7 AIR QUALITY

7.1 Introduction

This chapter assesses the likely significant effects of the proposed development on air quality, including a qualitative assessment of construction and operational air emissions. Climate is addressed separately in Chapter 8.

Chapter 3 provides a description of the proposed development and Chapter 4 describes the indicative construction strategy for the proposed development. The following aspects are particularly relevant to the air quality assessment:

- Design:
    - Aspects relating particularly to the design and location of the proposed development include access to public transport and limited operational traffic movements, with 26 car parking spaces permitted under An Bord Pleanála (ABP) decision 306569-20.
- Operation:
    - Aspects relating particularly to the operation include the sizing of boilers and emergency generator to serve Block A.
- Construction:
    - Aspects relating particularly to the construction of the proposed development, including mitigation measures to reduce dust impacts, and procedures to deal with Asbestos Containing Materials (ACMs) in accordance with the relevant procedures and legislation (as permitted under ABP decision 306569-20).

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Please refer to Chapter 1 for further details of their relevant qualifications and experience.

7.2 Assessment Methodology

7.2.1 General

Air quality assessments are concerned with the presence of airborne pollutants in the atmosphere. The likely significant effects of the proposed development on air quality have been assessed by considering the background concentration levels of pollutants in the atmosphere and the potential for construction and operational effects associated with the proposed development.

Predicted concentrations associated with the proposed development are then compared to the relevant limit values described in **Section 7.2.2** to determine likely significant effects.

An assessment of the potential risk of asbestos containing materials (ACMs) being released to the environment has also been undertaken.

This assessment has also been undertaken with regard to the Transport Infrastructure Ireland (TII), (formerly the National Roads Authority (NRA)), air quality guidelines[1]. These guidelines provide a methodology for the assessment, management and mitigation of air quality at construction sites which can be adapted accordingly depending on the nature of the works.

The TII guidelines state that increases in Annual Average Daily Traffic (AADT) flows of less than 5% and 10% during the operational and construction phases respectively are unlikely to result in significant air quality effects. Likely significant effects on air quality are therefore assessed when the AADT flows are projected to increase above these thresholds during construction and operation of the proposed development.

The traffic volumes as presented in Chapter 6: Transport, show that during the peak construction period, there will be approximately 5 additional HGV movements per hour due to proposed development. This increase is significantly less than the 10% increase in traffic volumes that triggers the requirement for a detailed assessment and is unlikely to result in significant air quality effects during construction.

Traffic volumes during the operational phase will also be minimal, limited to access/egress from the proposed 26 car parking spaces, deliveries/collections and service traffic, and as such, no significant air quality effects are predicted. There is therefore no requirement for a detailed assessment and the proposed development is unlikely to result in significant air quality effects during operation.

7.2.2 Guidance and Legislation

7.2.2.1 Limit Values

Limit values for a range of air pollutants have been set through European and national legislation. These limit values are set for the protection of human health and ecosystems.

On 12 April 2011, the Air Quality Standards (AQS) Regulations 2011 (S.I. No. 180 of 2011)[2] came into force and transposed EU Directive 2008/50/EC[3] on ambient air quality and cleaner air for Europe into Irish law. The purpose of the AQS Regulations is:

- to establish limit values and alert thresholds for concentrations of certain pollutants;
- to provide for the assessment of certain pollutants using methods and criteria common to other European Member States;
- to ensure that adequate information on certain pollutant concentrations is obtained and made publicly available; and
- to provide for the maintenance and improvement of ambient air quality where necessary.

The limit values established under the AQS Regulations relevant to this assessment are included in Table 7.1.

The 2019 EPA monitoring report[4] states that the NO_x annual mean limit value for the protection of vegetation only applies to Zone D. Therefore, the assessment of NO_x has not been considered in this assessment.

Pollutant	Limit value for the protection of	Averaging Period	Limit Value (µg/m³)	Basis of application of limit value
NO_2	Human Health	1-hour	200	≤ 18 exceedances p.a. (99.79%ile)
		Calendar year	40	Annual mean

[1] Transport Infrastructure Ireland (TII), (formerly the National Roads Authority (NRA)) (2011). Guidelines for the Treatment of Air Quality during the Planning and Construction of National Roads Schemes. TII, Dublin, Ireland.
[2] Air Quality Standards (AQS) Regulations 2011 (S.I. No. 180 of 2011)
[3] E.C (2008). Directive 2008/50/EC. Ambient Air Quality and Cleaner Air for Europe
[4] EPA (2019) Summary data tables 2018. Available at http://www.epa.ie/media/Summary%20data%20tables%202018.pdf

PM_{10}	Human Health	24-hours	50	≤ 35 exceedances p.a. (90%ile)
		Calendar year	40	Annual mean
$PM_{2.5}$	Human Health	Calendar year	20	Annual mean

Table 7.1: Limit values in the AQS Regulations

There are no statutory limits for dust at a European or national level. However, TA Luft[5] provides a guideline for the rate of dust deposition of 350 mg/m2/day averaged over one year. The EPA concurs[6] that this guideline may be applied, although the EPA typically applies the guideline limit as a 30-day average.

The European Union (Medium Combustion Plant) Regulations 2017 were signed into law in December 2017. Their purpose is to limit emissions to atmosphere from boilers and other stationary combustion plants in the 1-50 MWTH (thermal input) range.

7.2.3 Study Area

The proposed development is located at 42A Parkgate Street, Dublin. The proposed development is contained within the planning boundary as shown in Chapter 3.

Sensitive receptor locations are defined by TII guidance as residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present. The buildings located 20m to the north of the proposed development are of mixed use and have been considered as sensitive for this assessment as they include residential dwellings.

7.2.4 Site Visits

No site visits were considered necessary in the preparation of this chapter.

7.2.5 Consultation

No specific consultation was undertaken in the preparation of this chapter. A number of pre-planning meetings were held with Dublin City Council and An Bord Pleanála, please refer to Chapter 1.

7.2.6 Categorisation of the Baseline Environment

A desk-based study of the baseline environment of the proposed development area was undertaken in order to inform this assessment. EPA Air Quality Reports[7,8,9] were referred to.

7.2.7 Impact Assessment Methodology

7.2.7.1 Dust

The TII guidelines state that dust emissions from construction sites can lead to soiling, elevated PM_{10} concentrations and can cause effects on vegetation such as reduction in light required for photosynthesis and an increase in leaf temperature due to changed surface optical properties. The likely significant effects of dust emissions during construction are assessed by considering the proximity of

[5] TA Luft (2002) Technical Instructions on Air Quality
[6] EPA (2006) Environmental Management in the Extractive Industry (Non-Scheduled Minerals)
[7] EPA (2019) Air Quality in Ireland 2018- Indicators of Air Quality
[8] EPA (2018) Air Quality in Ireland 2017- Indicators of Air Quality
[9] EPA (2017) Air Quality in Ireland 2016- Indicators of Air Quality

sensitive receptors to the construction works. The likely significant effects of construction dust on sensitive habitats are also considered.

Significance criteria for the construction phase have been adopted from the TII Guidelines and are presented in Table 7.2.

Source		**Potential distance for Significant Effects (Distance from Source)**		
Scale	Description	Soiling	PM_{10}	Vegetation Effects
Major	Large construction sites, with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites, with limited use of haul routes	25m	10m	10m

Table 7.2: Assessment criteria for the effect of dust emissions from construction activities with standard mitigation in place

7.3 Baseline Conditions

7.3.1 Air Quality

The Environmental Protection Agency (EPA) Air Quality in Ireland Reports describes the air quality zoning adopted in Ireland under the Air Quality Standards Regulations, 2011 as follows:

- Zone A (Dublin conurbation);
- Zone B (Cork conurbation);
- Zone C (24 Cities and towns); and
- Zone D (Rural Ireland: areas not in Zones A, B and C).

The site falls within Zone A. Background levels from 2019, 2018 and 2017 air quality monitoring of NO_2, $PM_{2.5}$ and PM_{10} in Zone A provided by the EPA are presented in Table 7.3.

Concentrations of each pollutant recorded in Zone A are averaged to represent typical background levels. Average concentrations were obtained from all stations where 90% data capture was achieved. This is in accordance with Directive 2008/50/EC3 which specifies that any site used for assessment purposes must comply with 90% data capture.

Pollutant background concentrations are considered in this assessment. Table 7.3 presents a three-year average of background pollutant concentration values for Nitrogen Dioxide (NO2) and Particulate Matter (PM2.5 and PM10).

Year	**Annual Average NO_2 Limit (40 µg/m³)**	**Annual Average PM_{10} Limit (40 µg/m³)**	**Annual Average $PM_{2.5}$ Limit (25 µg/m³)**
2019	25.9	13.8	9.3
2018	21.3	14.2	7.5
2017	19.7	11.5	7.5
Average	*22.3*	*13.2*	*8.1*

Table 7.3: Annual Mean Background Pollutant Concentrations for Zone A

As outlined in Chapter 15: Land and Soils, low levels of asbestos containing materials (ACM) were detected during the site investigation.

7.4 Likely Significant Effects

7.4.1 Do-nothing scenario

In the scenario where the proposed development did not proceed as planned, none of the construction or operational impacts as set out in this chapter would occur.

7.4.2 Assessment of potential direct effects during construction

7.4.2.1 Direct Effects

Chapter 3 provides a description of the proposed development with Chapter 4 providing details of the proposed construction strategy for the proposed development.

Dust emissions are likely to arise from the following activities:

- Site excavation;
- Breaking of undercroft piles;
- Piling;
- Crushing;
- Use of generators;
- Stockpiling of separated particles;
- Handling of construction materials;
- Construction works on Parkgate Street;
- Construction traffic movements; and
- Landscaping.

In general, any additional airborne concentrations of particulate matter arising from construction would be small and very local to the construction site (minimising human exposure). Particles generated by most construction activities tend to be larger than 10µm in diameter which are too large to enter the human lung.

The construction phase of the proposed development is considered to be of a major scale (refer to Table 7.2). This has the potential to result in soiling effects within 100 m and PM_{10} and vegetation effects within 25 m of the works with standard mitigation in place.

A number of sensitive receptors are located on the northern boundary; the closest of which is located approximately 20m from the site boundary. There is potential for a significant impact from soiling, PM_{10} and vegetation effects arising from construction activities at properties along the western and northern boundary of the proposed development with the implementation of standard mitigation measures.

7.4.2.2 Indirect Effects

As stated in Section 7.2.1, no likely effects on air quality from construction traffic is predicted to occur.

7.4.2.3 Cumulative Effects

Appendix 21.1 of Chapter 21: Cumulative and Interactive Effects, outlines the proposed and permitted developments within 1 km of the proposed development.

Three of these developments are located within the immediate surrounds (Parkgate Street, Conyngham Road, Infirmary Road, Benburb Street) of the proposed development.

1. The First Ireland Risk Management Ltd (2168/15) is now constructed at Benburb Street, 70m from the proposed development, and as such, no construction cumulative effects with this development are anticipated.

2. The development of 17-22 Parkgate Street (3539/17) involves the construction of a four-storey building approximately 50m from the proposed development.

3. As permitted under ABP-306569-20, permission was granted at this site for 321no. Build-to-Rent residential apartments, ancillary residents' amenity facilities, commercial office (c.3,698 sq. m), retail (c.214 sq. m) and café/restaurant (c.236 sq. m), accommodated in 5no. blocks ranging from 8 to 13 storeys (c. 31,146 sq. m) over ancillary basement area, and all associated and ancillary conservation, landscaping and site development works. The construction phase assessment undertaken for the permitted development, included for the construction of a 29-storey residential tower. Therefore, cumulatively, the impact of the proposed development and the permitted development is no greater than the impact presented in the EIAR for the permitted development.

Given the scale of this adjacent development, in terms of both construction activities and construction traffic, there is the potential for cumulative effects. The developer is obliged to comply with the Codes of Practice from the Air Pollution Section of Dublin City Council and therefore, no significant cumulative effects are envisaged in combination with the adjacent development.

7.4.3 Assessment of potential direct effects during operation

7.4.3.1 Direct Effects

As permitted under ABP-306569-20, the indicative sizing of the proposed gas boilers for use is 600kW. Four such boilers are proposed to be located in the basement of Block B which will also serve Block A. These boilers are not subject to registration under the Medium Combustion Plant Directive (for emission sources between 1MW and 50MW) and are therefore not considered significant. In addition, an emergency generator, of indicative sizing of 450kVA, will be located onsite. As this generator will only be used during periods of power failure, no significant effect on air quality is expected to occur.

7.4.3.2 Indirect Effects

As stated in Section 7.2.1, no likely effects on air quality from operational traffic is predicted to occur.

7.4.3.3 Cumulative Effects

Appendix 21.1 of Chapter 21: Cumulative and Interactive Effects outlines the proposed and permitted developments within 1 km of the proposed development.

Given the minimal amount of traffic generation during the operational phase of the proposed development, any cumulative effect, in combination with the operational effects of other proposed or permitted developments, will be not significant. Therefore, no significant cumulative impacts are predicted in combination with the proposed development.

7.5 Mitigation Measures and Monitoring

7.5.1 Mitigation

7.5.1.1 Mitigation During Construction

The assessment of likely significant effects during construction (contained in Section 7.4.2) includes for the implementation of 'standard mitigation', as stated in the TII guidance. The measures which will be implemented during the construction phase of the proposed development are:

- Spraying of exposed earthwork activities and site haul roads during dry weather;
- Provision of wheel washes at exit points;
- Covering of stockpiles;
- Control of vehicle speeds, speed restrictions and vehicle access; and

- Sweeping of hard surface roads.

In addition, the following measures will be implemented for during the construction phase of the proposed development:

- A c. 1.8m hoarding will be provided around the site works to minimise the dispersion of dust from the working areas;
- Any generators will be located away from sensitive receptors in so far as practicable; and
- Stockpiles will be located as far as possible from sensitive receptors and covered and/or dampened during dry weather.

Employee awareness is also an important way that dust may be controlled on any site. Staff training and the management of operations will ensure that all dust suppression methods are implemented and continuously inspected.

As permitted under ABP-306569-20, during the construction phase of the proposed development it is possible that disturbance of ACMs on site could cause asbestos fibres to be released into the ambient environment. An asbestos audit will be carried out on the buildings scheduled for demolition prior to demolition works. Any asbestos discovered will be removed by a Specialist Contractor in accordance with Safety, Health, and Welfare at Work (exposure to Asbestos) Regulations 2006/2013[10], and disposed of by specialist contractors to an appropriately licensed facility. Traceable records of this activity, including the disposal licence, will be kept.

7.5.1.2 Mitigation During Operation

As there are no significant effects on air quality predicted during the operational phase of the proposed development, no mitigation measures are proposed.

7.5.2 Monitoring

7.5.2.1 Mitigation During Construction

Dust monitoring will be undertaken at a range of nearest sensitive receptors during the construction phases. The TA Luft dust deposition limit values of 350 mg/m^2/day (averaged over one year) will be applied as a 30-day average.

7.5.2.2 Mitigation During Operation

As no significant effects are predicted to occur during the operation of the proposed development, no monitoring measures are required.

7.6 Residual Effects

With the implementation of the mitigation measures outlined in Section 7.5, no significant residual negative effects on air quality are envisaged during the construction or operation of the proposed development.

8.0 Difficulties Encountered

There were no difficulties encountered during the compilation of this chapter.

[10] Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013). Available at: https://www.hsa.ie/eng/Legislation/New_Legislation/SI_291_2013.pdf