling Borough Council (TMBC).

The proposed development is for the construction of a 70-room hotel, 10 residential units and the retention of the existing ground floor retail unit, façade upgrades, public realm upgrades, landscaping, associated vehicular parking, cycle parking and refuse storage.

The purpose of the air quality assessment is to indicate if the development is in an area of poor air quality and if future occupants of the development will be impacted upon by existing poor air quality associated with road traffic emissions, in particular, that resulting from concentrations of nitrogen oxides (NOx) and particulate matter. The air quality assessment also considers the effect of the proposed development on existing receptors. Assessment of the potential effects on future occupants is achieved through assessing the location of the development against the existing NO₂ concentrations in the context of the air quality objectives and limit values. Assessment is also made of the air quality impact of the proposed development on existing receptors.

Air quality emission mitigation assessment is also conducted following the Kent and Medway Air Quality Partnership Air Quality Planning Guidance¹.

This report presents the air quality assessment for site suitability identifies mitigation required.

Air quality policy and criteria relevant to the assessment have been presented and briefly discussed in Section 2 of this report. A brief description of the site and proposed development is given in Section 3. The air quality assessment is presented in Section 4. The dust risk assessment is presented in Section 5. The air quality neutral assessment is presented in Section 6. The conclusions are provided in Section 7.

¹ Kent and Medway Air Quality Partnership. Air Quality Planning Guidance. 2015.



2 AIR QUALITY POLICY AND CRITERIA

2.1 Air Quality – Pollutants for Consideration

The pollutants for consideration in TMBC are nitrogen dioxide (NO₂) and particulate matter (PM).

 PM_{10} is the fraction of PM that is 10 microns or less in size and $PM_{2.5}$ is the fraction of PM that is 2.5 microns or less in size. Both can be drawn into the lungs and can cause respiratory illness, cardiovascular illness and mortality. Oxides of nitrogen include nitric oxide (NO) and nitrogen dioxide (NO₂). NO₂ can cause inflammation of the lung and can lead to shortness of breath, coughing and can reduce immunity to infections of the lung such as bronchitis.

2.2 Air Quality Policy and Guidance

2.2.1 European and National Air Quality Standards

Air Quality Directive 2008/50/EC² introduced legally binding "limit value" targets for the member governments to reduce air pollution to concentrations at which minimal effects on health are likely to occur.

The directive was transposed into law through the Air Quality (England) Standards Regulations³ with air quality objectives and dates they were to be achieved by. The sensitive locations, at which the standards and objectives apply, are places where the population is expected to be exposed to the various pollutants over the averaging period in question. For objectives to which an annual mean standard applies, the most common sensitive receptor locations used to measure concentrations are areas of residential housing, since it is reasonable to expect that people living in their homes could be exposed to pollutants over such a period of time. GLA guidance in the London Plan has since extended this requirement to places of work. For shorter averaging periods of between 15 minutes, 1 hour or 1 day, the sensitive receptor location can be anywhere where the public could be exposed to the pollutant over these shorter periods of time.

Pollutant	nt Air Quality Objectives for Particulates and NO ₂		Air Quality Objectives for Particulates and NO ₂ Date to be Acl		Date to be Achieved By
	Concentration	Measured as			
PM ₁₀	50 μg/m³ not to be exceeded more than 35 times a year	24 hour mean	31 December 2004		
	40 μg/m³	Annual mean	31 December 2004		
PM _{2.5}	25 μg/m³	Annual mean	2020 (but not in UKAQS)		
	15% reduction urban background	Annual mean	2010-2020		
NO2	40 μg/m³	Annual mean	31 December 2005		
	200 μg/m³ not to be exceeded more than 18 hours in a year	Hourly mean	31 December 2005		

Table 2.1: Air Quality Objectives for PM₁₀, PM_{2.5} and NO₂

 ² Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe
³ DEFRA. 2010. The Air Quality Standards (England) Regulations.



The Environment Act 1995⁴ introduced the requirement for local authority management of air quality. Part IV of this Act details the duties of local authorities in carrying out their local air quality management (LAQM) to tackle poor air quality. Part of the requirements is for the Review and Assessment of air quality and production of Updating and Screening Assessments (USA) and Status Reports. Where exceedance of these objectives is shown or anticipated the local authority is required to produce an Air Quality Action Plan to reduce emissions and pollutant concentrations.

2.2.2 National and Regional Planning Policy and Guidance

The **NPPF**⁵ presents the Government's planning policies for England and how these are expected to be applied, with the development of local and neighbourhood plans under the framework. Paragraph 170 e) of the NPPF identifies that the planning system should aim to conserve and enhance the natural and local environment by "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..."

Paragraph 181 states "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".

Planning Practice Guidance⁶ for air quality has been produced that gives indication of details the local authority may want to consider when there are concerns about air quality and special requirements such as the height of chimneys and securing mitigation measures through planning conditions and obligations. The PPG considers that dust can also be a planning concern for effects on local amenity. The guidance considers that assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality. The mitigation of air quality impacts and effects is to depend on the proposed development and should be proportionate to the likely impact.

The Kent & Medway Air Quality Air Quality Planning Guidance presents a staged process to air quality assessment:

1. Using the 'Screening checklist' to determine whether the proposal qualifies as a 'major development'

2. Determining whether the development requires an air quality assessment or emissions assessment using the 'Air Quality and emission mitigation assessment checklist';

3. Determining whether an air quality assessment is required to assess the impact on public health and/or the local environment as well as the significance of a development on local air quality;

4. Determining whether an application should be refused on air quality grounds or what mitigation measures are required to make the development acceptable on air quality grounds;

⁴ Office of the Deputy Prime Minister. 1995. The Environment Act.

⁵ Ministry of Housing, Communities & Local Government. 2019. National Planning Policy Framework.

⁶ Department for Communities and Local Government. 2019. Planning Practice Guidance – Air Quality. Revision date November 2019



2.2.3 Local Air Quality Guidance

The Tonbridge and Malling Managing Development and the Environment Development Plan Document⁷ contains Policy SQ4:

Policy SQ4 Development will only be permitted where all of the following criteria are met:

(a) the proposed use does not result in a significant deterioration of the air quality of the area, either individually or cumulatively with other proposals or existing uses in the vicinity;

(b) proposals would not result in the circumstances that would lead to the creation of a new Air Quality Management Area;

(c) proximity to existing potentially air polluting uses will not have a harmful effect on the proposed use; and(d) there is no impact on the air quality of internationally, nationally and locally designated sites of nature conservation interest or appropriate mitigation is proposed to alleviate any such impact.

Tonbridge High Street has been declared an AQMA in the area shown in Figure 2.2.



Figure 2.2 Tonbridge High Street Air Quality Management Area

⁷ Tonbridge and Malling Borough Council. Managing Development and the Environment. Development Plan Document. 2010



3 SITE DESCRIPTION

3.1 Existing Site

The Site is located on the west side of the High Street in the centre of Tonbridge. The site is at the boundary of the Tonbridge High Street AQMA. To the north is New Wharf Road and residential uses and a pub beer garden beyond. To the west is residential use at Waterside Lodge and beyond that the River Medway. To the south is a Job Centre and a solicitors office. To the east is mixed commercial and residential uses on High Street.

An aerial view of the site location is shown in Figure 3.1, which highlights the proposed development site.



Figure 3.1: Site location

3.2 Proposed Development

The project involves the following:

- Construction of a 70 bed hotel over 5 storeys;
- 10 residential units though the conversion and extension of the existing building;
- Commercial use at ground floor (retention of Use Class A1 to the front and potential for flexible A1/D2/D1 use within Unit 2);
- Façade upgrades to the High Street frontage;
- Ground level parking within an under croft will be provided as part of the development with a total of 25 vehicle parking spaces serving the hotel accommodation and commercial unit. Currently, it is considered that these parking spaces will serve the hotel staff and guests, commercial unit and that the proposed residential units will be car free;
- Servicing of the hotel will be via the one way system, with a loading bay proposed to be located to the south side of New Wharf Road.



4 AIR QUALITY ASSESSMENT

4.1 Introduction

To scope the content of the air quality assessment the impact of the development on the local area needs to be considered, along with the impact of existing sources of pollution in local area on the occupants of the proposed development.

The development does not meet the criteria (within the *"Land-use Planning & Development Control: Planning for Air Quality"*⁸ guidance) for the need to assess the impact of the development on air quality in the local area the change in traffic flows from the proposed development is predicted to be less than 100 AADT vehicle movements (the screening requirement for assessment of traffic emission assessment in an AQMA). Building emissions are not required to be assessed as the development will use ultra-low NOx boilers, electric combi boilers and potentially an air source heat pump.

The proposed development is located at the boundary of the Tonbridge High Street AQMA. Therefore the assessment is concerned with the impact of the existing sources of air pollution form road sources, on the human health receptors introduced by the development, rather than the impact of the development itself.

4.2 Methodology

The air quality assessment uses published pollutant concentrations that are supplied by TMBC from along Tonbridge High Street near the site of the proposed development.

These concentrations have been evaluated using the "Simple" assessment procedure in the "planning for air quality" guidance. The receptors considered are those introduced by the proposed development, on the ground floor at the closest façade to the roads, as a worst case. The criteria in Table 4.1 has been used to describe the impact of introduction of receptors by the proposed development and the impact on existing receptors from the proposed development.

Annual Mean pollutant concentration in	% Change in concentration relative to Air Quality Assessment Level (AQAL) – NO2 and PM_{10} annual mean			
assessment year	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% or less of AQAL	Negligible	Slight	Moderate	Moderate
95-102% or less of AQAL	Slight	Moderate	Moderate	Substantial
103-109 % or less of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Table 4.1 Assessment Criteria Impact Descriptors for Individual Receptors

Note: Where the predicted change is less than 0.5% the impact descriptor is negligible.

⁸ Institute of Air Quality Management. Land-Use Planning & Development Control: Planning For Air Quality. 2017.



4.3 Impacts

With 25 parking spaces and a trip rate of 91 the development does not meet the IAQM screening criteria for further assessment and is considered to result in a predicted change in NO₂ concentrations of less than 0.5% and so the impact of the development is considered as "**Negligible**".

To establish the ambient NO₂ concentrations measured at the TN110 NO₂ diffusion tube site at 88 High Street have been used and are considered representative of the worst case exposure of the residential element on the High Street façade. The measured concentrations at TN35 and TN44 have also been considered. The measured concentrations are taken from the 2019 TMBC Annual Status Report⁹. The measured annual mean NO₂ concentration for recent years are presented in Table 4.2.

Site Details		NO ₂ Annual Mean Concentration (μ g/m ³))
Site ID	Site Type	2016	2017	2018
TN110 – 88 High Street	Roadside	30.1	32.8	28.4
TN35 - High Street, Tonbridge(no 35 WH Smith)	Urban Centre	34.6	37.5	36.4
TN44 - High Street, Tonbridge(no 46a)	Urban Centre	40.5	38.4	35.2

Table 4.2. TMBC diffusion tube NO₂ concentrations

The measured annual mean NO₂ concentrations at the development site are below the annual mean NO₂ objective of 40 μ gm⁻³. As such no mitigation to human health receptors within the proposed development is required. Nevertheless, MVHR is proposed for the residential units as part of the development and the ventilation inlets are proposed to be located as far back from Tonbridge High Street as practicable.

The hourly mean NO₂ objective is considered highly unlikely to be exceeded as the hourly mean objective is unlikely to be exceeded where the annual mean NO₂ concentration is below $60 \ \mu gm^{-3}$. As such the amenity areas are considered to be in an area with suitable air quality in relation to the hourly NO₂ mean objective.

 NO_2 concentrations at other areas of the site away from High Street are predicted to be well below the annual mean NO_2 objective and benefit from the barrier effect of the buildings.

TMBC does not measure PM_{10} concentrations within the Tonbridge area as the concentrations are well below the annual mean PM_{10} objective.

The impact descriptor for the individual sensitive receptors introduced by the development proposal is "**Negligible**".

⁹ Tonbridge and Malling Borough Council. Annual Status Report. 2019.





Figure 4.1. Site location relative to TMBC diffusion tube locations

Key: 🔲 Development site

4.4 Significance of Air Quality Impacts and Effects

It is noted that the measured concentrations used are for ground level exposure (around 2m) and are considered to be below the annual mean NO₂ objective in all areas of the proposed development and well below the PM₁₀ annual mean objective. The effect of the introduction of the human health sensitive receptors through the development is considered as a "**Not Significant**" effect. The effect of the impact of the development on existing receptors is considered as "**Not Significant**" as the emissions are below the scoping criteria for air quality assessment (though emissions mitigation assessment is conducted in Section 6).



5 DUST RISK ASSESSMENT

5.1 Introduction

The purpose of this assessment is to identify the category of risk from dust emission associated with the demolition and construction phases, and to put in place a suitable mitigation strategy to ensure negative impacts and adverse effects are controlled and reduced.

This assessment follows the procedure in the Institute of Air Quality Management's "Guidance on the assessment of dust from demolition and construction"¹⁰.

The construction works are assessed for four phases:

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

The first step of the assessment is to conduct screening to establish if there is need to proceed to detailed assessment. A dust risk assessment usually proceeds to detailed assessment if there is a human receptor within 50 m of the boundary of the site or 50 m of the routes used by construction vehicles on the public highway, up to 500 m from the site entrances (for large sites).

The main steps are as follows:

- identify magnitude of dust emission for each of the phases the worksite;
- Identify the sensitivity of the receptors;
- Identify the sensitivity of the area;
- determine potential risk category of each works phase; and
- outline how each risk will be mitigated.

There are human and soiling receptors within 20 m of the site and so the assessment proceeded to a detailed assessment and is described in the following sections.

5.2 Dust Emission Magnitude

Demolition

The demolition phase is limited in scope. The demolition phase involves:

- total volume of building to be demolished <20,000m3;
- demolition activities less than 10m in height;

The demolition phase dust emission magnitude is considered as **Small.**

Earthworks

The site is underlain by made ground and alluvium (clay, silt, sand and gravel) that have a medium potential for dust when dry.

The earthworks phase involves:

- a site area less than <2,500 m²;
- a moderately dusty soil type
- <5 heavy earth moving vehicles; and

¹⁰ Institute of Air Quality Management. Guidance on the assessment of dust from demolition and construction. 2014



• <10,000 tonnes of material to be moved.

The earthworks phase dust emission magnitude is considered as **Small**.

Construction

The construction phase involves:

- total building volume <25,000 m³.
- Use of a potentially dusty building material (concrete);

The construction phase dust emission magnitude is considered as **Medium**.

Trackout

The trackout phase involves:

- maximum of 5 HDV outward movements (during the excavation phase);
- unpaved road length <50 m; and
- use of hardstanding for deliveries.

The Trackout phase dust emission magnitude is considered as **Small**.

The summary of the dust emission magnitude is presented in Table 5.1.

Table 5.1 Dust Emission Magnitude

Phase	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Medium
Trackout	Small

5.3 Sensitivity of the Area

The next step of the assessment is to define the sensitivity of the area. The sensitivity of the area takes into account a number of factors, including:

- Specific sensitivities of receptors in the area
- The proximity and number of receptors
- Background PM₁₀ concentrations
- Site specific factors such as topography

The sensitivity is defined for:

- Dust soiling effects
- Human health effects of PM₁₀
- Ecological effects

High sensitivity receptors for dust soiling in the vicinity of the site include dwellings. High sensitivity receptors for health effects of PM₁₀ include receptors in residential areas including dwellings.

Ecological effects are not considered further in this assessment as there are no dust sensitive designated ecological receptors within 50m of the site boundary or construction route or within 500m of the site entrance.

For dust soiling effects there are between 10 and 100 high sensitivity receptors within 20 m of the site boundary and so the sensitivity of the area is defined as "High" for soiling effects.



For human health effects the baseline annual mean PM_{10} concentration needs to be considered. For the purpose of the dust risk assessment background PM_{10} concentrations have been assumed to be below $24\mu gm^{-3}$ based on the background concentrations from Defra. With the baseline PM_{10} concentration below $24\mu gm^{-3}$ with 10-100 high sensitivity residential receptors within 20 m the site the sensitivity of the area is considered as "Low" for human health effects.

The sensitivity of the area is summarised below in Table 5.2.

Table 5.2 Sensitivity of the area

Receptor	Sensitivity of the surrounding area			
Sensitivity	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low

5.4 Risk of Impacts

When the dust emission magnitude is combined with the sensitivity of the area the risk of impacts with no mitigation applied can be determined. The summary of the risk assessment is presented below in Table 5.3. In summary, the site is considered a **Low Risk** site for human health and a **Low Risk** site for dust soiling effects except during the limited demolition works and construction works when predicted to be a **Medium Risk** site. The dust risk is used to define the amount of site-specific mitigation that is required. The mitigation is described in Section 5.5.

Table 5.3 Dust risk summary

Summary	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Low Risk	Medium Risk	Low Risk
Human Health	Negligible	Negligible	Low Risk	Negligible

5.5 Construction Dust and Air Quality Mitigation

Based on the dust risk assessment the following mitigation measures form the control of dust and emissions guidance are proposed:

Dust and Air Quality

Table 5.4 Construction Dust and Air Quality Mitigation measures

Reference	Measure	Specific details
Site manage	ement	
SM1	Develop and implement a stakeholder communications plan that includes	
	community engagement before work commences on site;	
SM2	Develop a dust management plan.	This section
SM3	Display the name and contact details of person(s) accountable for air quality	
	pollutant emissions and dust issues on the site boundary	
SM4	Display the head or regional office contact information	
SM5	Record and respond to all dust and air quality pollutant emissions complaints;	
SM6	Carry out regular site inspections to monitor compliance with air quality and	
	dust control procedures, record inspection results, and make an inspection log	
	available to the local authority when asked;	
SM7	Increase the frequency of site inspections by those accountable for dust and air	
	quality pollutant emissions issues when activities with a high potential to	



	produce dust and emissions and dust are being carried out, and during	
	prolonged dry or windy conditions.	
SM8	Record any exceptional incidents that cause dust and air quality pollutant	
	emissions, either on or off the site, and the action taken to resolve the situation	
	is recorded in the log book.	
Preparing a	and maintaining the site	
PM1	Plan site layout: machinery and dust causing activities should be located away	
	from receptors	
PM2	Erect solid screens or barriers around dust activities or the site boundary that	
	are, at least, as high as any stockpiles on site	
PM3	Avoid site runoff of water or mud	
PM4	Keep site fencing, barriers and scaffolding clean using wet methods	
PM5	Remove materials from site as soon as possible.	
PM6	Carry out regular dust soiling checks of buildings within 100m of site boundary	
	and cleaning to be provided if necessary and attributable to site activity.	
PM7	Agree monitoring locations with the Local Authority.	
PM8	Put in place real-time dust and air quality pollutant monitors across the site and	
	ensure they are checked regularly.	
Operating	vehicle/machinery and sustainable travel	
OV1	All NRMM should meet Stage IIIB emission criteria. A schedule of NRMM will be	
	maintained on site and issued to TMDC Environmental Officers at regular	
	Intervals or uploaded onto the NRMM register. Diesel sources will be recorded	
	on the same document	
OV2	Non-road mobile machinery (NRMM) used on site will operate ultra-low sulphur	
	diesel (meeting the specification within EN590:201411);	
OV3	Ensure all vehicles switch off engines when stationary – no	
	idling vehicles.	
OV4	Avoid the use of diesel or petrol powered generators and use mains electricity	
	or battery powered equipment where possible	
OV5	Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes	Minimal haul
	and work areas	road length and
		existing
		hardstanding
		used
OV6	Implement a Travel Plan that supports and encourages sustainable travel (public	
	transport, cycling, walking, and car-sharing	
Operations		
OP1	Only use cutting, grinding or sawing equipment fitted or in conjunction with	
	suitable dust suppression techniques such as water sprays or local extraction, e.g.	
	suitable local exhaust ventilation systems	
OP2	Ensure an adequate water supply on the site for effective dust/particulate	
	matter mitigation (using recycled water where possible)	
OP3	Use enclosed chutes, conveyors and covered skips	
OP4	Minimise drop heights from conveyors, loading shovels, hoppers and other	
	loading or handling equipment and use fine water sprays on such equipment	
	wherever appropriate	

¹¹ European Committee for Standardisation. EN590:2014. Automotive fuels diesel requirements and test methods. 2014.



OP5	Ensure equipment is readily available on site to clean any dry spillages, and
	clean up spillages as soon as reasonably practicable after the event using wet
	cleaning methods.

Waste Management					
WM1	Reuse and recycle waste to reduce dust from waste materials				
WM2	Avoid bonfires and burning of waste materials.				
Demolition					
DM1	Soft strip inside buildings before demolition (retaining walls and windows in the				
	rest of the building where possible, to				
	provide a screen against dust).				
DM2	Ensure water suppression is used during demolition operations.				
DM3	Avoid explosive blasting, using appropriate manual or mechanical alternatives.				
DM4	Bagging and removal of any biological debris or damp down of material prior to				
	demolition;				
Earthworks					
	No specific measures for a low risk site				
Construction					
CS1	Avoid scabbling (roughening of concrete surfaces) if possible.				
CS2	Ensure sand and other aggregates are stored in bunded areas and are not				
	allowed to dry out, unless this is required for a particular process, in which case				
	ensure that appropriate additional control measures are in place.				
Trackout					
TR1	Avoid dry sweeping of large areas.	Use wet sweeping			
TR2	Ensure vehicles entering and leaving sites are securely covered to prevent				
	escape of materials during transport.				
TR3	Implement a wheel washing system (with rumble grids to dislodge accumulated	Use of jetwash to			
	dust and mud prior to leaving the site where reasonably practicable).	clean wheels			
		when required			

5.6 Non-Road Mobile Machinery

Non-road Mobile Machinery (NRMM) will meet Stage IIIB of EU Directive 97/68/EC (Directive 97/68/EC of the European Parliament and of the Council, 1997) and its subsequent amendments as a minimum, from the 1st of September 2020.



6 EMISSIONS MITIGATION ASSESSMENT

6.1 Introduction

This section details the KMAQP standard emissions mitigation required. The KMAQP screening checklist is presented below in Table 6.1. As the development is a major development and close to the Tonbridge High Street AQMA and as the answer is yes to both questions the assessment proceeded to Checklist 2.

Table 6.1 Screening checklist

Screening Checklist	Yes	No	Recommendations
Q1. Is the proposed development categorised as a major size development The proposed development is a major size development	Y		If Yes, go to Checklist 2 If No, go to Q2.
Q2. Is the proposed development within, or close to an Air Quality Management Area. The proposed development is close to an air quality management area	Y		If Yes, go to Checklist 2 If No, no mitigation is required

The KMAQP screening Checklist 2 is presented below in Table 6.2.

Table 6.2 Air Quality and Emissions Mitigation Assessment Checklist 2

Question	Yes	No	Comments
Q3. Does the development require an Environmental		N	
Impact Assessment (EIA)?			
Q4. Will development type likely become large scale		N	
major development*?			
(either on its' own or as part of several separate			
cumulative planned developments.)			
Q5. Is there vehicle parking in the development:		N	25 parking spaces for the hotel.
>100 (outside AQMA) or >50 (within or adjacent to			There are no parking spaces for
AQMA)?			the residential element.
Q6. For existing roads with >10,000 Annual Average		N	
Daily Traffic (AADT) does the development: Introduce			
extra vehicle movements (>5%), is it			
likely to cause congestion or introduce > 15			
extra heavy duty vehicle movements per day			
Q7. Will the development introduce new sensitive		N	Part of the development is
receptors into an AQMA?			located at the boundary of the
			AQMA though not within the
			AQMA
Q8. Are there any other proposed developments in the		N	Proposed developments nearby
vicinity of this development which could have a			include:
cumulative effect on air quality?			
Q9. Is the development introducing biomass		N	
energy/heating plant into an urban			
environment?			
Q10. Is the development likely to impact on sensitive		N	No sensitive environments
environments (i.e. SSSI's, National Parks etc.)			within 500m

The KMAQP guidance requires an emissions mitigation assessment for all major developments.

6.2 Standard Mitigation

The standard mitigation requirements and how the proposed development meets (or exceeds) this requirement is shown in Table 6.3.

Standard Mitigation Requirement	Project Compliance
Residential - All gas-fired boilers to meet minimum standard of <40mgNOx/kWh	The residential element of the proposed development uses electric combi-boilers,
	removing site emissions from
Residential - 1 Electric Vehicle charging point* per dwelling with dedicated parking or 1 charging point per 10 spaces (unallocated parking)	The residential element of the proposed development does not have parking spaces.
Commercial/Retail/Industrial - 10% of parking spaces to be provided with Electric Vehicle charge points* which may be phased with 5% initial provision and the remainder at an agreed trigger level	Over 10% (3) of the parking spaces will have electric vehicle charging points.
Demolition/Construction - Mitigation in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction	Mitigation in accordance with IAQM guidance is presented in section 5.5

6.3 Emissions Mitigation Assessment – Residential Element and Retail Element

No further emissions mitigation is required for the residential element of the development is required as the residential element is car free and uses electrical heating plant to avoid on site emissions. The ground floor retail unit element is retained and therefore is not included in the emissions mitigation assessment.

6.4 Emissions Mitigation Assessment – Emission Mitigation Calculation.

The emissions mitigation calculations are based on the following equation: EFT output x damage costs x 5 years = 5 year exposure cost value.

Version 9 of the Emission Factor Toolkit¹² has been used to calculate the impact of the hotel use.

EFT input factors:

- 70 bed hotel (urban not London) from hotel trip rate
- calculations for NOx and PM₁₀
- 91 (trip/traffic ratio for hotel)
- cars only (0% HGV)
- 50 kph (average speed)
- 10km (NTS UK average.)

EFT output = 45.31 kg/annum (NOx) and 5.32 kg/annum (PM₁₀) = 0.04531 tonnes/annum (NOx) and 0.00532 tonnes/annum (PM₁₀) x Damage cost £10,699/tonne (NOx) and £136,861/tonne (PM₁₀)

=£484.77 (NOx) + £728.10 (PM₁₀) = £1,212.87 x 5 (years) Total Damage Cost = £2,423.85 (NOx) + £ 6,064.35 (PM₁₀) = £8,488.20

¹² https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html



Notes:

- Trip rates for hotel element from transport assessment.

- Trip length uses the 2014 National Travel Survey (NTS)3 UK average = 7.3miles/10km

- The IGCB damage costs used are the IGCB Air Quality Damage Costs per tonne, 2019 damage costs (Central estimates: NOx = £10,699/tonne and PM_{10} £136,861/tonne Transport Average ($PM_{2.5}$ damage cost urban medium road transport (£203,359 x $PM_{2.5}/PM_{10}$ conversion factor 0.673).

The following scheme specific mitigation measures are proposed in addition to the standard mitigation:

- The residential element does not have car parking spaces
- Adequate provision of secure cycle storage
- Public transport subsidy for employees
- Use of green infrastructure
- All commercial vehicles should comply with either current or previous European Emission Standard
- Use of air source heat pumps for space heating (if practicable and subject to analysis).



7 CONCLUSIONS

Anderson Acoustics Ltd was commissioned by Jaspar Group to undertake an air quality and emissions assessment for the proposed mixed use hotel, residential and retail development at High Street Tonbridge. The impact of the development on existing receptors is considered "**Negligible**" and the effect is "**Not Significant**". Air quality mitigation proposed for the development includes space and water heating through electric combi-boilers for the residential element and ultra-low NOx boilers for the hotel element. Space heating may also be provided to the hotel using an air source heat pump. Air quality mitigation proposed for transport emissions includes electric vehicle charging points and cycle parking bays.

The measured NO_2 concentrations for the site indicate that concentrations at the site of the proposed development are below the annual mean NO_2 objective in the area of the development with exposure to the highest NO_2 concentrations on the façade on High Street. The hourly mean NO_2 objective is highly unlikely to be exceeded and so the air quality in the amenity areas is considered acceptable. The effect of the introduction of the human health receptors is considered as "**Not Significant**".

The dust risk assessment shows the site to be "**Low Risk**" for human health effects for all activities and "**Low Risk**" for dust soiling effects except during demolition and construction where the site is "**Medium Risk**" as the sensitivity of the area is high.

An air quality and emissions mitigation assessment has been conducted and mitigation proposed, according to the guidance, to offset the potential damage.