



**17-27 QUEEN VICTORIA STREET,
READING RG1 1SY**

Air Quality Assessment

February 2017

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AcousticAir

Noise, Vibration & Air Quality Services

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for

Pepa Holdings Ltd

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1. INTRODUCTION

- 1.1 AcousticAir has been commissioned by Pepa Holdings Ltd to undertake an air quality assessment to support a planning application for the conversion of a Grade 2 Listed building from offices to residential at 17-27 Queen Victoria Street, Reading. Queen Victoria Street is a pedestrianised street and the proposed conversion will not have any car parking spaces and will be a car free residential building with 'parking' spaces for bicycles only. As a result, the development will not contribute to additional vehicle movements or emissions on the local road network. Figure 1 shows the location of the development site.
- 1.2 Air quality standards are summarised in Section 2, a summary of the Local Planning Authority's Air Quality Review and Assessments is presented in Section 3 and the air quality impact assessment for the proposed development is presented in Section 4. Our conclusions are presented in Section 5.

2. AIR QUALITY STANDARDS

- 2.1 The principal air quality standards applied within the UK are the standards and objectives that were initially formulated within the Air Quality (England) Regulations 2000 (AQR) as amended in 2002. These were enacted as part of the UK National Air Quality Strategy (AQS) under Section 80 of the Environment Act 1995, and implement relevant directives of the European Union (EU). The latest version of the UK AQS was published in 2007.
- 2.2 It is important to note the distinction between standards and objectives. Although the AQS standards define concentration levels that will avoid or minimise risks to health, they do not necessarily reflect levels that are presently technically feasible or economically efficient. In contrast, the AQS objectives have been set with regard to what is realistically achievable within a specified timetable. The approach adopted by the Strategy is to apply the objectives, where members of the public, in a non-occupational capacity and at locations close to ground level, are likely to be exposed over the averaging time of the objective, for example, over 1-hour, 24-hour or annual periods as appropriate.
- 2.3 Under the Environment Act 1995, Local Authorities must review and document local air quality within their areas by way of a staged appraisal and respond accordingly, with the aim of meeting the air quality objectives by the years defined in the Regulations. Where the objectives of the Regulations are not likely to be achieved by the objective year, an authority is required to designate an Air Quality Management Area (AQMA). For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it will try to meet air quality standards in future.
- 2.4 The Air Quality Strategy is an ongoing mechanism that will be regularly reviewed and updated to take account of evolving European Union (EU) legislation, technical and policy developments and the latest research on health effects of air pollution.
- 2.5 The Strategy's objectives for particles (PM₁₀), benzene and carbon monoxide were reviewed in 2000/2001 and in February 2003, in the light of more recent scientific knowledge and policy changes, the Government updated the Air Quality Strategy (AQS) by way of an Addendum. The revisions provide alterations or extensions to four of the eight existing pollutant objectives, and the addition of a ninth pollutant, polycyclic aromatic hydrocarbons (PAHs). Further revisions to the objectives were promulgated in the 2007 version of the AQR and the current air quality objectives for the protection of human health are summarised in Table 2.1 below. Definitions of units and terms used to quantify air pollutant concentrations are provided in Appendix I.

Table 2.1: UK Air Quality Objectives for Protection of Human Health

Pollutant	Concentration	Measured as *
Benzene		
All authorities	16.25 µg/m ³	Running annual mean
England and Wales only	5 µg/m ³	Annual mean
Scotland and N. Ireland	3.25 µg/m ³	Running annual mean
1,3 Butadiene	2.25 µg/m ³	Running annual mean
Carbon Monoxide		
England, Wales and N. Ireland	10 mg/m ³	Maximum daily running 8-hour mean
Scotland only	10 mg/m ³	Running 8-hour mean
Lead	0.5 µg/m ³	Annual mean
	0.25 µg/m ³	Annual mean
Nitrogen dioxide	200 µg/m ³	1 hour mean not to be exceeded more than 18 times per year
	40 µg/m ³	Annual mean
Particles (PM₁₀ gravimetric)		
All authorities	50 µg/m ³	Daily mean not to be exceeded more than 35 times a year
	40 µg/m ³	Annual mean
Scotland only	50 µg/m ³	Daily mean not to be exceeded more than 7 times a year
	18 µg/m ³	Annual mean
Particles (PM_{2.5} gravimetric)	25 µg/m ³ (target)	Annual mean
England only	Work towards reducing emissions/concentrations of fine particulate matter (PM _{2.5})	Annual mean
Scotland only	10 µg/m ³ (limit)	Annual mean
Sulphur dioxide	350 µg/m ³	1-hour mean not to be exceeded more than 24 times a year
	125 µg/m ³	24-hour mean not to be exceeded more than 3 times a year
	266 µg/m ³	15-minute mean not to be exceeded more than 35 times a

		year
Objectives not yet Prescribed in Regulations for the Purposes of Local Air Quality Management		
Polycyclic aromatic hydrocarbons	0.25 ng/m ³	Annual mean
Ozone	100 µg/m ³	8 hourly running or hourly mean, not to be exceeded more than 10 times a year

Notes: * how the objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000 and 2002)

- 2.6 The EU has also set NO₂ objectives for 2010 that must be met by all member states, although these 2010 EU NO₂ objectives are equal to the UK Air Quality Strategy NO₂ 2005 objectives.
- 2.7 Of the pollutants mentioned above, the majority of the UK SO₂ emissions derive from stationary combustion plant rather than traffic emissions. Therefore, this pollutant is not significant for this assessment. Similarly, the concentration of lead in vehicle fuels has been reduced to negligible levels in the past 10 to 15 years, particularly since the introduction of unleaded fuel, and this pollutant is also no longer of concern for this study. Of the remaining pollutants, the standards for carbon monoxide, benzene and 1,3 butadiene are generally met in urban areas. The pollutants of most concern to planning authorities in urban areas, due to the high concentrations presently encountered (of which local road traffic makes a large contribution) are NO₂ and PM₁₀.

London Councils Air Quality and Planning Guidance, January 2007

- 2.8 This guidance updates and replaces the Association of London Government's Planning Technical Guidance issued on 20th March 2001 and Circular TEC 01/03, and aims to help reduce exposure to air pollution across the whole of London. The technical guidance was produced by the APPLE (Air Pollution Planning and the Local Environment) working group and provides useful guidance for assessing the significance of air quality issues at other sites throughout the UK.
- 2.9 In determining both the significance of exposure to air pollution and the levels of mitigation required, the guidance recommends that consideration should be given to the Air Pollution Exposure Criteria (APEC) as presented in Table 2.2:

Table 2.2: Air Pollution Exposure Criteria

	Applicable Range Nitrogen Dioxide Annual Mean	Applicable Range PM₁₀	Recommendation
APEC – A	> 5% below national objective	Annual Mean: > 5% below national objective 24 hr: > 1-day less than national objective	No air quality grounds for refusal; however mitigation of any emissions should be considered.
APEC – B	Between 5% below or above national objective	Annual Mean: Between 5% above or below national objective 24 hr: Between 1-day above or below national objective.	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., Maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered and internal pollutant emissions minimised.
APEC – C	> 5% above national objective	Annual Mean: > 5% above national objective 24 hr: > 1-day more than national objective.	Refusal on air quality grounds should be anticipated, unless the Local Authority has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures.

Notes: * Applicable ranges assume downward pollutant trend has been established.

2.10 The London Councils' guidance also provides a diagram for assisting in determining whether an application is significant in terms of air quality, and the flow chart is reproduced in Appendix II. The matter of significance is

based on the professional judgement of the Local Authority officer, and it is advised that even where air quality is deemed not to be a significant consideration, mitigation measures may still be required.

National Planning Policy Framework

- 2.11 The National Planning Policy Framework (NPPF), issued by the Department for Communities and Local Government in March 2012, sets out the Government's planning policies for England and how these are to be expected to be applied. The NPPF must be taken into account in the preparation of local and neighbourhood plans, and is to be a material consideration in planning decisions.
- 2.12 With a key emphasis on sustainable development, the NPPF identifies those planning guidance documents that have been revoked and replaced by the Framework, and, in relation to environmental emissions, these include, amongst others, Planning Policy Statement 23: Planning and Pollution Control (2004).
- 2.13 With regard to air quality, the NPPF guidance is that planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts of air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan.
- 2.14 In drawing up their Local Plans to implement the NPPF, Local Planning Authorities are advised that significant adverse impacts on any of the three key dimensions of sustainable development (economic, social and environmental) should be avoided and, wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impact should be considered, and where adequate mitigation measures are not possible, compensatory measures may be appropriate.

Planning Practice Guidance

- 2.15 In March 2014 the Department for Communities & Local Government updated its on-line planning guidance to assist with interpretation of the NPPF. The guidance covers general matters such as relevance of air quality issues, role of the Local Plan, information sources, assessment approaches and mitigation. How considerations about air quality fit into the development management process is summarised by the guidance in a flowchart, which is included here in Appendix II with other relevant flow charts.

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) – Land-Use Planning & Development Control: Planning For Air Quality 2015

- 2.16 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have produced this guidance to ensure that air quality is

adequately considered in the land-use planning and development control processes.

- 2.17 The guidance clarifies when an air quality assessment is required and what it should contain. It sets out how impacts should be described and assessed. Importantly it sets out a recommended approach that can be used to assess the significance of the air quality impacts, taking account of the advice issued by IAQM. An important focus of this guidance is on minimising the air quality impacts of all developments for which air quality assessments have been requested by the planning authority; this will be through good design and application of appropriate mitigation measures.
- 2.18 Stage 1 of the assessment in the local area seeks to screen out smaller development and/or developments where impacts can be considered to have insignificant effects. The Stage 1 criteria are set out in Table 2.3 and require any of the criteria in row A, coupled with any of the criteria in row B, to apply before an assessment proceeds to Stage 2. If none of the criteria are met then the impacts can be considered to be insignificant and there is no requirement to carry out an air quality assessment.

Table 2.3: Stage 1 Criteria

Criteria to Proceed to Stage 2	
A.	If any of the following apply: • 10 or more residential units or a site of more than 0.5 ha • more than 1,000 m² of floor space for all other uses or a site area greater than 1 ha
B.	Coupled with any of the following: • the development has more than 10 parking spaces • the development will have a centralised energy facility or other centralised combustion process
Note: Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.	

- 2.19 The criteria in Table 2.4 provide more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area.

Table 2.4: Indicative Criteria for Requiring an Air Quality Assessment

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans < 3.5t gross vehicle weight)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses > 3.5t gross vehicle weight)	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor Coupled with the car park having more than 100 movements per day (total in and out)
7. Have one or more substantial combustion processes.	Where the combustion unit is: - any centralised plant using bio fuel - any combustion plant with single or combined thermal input > 300kW - a standby emergency generator associated with a centralised energy centre (if likely to be tested/used > 18 hours a year)
8. Have a combustion process of any size.	Where the pollutants are exhausted from a vent or stack in a location and at a height that may give rise to impacts at receptors through insufficient dispersion. This criterion is intended to address those situations where a new development may be close to other buildings that could be residential and/or which could adversely affect the plume's dispersion by way of their size and/or height.

2.20 Where an air quality assessment is identified as being required, this may be either a Simple or a Detailed Assessment. A Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that is completed with the aid of a predictive technique, such as a dispersion model. Passing a criterion in Table 2.4 does not automatically lead to the requirement for a Detailed Assessment. Once again, where none of the criteria are met the impacts can

be considered to be insignificant and there is no requirement to carry out an air quality assessment.

- 2.21 The purpose of the air quality assessment is to define the likely quantitative or qualitative changes in air quality or exposure to air pollution as a result of the proposed development.
- 2.22 The suggested framework for describing the impacts on the basis set out above is set out in Table 2.5. The term Air Quality Assessment Level (AQAL) is used to include air quality objectives or limit values, where these exist. The Table is only intended to be used with annual mean concentrations, and all % changes are rounded up or down to whole numbers. At exposures less than 75% of the AQAL, the degree of harm is described as likely to be small. As the exposure encroaches and exceeds the AQAL the degree of harm increases, and the change becomes more important when the result is an exposure that is approximately equal to or greater than the AQAL.

Table 2.5: Impact Descriptors for Individual Receptors

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

- 2.23 In the case of combustion sources (including road traffic), it is recommended that PM_{2.5} is used to assess impacts rather than PM₁₀. The AQAL for PM_{2.5} is much lower on the basis of the air quality objective and EU limit value and this therefore represents a more conservative approach. If, however, PM₁₀ is assessed, then Table 2.5 should be applied using the limit value of 40 µg/m³ as an annual mean, or alternatively a derived value for the annual mean based on exceeding 50 µg/m³ for more than 35 days in a year (the equation in LAQM.TGO9 shows an annual mean of 32 µg/m³ equating to 35 days at or above 50 µg/m³).
- 2.24 A judgement of the significance of the impacts is to be made by a competent professional who is suitably qualified, and the reasons for reaching the conclusions should be transparent and set out logically. Whilst the starting point for the assessment of significance is the degree of impact, as defined by Table 2.5, this should be seen as only one of the factors for consideration, not least because the outcome of this assessment procedure applies to a receptor and not the overall impact of the scheme on the locality.
- 2.25 The guidance also makes it clear that the presence of an AQMA should not halt all development, but where development is permitted, the planning system

should ensure that any impacts are minimised as far as is practicable. Even where developments are proposed outside of AQMAs, and where pollutant concentrations are predicted to be below the objectives/limit values, it remains important that the proposed development incorporates good design principles and best practice measures and that emissions are fully minimised.

3. READING BOROUGH COUNCIL'S AIR QUALITY REVIEW AND ASSESSMENT

- 3.1 Reading Borough Council (RBC) completed the first round of the Review and Assessment in 2000. This first round concluded that the National Air Quality Objectives (NAQOs) would be achieved across the Borough.
- 3.2 The Updating and Screening Assessment (USA) undertaken as part of the second round of Review and Assessment identified potential exceedences of the annual mean nitrogen dioxide (NO₂) NAQO at eight locations across the Borough. This was based on available monitoring data.
- 3.3 Following the USA, a Detailed Assessment (2005) confirmed that the annual mean NO₂ NAQO would be exceeded close to a number of major roads and junctions throughout the Borough. As a result of these findings RBC declared six Air Quality Management Areas (AQMAs) in September 2006 and expanded the network of passive diffusion tubes and continuous monitors across the Borough.
- 3.4 In the third round of Review and Assessment undertaken by RBC, the 2006 USA identified eight junctions where the 24 hour mean Particulate Matter (PM₁₀) NAQOs and/or the annual mean NO₂ NAQO could be exceeded.
- 3.5 The following 2007 Detailed Assessment concluded that the PM₁₀ NAQOs would be achieved across the Borough and that an additional AQMA for annual mean concentrations of NO₂ should be considered.
- 3.6 The 2008 Further Assessment concluded that in 2007 NO₂ concentrations continued to exceed the annual mean NAQO within the six AQMAs declared in 2006. Predicted concentrations for 2015 showed that traffic flows would need to be reduced significantly to meet the NAQOs and source apportionment showed that HGVs were the major source for the NO₂ hotspot areas. It also recommended that a single AQMA be declared covering the appropriate areas where there was a risk of exceedence of the NO₂ NAQO including the area identified in the Detailed Assessment (2007).
- 3.7 The 2008 Progress Report concluded that there continued to be exceedences at the locations already highlighted by the Local Air Quality Management (LAQM) process. There had been an overall downward trend in background NO₂ concentrations, however in recent years the monitored levels remained at a similar level. Both the annual and 24 hour mean NAQOs for PM₁₀ continued to be met within the Borough. Long-term monitoring data showed an upward trend in annual mean concentrations at the Reading Newtown urban background continuous monitoring site, however they were well below the annual mean PM₁₀ NAQO.
- 3.8 RBC revoked the previous six AQMAs declared in September 2006 for annual NO₂ NAQO and declared a single AQMA in April 2009, following the recommendations of the Further Assessment, for annual and hourly NO₂

NAQO exceedences. The single AQMA covers the Oxford Road area identified during the third round of the Review and Assessment process as being in exceedence of the annual NAQO for NO₂ in addition to those areas identified and declared following the second round. The single AQMA goes further than covering areas of known exceedence, by covering all major transport routes throughout the district to address the possibility of moving hotspots from one area to another following implementation of the AQAP.

- 3.9 The extent of the AQMA is shown in Figure 1, and the development sits within the centre, although not directly exposed to traffic emissions since the local area has been pedestrianised.
- 3.10 Since 2009, annual Progress Reports and Updating and Screening Assessments have not found any significant changes within the Borough to suggest the likelihood of further exceedences outside of the AQMA declaration.
- 3.11 The Council's most recently published Updating and Screening Assessment (2015) concludes that for NO₂, there were 30 sites with an exceedence of the 40 µg/m³ annual mean, and a further 14 sites indicating a borderline exceedence (>36 µg/m³) in 2014. All sites that were showing either an exceedence or a borderline exceedence were located within the current AQMA boundaries as formally declared in April 2009, therefore no Detailed Assessment was required.
- 3.12 Monitoring data for PM₁₀ collected at the Caversham Road and Kings Road continuous analysers, indicated an exceedence of the 24-hour objective (more than 35 exceedences of 50 µg/m³), when calculated using the 90th percentile method due to low data capture (87% and 88% respectively).
- 3.13 RBC identified a number of possible reasons for this occurrence. A factor that may have had an impact on the pollution levels at the Caversham Road air quality monitoring site is the recently completed expansion of Reading Station and Cow Lane Bridges widening. Because of this work a large number of haulage vehicles have been using the route which may have impacted the recorded results. This work has recently finished so it is proposed to monitor the situation to see if the levels now drop to the levels recorded prior to the work commencing.
- 3.14 In addition, there have been road works near to the monitoring site on Kings Road for a significant part of the year due to junction and bus lane improvements. This may have impacted the results recorded in 2014. These have now been completed so it is proposed to monitor the situation to see if levels now drop back to levels records in previous years.
- 3.15 The proposed development at Queen Victoria Street falls within the AQMA as indicated on Figure 2. RBC's NO₂ monitoring sites are identified in Figure 3 and the data for their closest diffusion tubes to the development site, at Garrard Street and Friar Street within the AQMA, are summarised in Table

3.1. The average concentrations of NO₂ between 2011 and 2014 ranged from 41 to 52 µg/m³, which both lie above the air quality objective of 40 µg/m³.

Table 3.1: Annual Mean Concentrations at Garrard Street and Friar Street, µg/m³

Site ID	OS Co-ordinates	Relevant Exposure	Distance to Kerb (m)	Annual Mean Concentrations (µg/m3)				
				2011	2012	2013	2014	Average
Garrard Street	471421,173693	Y (0m)	1.5	34	39	52	40	41.25
Friar Street	471437,173589	Y (7m)	5m	N/A	52	52	51	51.66

3.16 However, as with all of RBC's monitoring locations, the diffusion tube sites at Garrard Street and Friar Street are roadside locations at only 1.5 and 5m respectively from the emission sources. They will not, therefore, be representative of levels at the pedestrianised Queen Victoria Street. The development site is approximately 50m from the traffic sources using Friar Street to the north, and Broad Street to the south is similarly pedestrianised. As a result, air quality at the development site will be lower than those values measured at roadsides, and, given the dispersion effects over the 50m between Friar Street and the development site, local concentrations at the site are considered to fall below the air quality objective.

3.17 There will be numerous existing residential premises within the centre of Reading that will already have been treated as 'relevant exposure' in RBC's air quality reviews and assessments. The conclusions reached for existing dwellings will be bettered at the new apartments at the development site due to the lack of traffic emissions directly outside the building. In this situation, it is to be expected that all air quality objectives will be satisfied.

4. AIR QUALITY IMPACT ASSESSMENT

- 4.1 The EPUK/IAQM guidance set out in Section 2 establishes that the development requires an air quality assessment and that this may be either a Simple or a Detailed Assessment. A Simple Assessment is one relying on already published information and without quantification of impacts.
- 4.2 Given the site's location on the pedestrianised Queen Victoria Street, coupled with the facts that (i) the site is not directly exposed to traffic emissions from any form of vehicle movements, and (ii) the proposed conversion of the Grade 2 Listed building will not have any car parking spaces and be a car free development that will not contribute to vehicle movements on the local road network, a qualitative 'Simple Assessment' has been deemed appropriate for the air quality assessment.
- 4.3 Local monitoring data is summarised in Section 3 and indicates that for roadside receptors to the north of the development site at distances of 1.5 and 5m from roads within the AQMA, annual average concentrations of NO₂ range from 41 to 52 µg/m³, which lie above the air quality objective of 40 µg/m³. However, the development site lies within a pedestrianised area and is at least 50m from the nearest traffic sources using Friar Street to the north, which means that emissions from closest traffic sources will undergo dilution and dispersion before impacting upon new dwellings at the development site.
- 4.4 There are no automatic monitoring sites in the immediate vicinity of the development site from which background concentrations can be obtained. Therefore, suitable estimates of background air quality have been derived in accordance with LAQM.TG(016) using the air pollution background concentration maps published by Defra. The maps are updated by Defra periodically to reflect changes to underlying data including emissions factors. In recent years there have been annual updates due to new information on NO_x emissions from diesel vehicles, and fleet and vehicle activity data have also been updated.
- 4.5 Average background pollutant concentrations for local 1 x 1 km grid squares covering the development site are available for all future years, and Table 4.1 shows the background concentrations that were used in this assessment. Background values for NO_x are presented, as they are required in the conversion of modelled NO_x concentrations to total NO₂. Only those pollutants of real concern to the local authority, namely NO₂ and PM₁₀, are considered

Table 4.1: Annual Mean Background Concentrations, µg/m³

Year	NO _x	NO ₂	PM ₁₀
2017	43.11	26.92	19.28

- 4.6 Background concentrations of NO₂ and PM₁₀ both lie below their respective air quality objectives of 40 µg/m³, although it is to be expected that actual concentrations at the development site will lie somewhere between the background concentrations and the values measured at roadside.
- 4.7 At exposures less than 75% of the AQAL, the degree of harm is described as likely to be small. As the exposure encroaches and exceeds the AQAL the degree of harm increases, and an impact becomes more important when the result is an exposure that is approximately equal to or greater than the AQAL. Since the annual mean background concentration of NO₂ (26.92 µg/m³) is less than 70% of the AQAL as defined in Table 2.5, the indication is that due to the distance of the pedestrianised location from the nearest traffic sources, the overall degree of harm due to air pollution will be small.
- 4.8 Being a car-free development, the proposal would not interfere with or prevent implementation of measures within the Council's AQAP, nor would it cause a worsening of local air quality. As a consequence, air quality is not considered to be a significant consideration for planning purposes, and the matter can proceed to a planning decision with planning conditions if appropriate.

5. CONCLUSIONS

- 5.1 Queen Victoria Street is a pedestrianised street and the proposed conversion of the Grade 2 Listed building will not include any car parking spaces. Therefore, the development would not lead to any additional traffic flows on the local road network.
- 5.2 The site lies within the Council's designated AQMA, although not directly exposed to traffic emissions since the local area has been pedestrianised. The development site is approximately 50m from the nearest traffic sources using Friar Street to the north, and Broad Street to the south is similarly pedestrianised. As a result, air quality at the development site will be lower than those values measured at roadsides, and, given the dispersion effects over the 50m between Friar Street and the development site, local concentrations at the site are considered to fall below the air quality objective.
- 5.3 Background concentrations of NO₂ and PM₁₀ at the development site lie below their respective air quality objectives of 40 µg/m³, although it is to be expected that actual concentrations at the development site will lie somewhere between the background concentrations and the values measured at roadside.
- 5.4 At exposures less than 75% of the Air Quality Action Level (AQAL), the degree of harm is described as likely to be small. As the exposure encroaches and exceeds the AQAL the degree of harm increases, and an impact becomes more important when the result is an exposure that is approximately equal to or greater than the AQAL. Since the annual mean background concentration of NO₂ at the development site (26.92 µg/m³) is less than 70% of the AQAL, the indication is that due to the distance of the pedestrianised location from the nearest traffic sources, the overall degree of harm due to air pollution will be small.
- 5.5 Being a car-free development, the proposal would not interfere with or prevent implementation of measures within the Council's AQAP, nor would it cause a worsening of local air quality. As a consequence, air quality is not considered to be a significant consideration for planning purposes, and the matter can proceed to a planning decision with planning conditions if appropriate.

Figure 1

Site Location Plan

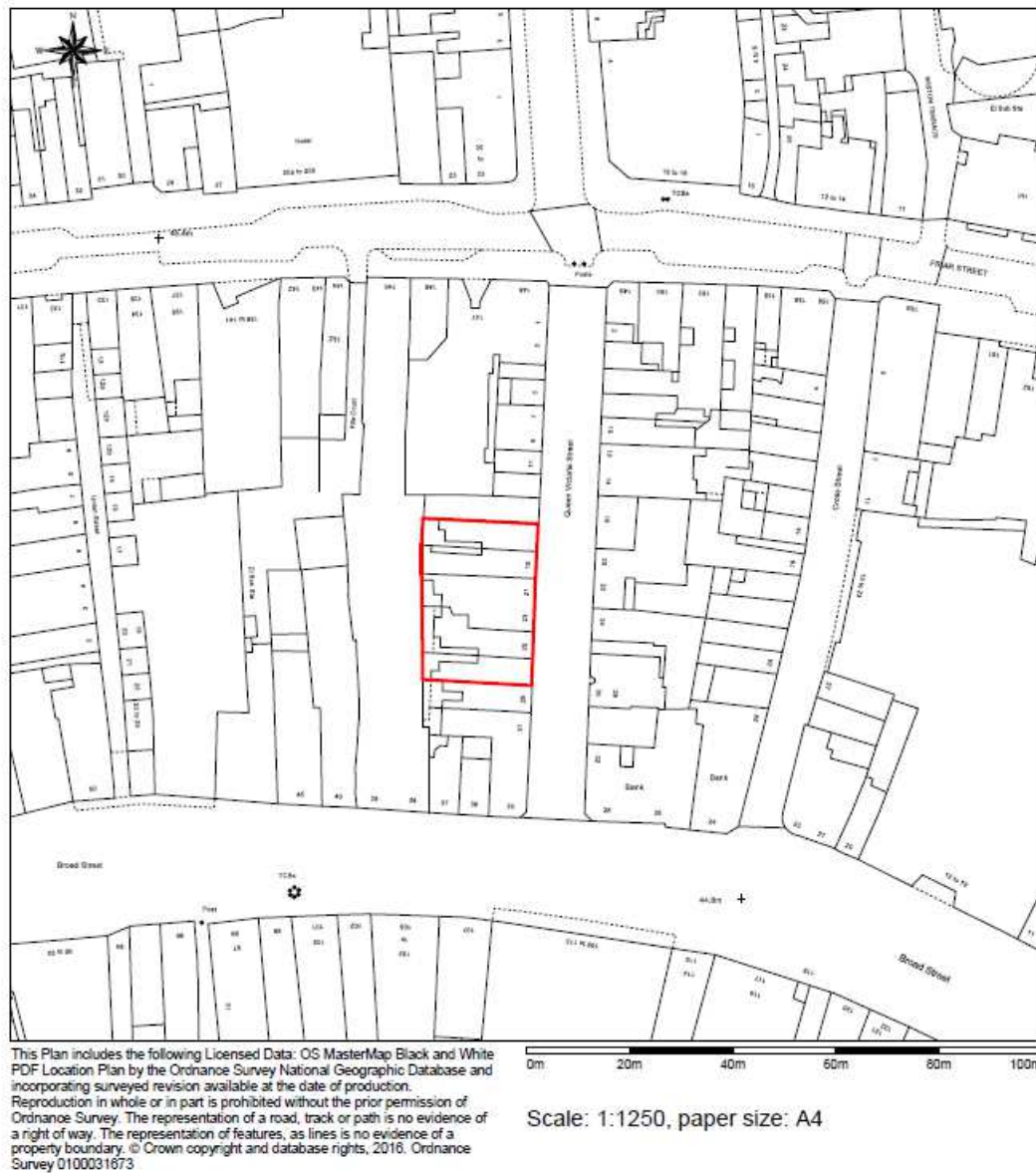


Figure 2

Air Quality Management Area and Automatic Monitoring Sites

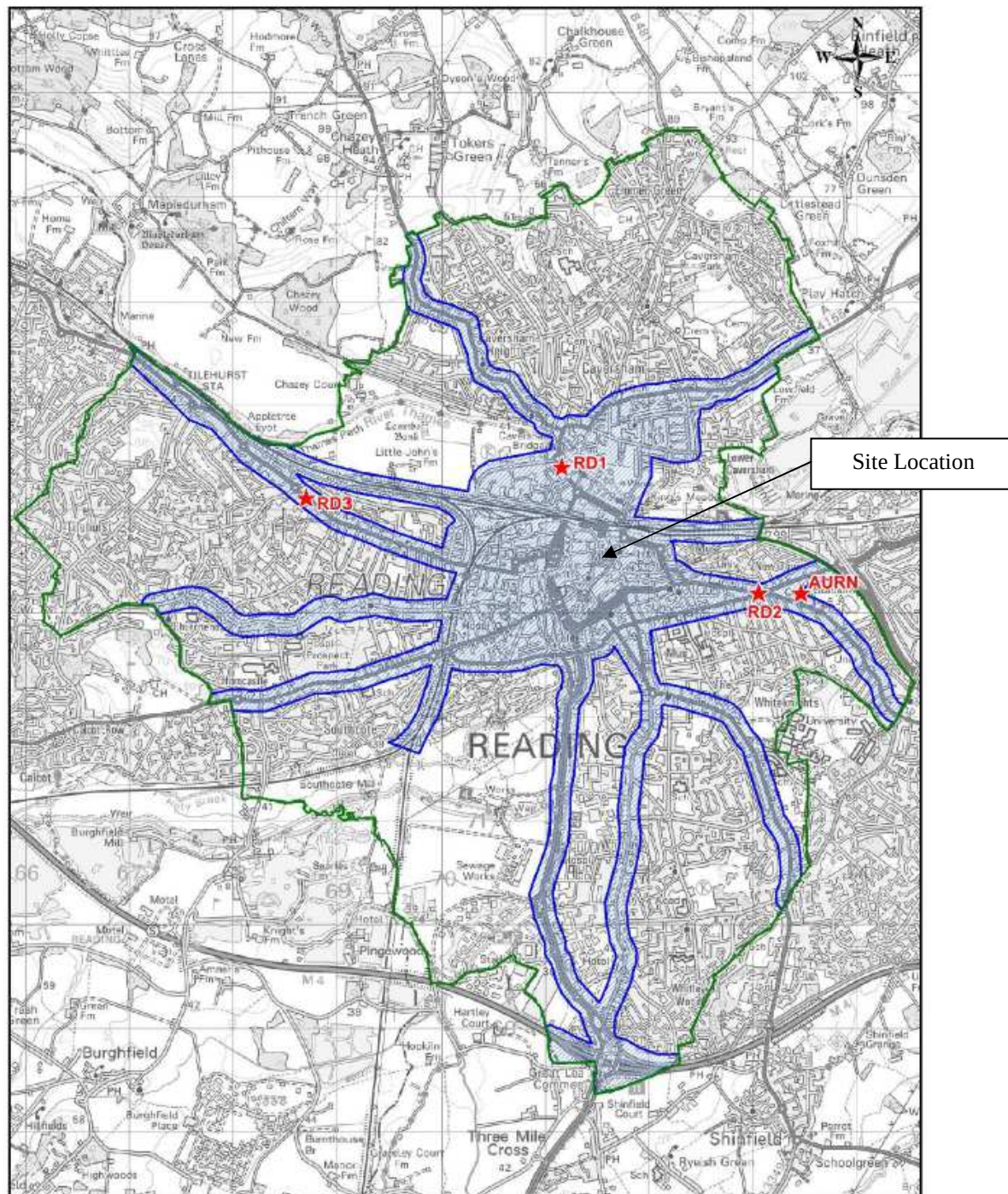


Figure 3

Map of Non-Automatic Monitoring Sites



APPENDIX I

DESCRIPTION OF AIR QUALITY TERMS AND UNITS

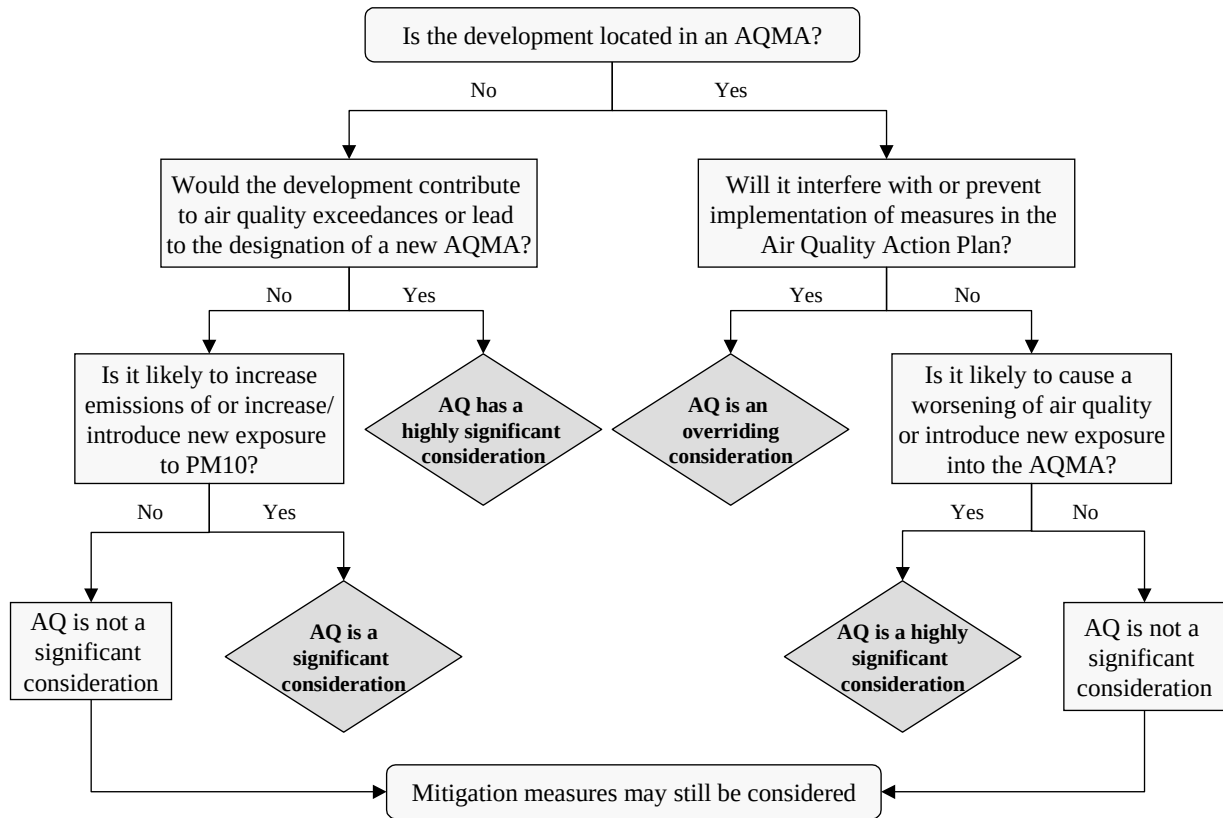
DEFINITION OF AIR QUALITY TERMS AND UNITS

ppm	parts per million - defines the units of pollution in every million (10^6) units of air.
ppb	parts per billion - defines the units of pollution in every billion (10^9) units of air.
$\mu\text{g}/\text{m}^3$	microgrammes per cubic metre - one microgramme is one millionth of a gram.
ng/m^3	nanogrammes per cubic metre – one nanogramme is one milliardth (i.e. one thousand millionth of a gram (10^{-9}))
Annual mean	the average of the concentrations measured for one year.
1-hour mean	the average of the concentrations measured for one hour.
24-hour mean	the average of the concentrations measured for twenty four hours.
Running mean	the mean or series of means calculated for overlapping time periods. For example, an 8-hour running mean is calculated every hour and averages the values for eight hours. The period of averaging is stepped forward by one hour for each subsequent value so that a degree of overlap exists between successive values. Non-running means are calculated for consecutive time periods so that there is no overlap.
Percentile	a value that establishes a particular threshold in a collection of data. For example, the 90 th percentile of yearly values is the value that 90% of all the data in the year fall below or equal.
Exceedance	a period of time when the concentration of a pollutant is greater than, or equal to, the relevant air quality standard.

APPENDIX II

SIGNIFICANCE FLOW CHARTS

Determining significant impacts on air quality



Note: Where **significant** is used, it will be based on the professional judgement of the Local Authority officer.

Planning Practice Guidance

