



Cherry Core Limited & Jasmine Perfection Limited

James Street, Dublin

Air Quality Assessment

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This work has been undertaken in accordance with the quality management system of RSK Group Limited.

Abbreviations

AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
AQS	Air Quality Standard
CAFE	Clean Air for Europe
CHP	Combined Heat and Power
Defra	Department for Environment, Food and Rural Affairs
EC	European Commission
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAQM TG.16	Local Air Quality Management Technical Guidance (2016)
LDV	Light Duty Vehicle
NECD	National Emissions Ceiling Directive
NPF	National Planning Framework
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
PM _{2.5}	Particulate matter of size fraction approximating to <2.5mm diameter
PM ₁₀	Particulate matter of size fraction approximating to <10mm diameter
RSK	RSK Environment Limited

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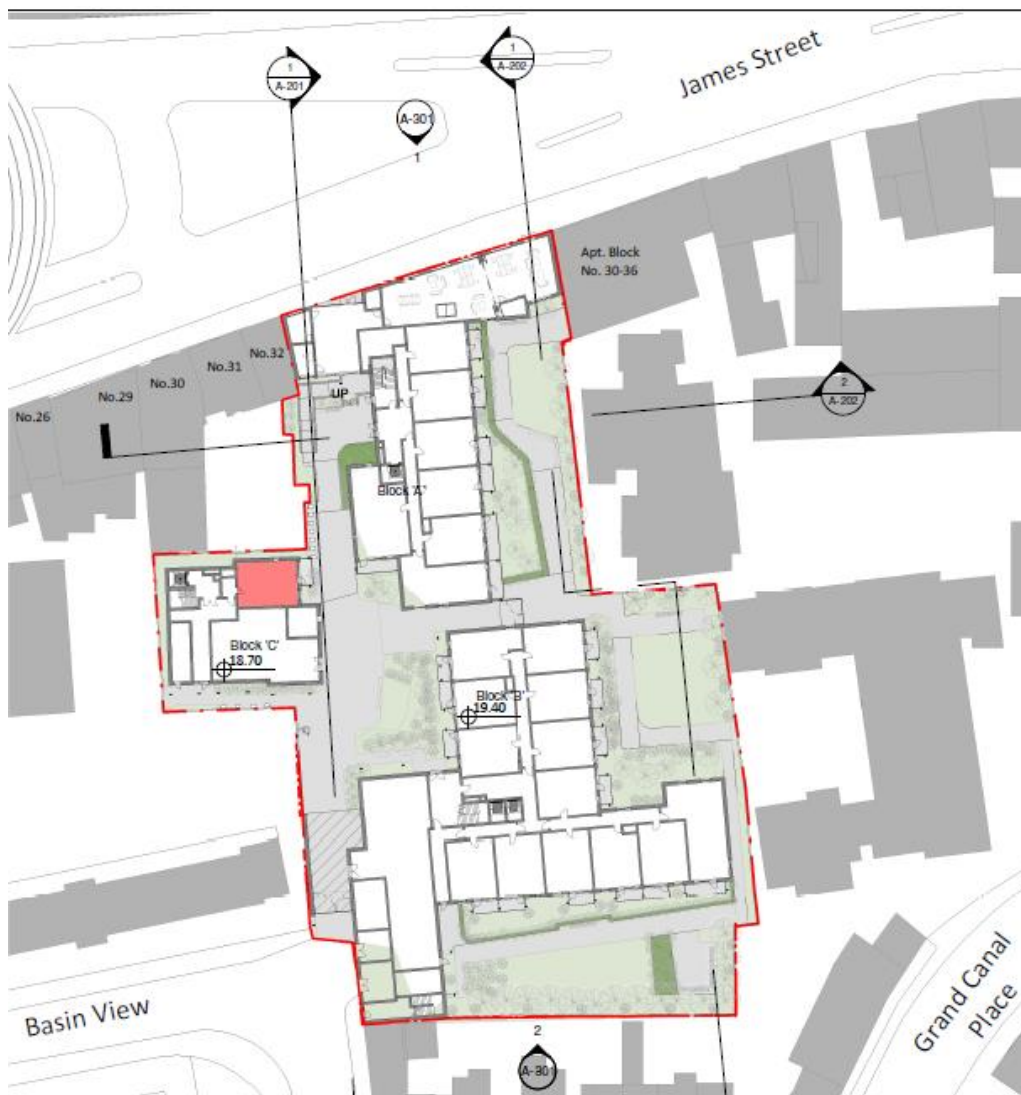
1 INTRODUCTION

1.1 Background

RSK Environment Ltd (RSK) was commissioned to undertake an assessment of the potential air quality impacts associated with the proposed development at James Street, Dublin. The development comprises demolition of existing buildings and erection of three blocks comprising 189 Build to rent Apartments, communal lounge, multi-functional communal room and concierge. The proposed development is in Dublin City Council (DCC) with approximate grid reference of the centre of the site at 313933, 233834. The proposed development site plan is displayed in Figure 1.1.

The following report presents the findings of an assessment of existing/baseline air quality, potential air quality impacts during the operational phase of the proposed development, and the potential exposure of future residential receptors to air pollution.

Figure 1.1: Proposed Development Site Plan



2 LEGISLATION, PLANNING POLICY & GUIDANCE

2.1 Key Legislation

2.1.1 Air Quality Standards

The Air Quality Framework Directive (1996) established a framework under which the European Commission (EC) could set limit or target values for specified pollutants. The directive identified several pollutants for which limit or target values have been, or will be set in, subsequent 'daughter directives'. The framework and daughter directives were consolidated by Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe, which retains the existing air quality standards and introduces new objectives for fine particulates (PM_{2.5}).

The air quality standards (AQSs) in Europe are set in EU directives, the Clean Air for Europe (CAFE) Directive was published in 2008. The CAFE directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011.

The relevant¹ standards for Europe to protect human health are summarised in Table 2.1.

Table 2.1: Air Quality Standards Relevant to the Proposed Development

Substance	Averaging period	Exceedances allowed per year	Ground level concentration limit (µg/m ³)
Nitrogen dioxide (NO ₂)	1 calendar year	-	40
	1 hour	18	200
Fine particles (PM ₁₀)	1 calendar year	-	40
	24 hours	35	50
Fine particles (PM _{2.5})	1 year	-	25

2.1.1 Gothenburg Protocol

In 1999, Ireland signed the Gothenburg Protocol to the 1979 UN Convention on Long Range Transboundary Air Pollution.

European Commission Directive 2001/81/EC and the National Emissions Ceiling Directive (NECD), prescribes the same emissions limits as the 1999 Gothenburg Protocol. A National Programme for the progressive reduction of emissions of four transboundary pollutants, nitrogen oxides (NO_x), sulphur dioxide (SO₂), volatile organic compounds (VOCs) and ammonia (NH₃), has been in place since April 2005. The data available from the EU in 2010 indicated that Ireland complied with the emissions ceilings for SO₂, VOCs and NH₃ but failed to comply with the ceiling for NO_x. COM (2013) 920

¹ Relevance, in this case, is defined by the scope of the assessment.

Final is the “proposal for a Directive on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC”, which will apply the 2010 NECD limits until 2020 and establish some new national emission reduction commitments which will be applicable from 2020 and 2030 for SO₂, NO_x, non-methane volatile organic compounds (NMVOC), NH₃, and methane (CH₄). Irelands reduction targets are shown in Table 2.2.

Table 2.2: The reduction targets for Ireland, shown as a percentage reduction from 2005 levels, for four transboundary pollutants (SO₂, NO_x, VOCs, NH₃) and PM_{2.5}.

Pollutant	Percentage reduction below 2005 level	
	2020-2029	2030
SO ₂	65%	83%
NO _x	49%	75%
VOC	25%	32%
NH ₃	1%	7%
PM _{2.5}	18%	53%

2.2 Planning Policy

The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality concern that relates to land use and its development can, depending on the details of the proposed development, be a material consideration in the determination of planning applications.

2.2.1 National Planning Framework – Project Ireland 2040

In 2018 the National Planning Framework (NPF) was published, providing a framework to protect and enhance the environment.

Section 9 of the NPF deals with Realising Our Sustainable Future, and states the following in regards to the planning system; *‘The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital.’*

With specific regard to air quality, the NPF states in National Policy Objective 64: *“Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport to the private car, the promotion of energy efficient buildings and homes, heating systems with zero local emissions, green infrastructure planning and innovative design solutions.”*

2.3 Guidance Documents

2.3.1 Local Air Quality Management Review and Assessment Technical Guidance

The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their air quality review and assessment work. This guidance, referred to in this document as the Local Air Quality Management Technical Guidance (Defra, 2016) ('LAQM TG.16')

2.3.2 Land-Use Planning & Development Control: Planning for Air Quality

Environmental Protection UK's (EPUK) and the IAQM jointly published a revised version of the guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' in 2017 (herein the 'EPUK-IAQM guidance') to facilitate consideration of air quality within local development control processes. It provides a framework for air quality considerations, promoting a consistent approach to the treatment of air quality issues within development control decisions.

The guidance includes methods for undertaken an air quality assessment and an approach for assessing the significance of effects. The guidance note is widely accepted as an appropriate reference method for this purpose.

3 ASSESSMENT SCOPE

3.1 Overall Approach

The approach taken for assessing the potential air quality impacts of the proposed development may be summarised as follows:

- Consultation with the local authority;
- Baseline characterisation of local air quality;
- Qualitative air quality assessment;
- Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and

3.2 Consultation

The Environmental Protection team at DCC was consulted in the preparation of this air quality assessment. However, at the time of writing, no response had been received.

3.3 Baseline Characterisation

Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

A desk-based study has been undertaken including a review of monitoring data available from DCC, Environmental Protection Agency (EPA) and modelled NO₂, PM₁₀ and PM_{2.5} concentrations from the EPA Maps website.

3.4 Operational Phase Impact Assessment

3.4.1 Emissions to Air from Operational Phase Traffic

The EPUK-IAQM 2017 guidance provides indicative criteria for when an air quality assessment is required, if none of the criteria are exceeded, it is considered unlikely that there will be any significant impacts on air quality during the operational phase. A simple screening level assessment against these criteria has been undertaken in Section 5 of this report.

It is understood that no significant combustion sources such as combined heat and power (CHP) plant or biomass boilers are proposed as part of the scheme, and this report has therefore not considered emissions related to energy generation any further.

3.4.2 Exposure of Future Occupants to Air Pollution

The potential exposure of future users of the proposed development has been considered by reviewing the baseline conditions (Section 4) and the locations of sensitive receptors within the proposed development, as well as considering the EPUK-IAQM guidance.

4 BASELINE AIR QUALITY CHARACTERISATION

4.1 Emission Sources and Key Air Pollutants

The application site is located in an urban area where the main source of air pollution is likely to be roads. The site is situated on James Street, with some apartments in Block A facing James Street.

The principal pollutants relevant to this assessment are considered to be NO₂, PM₁₀ and PM_{2.5}, generally regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. These pollutants are generally considered to have the greatest potential to result in human health impacts.

4.2 Baseline Monitoring Data

According to the data obtained from the EPA website, there were 12 automatic monitoring stations in Dublin in 2018. The closest monitoring location is located approximately 0.5 km away from the proposed development site.

The 2016-2018 annual average NO₂ concentrations for the automatic sites within 2 km of the development site have been reproduced in Table 4.1. The 2018 annual NO₂ concentration exceeded the air quality objective at the closest of these locations (DB20). However, it should be noted that the 2018 annual NO₂ concentration for this location is not based on a full year of monitoring, but rather from the period 28th November 2018 to 31st December 2018, and it is therefore not appropriate to compare this to the annual average objective.

The 2018 annual average PM₁₀ and PM_{2.5} concentrations have been reproduced in Table 4.2 and Table 4.3 respectively. No exceedances of the air quality objectives were recorded.

Table 4.1: Annual Average Measured NO₂ Concentrations

Site ID	Site Type	Site Name	Approx distance from proposed development (km)	Annual Average NO ₂ (µg/m ³)		
				2016	2017	2018
DB20	Suburban	St John's	0.5	-	-	44*
D9	Urban	Winetavern Street	1.2	36.6	27.2	29
D20	Suburban	Davitt Road	1.4	-	-	26*
D2	Urban	Coleraine Street	1.5	27.6	25.6	30*
Air Quality Objective				40		

*Not a full year

Table 4.2: Annual Average Measured PM₁₀ Concentrations

Site ID	Site Name	Approx distance from proposed development (km)	Annual Average PM ₁₀ (µg/m ³)			No of days PM10 >50 µg/m ³		
			2016	2017	2018	2016	2017	2018
DB20	St John's	0.5	-	-	14*	-	-	0
D9	Winetavern Street	1.2	14	12.9	14	2	3	1
D20	Davitt Road	1.4	13.5	-	14*	2	-	1
Air Quality Objective			40			35		

*Not a full year

Table 4.3: Annual Average Measured PM_{2.5} Concentrations

Site ID	Site Type	Site Name	Approx distance from proposed development (km)	Annual Average PM _{2.5} (µg/m ³)		
				2016	2017	2018
DB20	Suburban	St John's	0.5	-	-	9*
D20	Suburban	Davitt Road	1.4	-	-	8*
D2	Urban	Coleraine Street	1.5	9	8	-
Air Quality Objective				25		

*Not a full year

4.3 Modelled Data

In addition to the local monitoring data, modelled air quality data available from the EPA Maps² website may also be used to establish likely background air quality conditions at the proposed development site.

The maps have been produced using the urban scale ADMS Urban model. Details of the process of modelling and monitoring can be found in the 2019 EPA report '*Urban Environmental Indicators: Nitrogen dioxide levels in Dublin*'. The maps details modelled annual concentrations of NO₂, PM₁₀ and PM_{2.5} in Dublin in 2017. Figure 4.1 to Figure 4.3 shows the modelled annual average concentrations for NO₂, PM₁₀ and PM_{2.5} for the proposed development site respectively. The site boundary has been included to establish the modelled pollution concentrations within the site boundary. No exceedances of the NO₂, PM₁₀ or PM_{2.5} annual mean AQSs are shown for the proposed development site.

² <https://gis.epa.ie/EPAMaps>

Figure 4.1: Annual Average Modelled NO₂ Concentrations for 2017



Figure 4.2: Annual Average Modelled PM₁₀ Concentrations for 2017

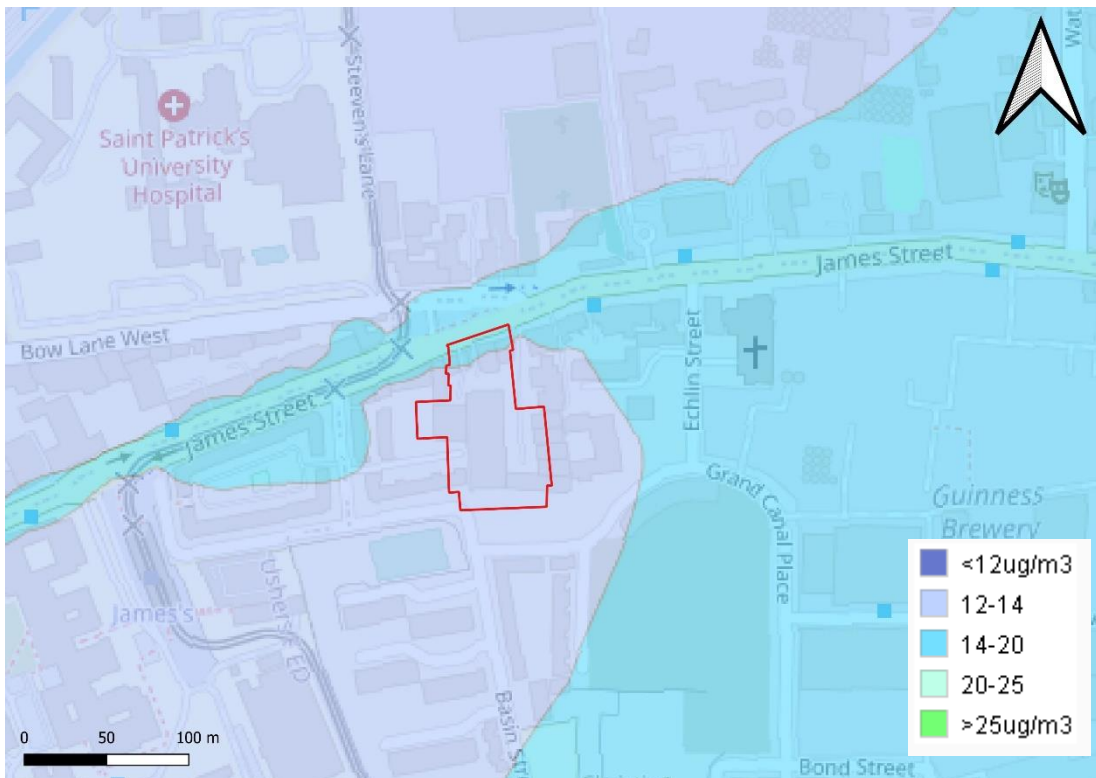
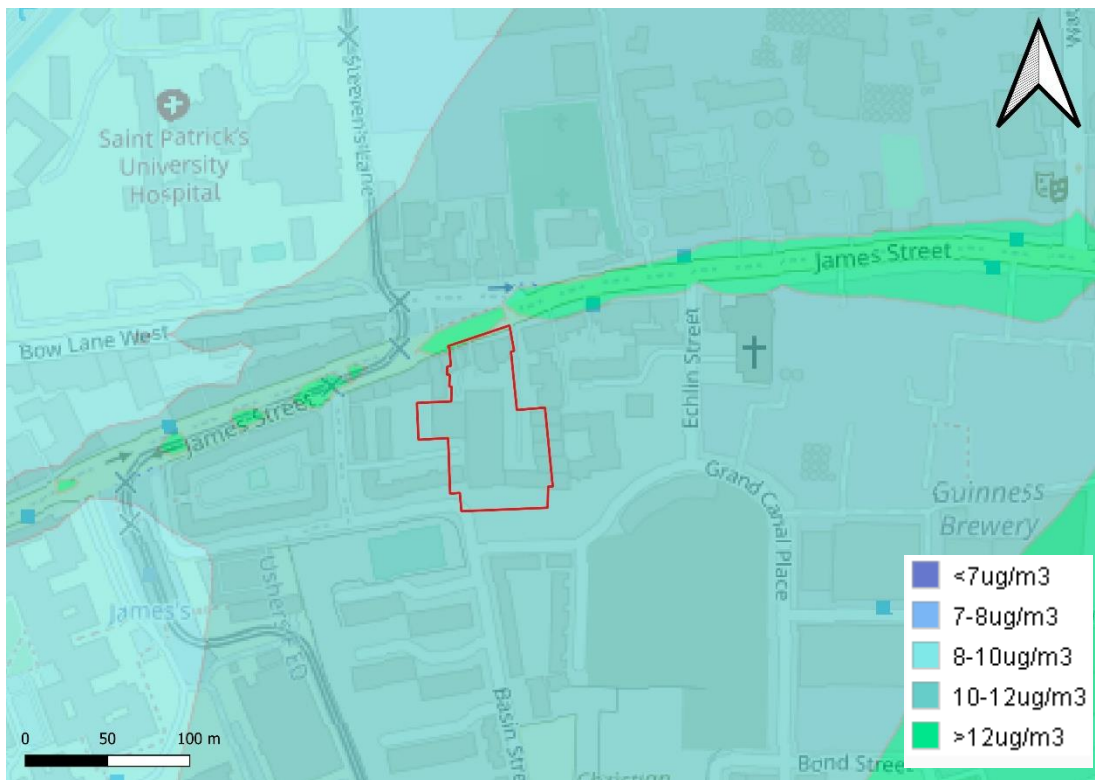


Figure 4.3: Annual Average Modelled PM_{2.5} Concentrations for 2017



4.4 Background at Proposed Site

The EPUK-IAQM guidance indicates that the annual mean PM₁₀ concentrations tend to be greater than ~31µg/m³ for an exceedance of the daily mean PM₁₀ AQS to be likely. LAQM TG.16 indicates that the annual mean NO₂ concentrations tend to be greater than 60µg/m³ for an exceedance of the hourly mean NO₂ AQS to be likely.

Based on the monitoring data available and the modelled concentrations of NO₂, PM₁₀ and PM_{2.5}, no exceedances of any of the relevant AQSs are anticipated at the site. Therefore, the impact of existing ambient air quality on any receptors to be introduced at the site is likely to be insignificant.

5 ASSESSMENT OF IMPACTS

5.1 Operational Phase

5.1.1 Emissions to Air from Operational Phase Traffic

Table 5.1 presents a comparison of the relevant EPUK-IAQM screening criteria for the proposed development. The term Air Quality Management Area (AQMA) is not used in Ireland. For the purpose of air quality classification, the Dublin conurbation is designated as Zone A. Due to the location of the proposed development within Dublin City Centre, it is considered appropriate to use the EPUK-IAQM screening criteria developed for proposed developments within AQMAs.

It is understood that traffic data specific for the proposed development is not available. However, it is considered unlikely that the proposed development will contribute to a significant increase in traffic flows, as the proposed development includes only 3 car parking spaces.

As none of the screening criteria are exceeded, no significant impacts are expected, and further assessment of the operational phase traffic is not considered to be required.

Table 5.1: Air Quality Screening Criteria from EPUK-IAQM Guidance and Comparison with the Proposed Development

EPUK-IAQM Screening Criteria	Comparison of proposed development to screening criteria
A change of Light Duty Vehicles (LDVs) of: <ul style="list-style-type: none"> - More than 100 Annual Average Daily Traffic (AADT) within an AQMA 	Criterion not exceeded: Traffic flows in AADT are not available. However, due to the limited number of car parking spaces, it is not expected that the development will exceed 100AADT.
A change of Heavy Duty Vehicles (HDVs) of: <ul style="list-style-type: none"> - More than 100 AADT not within an AQMA 	Criterion not exceeded: No change to HDV flow is expected.
Road realignment, where the change is 5m or more and the road is within an AQMA.	Criterion not exceeded: It is understood that no road realignment proposed.
Introduction of a new junction or the removal of an existing junction near to relevant receptors. This applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.	Criterion not exceeded: Entranceways with traffic lights or roundabouts are not proposed.
Introduction or change of a bus station, where bus flows will change by: <ul style="list-style-type: none"> - more than 25 AADT within or adjacent to an AQMA - more than 100A ADT elsewhere. 	Criterion not exceeded: It is not anticipated that the development would introduce any additional bus routes.

EPUK-IAQM Screening Criteria	Comparison of proposed development to screening criteria
<p>Have an underground car park with extraction system, where the ventilation extract for the car park will be within 20m of a relevant receptor.</p> <p>Coupled with the car park having more than 100 movements per day (total in and out).</p>	<p>Criterion not exceeded: It is understood that underground car parking is not proposed.</p>
<p>Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.</p>	<p>Criterion not exceeded: It is understood that substantial combustion processes are not proposed.</p>

5.1.1 Exposure of Future Residents to Air Pollution

The proposed development is located on James Street, but as detailed in Section 4, monitoring data representative of the site and modelled pollution concentrations are expected to be below the relative AQSS.

The main source of air pollution to the proposed development site is anticipated to be vehicular traffic using James Street in both directions. There are no publicly available traffic data for James Street. However, based on the background concentrations, modelled pollution concentrations and the estimated minimal increase in vehicle trips, it is considered that impact of existing ambient air quality on any receptors to be introduced at the site is likely to be insignificant.

6 MITIGATION MEASURES & RESIDUAL IMPACTS

As identified in Section 5.1, due to the size of the proposed development and the predicted minor increase in traffic generated, the development is considered unlikely to result in significant impact on local air quality. Mitigation is therefore not considered to be required; however, in order to further reduce the residual air quality impacts associated with the proposed development, a selection of the following mitigation measures could be implemented as best practice:

- Proportionate assistance to improve cycling and walking facilities and public transport services and infrastructure which would be of benefit to future site users;
- Provision of subsidised or free access to public transport for future residents;
- Proportionate support for 'low' or 'no emission' public transport serving the local area;
- Proportionate support for smart driving training schemes, cycle training and awareness schemes, and bike hiring schemes; and,
- Provision of proportionate assistance for secure and safe cycle parking facilities on-site.

The above list, is not exhaustive, but includes a number of measures which could be considered for the proposed development.

7 CONCLUSIONS

An air quality assessment for a proposed development at James Street, Dublin has been undertaken.

To determine the impact of the development on local air quality, a qualitative impact assessment of the operational impacts was undertaken with reference to the EPUK-IAQM guidance. None of the screening criteria outlined in this guidance are likely to be exceeded as a result of the proposed development.

On these bases, the development is unlikely to result in a significant impact on local air quality. Mitigation is therefore unlikely to be required. However, if an appropriate selection of the best practice mitigation measures recommended in Section 6 is implemented, the negligible residual air quality impacts associated with the operation of the development can be reduced.

The application site is located on James Street; however, monitoring data and modelled background concentrations are below the relative AQSs. Hence, the impact of ambient air quality on any future proposed receptors to be introduced at the site is likely to be insignificant.