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REDEVELOPMENT OF 22 TOWER STREET, LONDON

AIR QUALITY STATEMENT

APRIL 2014

the journey is the reward

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Mayer Brown Limited, Lion House, Oriental Road, Woking, Surrey GU22 8AR
Telephone 01483 750508 Fax 01483 750437 wokingoffice@mayerbrown.co.uk www.mayerbrown.co.uk

REDEVELOPMENT OF 22 TOWER STREET, LONDON
AIR QUALITY STATEMENT

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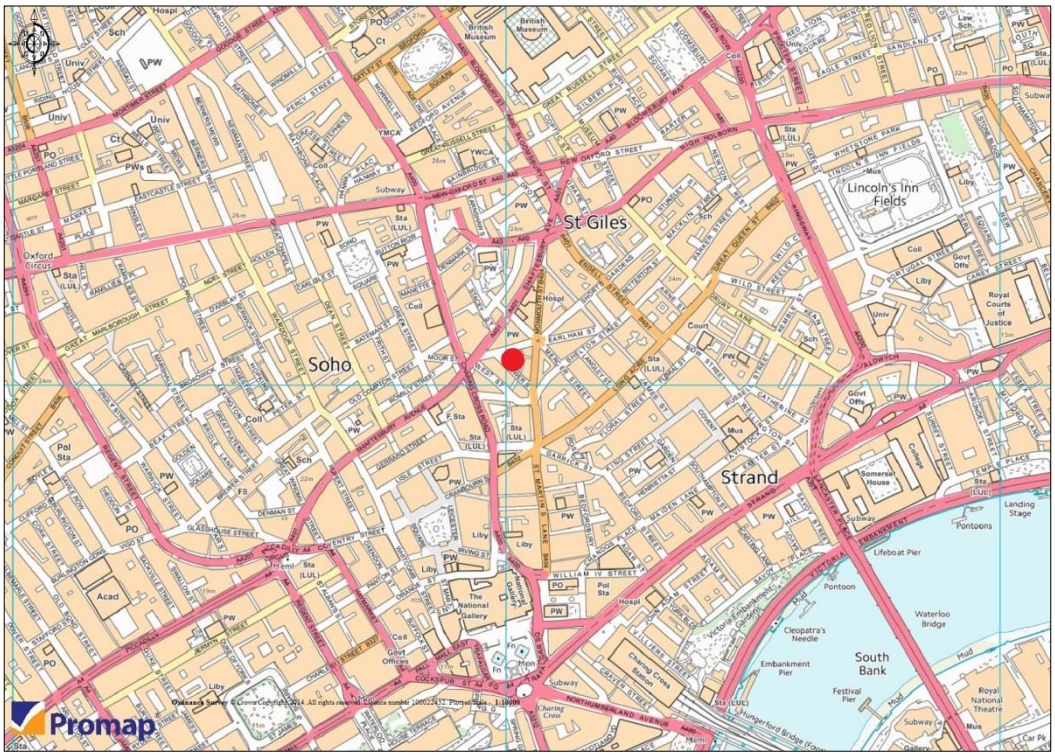
1 Introduction

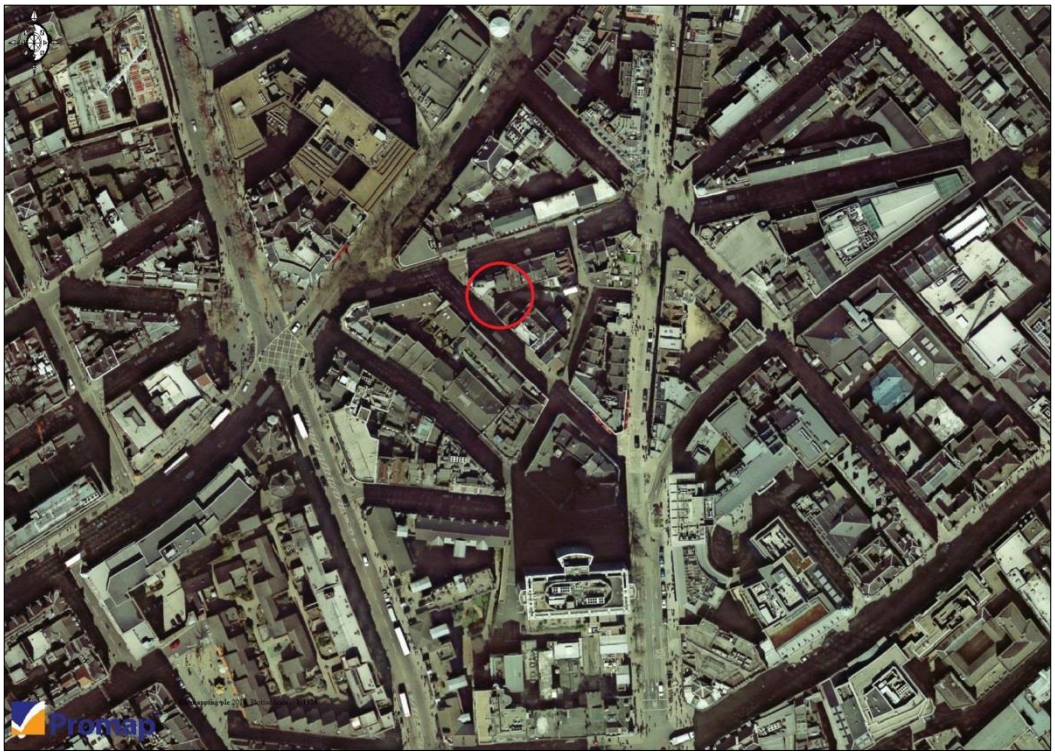
1.1 Mayer Brown Ltd has been appointed by Leith Planning to undertake this air quality assessment in support of a planning application for the proposed redevelopment of 22 Tower Street, London. The location of the proposed redevelopment area is illustrated in Figure 1.1: Site Location in Relation to the Local Highway Network.



(Source: Ordnance Survey, Licence: AL100002189)

Figure 1.1: Site in Relation to the Local Highway Network

1.2 This application site currently has planning consent for office use. The site is bounded predominantly by office/residential and retail properties. This is illustrated in **Figure 1.2**: The Existing Site Layout



(Source: Ordnance Survey, Licence: AL100002189)

Figure 1.2: Existing Site Layout

1.3 The planning application comprises the redevelopment and conversion of 22 Tower Street in London from offices to 22-24 flats.

1.4 The main issue in terms of air quality for a development of this nature will be the introduction of sensitive receptors (future residents) into the proposed residential units, into an area which is already an Air Quality Management Area (AQMA).

1.5 During the scoping exercise with Westminster City Council (WCC) it was agreed that a comparison exercise would be undertaken to ascertain the expected air pollution levels at the facades of the residential units, utilising monitored data within Westminster and Kensington & Chelsea.

1.6 A qualitative assessment of the air quality impacts of construction upon local residents is provided based upon the scale of the development and appropriate referenced guidance.

1.7 This assessment has been undertaken using the guidance and parameters set out in Section 2 and the scope of works undertaken has been discussed with the WCC.

2 National and Local Policies and Principles

National Legislation

2.1 Part IV of the Environment Act 1995[1] requires local authorities to review and assess the air quality within their boundaries. As a result, the Air Quality Strategy was adopted in 1997, with national health based standards and objectives set out for all seven key air pollutants.

2.2 The purpose of this is to identify areas where air quality is unlikely to meet the objectives prescribed in the regulations. The strategy was reviewed in 2000 and the amended Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2000) was published. This was followed by an Addendum in February 2003 and, in July 2007, an updated Air Quality Strategy was published. The current pollutant standards as they apply to this assessment are described below.

2.3 The UK Air Quality Strategy for England, Scotland, Wales and Northern Ireland sets national health-based standards and objectives for the seven key air pollutants. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence based on how each pollutant affects human health. Pollutant objectives are the future dates by which each standard is to be achieved, taking into account economic considerations, practical and technical feasibility.

2.4 The updated 2007 strategy does not remove any of the objectives set out in the previous strategy and its addendum, apart from replacing the provisional 2010 PM_{10} objective in England, Wales and Northern Ireland with an exposure reduction approach. The exposure reduction approach will generally be more beneficial to public health and potentially more cost-effective.

2.5 The percentage reduction objective is a relative measure of improvement (in this case, 15% reduction in average concentrations in urban background areas across the UK between 2010 and 2020), the air quality objectives/limit values, are designed to deliver a minimum level of protection applicable to all areas in a country (25 µg/m^3).

2.6 The new objectives are set out in **Table 2.1** below:

[1] Department for Environment, Food and Rural Affairs (1995) The Environment Act. HMSO, London.

Pollutant	Air Quality Objective		Date to be Achieved by
	Concentration	Measured As	
Nitrogen Dioxide (NO_2)	40 µg/m^3	Annual Mean	01.01.10
Particular Matter (PM_{10})	Indicative 2010 objectives for PM_{10} (from the 2000 Strategy and 2003 Addendum) have been replaced by an exposure reduction approach for $PM_{2.5}$		
Particles ($PM_{2,5}$) Exposure Reduction UK	25 µg/m3	Annual Mean	2020
Particles ($PM_{2,5}$) Exposure Reduction UK urban areas	Target of 15% Reduction in concentrations at urban background	Annual Mean	Between 2010 & 2020

Table 2.1: Air Quality Strategy for England, Scotland, Wales and Northern Ireland – New Particles Objectives

2.7 As a result of this process, an Air Quality Management Area has been declared for the whole borough.

2.8 With regards to dust, it is recognised that major construction works may give rise to dust emissions within the PM_{10} size fraction and it is noted within section 79 of the Environmental Protection Act 1990 that a statutory nuisance is defined as:

'Any dust or effluvia arising from an industrial, trade or business premises and being prejudicial to health or a nuisance'

2.9 There are currently no statutory UK standards in relation to deposited dust and its propensity to cause nuisance. However, the Local Air Quality Management Technical Guidance Note (09)[2] advises that this source of PM_{10} emission is only relevant in terms of public exposure where:

- There are relevant locations for public exposure within 400 to 1000 metres of the dust emission source and the 2004 PM_{10} background is 27µg/m^3 or more.
- There are relevant locations for public exposure within 200 to 400 metres of the dust emission source and the 2004 PM_{10} background is 26 µg/m^3 or more.
- There are locations for public exposure within 200 metres of the dust emission source and the 2004 PM_{10} background is 26µg/m^3 or more, dust fall may become an issue and may be reported as a nuisance.

[2] Department for Environment, Food and Rural Affairs (2009) Local Air Quality Management Technical Guidance LAQM, TG (09). DEFRA London.

2.10 The London Best Practice Guidance - The control of dust and emissions from construction and demolition [3] has the overarching aim of protecting public health and ensuring proper management of demolition and construction sites. It builds on other guidance and establishes best practice that is relevant and achievable.

2.11 Under the site evaluation guidelines within this document, the site falls in the small to negligible/imperceptible risk category. The guidance offers best practice mitigation measures for medium risk sites which are applicable; it will be recommended that they are used to help reduce any construction activities to low risk.

2.12 The guidance also offers advice on dust and emission control measures stating that:

"Developers will need to ensure that all on-site contractors follow best practicable means (BPM) to minimise dust and emissions."

2.13 Where there is a potential for nuisance to occur, the Quality Urban Air Review Group advises that an appropriate criterion for nuisance is a deposition rate of 2 to 3 times the existing background rate. Therefore, for this criterion to be applied, existing background emission rates must be established prior to construction.

2.14 Part IV of the Environment Act [4] requires Local Authorities to undertake a review and assessment of the air quality within their boundaries, in relation to the seven key air pollutants of Benzene, 1,3 Butadiene, Lead, Sulphur Dioxide, Carbon Monoxide, Nitrogen Dioxide and Particulate Matter. These review and assessments are discussed further in Section 4.

National Policy

2.15 In March 2012, the current Planning Policy Guidance documents were superseded by the National Planning Policy Framework (NPPF). The aim of this document is to set out the Government's requirements for the planning system, only to the extent that it is relevant, proportionate and necessary to do so. It also aims to enable local people and councils to produce their own distinctive local and neighbourhood plans.

2.16 The NPPF is based upon 12 Core planning principles, a number of which have relevance to the proposals:

2.17 Number 4 states that planning should:

"...contribute to conserving and enhancing the natural environment and reducing pollution..."

[3] Greater London Authority, London Boroughs and Association of London Government (2006) London Best Practice Guidance - The control of dust and emissions from construction and demolition. London

[4] Department for Environment, Food and Rural Affairs (1995) The Environment Act. HMSO, London.

2.18 Policy 11 Conserving and Enhancing the Natural Environment also states that the planning system should contribute to and enhance the natural and local environment by:

"...preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability;

2.19 The core principle and Policy 11 are reflected in the provision of this assessment which seeks to provide evidence that there will be no adverse effects upon air quality.

Regional Planning Policy

The London Plan[5]

2.20 The London Plan is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years.

2.21 In Chapter 5 – London's Response to Climate Change, policy 5.1, Climate change mitigation, states:

"The Mayor seeks to achieve an overall reduction in London's carbon dioxide emissions of 60 per cent (below 1990 levels) by 2025. It is expected that the GLA Group, London boroughs and other organisations will contribute to meeting the strategic reduction target..."

2.22 Policy 5.2, Minimising carbon dioxide emissions states:

"A. Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1. Be lean: use less energy

2. Be clean: supply energy efficiently

3. Be green: use renewable energy..."

2.23 Policy 5.3, Sustainable design and construction states:

"The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments."

5 Greater London Authority (GLA) (2011) The London Plan. Spatial development strategy for Greater London . GLA, London.

2.24 In Chapter 7 – London's Living Places and Spaces, policy 7.14, Improving Air Quality and under planning decisions, it states the following:

"…Development proposals should:

a. *minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs) and where development is likely to be used by large numbers of those particularly vulnerable to poor air quality, such as children or older people) such as by design solutions, buffer zones or steps to promote greater use of sustainable transport modes through travel plans.*

b. *promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the GLA and London Councils' 'The control of dust and emissions from construction and demolition'*

c. *be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs).*

d. *ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches.*

e. *where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified…."*

The Mayor's Air Quality Strategy – Clearing the Air[6]

2.25 The Strategy has been developed in conjunction with the Mayor's London Plan and the first priority of this Strategy is to achieve European Union limit values, which will be the most effective means to reduce the impact of air pollution on Londoners.

2.26 Chapter 3 – Transport Measures, proposes to reduce vehicle emissions through people making smarter choices about which mode they use to travel and, for all vehicles, using

[6] Greater London Authority (GLA) (2010) Clearing the Air – The Mayor's Air Quality Strategy for public consultation.GLA, London.

them as efficiently as possible, through policy 1, Encouraging smarter choices and sustainable travel behaviour:

"The Mayor, working with boroughs and stakeholders, will support Londoners and those working in and visiting the capital in making behavioural changes to the way they travel to reduce emissions from transport and promote more efficient use of vehicles by individual and organisations."

2.27 In addition, this chapter proposes to improve air quality through a new generation of cleaner, greener private vehicles operating in London with a long-term aspiration of zero tailpipe emissions, through policy 2, Promoting technological change and cleaner vehicles:

"The Mayor, through TfL, working with central Government and boroughs and encouraging others will promote the transfer to and the uptake and use of low emission vehicles for both private and freight transport."

2.28 In Chapter 4 – Non-transport Measures, policy 7, Reducing emissions from construction and demolition sites, states:

"The Mayor, working with London boroughs, the GLA group and the construction industry to encourage implementation of the Best Practice Guidance for construction and demolition sites across London."*

**Now known as the London councils Transport and Environment Committee*

2.29 Policy 8 aims to implement a planning process that ensures that no new development has a negative impact on air quality in London and states:

"The Mayor will ensure that new developments in London shall as a minimum be 'air quality neutral' through the adoption of best practice in the management and mitigation of emissions."

Local Planning Policy

2.30 The City of Westminster Core Strategy was adopted in January 2011. Policy CS30 Air Quality states:

"The council will require a reduction of air pollution, with the aim of meeting the objectives for pollutants set out in the national strategy.

Developments will minimise emissions of air pollution from both static and traffic generated sources.

Developments that include uses that are more vulnerable to air pollution (Air Quality Sensitive Receptors) will minimise the impact of poor air quality on occupants through the design of the building and appropriate technology."

3 Assessment Methodology and Criteria

3.1 The assessment has been undertaken in consultation with Westminster City Council, using the parameters set out in the recognised standards and guidelines below.

Standards and Guidelines

3.2 Local Air Quality Management Technical Guidance LAQM. TG (09)[7]: Published by DEFRA in order to provide technical guidance to local authorities in the assessment of the seven key air pollutants of Nitrogen Dioxide, Particulate Matter, Lead, 1-3 butadiene, Benzene, Carbon Dioxide and Sulphur Dioxide.

3.3 Regional and Local Plans where applicable: These documents put the assessment of air quality into the context of the regional and local plans for the area.

3.4 Development Control: Planning for Air Quality[8]: This guidance has been produced to help ensure that air quality is properly accounted for in local development control processes. It states that, particular attention will inevitably be paid to development within or close to areas formally designated as air quality management areas (AQMAs). These guidelines have been followed, where appropriate, when preparing this air quality assessment.

3.5 The National Atmospheric Emissions Inventory (NAEI)[9]: This is a website run by Ricardo AEA Technology where emission data can be obtained which relates the vehicle fleet composition for the year of study. The NAEI is the standard reference for air emissions in the UK and compiles annual estimates of emission for a wide range of important pollutants, including air quality pollutants and greenhouse gases to the atmosphere from UK sources such as cars, trucks, power stations and industrial plant.

3.6 The Local Air Quality Management Tools within the Department for Environment, Food & Rural Affairs website [10] contains information pertaining to monitoring networks across the UK and provides tools, which aid in the estimation of pollutant concentrations with reference to the year of study.

[7] Department for Environment, Food and Rural Affairs (2009) Local Air Quality Management Technical Guidance LAQM, TG (09). DEFRA. London

[8] Environmental Protection UK (2010) Development Control: Planning for Air Quality (2010 Update). Environmental Protection UK, Brighton

[9] http://naei.defra.gov.uk

[10] http://laqm.defra.gov.uk/

3.7 Urban Air Quality in the United Kingdom[11]: This report reviews knowledge of the sources, chemical composition and physical properties, and concentrations of airborne particles and examines the implications for control of particulate matter in the UK urban air. In particular, it is used in the study to provide an acceptable method for assessing nuisance dust deposition.

3.8 Air Quality and Planning Guidance[12]: This guidance is aimed at local authorities, developers and their consultants, and provides technical advice on how to deal with planning applications that could have an impact on air quality. Where developers and local authorities follow the procedures in this guidance, helps ensure consistency in the approach to dealing with air quality and planning.

[11] The Quality of Urban Air Review Group (QUARG) (1996) Airbourne Particulate Matter in the United Kingdom. DoE, London

[12] London Councils. (2007),Air Quality and Planning Guidance, The London Air Pollution Planning and the Local Environment (APPLE) working group, London

4 Baseline Conditions

4.1 A borough wide Air Quality Management Area has been declared for both NO_2 and PM_{10}.

Monitoring Data

4.2 Due to the lack of monitoring data at the site location it is difficult to fully ascertain what the pollution levels are. Therefore a review of the nearest monitoring locations has been undertaken to help understand what the pollution levels could be.

4.3 The nearest two kerb/roadside monitoring locations to the site are *Air Street* and *Charing Cross*. The most recent available monitored levels can be found in **Table 4.1**

Year	Annual Average NO_2 ($\mu g/m^3$)	
	Air Street	Charing Cross
2013*	82	80
2012*	86	83
2011*	89	86
2010	92	89
2009	81	83
2008	75	78

* Monitored NO_2 data has been projected forward to using TG09 Updated box 2.1.

Table 4.1: Roadside Monitored Levels

4.4 The monitored levels in **Table 4.1** demonstrate that the pollution levels in the areas both breach the annual and hourly mean air quality objective. However due to the close locality of these monitoring locations to busy trafficked A-Roads it is expected the pollution levels would be high.

4.5 Tower Street is located slightly away from the both the A400 Charing Cross Road and A401 Shaftesbury Avenue and therefore wouldn't be as influenced by vehicular emissions and would be classified as an *Urban Background* site

4.6 The nearest *Urban Background* site is Covent Garden. **Table 4.2** demonstrates the most recent ratified pollution levels.

Year	Annual Average NO_2 ($\mu g/m^3$)
2013*	47
2012*	48
2011*	50
2010	52
2009	48
2008	No data
Average	**49**

* Monitored NO_2 data has been projected forward to using TG09 Updated box 2.1.

Table 4.2: Background Monitored Levels

4.7 The Covent Garden monitoring site is similar to Tower Street as it has influenced by the A4 Strand and A4200 but far enough away to not be considered a kerb/roadside monitoring location.

4.8 Due to above the Covent Garden site is considered the most representative of Tower Street and therefore it is anticipated the pollution levels would be approximately 49 $\mu g/m^3$

5 Potential Impacts

Completed Development

5.1 The main concern with this development is the introduction of new sensitive receptors (residents) to this polluted area.

5.2 However, NO_2 concentrations decline quickly with increasing distance from source, in this case road traffic. This is both for horizontal distance from the roadside and by way of height[13]. This steep rate of decline is confirmed in recent studies. However, the steep rate of decline may not apply in a street canyon situation, as would be the situation along Tower Street.

Operational Activities

5.3 It is not anticipated that there will be any operational air quality impacts related to the proposed site activities. However, due to the introduction of new sensitive receptors in an already highly polluted area, mitigation measures will be required to safeguard future residents.

Construction Related Air Quality

5.4 The migration distances of dust are largely dependent upon factors such as size, composition, source, wind speed and weather. There are currently no statutory UK standards in relation to deposited dust and its propensity to cause nuisance. However, the EPUK Development Control Air Quality (2010 update) notes that deposition rates are dependent in part upon metrological conditions and that as these cannot be reliably predicted. Assessment should therefore focus on the distance and duration over which there is a risk that impacts may occur. Owing to the nature of the site and the works proposed, the following criteria have been derived, based upon advice contained within Institute of Air Quality Management guidance[14] on modelled fall off in concentration of PM_{10} with distance from source (**Table 5.1**).

Distance to Nearest Receptor	Dust Emission Class		
Dust Soiling and PM_{10}	Large	Medium	Small
<20m	High Risk	High Risk	Medium Risk
20 – 100m	High Risk	Medium Risk	Low Risk
100 – 200m	Medium Risk	Low Risk	Low Risk
200 – 350m	High Risk	Low Risk	Negligible

[13] NO.Concentrations and Distance from Road, Air Quality Consultants, July 2008

[14] Institute of Air Quality Management (IAQM) (2012), Guidance on the Assessment of Impacts of Construction on Air Quality and the Determination of their Significance, IAQM, 2012.

Table 5.1: Distance from Source

For this site, there will be minimal external construction activity as the proposal is for a change of use to an existing building. The majority of works will therefore be internal, connected with changing the existing layout. Given the size of the site and the fact that the majority of residential premises are understood to be located at a minimum 20m from the site, it is concluded that construction dust impacts upon local residents are likely to be Medium Risk.

PM_{10} and other Pollutants

5.5 There is also a potential for construction activities to result in the evolution of PM_{10} and other pollutants. These may be a result of plant and vehicle exhausts and the use of volatile materials, such as bitumen. These emissions are difficult to quantify. However, they will be associated with stationary on site sources and are unlikely to be of sufficient quantity to have offsite impacts.

6 Mitigation Measures and Residual Impacts

Ventilation Systems

6.1 Given the predicted NO_2 concentration levels are above the close to the annual and hourly mean objective it is recommended to seal the windows on all facades, providing positive ventilation into the development, ideally from the rooftop.

6.2 It is considered that as the rooftop level will not form part of a street canyon dilution and dispersion with clean air will increase and result in lower NO_2 concentrations.

6.3 Such ventilation system needs to be designed and installed by specialist company and will need to be maintained..

Construction

6.4 Potentially significant impacts during the construction/refurbishment phase are generally associated with dust generating activities in close proximity to likely sensitive receptors. By employing appropriate site management practices, the potential for adverse effects from construction vehicles and plant during the works will be minimised.

6.5 The following measures should be considered as good practice during the refurbishment stage:

- Special provisions will apply for any materials containing asbestos. The safety method statement should outline the control measures necessary to minimise the risks to an acceptable level, and all statutory notices will be placed with the Health and Safety Executive (HSE).

Operations

Development Traffic

6.6 This assessment has demonstrated that as the development will have no residual impact on the traffic flows, due to the nature of the development, there will be no air quality impacts associated with the development traffic. Therefore, it is not anticipated that mitigation measures will be required for this aspect.

Operational Activities - Residents

6.7 The operational activity of the proposed development is not predicted to give rise to any air quality issues due to their activities. They will however be impacted by existing

air quality issues which is why the mitigation measures in section 6.1 above are proposed.

7 Conclusions

Demolition and Construction

7.1 Subject to the implementation of good practice on site during construction/refurbishment as per Section 6, the residual construction air quality impacts are anticipated to be, local, temporary and of minor significance.

Operations

Development Traffic

7.2 Whilst the proposed development site is located within the existing AQMA. The proposed redevelopment is predicted to produce no new vehicular trips. It can therefore be concluded that the traffic associated with the proposed redevelopment will not result in a detrimental impact upon the existing AQMA.

Operational Activities

7.3 With the mitigation measure recommended there will be no air quality impacts from the operational use of the building for residential dwellings.