

An architectural rendering of the Berol Quarter development. The image shows a mix of building styles: a historic brick building on the left with arched windows and a modern high-rise with a grid of windows in the background. A large, leafy tree stands in the foreground, and a plaza with people walking and a cyclist is visible at the bottom. The entire image has a light purple overlay.

# BEROL QUARTER

## Air Quality Assessment

WSP  
BEROL QUARTER LIMITED

December 2022



Berol Quarter Limited

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# THE BEROL QUARTER

Air Quality Assessment





Berol Quarter Limited

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Air Quality Assessment

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## EXECUTIVE SUMMARY

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WSP has been commissioned by Berol Quarter Limited to undertake an air quality assessment to support the planning application for the proposed development of The Berol Quarter. The proposals include

*“Full planning permission for the refurbishment and extension of Berol House to include Use Class E floorspace and the redevelopment of 2 Berol Yard to provide new residential homes, Use Class E floorspace and associated landscaping, public realm improvements, car and cycle parking and other associated works.”*

This report presents the findings of the assessment, which addresses the potential air quality impacts during both the construction and operational phases of the proposed development. For both phases the type, source and significance of potential impacts were identified, and the measures that should be employed to minimise these proposed. The methodology followed in this study was discussed and agreed with the Environmental Health Officer of the London Borough of Haringey.

The assessment of construction phase impacts associated with fugitive dust and fine particulate matter (PM<sub>10</sub>) emissions has been undertaken in line with the relevant Institute of Air Quality Management guidance. This identified that there is a High Risk of dust soiling impacts and a Medium Risk of increases in particulate matter concentrations due to construction activities. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust and particulate matter releases would be significantly reduced. The residual effects of the construction phase on air quality are considered to be negligible.

The assessment of the potential air quality impacts associated with emissions from combustion plant associated with the operational phase of the proposed development has been completed in line with published methodologies and technical guidance. The pollutant considered in this part of the assessment was nitrogen dioxide (NO<sub>2</sub>).

An assessment of the potential for future residents of the proposed development to be exposed to poor air quality, given the site's location in an Air Quality Management Area, has also been undertaken.

The results show that the proposed development would cause a negligible impact when considering concentrations of NO<sub>2</sub>. According to the assessment significance criteria, the residual effects of the proposed development are therefore not significant. Concentrations of NO<sub>2</sub> were below, and therefore met, the relevant UK Air Quality Strategy objectives on the proposed development site, and therefore future residents are not anticipated to be exposed to poor air quality.

Based on the assessment results, it is considered that the development proposals comply with national, regional and local policy for air quality, and air quality is therefore not a factor of concern within the planning process.

# 1 INTRODUCTION

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- 1.1.1. WSP has been commissioned by Berol Quarter Limited (the 'Applicant'), to carry out an assessment of the potential air quality impacts arising from the proposed development at 2 Berol Yard and Berol House, Ashley Road; hereafter referred to as the 'proposed development' or 'application site'.
- 1.1.2. The application site lies within the administrative boundary of the London Borough of Haringey (LBH) with the boundaries of the London Borough of Hackney (LBHack) and London Borough of Waltham Forest (LBWF) within 2km of the application site. Currently, the application site comprises vacant land on Watermead Way and Berol House (an office building) on Ashley Road. It is bordered to the north by the Cannon Factory and The Gessner, to the east by A1055 Watermead Way and to the south by Tottenham Hale Station and the Tottenham Hale District Centre, which mainly comprises Tottenham Hale Retail Park on the opposite side of Ferry Lane. To the west, on the opposite side of Ashley Road, are the development plots of Ashley Gardens, Ashley House and Ashley Park.
- 1.1.3. The proposed development is for the refurbishment and extension of Berol House to include Class E floorspace, and the redevelopment of 2 Berol Yard to provide new residential homes and Class E floorspace. Also included are landscaping, public realm improvements, car and cycle parking and other associated works. The energy demand of the proposed development will be met through a connection to the District Energy Network (DEN) which will connect to an Energy from Waste facility to provide low carbon heating. In the event that there is a time lag between the occupation of the proposed development and the operation of the DEN, the energy demand will initially be met by three gas-fired boilers. An emergency back-up generator is also included in the proposals for life safety purposes.
- 1.1.4. This report presents the findings of an assessment of the potential air quality impacts of the proposed development during both the construction and operational phases. For both phases, the type, source and significance of potential impacts are identified, and the measures that should be employed to minimise these described. The assessment also considers the potential exposure of the new residents within the proposed development.
- 1.1.5. This air quality assessment report sets out the relevant policy context in **Section 2**. **Section 3** provides details on the scope of the assessment before describing the assessment methodology and the criteria used to determine the significance of effects. Baseline conditions are reviewed in **Section 4**. Potential impacts are described in **Section 5**. To address any potential adverse effects, **Section 6** sets out the requirements for mitigation and monitoring measures, and the residual effects. A summary of the assessment and its conclusions are given in **Section 7**. A glossary of the terms used within this report is given in **Appendix A**.

## 2 LEGISLATION, POLICY AND GUIDANCE

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### 2.1 LEGISLATION

2.1.1. The following legislation is relevant:

- The Environmental Protection Act 1990, Part III concerning prevention of statutory nuisance due to emissions from demolition/construction site activities by using Best Practicable Means<sup>1</sup>.
- The Environment Act 1995, Part IV giving requirements for a National Air Quality Strategy (AQS) and Local Air Quality Management (LAQM) duties for local authorities<sup>2,3</sup>. Where a local authority determines that one or more objective(s) is/are not likely to be met then it is required to declare one or more Air Quality Management Area (AQMA) and draw up an Action Plan to improve air quality.
- The Environment Act 2021, Schedule 11 includes amendments to Part IV of the Environment Act 1995 concerning the LAQM framework<sup>4</sup>. This is to strengthen the LAQM framework and enable greater cooperation at local level, bringing more organisations into the process of improving air quality. At the time of writing this report, the following targets for PM<sub>2.5</sub> are proposed to be brought forward in secondary legislation by 31<sup>st</sup> October 2022:
  - Annual mean concentration target for a maximum concentration of 10µg/m<sup>3</sup> to be met across England by 2040; and
  - Population exposure reduction target for a 35% reduction in population exposure by 2040 (compared to a base year of 2018)<sup>5</sup>.
- The Air Quality (England) Regulations 2000 (as amended 2002)<sup>6,7</sup>, setting ambient air quality objectives as given in the National Air Quality Strategy.

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<sup>1</sup> The National Archive (1990) *Environmental Protection Act 1990* [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/resources> [Accessed November 2022].

<sup>2</sup> The National Archive (1995) *Environment Act 1995* [online]. Available at: <https://www.legislation.gov.uk/ukpga/1995/25/contents> [Accessed November 2022].

<sup>3</sup> Department for Environment, Food and Rural Affairs (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1)* [online]. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf) [Accessed November 2022].

<sup>4</sup> The National Archive (2021) *Environment Act 2021* [online]. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/schedule/11/enacted> [Accessed November 2022].

<sup>5</sup> Defra (2021) *Air Quality Targets in the Environment Act* [online]. Available at: <https://uk-air.defra.gov.uk/library/air-quality-targets> [Accessed November 2022].

<sup>6</sup> The National Archive (2000) *The Air Quality (England) Regulations 2000* [online]. Available at: <https://www.legislation.gov.uk/uksi/2000/928/contents/made> [Accessed November 2022].

<sup>7</sup> The National Archive (2002) *The Air Quality (England) (Amendment) Regulations 2002* [online]. Available at: <https://www.legislation.gov.uk/uksi/2002/3043/contents> [Accessed November 2022].

- The Air Quality Standards Regulations 2010 (as amended 2016)<sup>8,9</sup> and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020<sup>10</sup>, setting mandatory limit and target values (amongst other things) for ambient air pollutants to be met at national level. Where exceedance of any limit is determined, the Secretary of State must draw up and implement an AQMA.

2.1.2. The relevant ambient air quality standards are given in **Table 2-1**.

**Table 2-1 – Relevant air quality standards**

| Pollutant                                                               | Concentration in micrograms per cubic metre (µg/m³) | Measured as          | Number of exceedances allowed in a calendar year                                                          |
|-------------------------------------------------------------------------|-----------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------|
| Nitrogen dioxide (NO <sub>2</sub> )                                     | 40                                                  | Annual mean          | None                                                                                                      |
|                                                                         | 200                                                 | 1-hour (hourly) mean | No more than 18                                                                                           |
| Particulates less than 10 micrometres in diameter (PM <sub>10</sub> )   | 40                                                  | Annual mean          | None                                                                                                      |
|                                                                         | 50                                                  | 24-hour (daily) mean | No more than 35                                                                                           |
| Particulates less than 2.5 micrometres in diameter (PM <sub>2.5</sub> ) | 20                                                  | Annual mean          | None                                                                                                      |
|                                                                         | 10                                                  | Annual mean          | None (Mayor of London air quality target to be achieved by 2030, and proposed Government target for 2040) |

<sup>8</sup> The National Archives (2010) *The Air Quality Standards Regulations 2010* [online]. Available at: <https://www.legislation.gov.uk/uksi/2010/1001/contents/made> [Accessed November 2022].

<sup>9</sup> The National Archive (2016) *The Air Quality Standards (Amendment) Regulations 2016* [online]. Available at: <https://www.legislation.gov.uk/uksi/2016/1184/contents/made> [Accessed November 2022].

<sup>10</sup> The National Archive (2020) *The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020* [online]. Available at: <https://www.legislation.gov.uk/uksi/2020/1313/introduction/made> [Accessed November 2022].

## 2.2 PLANNING POLICY

2.2.1. The planning policy set out below is relevant.

### NATIONAL PLANNING POLICY FRAMEWORK

2.2.2. The National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied<sup>11</sup>, including for new development and air quality.

### THE LONDON PLAN 2021

2.2.3. Policy SI 1 of the London Plan<sup>12</sup> is the key policy specific to the improvement of air quality within Greater London. In particular:

*"B 1) Development proposals should not:*

- a) lead to further deterioration of existing poor air quality*
- b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits*
- c) create unacceptable risk of high levels of exposure to poor air quality.*

*2) In order to meet the requirements in Part 1, as a minimum:*

- a) development proposals must be at least Air Quality Neutral*
- b) development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures*
- c) major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1*
- d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people should demonstrate that design measures have been used to minimise exposure."*

2.2.4. Policy SI 3 Energy infrastructure states that *"2) CHP and ultra-low NO<sub>x</sub> gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality."*

2.2.5. Policy D3 Optimising site capacity through the design-led approach is also relevant and says that new development should be designed such that it helps *"prevent or mitigate the impacts of [...] poor air quality"*.

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<sup>11</sup> Ministry of Housing, Communities and Local Government (2021) *National Planning Policy Framework* [online]. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed November 2022].

<sup>12</sup> The Mayor of London, (2021). *The London Plan: Spatial Development Strategy for Greater London* [online]. Available at: <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021> [Accessed November 2022].

- 2.2.6. Policy GG3 'Creating a healthy city' is also relevant. This policy requires developers to “seek to improve London’s air quality, reduce public exposure to poor air quality and minimise inequalities in levels of exposure to air pollution”.

#### **HARINGEY DEVELOPMENT MANAGEMENT DEVELOPMENT PLAN DOCUMENT (ADOPTED JULY 2017)**

- 2.2.7. The Council published their Development Management Development Plan Document (DPD)<sup>13</sup>, which sets out the planning policies that will help determine the developments that are granted planning permission in Haringey, and forms part of the Local Plan. The DPD contains one policy of relevance to air quality, which is Policy DM23: Environmental Protection. This states that:
- “A. All development proposals should consider air quality and be designed to: a) Improve or mitigate the impact on air quality in the Borough; and b) Improve or mitigate the impact on air quality for the occupiers of the building or users of the development.*
- B. Air quality assessments will be required for all major development and other development proposals, where appropriate.*
- C. Where necessary, adequate mitigation must be provided.”*

#### **HARINGEY LOCAL PLAN: STRATEGIC POLICIES 2013 (WITH ALTERATIONS 2017)**

- 2.2.8. The Strategic Policies document<sup>14</sup>, which also forms part of the Local Plan, was consolidated with alterations last year. This document still refers to the old Unitary Development Plan policy relevant to air quality, which has been ‘saved’. This is Policy ENV7 Air, Water and Light Pollution, which states that:
- “The Council will control potential pollution resulting from development in the borough by: requiring development to locate close to facilities and public transport; requiring developments to include measures to avoid, reduce and only then mitigate the emissions of pollutants, where appropriate; separating potentially polluting activities from sensitive areas (green belt, MOL or ecologically valuable sites) or uses (schools, hospitals, homes); and requiring developments that may cause pollution to locate in areas such as the defined employment areas to minimise their impact on the environment.*
- The Council will adopt the precautionary principle to the issue of pollution, by taking decisions on planning applications so as to avoid possible environmental damage when the scientific evidence for acting is inconclusive but the potential damage could be great. ”*

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<sup>13</sup> London Borough of Haringey (2017) *Development Management Development Plan Document* [online]. Available at: <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/local-plan-development-management-dpd> [Accessed November 2022].

<sup>14</sup> London Borough of Haringey (2017) *Local Plan: Strategic Policies 2013 (with alterations 2017)* [online]. Available at: <https://www.haringey.gov.uk/planning-and-building-control/planning/planning-policy/local-plan/local-plan-strategic-policies> [Accessed November 2022].

## 2.3 GUIDANCE

2.3.1. The following guidance, which is relevant to air quality assessment, was referred to:

- Mayor of London: The Control of Dust and Emissions During Construction and Demolition - Supplementary Planning Guidance (SPG)<sup>15</sup>;
- Institute of Air Quality Management (IAQM): Guidance on the Assessment of Dust from Demolition and Construction<sup>16</sup>;
- Environmental Protection UK (EPUK)/IAQM: Land-Use Planning and Development Control - Planning for Air Quality<sup>17</sup>;
- Mayor of London: London Local Air Quality Management Technical Guidance LLAQM.TG(19)<sup>18</sup>;
- Department for Environment Food and Rural Affairs (Defra): Local Air Quality Management Technical Guidance LAQM.TG(22)<sup>19</sup>;
- Environment Agency (EA): Specified generators: dispersion modelling assessment<sup>20</sup>;
- EA: Air emissions risk assessment for your environmental permit<sup>21</sup>;
- Mayor of London: London Plan Guidance Air Quality Neutral<sup>22</sup>; and
- London Councils: Air Quality and Planning Guidance<sup>23</sup>.

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<sup>15</sup> Mayor of London (2014) *The Control of Dust and Emissions During Construction and Demolition - Supplementary Planning Guidance* [online]. Available at: <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/control-dust-and> [Accessed November 2022].

<sup>16</sup> Holman et al, (2014). *IAQM Guidance on the assessment of dust from demolition and construction*, Institute of Air Quality Management, London [online]. Available at: <https://iaqm.co.uk/guidance/> [Accessed November 2022].

<sup>17</sup> Moorcroft and Barrowcliffe et al. (2017). *Land-use Planning & Development Control: Planning for Air Quality*. v1.2. Institute of Air Quality Management, London [online]. Available at: <https://iaqm.co.uk/guidance/> [Accessed November 2022].

<sup>18</sup> Mayor of London, (2019). *London Local Air Quality Management (LLAQM) Technical Guidance 2019 (LLAQM.TG (19))* [online]. Available at: <https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-london-boroughs> [Accessed November 2022].

<sup>19</sup> Defra, (2022). *Local Air Quality Management Technical Guidance LAQM.TG(22)* [online]. Available at: <https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/> [Accessed November 2022].

<sup>20</sup> EA (2019) *Specified generators: dispersion modelling assessment* [online]. Available at: <https://www.gov.uk/guidance/specified-generators-dispersion-modelling-assessment#nosubsub-to-nosub2sub-conversion-ratios-to-use> [Accessed November 2022].

<sup>21</sup> EA (2022) *Air emissions risk assessment for your environmental permit* [online]. Available at: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit> [Accessed November 2022].

<sup>22</sup> Mayor of London (2021) *London Plan Guidance Air Quality Neutral Consultation Draft* [online]. Available at: <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/air-quality-neutral-aqn-guidance> [Accessed November 2022].

<sup>23</sup> London Councils (2007) *London Councils Air Quality and Planning Guidance* [online]. Available at: <https://www.londoncouncils.gov.uk/node/25533> [Accessed November 2022].

## 3 SCOPE AND METHODOLOGY

### 3.1 SCOPE

3.1.1. The scope of the assessment has been determined in the following way:

- Consultation with the Environmental Health Officer at LBH was carried out on 24<sup>th</sup> August 2022 via email to agree the scope of the assessment and the methodology to be applied. Confirmation was received on 12<sup>th</sup> September that LBH are satisfied with the scope, provided there is no significant deviation from policy and that relevant guidance and policy is followed.
- Review of LBH's latest air quality annual status reports<sup>24</sup> and air quality data for the area surrounding the application site, Defra<sup>25</sup>, the EA<sup>26</sup>, and the London Air websites<sup>27</sup>.
- Desk study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality, and a review of the masterplan for the proposed development to establish the location of new sensitive receptors.
- Review of the traffic data provided by WSP Transport Consultants.
- Review of the data provided in support of the energy strategy by NLY Building Services Ltd.

3.1.2. The scope of the assessment includes consideration of the potential impacts on local air quality resulting from:

- Dust and particulate matter generated by on-site activities during the construction phase;
- Increases in pollutant concentrations as a result of exhaust emissions arising from construction traffic and plant; and
- Increases in pollutant concentrations as a result of emissions to air from the gas-fired boilers and back-up generator included within the development proposals.

3.1.3. Impacts scoped in or out of this assessment are provided in **Table 3-1** below.

**Table 3-1 - Impacts scoped in or out of the assessment**

| Impact             | Scoped in or out? | Justification |
|--------------------|-------------------|---------------|
| Construction Phase |                   |               |

<sup>24</sup> LBH (2022) *London Borough of Haringey Annual Air Quality Status Report 2021* [online]. Available at: [https://www.haringey.gov.uk/sites/haringeygovuk/files/air\\_quality\\_annual\\_status\\_report\\_for\\_2021.pdf](https://www.haringey.gov.uk/sites/haringeygovuk/files/air_quality_annual_status_report_for_2021.pdf) [Accessed November 2022]

<sup>25</sup> Defra (2022) *Background Mapping data for local authorities – 2018* [online]. Available at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018> [Accessed November 2022]

<sup>26</sup> Environment Agency (2022) *Pollution Inventory* [online]. Available at: <https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory> [Accessed October 2022]

<sup>27</sup> Imperial College London (2022) *London Air* [online]. Available at: <http://www.londonair.org.uk/LondonAir/Default.aspx> [Accessed October 2022]

| Impact                                                                                                                                                         | Scoped in or out? | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fugitive dust emissions from construction activities affecting amenity.                                                                                        | In                | There are sensitive human receptors within 350m of construction activities and within 50m of the routes used by construction vehicles on the public highway, up to 500m from the site entrance.<br><br>Determination of the risk of dust impacts from the proposed development will inform the identification of proposed mitigation measures commensurate to the risk identified. (Note: The dust risk beyond 350m of construction activities will be negligible and any effects will be not significant.)                                                                                                                                                                                      |
| Emissions of NO <sub>x</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> from non-road mobile machinery (NRMM) affecting local air quality at existing receptors. | In                | As operation of NRMM will be limited to working hours and then only when and where required within the application site, the exhaust emissions are unlikely to have a substantial impact on pollutant concentrations at receptors. In line with paragraph 4.23 of LLAQM.TG(19), a quantitative assessment of this impact was scoped out and a qualitative assessment was undertaken.                                                                                                                                                                                                                                                                                                             |
| Emissions of NO <sub>x</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> from construction traffic affecting local air quality.                                   | Out               | Expected construction traffic flows were compared to EPUK/IAQM Land-Use Planning Guidance indicative criteria for requiring an air quality assessment. As construction traffic will not exceed the annual average daily traffic (AADT) flow thresholds for light duty vehicles (LDV) and heavy-duty vehicles (HDV) of 100 and 25 respectively on any given route then this impact was scoped out as likely to be not significant.<br><br>It is understood that the waste away will be undertaken by wait and load arrangements so that vehicle movements are minimised, and that the maximum volume of materials can be removed at any one stage.                                                |
| <b>Operational Phase</b>                                                                                                                                       |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Emissions of NO <sub>x</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> from operational traffic affecting local air quality at existing and future receptors.   | Out               | The proposed development will be car-free with the exception of eight blue badge spaces. The only vehicle trips associated with the operational phase of the proposed development will be associated with maintenance, servicing and deliveries. Once the proposed development is operational it will generate only a marginal change in AADT flows on the local road network as the application site is currently established as an existing pub and restaurant.<br><br>The expected change in traffic flows during the operational phase therefore do not exceed the EPUK/IAQM Land-Use Planning Guidance indicative scoping criteria for air quality assessment for locations within an AQMA. |
| Emissions of NO <sub>x</sub> from combustion plant on local air quality.                                                                                       | In                | The energy demand of the proposed development will be met through a connection to the DEN which will connect to an Energy from Waste facility to provide low carbon heating. In the event that the proposed development is occupied prior to the DEN becoming operational, three gas-fired high efficiency condensing boilers would be installed to provide heating to all units. Based on the heat demand output for gas boilers, they are likely to give rise to local air quality impacts at existing and future receptors.                                                                                                                                                                   |

| Impact                         | Scoped in or out? | Justification                                                                                                               |
|--------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                                |                   | A back-up diesel generator will also be installed for life safety purposes only.                                            |
| Air quality neutral assessment | In                | London Plan Policy SI 1 'Improving Air Quality' requires that "development proposals must be at least air quality neutral". |

## 3.2 METHODOLOGY

### CONSTRUCTION PHASE

- 3.2.1. Dust comprises particles typically in the size range 1-75 micrometres ( $\mu\text{m}$ ) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore, is not likely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.
- 3.2.2. The smaller particles of dust (less than  $10\mu\text{m}$  in aerodynamic diameter) are known as particulate matter ( $\text{PM}_{10}$ ) and represent only a small proportion of total dust released; this includes a finer fraction, known as  $\text{PM}_{2.5}$  (with an aerodynamic diameter less than  $2.5\mu\text{m}$ ). As these particles are at the smaller end of the size range of dust particles, they remain suspended in the atmosphere for a longer period of time than the larger dust particles, and can therefore be transported by wind over a wider area.  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  are small enough to be drawn into the lungs during breathing, which in sensitive members of the public could have a potential impact on health.
- 3.2.3. An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and  $\text{PM}_{10}$  during the construction phase has been undertaken with reference to:
  - The Mayor of London's SPG for the control of dust and emissions during construction and demolition<sup>15</sup>;
  - The available information for this phase of the proposed development provided by the Client and Project Team; and
  - professional judgement.
- 3.2.4. The Mayor of London's SPG requires a Dusk Risk Assessment to be undertaken following the methodology published by the IAQM<sup>16</sup>, which assesses the risk of potential dust and  $\text{PM}_{10}$  impacts from the following four sources: demolition; earthworks; general construction activities and track-out. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and  $\text{PM}_{10}$  levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined. A summary of the IAQM Construction Dust Guidance<sup>16</sup> assessment methodology is provided in **Appendix B**.

- 3.2.5. In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction NRMM may have an impact on local air quality adjacent to the routes used by these vehicles to access the application site and in the vicinity of the application site itself.

## OPERATIONAL PHASE

- 3.2.6. The proposed development's energy strategy is to connect to the District Energy Network (DEN), when this becomes available. In the event that there is a time lag between the occupation of the proposed development and the operation of the DEN, 100% gas boilers would be temporarily installed to meet demand in line with Greater London Authority (GLA) Energy Assessment Guidance section 9.27<sup>28</sup>.
- 3.2.7. The temporary boilers will provide communal heating, with energy generated by three gas fired boilers of 424.5kW each. To ensure conservatism in the assessment, it has been assumed that the three boilers will be in use all of the time. In addition, a stand-by diesel powered generator for emergency back-up for all life safety systems is proposed as part of the proposed development.
- 3.2.8. For the prediction of impacts due to emissions arising from the operation of the proposed heating system, the air pollutant dispersion model ADMS 5.2 (version 5.2.2.0)<sup>29</sup> was used. This model uses detailed information regarding the pollutant releases, local building effects and local meteorological conditions to predict pollutant concentrations at specific locations selected by the user.
- 3.2.9. A summary of the flue parameters and emissions to air of the plant, which have been used within the model is provided in **Table 3-2**.

**Table 3-2 - Emission Parameters from proposed combustion plant**

| Parameter                           | Boilers                    | Back-up Generator       |
|-------------------------------------|----------------------------|-------------------------|
| Stack Location                      | 534446,189664              | 534447,189664           |
| Stack Height (m)                    | 108.6m                     | 108.6m                  |
| Stack diameter (m)                  | 500mm                      | 500mm                   |
| Release temperature (°C)            | 30-60                      | 550                     |
| Release flow rate (m³/s)            | 0.0329                     | 0.546                   |
| Loading and Operation hours         | 100%, 8,760 hours per year | 100%, 50 hours per year |
| NO <sub>x</sub> emission rate (g/s) | 0.015565                   | 0.000016                |

<sup>28</sup> Mayor of London (2022) Energy Assessment Guidance – Greater London Authority guidance on preparing energy assessments as part of planning application (June 2022)

<sup>29</sup> Cambridge Environmental Research Consultants (2022) ADMS 5 [online]. Available at: <https://www.cerc.co.uk/environmental-software/ADMS-model.html> [Accessed November 2022].

### Other Emission Sources

- 3.2.10. The emissions from a number of energy centres<sup>30</sup> at neighbouring sites have been taken into account when considering the potential for cumulative effects. A summary of these emission sources which were included in the assessment is provided in **Table 3-3** and **Table 3-4**.

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<sup>30</sup> Planning applications for Cannon Factory and Ashley House (Planning Application Ref HGY/2018/2353) and Tottenham Hale Centre (Planning Application Ref HGY/2018/2223)



**Table 3-3 - Emission Parameters from Energy Centres at the Neighbouring Sites (part 1)**

| Parameter                   | Welbourne      | ARW            | ARE            | Ferry Island   | North Island   | Welbourne         | ARW               | ARE               | Ferry 1           | Ferry 2           | North Island      |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Plant                       | Boiler         | Boiler         | Boiler         | Boiler         | Boiler         | Back-up Generator | Back-up Generator | Back-up Generator | Back-up Generator | Back-up Generator | Back-up Generator |
| Stack Location              | 534179, 189657 | 534353, 189595 | 534392, 189615 | 534337, 189517 | 534287, 189542 | 534136, 189691    | 534353, 189595    | 534384, 189608    | 534381, 189548    | 534336, 189516    | 534286, 189543    |
| Stack Height (m)            | 51.9           | 39.7           | 66.6           | 48.2           | 64.7           | 20.4              | 39.7              | 66.6              | 129.1             | 48.2              | 64.7              |
| Stack diameter (m)          | 0.39           | 0.29           | 0.26           | 0.49           | 0.22           | 0.12              | 0.08              | 0.17              | 0.17              | 0.17              | 0.17              |
| Release temperature (°C)    | 60             | 60             | 60             | 60             | 60             | 537               | 537               | 475               | 475               | 475               | 475               |
| Release flow rate (m³/s)    | 0.702          | 0.397          | 0.328          | 1.142          | 0.219          | 0.330             | 0.147             | 0.652             | 0.652             | 0.652             | 0.652             |
| Loading and Operation hours | 8,760          | 8,760          | 8,760          | 8,760          | 8,760          | 50                | 50                | 50                | 50                | 50                | 50                |
| NO <sub>x</sub> rate (g/s)  | 0.01960        | 0.01110        | 0.00914        | 0.03180        | 0.00610        | 0.17500           | 0.07780           | 0.19500           | 0.19500           | 0.19500           | 0.19500           |



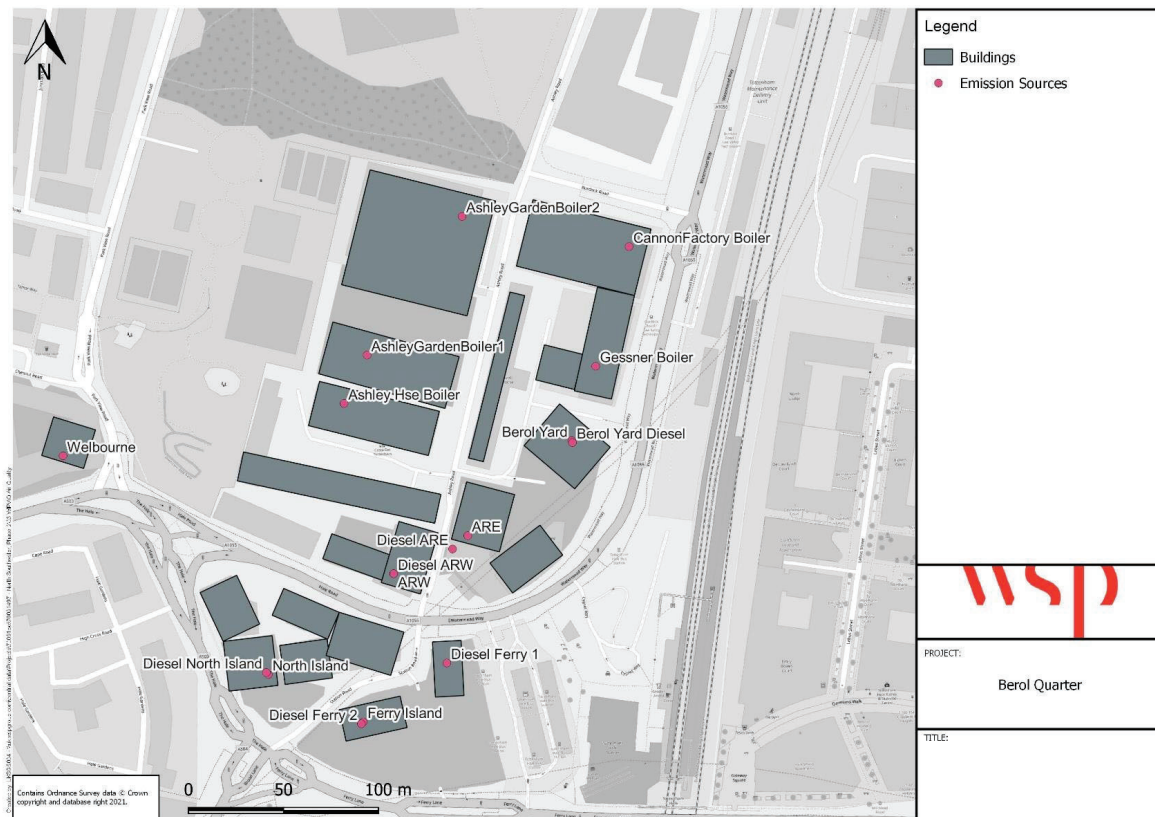
**Table 3-4 - Emission Parameters from Energy Centres at the Neighbouring Sites (part 2)**

| Parameter                           | The Gessner    | Ashley Garden 1 | Ashley Garden 2 | Ashley House  | Cannon Factory |
|-------------------------------------|----------------|-----------------|-----------------|---------------|----------------|
| Plant                               | Boiler         | Boiler          | Boiler          | Boiler        | Boiler         |
| Stack Location                      | 534459, 189704 | 534339, 189710  | 534389, 189783  | 534326,189684 | 534476, 189767 |
| Stack Height (m)                    | 47.0           | 34.0            | 37.0            | 24.9          | 55.7           |
| Stack diameter (m)                  | 0.20           | 0.15            | 0.25            | 0.40          | 0.40           |
| Release temperature (°C)            | 78             | 78              | 78              | 78            | 70             |
| Release flow rate (m³/s)            | 0.110          | 0.088           | 0.250           | 0.333         | 0.510          |
| Loading and Operation hours         | 8,760          | 8,760           | 8,760           | 8,760         | 8,760          |
| NO <sub>x</sub> emission rate (g/s) | 0.003          | 0.003           | 0.007           | 0.007         | 0.013          |

3.2.11. The locations of the emission sources of the proposed development and other emission sources are presented in **Figure 3-1**.



Figure 3-1 - Locations of Emission Sources



## Scenarios

- 3.2.12. For the operational assessment, two scenarios were considered as follows:
- 2025 without development; and
  - 2025 with development.
- 3.2.13. 2025 is the anticipated opening year of the proposed development.
- 3.2.14. The 'without development' scenario includes emissions from committed developments in the locality of the application site but do not include any contribution from the proposed development itself. The 'with development' scenario includes emissions from the proposed development itself and the nearby committed developments.

## Background Concentration

- 3.2.15. The nearest automatic background monitor is London Haringey Priory Park South (188917, 529986). It is an Automatic Urban and Rural Network (AURN) air quality monitoring site and is located approximately 4.5km west of the application site. The measured annual mean NO<sub>2</sub> concentration at this site in 2021 is 18.0µg/m<sup>3</sup>. Given the location of the background monitoring site, the background pollutant concentrations across the study area have been defined using the Defra Background mapping<sup>25</sup>.
- 3.2.16. The Defra background mapping<sup>25</sup> annual mean concentration for NO<sub>2</sub> at the 1x1km grid square (534500, 189500) encompassing the application site is 19.36µg/m<sup>3</sup> in 2025, the anticipated opening year. This background concentration has been used for the on-site background concentration within the operational assessment.

## Modelling Assumptions and Post-processing

- 3.2.17. Meteorological data, such as wind speed and direction, is used by the model to determine pollutant transportation and levels of dilution by the wind. Meteorological data used in the model was obtained from the Met Office observation station at London City Airport for the five year period from 2015 to 2019 (see **Appendix C**). This station is considered to provide representative data for the assessment.
- 3.2.18. Both nearby buildings and complex topography can have a significant effect on the dispersion characteristics of the plumes from the stacks being assessed. ADMS 5.2 has algorithms which take into account these impacts. Buildings can cause the plume to come to ground much closer to the stack than otherwise expected, causing higher pollutant concentrations. Therefore, the buildings that are currently under construction and other committed developments on the neighbouring sites are included in the model.
- 3.2.19. The topography of the surrounding area is essentially flat and at the same elevation across the entire area considered in the modelling. Therefore, terrain data have not been included in the model. The surface roughness used in the modelling was 1.0m, representative of cities.
- 3.2.20. The total NO<sub>2</sub> concentrations (i.e. Predicted Environmental Concentration (PEC)) at each receptor were calculated as follows:
- Long term standards: PEC long-term = Process Contribution (PC) + Background Concentration
  - Short term standards: PEC short-term = PC short term + (2 x Background long-term)

- 3.2.21. The contribution of emissions from the boilers to annual mean NO<sub>x</sub> concentrations output by ADMS 5.2 was converted to NO<sub>2</sub> assuming 70% conversion rate in the calculation of total annual mean NO<sub>2</sub> concentrations. A conversion ratio of 35% has been utilised for the assessment of short-term impacts, as recommended by EA guidance<sup>20</sup>.
- 3.2.22. Total annual mean NO<sub>2</sub> concentrations for the without development scenario include:
- the contribution from the boilers and back-up diesel generators associated with nearby committed development; and
  - the local NO<sub>2</sub> background concentration.
- 3.2.23. Total annual mean NO<sub>2</sub> concentrations for the with development scenario include:
- the contribution from the temporary gas-fired boilers and backup diesel generator at the proposed development;
  - the contribution from the boilers and back-up diesel generators associated with nearby committed development; and
  - the local NO<sub>2</sub> background concentration.
- 3.2.24. Once processed, the predicted concentrations were compared against the relevant AQS objective levels for NO<sub>2</sub>.
- 3.2.25. For the receptors closest to the top of the flue (i.e. on the top floor), the short-term PEC has been compared to the short-term AQS objective of 200µg/m<sup>3</sup> (18 hourly exceedances of which corresponds to the 99.8th percentile of hourly mean concentrations).

## SENSITIVE RECEPTORS

- 3.2.26. Sensitive locations are places where the public or sensitive ecological habitats may be exposed to pollutants resulting from activities associated with the proposed development. These will include locations sensitive to an increase in dust deposition and PM<sub>10</sub> exposure as a result of on-site construction activities, and locations sensitive to exposure to gaseous pollutants emitted from the exhausts of operational traffic associated with the proposed development.

### Construction Phase

- 3.2.27. The construction phase assessment is undertaken where there are: 'human receptors' within 350m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or 'ecological receptors' within 50m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). It is within these distances that the impacts of dust soiling and increased particulate matter in the ambient air will have the greatest impact on local air quality at sensitive receptors. The construction dust assessment study areas are illustrated in **Figure 5-1**.

### Operational Phase

- 3.2.28. The locations of new receptors are shown in **Figure 3-2** and detailed in **Table 3-5**.

**Table 3-5 – New Receptor Locations**

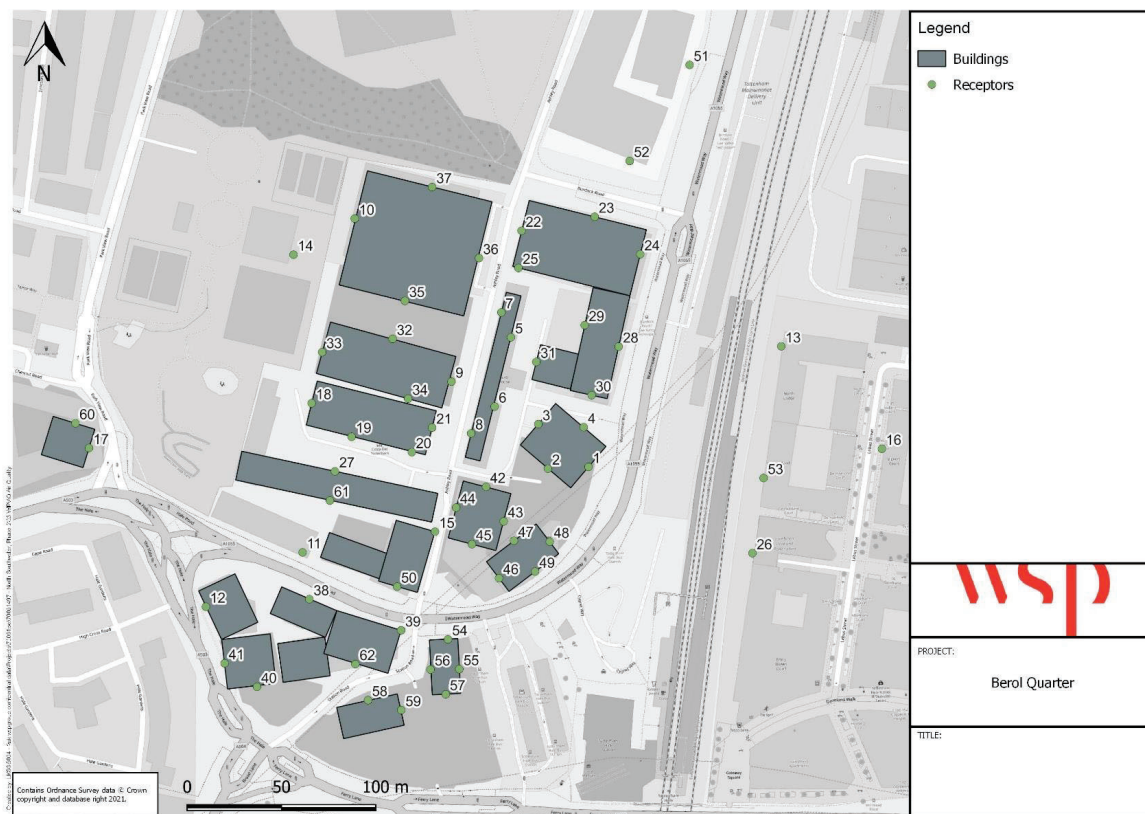
| Receptor | Description                  | X      | Y      | Height |
|----------|------------------------------|--------|--------|--------|
| 1        | New receptor at 2 Berol Yard | 534457 | 189650 |        |

| Receptor | Description                  | X      | Y      | Height                                                     |
|----------|------------------------------|--------|--------|------------------------------------------------------------|
| 2        | New receptor at 2 Berol Yard | 534436 | 189649 | From ground floor (1.5m) to 29 <sup>th</sup> floor (88.5m) |
| 3        | New receptor at 2 Berol Yard | 534431 | 189673 |                                                            |
| 4        | New receptor at 2 Berol Yard | 534455 | 189671 |                                                            |
| 5        | New receptor at Berol House  | 534416 | 189719 | From ground floor (1.5m) to fifth floor (16.5m)            |
| 6        | New receptor at Berol House  | 534408 | 189682 |                                                            |
| 7        | New receptor at Berol House  | 534411 | 189732 |                                                            |
| 8        | New receptor at Berol House  | 534395 | 189668 |                                                            |

- 3.2.29. In addition, existing residential properties and future residential properties at the committed developments have been identified as receptors for the assessment. These locations are also shown in **Figure 3-2**.
- 3.2.30. To complete the assessment, concentrations have also been modelled at a 3km x 3km grid with 10m spacing in order to evaluate the exposure of the wider area.



Figure 3-2 - Location of Sensitive Receptors



### 3.3 AIR QUALITY NEUTRAL ASSESSMENT

- 3.3.1. The air quality neutral assessment was undertaken using the Gross Internal Area (GIA) and anticipated development trip rates of each proposed land use class once operational, to calculate the NO<sub>x</sub> and PM<sub>10</sub> emissions from the transport elements of the proposed development. The building emissions were calculated from the combined emissions of the three supplementary gas boilers, assuming that they are running 24 hours a day, every day of the year.
- 3.3.2. At the time that this report was written, sufficient information on the DEN was not available to carry out an Air Quality Neutral assessment. An assessment of its compliance against BEB will be required once information regarding the emission rate of the combustion source becomes available.
- 3.3.3. The relevant figures for the proposed development as provided by the Project Team are presented in **Table 3-6**.

**Table 3-6 – Parameters used in the Air Quality Neutral Assessment**

| Parameter                                                             | Development Value        |
|-----------------------------------------------------------------------|--------------------------|
| Gross Internal Area (m <sup>2</sup> ) by land-use class*              | E: 6,340m <sup>2</sup>   |
|                                                                       | C3: 24,882m <sup>2</sup> |
| Number of residential units*                                          | 210                      |
| Annual Vehicle Trip Generation                                        | E: 3,650 trips/year      |
|                                                                       | C3: 24,090 trips/year    |
| Output of 3 x natural gas boiler plant <sup>^</sup>                   | 1,273.5kW                |
| Total boiler NO <sub>x</sub> emission rate <sup>^</sup>               | 44mg/kWh                 |
| Total predicted annual energy use <sup>^</sup>                        | 1,533,476kWh/year        |
| *Data provided by Lichfields <sup>31</sup> .                          |                          |
| <sup>^</sup> Data provided by NLY Building Services Ltd <sup>32</sup> |                          |

- 3.3.4. The resultant emissions were compared against the Building Emissions Benchmarks (BEBs) and Transport Emissions Benchmarks (TEB) in **Section 5.3** of this report. Developments that do not exceed these benchmarks (considered separately) will avoid any significant increase in NO<sub>x</sub> and PM<sub>10</sub> emissions across London as a whole and therefore will be classed as 'air quality neutral'.

<sup>31</sup> Allies and Morrison, John McAslan & Partners, Churchman Thornhill Finch (2022). *Berol Quarter Design and Access Statement*. London: Allies and Morrison.

<sup>32</sup> NLY Building Service Ltd. (2022) *P22025-R-001 Mechanical Services Design Report rev P2*.

## 3.4 SIGNIFICANCE CRITERIA

### CONSTRUCTION PHASE

- 3.4.1. The IAQM Construction Dust Guidance<sup>16</sup> assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be not significant.
- 3.4.2. For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the application site on local concentrations of NO<sub>2</sub> and particulate matter, the significance of residual effects has been determined using professional judgement and the principles outlined in the EPUK/IAQM Land-Use Planning guidance<sup>17</sup>, which are described below.

### OPERATIONAL PHASE

#### *Human Health Impacts*

- 3.4.3. The EA's Air Emissions risk assessment guidance<sup>21</sup> sets out the levels at which process contributions (contributions to concentrations from combustion plant emissions) can be screened out as being not significant; PC can be considered to be not significant if:
- The long term PC is <1% of the long term environmental standard (for NO<sub>2</sub>, <0.4µg/m<sup>3</sup>);
  - The short term PC is <10% of the short term environmental standard (for NO<sub>2</sub>, <20µg/m<sup>3</sup>).
- 3.4.4. Where the PC exceeds these thresholds and are potentially significant, it is necessary to compare the PEC) against the relevant statutory and guideline air quality standards, by combining the PC with appropriate background data.

#### *Human Health Exposure*

- 3.4.5. The assessment considers new exposure only that is introduced by the proposed development. The EPUK/IAQM Land-Use Planning guidance for new development says that
- "Where the air quality is such that an air quality objective at the building facade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure".*
- 3.4.6. In determining both the significance of new exposure to air pollution and the levels of mitigation required within the proposed development, consideration was given to the Air Pollution Exposure Criteria (APEC) published in the London Councils' guidance<sup>23</sup> for air quality assessments and shown in **Table 3-7**.

**Table 3-7 – London Councils' Air Pollution Exposure Criteria**

| <b>APEC Level</b> | <b>Applicable Range<br/>Annual Average<br/>NO<sub>2</sub></b> | <b>Applicable Range<br/>PM<sub>10</sub></b>                                                                                        | <b>Recommendation</b>                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A                 | >5% below national objective                                  | Annual Mean<br>>5% below national objective<br>24-hour mean<br>>1 day less than the national objective                             | No air quality grounds for refusal; however, mitigation of any emissions should be considered.                                                                                                                                                                                                                                                                                                           |
| B                 | Between 5% below or above national objective                  | Annual Mean<br>Between 5% below or above national objective<br>24-hour mean<br>Between 1 day above or below the national objective | May not be sufficient air quality ground for refusal, however appropriate mitigation must be considered e.g., maximise distance from pollution source, proven ventilation systems, parking considerations, winter gardens, internal layout considered, and internal pollutant emissions minimised.                                                                                                       |
| C                 | >5% above national objective                                  | Annual Mean<br>>5% above national objective<br>24-hour mean<br>>1 day more than the 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. |

## 3.5 LIMITATIONS & ASSUMPTIONS

- 3.5.1. The model used in this assessment relies on input data, which also have uncertainties associated with them. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the model will not take into account.
- 3.5.2. Information on the timings of operation for the proposed boilers was not available at the time of the assessment. Therefore, it was assumed that all three of the boilers will be operational 24 hours a day, 7 days a week, 365 days of the year, which is likely to be a worst case assumption given the lack of heating demand at night and in the summer months. The back-up diesel generator will be operating for 50 hours per year. It is assumed that the maintenance and testing schedule will involve a maximum of 50 runs of a maximum 1 hour each (i.e. approximately once per week for a duration of 1 hour).

## 4 BASELINE CONDITIONS

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### 4.1 LBH'S REVIEW AND ASSESSMENT OF AIR QUALITY

- 4.1.1. In 2001 LBH declared the borough-wide Haringey AQMA<sup>33</sup> due to exceedances of the annual mean NO<sub>2</sub> AQS objective and the daily mean PM<sub>10</sub> AQS objective.
- 4.1.2. In 2019 the LBH published its Air Quality Action Plan (AQAP)<sup>34</sup> and subsequently published its progress update in the London Borough of Haringey Air Quality Annual Status Report for 2021<sup>35</sup>. The AQAP outlines a number of actions that the council will deliver to improve air quality within its administrative area between 2019 and 2024. These actions include, but are not limited to, the following:
- Ensuring emissions from demolition and construction are minimised;
  - Provision of infrastructure to support walking and cycling;
  - Ensuring enforcement of NRMM air quality policies; and
  - Supporting Airtext, promotion and dissemination of high pollution alert services.

### 4.2 LOCAL AUTHORITY AIR QUALITY MONITORING DATA

#### CONTINUOUS MONITORING DATA

- 4.2.1. The LBH produced its most recent Air Quality Annual Status Report<sup>35</sup> in May 2021, which shows that the Council operates three continuous monitoring stations (CMS); one of which (GB0637A) is located within 2km of the application site boundary.
- 4.2.2. **Table 4-1** shows that annual mean NO<sub>2</sub> concentrations recorded at GB0637A, have been compliant with the AQS objective since 2017. In addition, over the six-year period between 2016 and 2021 inclusive annual mean NO<sub>2</sub> concentrations measured at this CMS have exhibited a general decrease.

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<sup>33</sup> Defra (2022) *Local Authority Details London Borough of Haringey – AQMA's Declared by London Borough of Haringey* [online]. Available at: [https://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=339](https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=339) [Accessed November 2022].

<sup>34</sup> LBH (2019) *Air Quality Action Plan 2019-2024* [online]. Available at: [https://www.haringey.gov.uk/sites/haringeygovuk/files/haringey\\_final\\_aqap\\_2019-24\\_signed.pdf](https://www.haringey.gov.uk/sites/haringeygovuk/files/haringey_final_aqap_2019-24_signed.pdf) [Accessed November 2022].

<sup>35</sup> LBH (2022) *London Borough of Haringey Annual Air Quality Status Report for 2021* [online]. Available at: [https://www.haringey.gov.uk/sites/haringeygovuk/files/air\\_quality\\_annual\\_status\\_report\\_for\\_2021.pdf](https://www.haringey.gov.uk/sites/haringeygovuk/files/air_quality_annual_status_report_for_2021.pdf) [Accessed November 2022].

**Table 4-1 - NO<sub>2</sub> concentrations (µg/m<sup>3</sup>) monitored at CMS within 2km of the application site**

| Site ID | Name                               | Type     | X, Y           | Approx. distance from application site | Annual mean NO <sub>2</sub> concentrations in µg/m <sup>3</sup> (and number of hours the 1-hour mean concentrations exceeded 200µg/m <sup>3</sup> ) |           |           |           |        |        |
|---------|------------------------------------|----------|----------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|--------|--------|
|         |                                    |          |                |                                        | 2016                                                                                                                                                | 2017      | 2018      | 2019      | 2020*  | 2021*  |
| GB0637A | Haringey Roadside (639, High Road) | Roadside | 533894, 190707 | 1.1km north west                       | <b>43</b><br>(6)                                                                                                                                    | 40<br>(5) | 39<br>(0) | 37<br>(0) | 33 (0) | 32 (0) |

Data for LBH was obtained from the 2021 Air Quality Annual Status Report<sup>35</sup>.

**Bold text** indicates an exceedance of the AQS objective of 40µg/m<sup>3</sup>.

\*Data is unlikely to be representative of typical pollution concentrations due to the COVID-19 pandemic and associated travel restrictions imposed in the UK throughout 2020 and into 2021.

- 4.2.3. **Table 4-1** also shows that the 1-hour mean NO<sub>2</sub> concentrations recorded at the site were compliant with the AQS objective for all years.
- 4.2.4. This CMS does not record PM<sub>10</sub> or PM<sub>2.5</sub> concentrations and therefore there are no PM<sub>10</sub> and PM<sub>2.5</sub> recorded concentrations within 2km of the application site.

## PASSIVE MONITORING

- 4.2.5. Annual mean NO<sub>2</sub> concentrations are also measured at diffusion tube locations within 2km of the application site. **Table 4-2** gives the data for these sites.

**Table 4-2 - Annual mean NO<sub>2</sub> concentrations at diffusion tubes within 2km of the application site**

| Site ID                    | Site Location            | Site Type | X, Y           | Approximate distance from application site | Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> ) |      |      |      |      |       |       |
|----------------------------|--------------------------|-----------|----------------|--------------------------------------------|----------------------------------------------------------------|------|------|------|------|-------|-------|
|                            |                          |           |                |                                            | 2015                                                           | 2016 | 2017 | 2018 | 2019 | 2020* | 2021* |
| London Borough of Haringey |                          |           |                |                                            |                                                                |      |      |      |      |       |       |
| HR14 a                     | 639 High Road            | Roadside  | 533890, 190710 | 1,089m north west                          | 39                                                             | 33   | 34   | 33   | 34   | 30    | 31    |
| HR14 b                     | 639 High Road            | Roadside  | 533890, 190710 | 1,089m north west                          | -                                                              | -    | -    | -    | -    | 33    | 30    |
| HR14 c                     | 639 High Road            | Roadside  | 533890, 190710 | 1,089m north west                          | -                                                              | -    | -    | -    | -    | 30    | 32    |
| HR30                       | Earlsmead Primary School | Roadside  | 533899, 189023 | 770m south west                            | 50                                                             | 43   | 40   | 44   | 40   | 33    | 30    |
| HR36                       | Holy Trinity CE School   | Roadside  | 533842, 189581 | 524m west                                  | -                                                              | -    | -    | 30   | 34   | 29    | 29    |

| Site ID                                                                                                                                                                                                                                                                                                                                                       | Site Location                 | Site Type | X, Y           | Approximate distance from application site | Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> ) |           |           |           |           |       |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------|----------------|--------------------------------------------|----------------------------------------------------------------|-----------|-----------|-----------|-----------|-------|-------|
|                                                                                                                                                                                                                                                                                                                                                               |                               |           |                |                                            | 2015                                                           | 2016      | 2017      | 2018      | 2019      | 2020* | 2021* |
| HR38                                                                                                                                                                                                                                                                                                                                                          | Welbourn Primary School       | Roadside  | 533991, 189460 | 427m south west                            | -                                                              | -         | -         | -         | 25        | 21    | 22    |
| HR47                                                                                                                                                                                                                                                                                                                                                          | 134 West Green Road           | Roadside  | 533117, 189142 | 1,365m south west                          | -                                                              | -         | -         | -         | -         | -     | 30    |
| HR48                                                                                                                                                                                                                                                                                                                                                          | Mulberry Primary              | Roadside  | 534022, 190341 | 697m north west                            | -                                                              | -         | -         | -         | -         | -     | 21    |
| HR49                                                                                                                                                                                                                                                                                                                                                          | 151 Mount Pleasant Road       | Roadside  | 533199, 190058 | 1,232m west                                | -                                                              | -         | -         | -         | -         | -     | 24    |
| HR55                                                                                                                                                                                                                                                                                                                                                          | Risley Ave. Primary           | Roadside  | 533257, 190739 | 1,509m north west                          | -                                                              | -         | -         | -         | -         | -     | 31    |
| HR56                                                                                                                                                                                                                                                                                                                                                          | Dukes Aldridge Academy        | Roadside  | 534205, 191270 | 1,525m north                               | -                                                              | -         | -         | -         | -         | -     | 23    |
| <b>London Borough of Hackney</b>                                                                                                                                                                                                                                                                                                                              |                               |           |                |                                            |                                                                |           |           |           |           |       |       |
| 33                                                                                                                                                                                                                                                                                                                                                            | Stamford Hill                 | Kerbside  | 533687, 187785 | 1,999m south west                          | <b>46</b>                                                      | <b>48</b> | <b>45</b> | <b>45</b> | 40        | 31    | 31    |
| 55                                                                                                                                                                                                                                                                                                                                                            | Our Lady 1                    | Roadside  | 533491, 187892 | 1,982m south west                          | -                                                              | -         | -         | -         | 36        | 25    | 27    |
| 139                                                                                                                                                                                                                                                                                                                                                           | Lubavitch Boys School 2       | Roadside  | 533821, 187733 | 1,991m south                               | -                                                              | -         | -         | <b>43</b> | <b>41</b> | 33    | 31    |
| <b>London Borough of Waltham Forest</b>                                                                                                                                                                                                                                                                                                                       |                               |           |                |                                            |                                                                |           |           |           |           |       |       |
| 2                                                                                                                                                                                                                                                                                                                                                             | Blackhorse Rd                 | Roadside  | 536048, 189159 | 1,643m east                                | -                                                              | <b>53</b> | <b>49</b> | <b>45</b> | <b>45</b> | -     | N/A   |
| 31                                                                                                                                                                                                                                                                                                                                                            | Coppermill School Edward Road | Roadside  | 535942, 188731 | 1,375m south                               | -                                                              | -         | -         | 38        | 38        | 29    | N/A   |
| 45                                                                                                                                                                                                                                                                                                                                                            | Higham Hill Rd                | Roadside  | 536226, 190223 | 1,804m east                                | -                                                              | -         | -         | -         | 32        | -     | N/A   |
| <p><b>Bold text</b> indicates an exceedance of the annual mean AQS objective of 40µg/m<sup>3</sup>.</p> <p>'-' indicates that the monitoring site was closed.</p> <p>Data from the LBH was obtained from the 2021 Air Quality Annual Status Report<sup>35</sup>.</p> <p>Data from the LBHack was obtained from the 2022 Air Quality Annual Status Report.</p> |                               |           |                |                                            |                                                                |           |           |           |           |       |       |

| Site ID                                                                                                                                                                                                                                         | Site Location | Site Type | X, Y | Approximate distance from application site | Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> ) |      |      |      |      |        |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|------|--------------------------------------------|----------------------------------------------------------------|------|------|------|------|--------|--------|
|                                                                                                                                                                                                                                                 |               |           |      |                                            | 2015                                                           | 2016 | 2017 | 2018 | 2019 | 2020 * | 2021 * |
| Data from the LBWF was obtained from the 2020 and 2021 Air Quality Annual Status Report <sup>36,37</sup> .                                                                                                                                      |               |           |      |                                            |                                                                |      |      |      |      |        |        |
| *2020 and 2021 monitoring data are not considered to be representative of normal conditions, nor suitable for making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic. |               |           |      |                                            |                                                                |      |      |      |      |        |        |

- 4.2.6. The results in **Table 4-2** above show that two out of the ten diffusion tube monitoring sites, that were operational within 2km of the application site in 2019, recorded exceedances of the annual mean AQS objective for NO<sub>2</sub>.
- 4.2.7. **Table 4-2** shows that the maximum concentration recorded in 2019 was 45µg/m<sup>3</sup> and was recorded at the roadside site 2 'Blackhorse Rd' approximately 1.6km to the east of the application site. The closest monitoring location to the application site boundary however, is the roadside site HR38 located approximately 427m to the south west. Since the site was commissioned in 2019, annual mean NO<sub>2</sub> concentrations recorded at this site were consistently below, and therefore met, the annual mean AQS objective.
- 4.2.8. In line with LAQM.TG(22) guidance<sup>19</sup>, **Table 4-2** illustrates that it is unlikely that there have been any exceedances of the hourly mean AQS objective within 2km of the application site since 2015. This is on the basis that all annual mean NO<sub>2</sub> concentrations recorded were less than 60µg/m<sup>3</sup>, where road transport is the main source of pollution.

### 4.3 LONDON ATMOSPHERIC EMISSIONS INVENTORY (LAEI)

- 4.3.1. The LAEI provides baseline annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations for Greater London up to the M25. The concentrations are provided at a grid resolution of 20m and considers emissions from a range of combustion and non-combustion sources.
- 4.3.2. A review of the available data from the latest version of the LAEI (2019)<sup>38</sup> shows that within the application site itself, there were not any expected exceedances of the annual mean NO<sub>2</sub> AQS

<sup>36</sup> LBWF (2020) *London Borough of Waltham Forest Air Quality Annual Status Report for 2019* [online]. Available at: <https://www.walthamforest.gov.uk/sites/default/files/2021-12/2019%20Air%20Quality%20Annual%20Status%20Report.pdf> [Accessed November 2022].

<sup>37</sup> LBWF (2021) *London Borough of Waltham Forest Air Quality Annual Status Report for 2020* [online]. Available at: <https://www.walthamforest.gov.uk/sites/default/files/2021-12/2020%20Air%20Quality%20Annual%20Status%20Report.pdf> [Accessed November 2022].

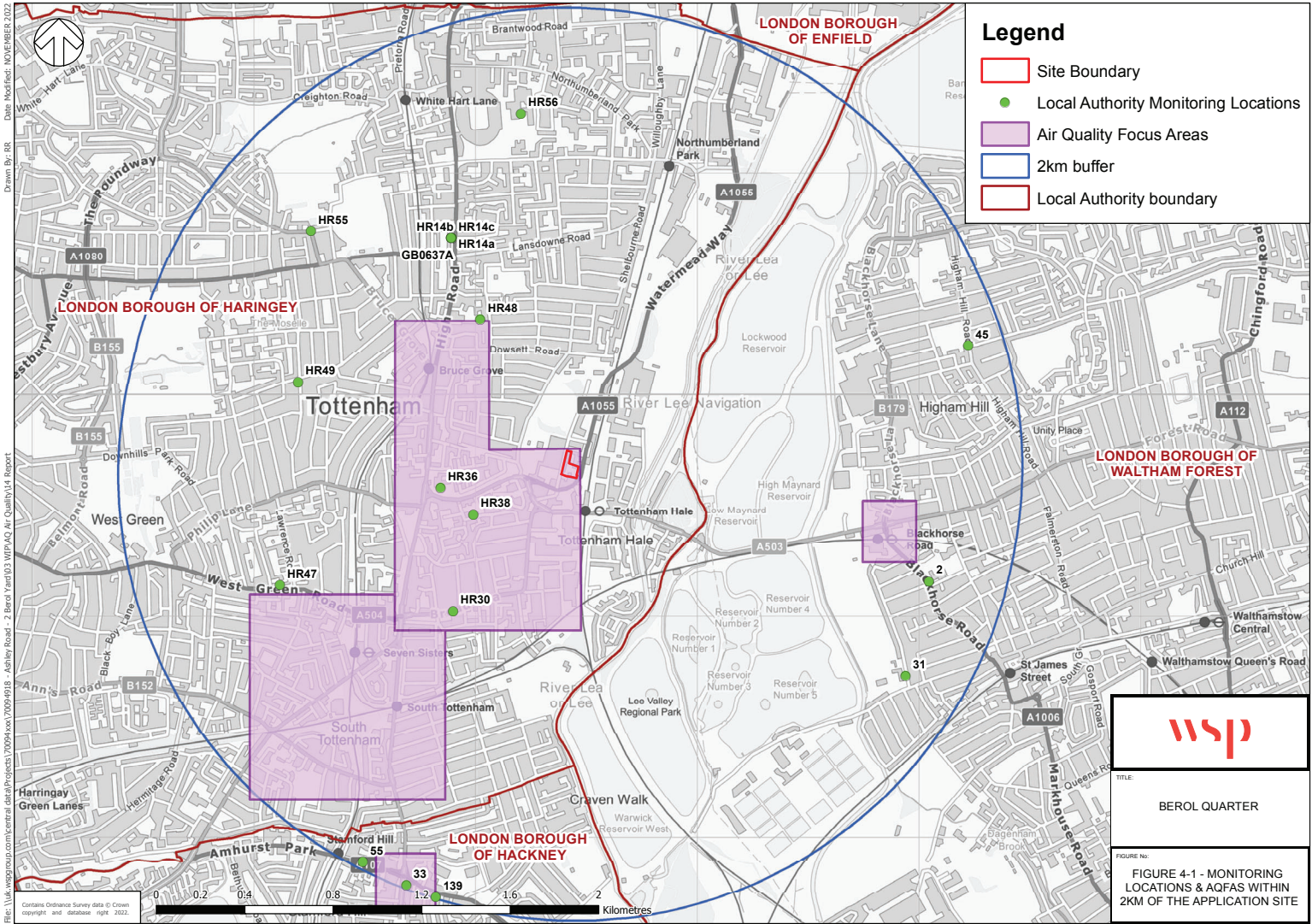
<sup>38</sup> GLA (2022) *London Atmospheric Emissions Inventory (LAEI) 2019* [online]. Available at: <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2019> [Accessed November 2022].

objective of  $40\mu\text{g}/\text{m}^3$ . Concentrations are expected to range from  $29.1\text{--}33.0\mu\text{g}/\text{m}^3$  across the application site.

- 4.3.3. No exceedances of the hourly mean  $\text{NO}_2$  AQS objective are expected at the application site in 2019. LAQM.TG(22)<sup>19</sup> advises that exceedances of the 1-hour mean  $\text{NO}_2$  AQS objective are unlikely to occur where annual mean concentrations are below  $60\mu\text{g}/\text{m}^3$ .
- 4.3.4. The LAEI (2019) data also shows that within the application site there were not expected to be any exceedances of the annual mean  $\text{PM}_{10}$  AQS objective of  $40\mu\text{g}/\text{m}^3$  nor of the annual mean  $\text{PM}_{2.5}$  AQS objective of  $20\mu\text{g}/\text{m}^3$ . The maximum and minimum predicted annual mean  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  concentrations at the application site in 2019 were  $18.4\mu\text{g}/\text{m}^3$  and  $16.6\mu\text{g}/\text{m}^3$  respectively. These concentrations were expected to occur across the application site.
- 4.3.5. The LAEI also identifies that the application site is located within an Air Quality Focus Area (AQFA)<sup>39</sup>. AQFAs are locations that *“not only exceed the EU annual mean limit value for  $\text{NO}_2$  but are also locations with high human exposure.”* **Figure 4-1** below shows that within 2km of the application site boundary there are the following four AQFAs:
  - Tottenham Hale Gyratory and A10 High Road to Bruce Grove; encompasses the site.
  - Seven Sisters junction Seven Sisters Rd/High Road A10; approximately 810m south west of the application site.
  - Blackhorse Road junction Blackhorse Lane/Blackhorse Road/Forest Road; approximately 1,301m east of the application site.
  - Stamford Hill (A107) / Clapton Common (A10); approximately 1,823m south west of the application site.

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<sup>39</sup> Mayor of London/GLA (2016) *London Datastore – London Atmospheric Emissions Inventory (LAE) 2013 Air Quality Focus Areas – December 2016 update* [online]. Available at: <https://data.london.gov.uk/dataset/laei-2013-london-focus-areas> [Accessed May 2022]



## 4.4 SUMMARY

- 4.4.1. The application site is located within a borough-wide AQMA declared by LBH in 2001 due to exceedances of both the annual mean NO<sub>2</sub> AQS objective and the daily mean PM<sub>10</sub> AQS objective. The application site is located in an area where air quality is mainly influenced by emissions from road transport and combustion plant that are local to the application site and are used to generate heat and power for buildings.
- 4.4.2. A review of air quality monitoring data recorded at locations within 2km of the application site indicates that whilst prior to 2019, many of the roadside and kerbside active and passive monitoring sites recorded exceedances of the annual mean NO<sub>2</sub> AQS, all sites have recorded a general decrease in NO<sub>2</sub> concentrations since 2015.
- 4.4.3. Lastly, a review of the available data within the LAEI indicates that whilst the application site is located within, or is in close proximity to, several AQFAs, there are not expected to be any exceedances of the annual mean NO<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub> AQS objective within the application site boundary. Compliance with the hourly mean NO<sub>2</sub> and daily mean PM<sub>10</sub> AQS objective is also expected at the application site.

## 5 ASSESSMENT OF IMPACTS

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### 5.1 CONSTRUCTION PHASE

#### DUST AND PM<sub>10</sub> ARISING FROM ON-SITE ACTIVITIES

- 5.1.1. Construction activities that have the potential to generate and/or re-suspend dust and PM<sub>10</sub> include:
- Preparation of temporary access/egress to the application site and haulage routes;
  - Earthworks;
  - Materials handling, storage, stockpiling, spillage and disposal;
  - Movement of vehicles and construction traffic within the application site (including excavators and dumper trucks);
  - Use of crushing and screening equipment/plant;
  - Exhaust emissions from site plant, especially when used at the extremes of their capacity and during mechanical breakdown;
  - Construction of buildings, roads and areas of hardstanding alongside fabrication processes;
  - Internal and external finishing and refurbishment; and
  - Site landscaping after completion.
- 5.1.2. The majority of the releases are likely to occur during the 'working week' which is understood to be between 08:00 and 18:00 Monday to Friday and between 08:00 and 13:00 on Saturdays. Work is not permitted to take place on Sundays or bank holidays<sup>40</sup>. However, for some potential release sources (e.g. exposed soil produced from significant earthwork activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

#### ASSESSMENT OF POTENTIAL DUST EMISSION MAGNITUDE

- 5.1.3. The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM<sub>10</sub> sources: demolition; earthworks; construction; and trackout. The findings of the assessment are presented below.

##### Demolition

- 5.1.4. No demolition activities will occur at the application site as part of the construction phase of the proposed development<sup>40</sup>. Therefore, consideration of the impact of this source on dust soiling and ambient PM<sub>10</sub> is not required.

##### Earthworks

- 5.1.5. The total area of the application site is 5000m<sup>2</sup>, the soil type is clay and therefore potentially dusty. In the absence of available information it has been conservatively assumed that the total material that will be moved is estimated to be more than 100,000 tonnes. It is also estimated that more than 10 heavy earth moving vehicles will be active at any one time, and that hoarding will be erected

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<sup>40</sup> NRG Consulting (2022) *Berol Quarter Construction Logistics Plan*.

along the application site perimeter. Therefore, the potential dust emission magnitude is considered to be large for earthworks activities

### Construction

- 5.1.6. The total volume of buildings to be constructed on the application site will be greater than 100,000m<sup>3</sup> with potentially dusty construction materials being used. In addition, on site concrete batching is not anticipated to occur, rather ready-mix concrete will be delivered as required. Therefore, the potential dust emission magnitude is considered to be large for construction activities.

### Trackout

- 5.1.7. According to the Construction Logistics Plan<sup>40</sup> there are expected to be no more than 10 HDV (>3.5t) outward movements in any one day travelling on potentially dusty surface materials. Due to the size of the site, it is also assumed that the length of unpaved roads within the application site will be 50-100m. Therefore, the potential dust emission magnitude is considered to be large for trackout.
- 5.1.8. **Table 5-1** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

**Table 5-1 – Potential Dust Emission Magnitude**

| Activity                | Dust Emission Magnitude |
|-------------------------|-------------------------|
| Demolition              | N/A                     |
| Earthworks              | Large                   |
| Construction Activities | Large                   |
| Trackout                | Large                   |

## ASSESSMENT OF SENSITIVITY OF THE STUDY AREA

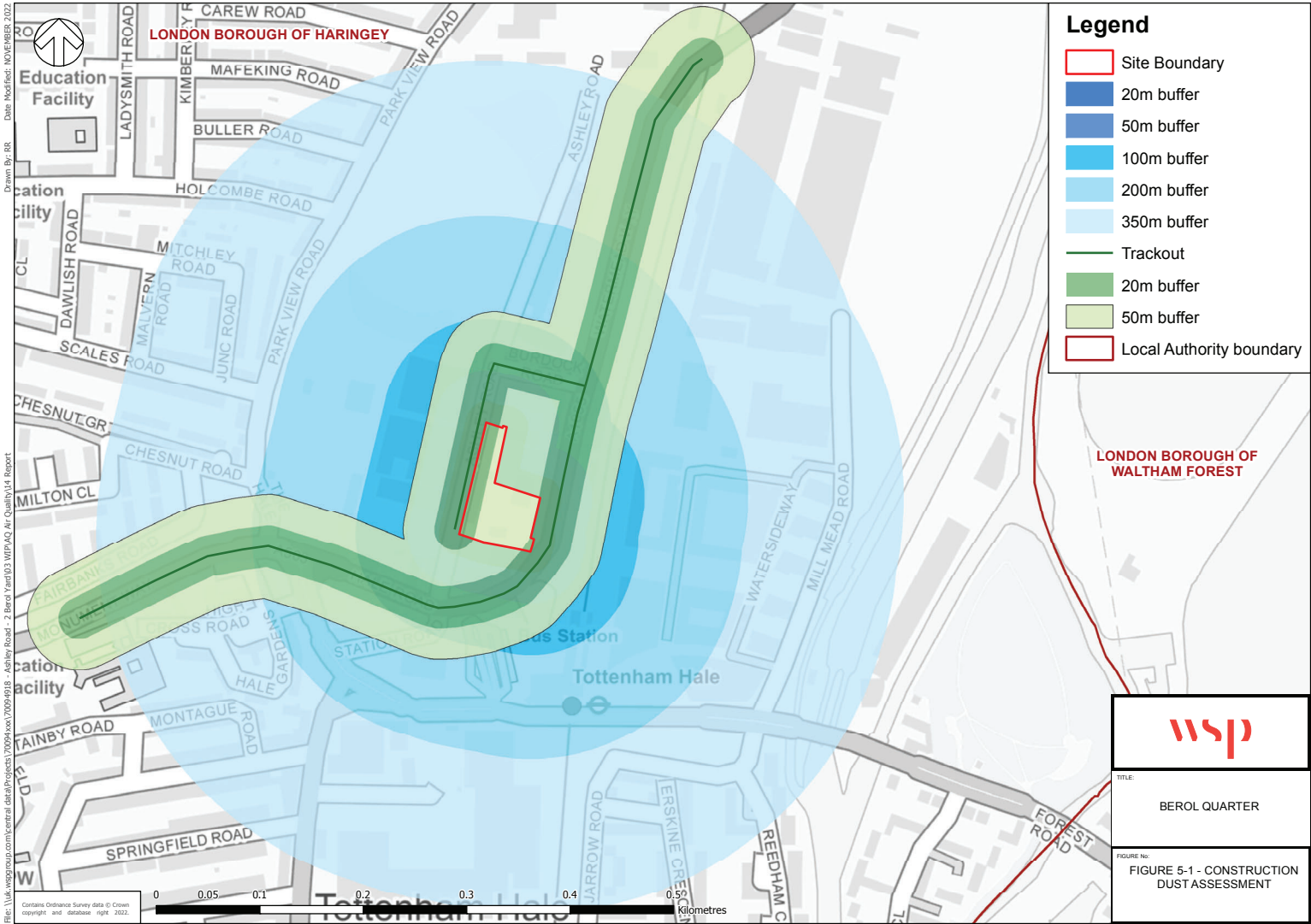
- 5.1.9. A windrose generated using the 2019 meteorological data used for the dispersion modelling of operational phase impacts is provided in **Appendix C**. This shows that the prevailing wind direction is from the south west. Therefore, receptors located to the north east of the application site are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.
- 5.1.10. Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. Immediately to the north of the application site are residential properties at The Gessner. The eastern boundary of the application site is bounded by A1055 Watermead Way and to the south of the application site is a residential development (known as Heart of Hale) which is under construction. There are a number of warehouse-type buildings to the west of the application site as well as residential properties along Hale Road and Ashley Road.
- 5.1.11. There are no ecological sites within 50m of the application site boundary nor within 50m of the construction routes within 500m of the application site. Ecological receptors are therefore not considered further within the construction dust risk assessment.

- 5.1.12. According to the Construction Logistics Plan<sup>40</sup>, all smaller delivery vehicles are expected to egress the application site via Ashley Road and turn right on to Watermead Way via Burdock Road before ultimately joining the A10 High Road. Larger vehicles are expected to use the temporary bay at the eastern site entrance on Watermead Way and not enter the site directly. Vehicles travelling along these routes will be within 50m of more than 100 highly sensitive receptors including residential dwellings.
- 5.1.13. Taking the above into account, including the maximum annual mean PM<sub>10</sub> concentration of 18.4µg/m<sup>3</sup> (see **Section 4.3**), and following the IAQM Construction Dust Guidance assessment methodology, the sensitivity of the area to changes in dust and PM<sub>10</sub> has been derived for each of the construction activities considered. The results are shown in **Table 5-2**.

**Table 5-2 - Sensitivity of the Study Area**

| Potential Impact | Sensitivity of the Surrounding Area |            |              |          |
|------------------|-------------------------------------|------------|--------------|----------|
|                  | Demolition                          | Earthworks | Construction | Trackout |
| Dust Soiling     | N/A                                 | High       | High         | High     |
| Human Health     | N/A                                 | Medium     | Medium       | Medium   |
| Ecological       | N/A                                 | N/A        | N/A          | N/A      |

**Figure 5-1** shows the study area of the construction dust assessment and the indicative trackout route during construction period.



## RISK OF IMPACTS

- 5.1.14. The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 5-3** below provides a summary of the risk of dust impacts for the proposed development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

**Table 5-3 – Summary Dust Risk Table to Define Site Specific Mitigation**

| Potential Impact | Risk       |             |              |             |
|------------------|------------|-------------|--------------|-------------|
|                  | Demolition | Earthworks  | Construction | Trackout    |
| Dust Soiling     | N/A        | High Risk   | High Risk    | High Risk   |
| Human Health     | N/A        | Medium Risk | Medium Risk  | Medium Risk |
| Ecological       | N/A        | N/A         | N/A          | N/A         |

- 5.1.15. In accordance with the GLA's SPG<sup>15</sup>, the overall dust risk rating of the proposed development has been classified as high risk.

## CONSTRUCTION VEHICLES & PLANT

- 5.1.16. The greatest impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the site access. It is anticipated that small construction vehicles will access the site via Ashley Road and larger construction vehicles will utilise a temporary bay along Watermead Way and not access the site directly. Due to the size of the application site, it is considered likely that the construction traffic will be low in comparison to the existing traffic flows on these roads.
- 5.1.17. Final details of the exact plant and equipment likely to be used on the application site will be determined by the appointed contractor. It is considered likely to comprise dump trucks, tracked excavators, diesel generators, asphalt spreaders, rollers, compressors and trucks. The number of plant and their location within the application site are likely to be variable over the construction period.
- 5.1.18. Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are therefore considered to be of negligible impact and therefore the effects are considered to be not significant.

## 5.2 OPERATIONAL PHASE

### OPERATIONAL TRAFFIC

- 5.2.1. WSP Transport Planning Consultants have confirmed that changes in traffic flows during the operational stage will not exceed the EPUK/IAQM scoping criteria for locations within an AQMA. This, in conjunction with estimated key pollutant concentrations that are compliant with their associated AQS, is justification for scoping out assessment of air quality impacts on existing receptors.

## ENERGY PLANT IN OPERATIONAL PHASE

- 5.2.2. The results of the dispersion modelling are presented in **Table D-1** and **Table D-2** in **Appendix D** and a summary is provided below.

### Process Contribution

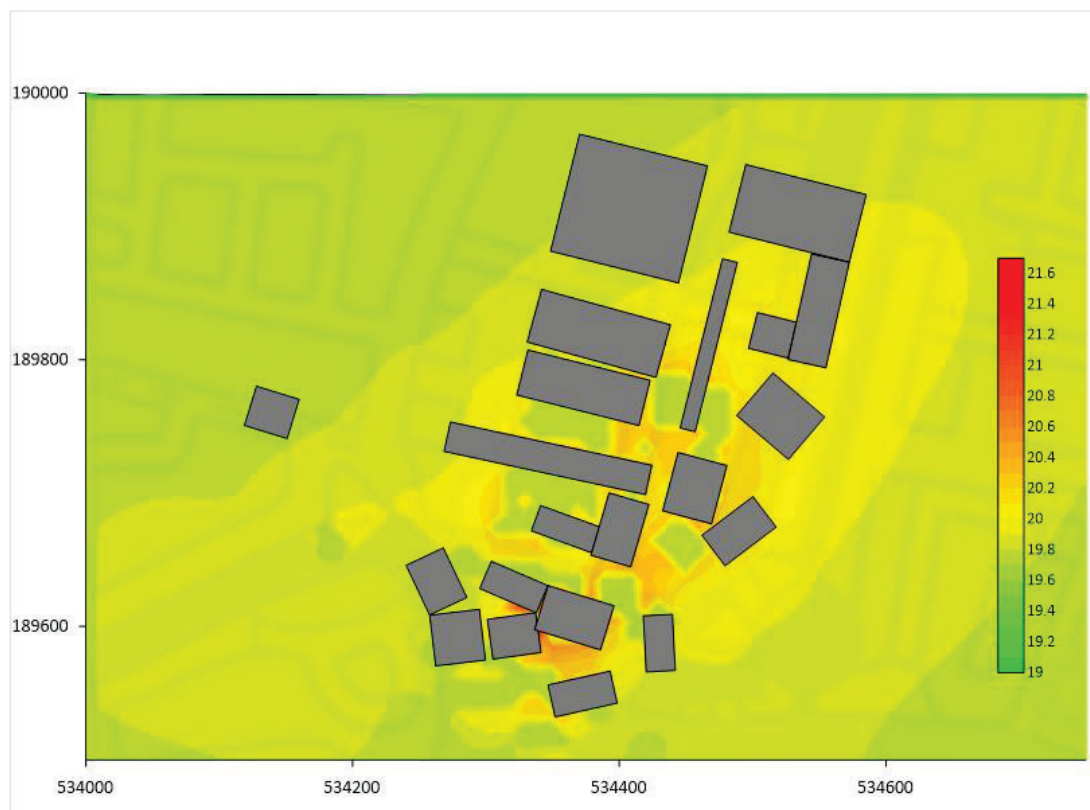
- 5.2.3. The maximum PC over the five years of meteorological data have been predicted at each of the receptors identified and across the modelled grid. The PC includes only the emissions arising from both the gas-fired boilers and the back-up diesel generator of the proposed development. The significance of the impacts has been assessed in accordance with the EA's Risk Assessment Guidance.
- 5.2.4. The predicted maximum annual mean NO<sub>2</sub> PC arising from the proposed new plant is 0.30µg/m<sup>3</sup> which is 0.76% of the relevant AQS objective. The change is less than 1% of the objective. As the annual mean PC is less than 1% of the AQS objective at all locations, the impact of the proposed plant emissions on annual mean NO<sub>2</sub> concentrations is considered to be not significant in accordance with the Environment Agency significance criteria.
- 5.2.5. The short term NO<sub>2</sub> PC is 0.94µg/m<sup>3</sup> which is 0.47% of the AQS objective of 200µg/m<sup>3</sup>. As the hourly mean PC is less than 10% of the AQS objective at all locations, the impact of the proposed plant emission on hourly mean NO<sub>2</sub> concentrations is considered to be not significant in accordance with the EA significance criteria.

### Cumulative Effects

- 5.2.6. The total PEC is calculated as the PC from the emission sources and the background concentration.
- 5.2.7. The AQS objective for annual mean NO<sub>2</sub> concentrations is 40µg/m<sup>3</sup>. The results of the assessment show that in both the "without development" and "with development" scenarios, the PEC is predicted to be within the objective at all modelled receptors including the existing receptors, the committed development receptors and the new receptors at Berol Quarter. The highest predicted concentration is 24.0µg/m<sup>3</sup> at the fifteenth floor of a residential property at Ferry Island (receptor number 58).
- 5.2.8. The AQS objective for short-term hourly mean NO<sub>2</sub> concentrations is 200µg/m<sup>3</sup>. The results of the assessment show that in both the "without development" and "with development" scenarios, the PEC is predicted to be within the objective at all the modelled receptors including the existing receptors, the committed development receptors and the new receptors at Berol Quarter. The highest predicted concentration is 68.8µg/m<sup>3</sup> at the fifteenth floor of a residential property at Ferry Island (receptor number 58).
- 5.2.9. The results for both the "without development" and "with development" scenarios show that annual mean and short term NO<sub>2</sub> concentrations are well within, and therefore meet, the objectives with the maximum PEC of 60% of the long term AQS objective and 34% of the short term AQS objective, and therefore, all modelled locations are within the APEC Level A criteria i.e. no air quality grounds for refusal and no mitigation is required.
- 5.2.10. **Figure 5-2** shows the predicted annual mean NO<sub>2</sub> concentrations across the modelled grid at heights of 1.5m (ground level).



Figure 5-2 – Annual mean NO<sub>2</sub> concentration (µg/m<sup>3</sup>) contours for the ‘with proposed development’ scenario



5.2.11. **Figure 5-2** shows that the annual mean NO<sub>2</sub> concentrations are well within the annual mean AQS objective at all gridded locations on the application site and the wider area. Concentrations at all locations are within the APEC Level A criteria i.e. no air quality grounds for refusal and no mitigation is required.

5.2.12. Consequently, it is considered that future residents will not be exposed to poor air quality.

### 5.3 AIR QUALITY NEUTRAL ASSESSMENT

5.3.1. The NO<sub>x</sub> emission rates of the proposed gas boiler are provided under two conditions, 16mg/kWh in BREEAM standard<sup>41</sup> and 44mg/kWh in EN15502<sup>42</sup>. Total NO<sub>x</sub> emissions from the development were calculated based upon the emission rate for each of the gas boilers (i.e. 44mg/kWh) as a conservative approach, with a total annual energy usage of 1,533,476kWh as provided by NLY Building Services Ltd.

$$44\text{mg/kWh} \times 1,533,476\text{kWh} = 67.5\text{kg/yr}$$

5.3.2. The total benchmarked building NO<sub>x</sub> emission for the proposed development has been calculated from the GIA for each of the proposed land use categories and the BEBs provided in the Air Quality Neutral guidance for individual gas boilers; as shown in **Table 5-4**.

**Table 5-4 – Calculation of BEB**

| Land use           | GIA (m <sup>2</sup> ) | Benchmark emission rate (g/m <sup>2</sup> /yr) | Total benchmark emissions for the proposed development (kgNO <sub>x</sub> /yr) |
|--------------------|-----------------------|------------------------------------------------|--------------------------------------------------------------------------------|
| Residential (C3)   | 22,950                | 3.5                                            | 87.1                                                                           |
| Offices/Retail (E) | 6,940*                | 1.43                                           | 9.1                                                                            |
| <b>Total</b>       |                       |                                                | <b>96.2</b>                                                                    |

\*GIA is representative of non-residential land-uses and is inclusive of community space for use by local groups.

5.3.3. The total building emissions that were calculated for the proposed development (67.5kg/yr) are less than the total BEB (96.2kg/yr). Therefore, the proposed development is considered to meet the requirements for being air quality neutral in terms of building emissions.

5.3.4. Concerning transport emissions, the Mayor of London's Air Quality Neutral guidance<sup>22</sup> states that where developments are car free, they can be assumed to meet the Transport Emissions Benchmark. The proposed development will be car free, with the exception of limited blue badge

<sup>41</sup> BREEAM New Construction 2018 [https://files.bregroup.com/breeam/technicalmanuals/sd/international-new-construction-version-6/content/12\\_pollution/pol02.htm](https://files.bregroup.com/breeam/technicalmanuals/sd/international-new-construction-version-6/content/12_pollution/pol02.htm) [Accessed October 2022]

<sup>42</sup> EN 15502-1:2012 Gas-fired heating boilers – Part 1: General requirements and test

parking. On this basis the proposed development will be compliant with the TEBs and is therefore air quality neutral in terms of transport emissions

- 5.3.5. The predicted building emissions are less than the BEB and the proposed development will be car-free. Taking into account both building and transport emissions, the development is 'air quality neutral' overall and no further mitigation is required.

## 6 MITIGATION & RESIDUAL EFFECTS

---

### 6.1 CONSTRUCTION PHASE

#### MITIGATION

- 6.1.1. Based on the assessment results, mitigation will be required. Recommended mitigation measures for a high risk site are given below.

##### General Communication

- A stakeholder communications plan that includes community engagement before work commences on site should be developed and implemented.
- The name and contact details of person(s) accountable for air quality and dust issues should be displayed on the site boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information should also be displayed.

##### General Dust Management

- A Dust Management Plan (DMP), which may include measures to control other emissions, in addition to the dust and PM<sub>10</sub> mitigation measures given in this report, should be developed and implemented, and approved by the Local Authority. In London, additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include a requirement for monitoring of dust deposition, dust flux, real-time PM<sub>10</sub> continuous monitoring and/or visual inspections.

##### Site Management

- All dust and air quality complaints should be recorded, and causes identified. Appropriate remedial action should be taken in a timely manner with a record kept of actions taken including of any additional measures put in-place to avoid reoccurrence.
- The complaints log should be made available to the local authority on request.
- Any exceptional incidents that cause dust and/or air emissions, either on- or offsite should be recorded, and then the action taken to resolve the situation recorded in the log book.
- Regular liaison meetings with other high risk construction sites within 500m of the site boundary should be held, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

##### Monitoring

- Daily on-site and off-site inspections should be undertaken, where receptors (including roads) are nearby to monitor dust. The inspection results should be recorded and made available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
- Regular site inspections to monitor compliance with the DMP should be carried out, inspection results recorded, and an inspection log made available to the local authority when asked.
- The frequency of site inspections should be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

- Dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations should be agreed with the Local Authority. Where possible baseline monitoring should start at least three months before work commences on site or, if it a large site, before work on a phase commences.

### **Preparing and maintaining the site**

- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable.
- Where practicable, erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Where practicable, fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover appropriately.
- Where practicable, cover, seed or fence stockpiles to prevent wind whipping.

### **Operating vehicle/machinery and sustainable travel**

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.
- Ensure all vehicle operators switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- A maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas should be imposed (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- A Construction Logistics Plan should be produced to manage the sustainable delivery of goods and materials.
- A Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) should be considered.

### **Operations**

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

### **Waste management**

- Avoid bonfires and burning of waste materials.

### Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Where practicable, only remove the cover in small areas during work and not all at once.
- Stockpile surface areas should be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up.
- Where practicable, windbreak netting/screening should be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the application site and the surroundings.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of the prevailing wind direction.
- During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up.

### Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
- All construction plant and equipment should be maintained in good working order and not left running when not in use.

### Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being in frequent use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Where practicable, hard surfaced haul routes should be installed, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

- 6.1.2. Detailed mitigation measures to control construction traffic should be discussed with LBH to establish the most suitable access and haul routes for the site traffic. The most effective mitigation will be achieved by ensuring that construction traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (through the use of wheel washers, etc.) and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.

### **RESIDUAL EFFECTS**

- 6.1.3. The residual effects of dust and PM<sub>10</sub> generated by construction activities following the application of the mitigation measures described above and good site practice is considered to be not significant.
- 6.1.4. The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be not significant.

## **6.2 OPERATIONAL PHASE**

### **MITIGATION**

- 6.2.1. Based on the assessment results, no additional mitigation is required for air quality.

### **RESIDUAL EFFECTS**

- 6.2.2. The proposed development is predicted to cause a small increase in NO<sub>2</sub> concentrations. At all the modelled locations concentrations are predicted to meet the statutory objectives both with and without the proposed development.
- 6.2.3. The residual impact of the proposed development on air quality is predicted to be negligible for NO<sub>2</sub> according to the IAQM/EPUK Land-Use Planning guidance assessment criteria and the future users of the proposed development would not be exposed to annual mean NO<sub>2</sub> concentrations that exceed the AQS objectives. This residual effect is considered to be not significant.

## 7 CONCLUSIONS

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- 7.1.1. A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for this phase of the proposed development using the IAQM Construction Dust Guidance assessment methodology. This identified that there is a high risk of dust soiling impacts and a medium risk of increases in particulate matter concentrations due to construction activities. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust and PM<sub>10</sub> releases would be significantly reduced. The residual effects of dust and PM<sub>10</sub> generated by construction activities on air quality are therefore considered to be not significant. The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be not significant.
- 7.1.2. In addition, a quantitative assessment has been undertaken using dispersion modelling to predict concentrations of NO<sub>2</sub> that would occur in the opening year across the application site with the temporary gas boilers in place. According to the modelled results, the maximum annual mean impacts (PC) are 1% or less of the AQS objective values everywhere and are therefore not significant. Total NO<sub>2</sub> concentrations at the proposed receptors are predicted to be below, and therefore meet, the air quality objective and fall into APEC A (<38µg/m<sup>3</sup>) of the London Councils' Guidance. Therefore, no mitigation measures are required.
- 7.1.3. The results of the Air Quality Neutral Assessment show that the proposed development is compliant with the building emissions benchmarks for NO<sub>x</sub> and PM<sub>10</sub>. In addition, the results of the Air Quality Neutral Assessment show that the proposed development is compliant with the transport emission benchmarks. The proposed development, with temporary gas boilers, as a whole is considered to be air quality neutral. Once further information is available for the DEN, this will also need to be assessed for compliance with Air Quality Neutral requirements.
- 7.1.4. On the basis of the above, it is considered that the proposed development complies with national, regional and local policy for air quality.

# Appendix A

## GLOSSARY OF TERMS

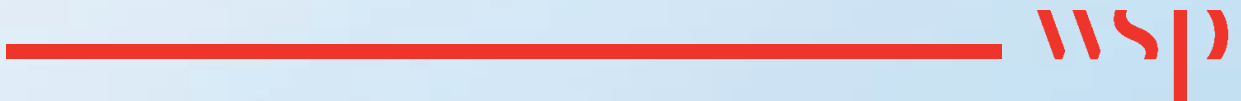


| Term                                 | Definition                                                                                                                                                                                                                                                                                                    |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AADT<br>Annual Average Daily Traffic | A daily total traffic flow (24 hrs), expressed as a mean daily flow across all 365 days of the year.                                                                                                                                                                                                          |
| Air quality objective                | Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).                                                                                          |
| Air quality standard                 | The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective). |
| Ambient air                          | Outdoor air in the troposphere, excluding workplace air.                                                                                                                                                                                                                                                      |
| Annual mean                          | The average (mean) of the concentrations measured for each pollutant for one year.                                                                                                                                                                                                                            |
| APEC                                 | Air Pollution Exposure Criteria                                                                                                                                                                                                                                                                               |
| AQFA                                 | Air Quality Focus Area                                                                                                                                                                                                                                                                                        |
| AQMA                                 | Air Quality Management Area.                                                                                                                                                                                                                                                                                  |
| AQS                                  | Air Quality Strategy                                                                                                                                                                                                                                                                                          |
| AURN                                 | Automatic Urban and Rural (air quality monitoring) Network, managed by contractors on behalf of Defra                                                                                                                                                                                                         |
| Conservative                         | Tending to over-predict the impact rather than under-predict.                                                                                                                                                                                                                                                 |
| Defra                                | Department for Environment, Food and Rural Affairs.                                                                                                                                                                                                                                                           |
| DEN                                  | District Energy Network                                                                                                                                                                                                                                                                                       |
| DPD                                  | Development Plan Document                                                                                                                                                                                                                                                                                     |
| Dust                                 | Dust comprises particles typically in the size range 1-75 micrometres ( $\mu\text{m}$ ) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials                                                                                                                |
| EA                                   | Environment Agency                                                                                                                                                                                                                                                                                            |
| Emission rate                        | The quantity of a pollutant released from a source over a given period of time.                                                                                                                                                                                                                               |
| EPUK                                 | Environmental Protection United Kingdom                                                                                                                                                                                                                                                                       |
| ES                                   | Environmental Statement                                                                                                                                                                                                                                                                                       |
| Exceedance                           | A period of time where the concentration of a pollutant is greater than the appropriate air quality standard.                                                                                                                                                                                                 |

| Term                                         | Definition                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fugitive emissions                           | Emissions arising from the passage of vehicles that do not arise from the exhaust system.                                                                                                                                                                                                                                                                                                                      |
| GLA                                          | Greater London Authority                                                                                                                                                                                                                                                                                                                                                                                       |
| HDV                                          | Heavy Duty Vehicle                                                                                                                                                                                                                                                                                                                                                                                             |
| IAQM                                         | Institute of Air Quality Management                                                                                                                                                                                                                                                                                                                                                                            |
| LAEI                                         | London Atmospheric Emissions Inventory                                                                                                                                                                                                                                                                                                                                                                         |
| LAQM                                         | Local Air Quality Management.                                                                                                                                                                                                                                                                                                                                                                                  |
| LBH                                          | London Borough of Haringey                                                                                                                                                                                                                                                                                                                                                                                     |
| LBHack                                       | London Borough of Hackney                                                                                                                                                                                                                                                                                                                                                                                      |
| LBWF                                         | London Borough of Waltham Forest                                                                                                                                                                                                                                                                                                                                                                               |
| LDV                                          | Light Duty Vehicle                                                                                                                                                                                                                                                                                                                                                                                             |
| NRMM                                         | Non-Road Mobile Machinery                                                                                                                                                                                                                                                                                                                                                                                      |
| NO <sub>2</sub>                              | Nitrogen dioxide.                                                                                                                                                                                                                                                                                                                                                                                              |
| NO <sub>x</sub>                              | Nitrogen oxides.                                                                                                                                                                                                                                                                                                                                                                                               |
| PC                                           | Process Contribution                                                                                                                                                                                                                                                                                                                                                                                           |
| PEC                                          | Predicted Environmental Concentration                                                                                                                                                                                                                                                                                                                                                                          |
| PM <sub>10</sub>                             | Particulate matter with an aerodynamic diameter of less than 10 micrometres.                                                                                                                                                                                                                                                                                                                                   |
| PM <sub>2.5</sub>                            | Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.                                                                                                                                                                                                                                                                                                                                  |
| SPG                                          | Supplementary Planning Guidance                                                                                                                                                                                                                                                                                                                                                                                |
| Trackout                                     | The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when HDVs leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site. |
| µg/m <sup>3</sup> micrograms per cubic metre | A measure of concentration in terms of mass per unit volume. A concentration of 1ug/m <sup>3</sup> means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.                                                                                                                                                                                                                |

# Appendix B

## **IAQM CONSTRUCTION DUST ASSESSMENT METHODOLOGY**



## STEP 1 – SCREENING THE NEED FOR A DETAILED ASSESSMENT

An assessment will normally be required where there are:

- ‘Human receptors’ within 350m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or
- ‘Ecological receptors’ within 50m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is “negligible”.

## STEP 2A – DEFINE THE POTENTIAL DUST EMISSION MAGNITUDE

The following are examples of how the potential dust emission magnitude for different activities can be defined. (Note that not all the criteria need to be met for a particular class). Other criteria may be used if justified in the assessment.

**Table 2A: Definitions of Dust Emission Magnitudes**

| Dust Emission Magnitude | Activity                                                                                                                                                                                                    |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Large                   | <b>Demolition</b><br>>50,000m <sup>3</sup> building demolished, dusty material (e.g. concrete), on-site crushing/screening, demolition >20m above ground level                                              |
|                         | <b>Earthworks</b><br>>10,000m <sup>2</sup> site area, dusty soil type (e.g. clay),<br>>10 earth moving vehicles active simultaneously,<br>>8m high bunds formed, >100,000 tonnes material moved             |
|                         | <b>Construction</b><br>>100,000m <sup>3</sup> building volume, on site concrete batching, sandblasting                                                                                                      |
|                         | <b>Trackout</b><br>>50 HDVs out / day, dusty surface material (e.g. clay), >100m unpaved roads                                                                                                              |
| Medium                  | <b>Demolition</b><br>20,000 - 50,000m <sup>3</sup> building demolished, dusty material (e.g. concrete)<br>10-20m above ground level                                                                         |
|                         | <b>Earthworks</b><br>2,500 - 10,000m <sup>2</sup> site area, moderately dusty soil (e.g. silt), 5-10 earth moving vehicles active simultaneously, 4m - 8m high bunds, 20,000 -100,000 tonnes material moved |
|                         | <b>Construction</b><br>25,000 - 100,000m <sup>3</sup> building volume, dusty material e.g. concrete, on site concrete batching                                                                              |
|                         | <b>Trackout</b>                                                                                                                                                                                             |

| Dust Emission Magnitude | Activity                                                                                                                                                                                                             |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | 10 - 50 HDVs out / day, moderately dusty surface material (e.g. clay), 50 -100m unpaved roads                                                                                                                        |
| Small                   | Demolition<br><20,000m <sup>3</sup> building demolished, non-dusty material (e.g. metal cladding), <10m above ground level, work during wetter months                                                                |
|                         | Earthworks<br><2,500m <sup>2</sup> site area, soil with large grain size (e.g. sand), <5 earth moving vehicles active simultaneously, <4m high bunds, <20,000 tonnes material moved, earthworks during wetter months |
|                         | Construction<br><25,000m <sup>3</sup> , non-dusty material (e.g. metal cladding or timber)                                                                                                                           |
|                         | Trackout<br><10 HDVs out / day, non-dusty soil, < 50m unpaved roads                                                                                                                                                  |

## STEP 2B – DEFINE THE SENSITIVITY OF THE AREA

The tables below present the IAQM assessment methodology to determine the sensitivity of the area to dust soiling, human health and ecological impacts respectively. The IAQM guidance provides guidance to allow the sensitivity of individual receptors to dust soiling and health effects to assist in the assessment of the overall sensitivity of the study area.

**Table 2Ba: Sensitivity of the Area to Dust Soiling Effects**

| Receptor Sensitivity | Number of Receptors | Distance from the Source (m) |        |        |      |
|----------------------|---------------------|------------------------------|--------|--------|------|
|                      |                     | <20                          | <50    | <100   | <350 |
| High                 | >100                | High                         | High   | Medium | Low  |
|                      | 10-100              | High                         | Medium | Low    | Low  |
|                      | 1-10                | Medium                       | Low    | Low    | Low  |
| Medium               | >1                  | Medium                       | Low    | Low    | Low  |
| Low                  | >1                  | Low                          | Low    | Low    | Low  |

**Table 2Bb: Sensitivity of the Area to Human Health Impacts**

| Receptor Sensitivity | Annual Mean PM <sub>10</sub> Concentration (µg/m <sup>3</sup> ) | Number of Receptors | Distance from the Source (m) |        |        |        |      |
|----------------------|-----------------------------------------------------------------|---------------------|------------------------------|--------|--------|--------|------|
|                      |                                                                 |                     | <20                          | <50    | <100   | <200   | <350 |
| High                 | >32                                                             | >100                | High                         | High   | High   | Medium | Low  |
|                      |                                                                 | 10-100              | High                         | High   | Medium | Low    | Low  |
|                      |                                                                 | 1-10                | High                         | Medium | Low    | Low    | Low  |
|                      | 28-32                                                           | >100                | High                         | High   | Medium | Low    | Low  |
|                      |                                                                 | 10-100              | High                         | Medium | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | High                         | Medium | Low    | Low    | Low  |
|                      | 24-28                                                           | >100                | High                         | Medium | Low    | Low    | Low  |
|                      |                                                                 | 10-100              | High                         | Medium | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | Medium                       | Low    | Low    | Low    | Low  |
|                      | <24                                                             | >100                | Medium                       | Low    | Low    | Low    | Low  |
|                      |                                                                 | 10-100              | Low                          | Low    | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | Low                          | Low    | Low    | Low    | Low  |
| Medium               | >32                                                             | >10                 | High                         | Medium | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | Medium                       | Low    | Low    | Low    | Low  |
|                      | 28-32                                                           | >10                 | Medium                       | Low    | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | Low                          | Low    | Low    | Low    | Low  |
|                      | 24-28                                                           | >10                 | Low                          | Low    | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | Low                          | Low    | Low    | Low    | Low  |
|                      | <24                                                             | >10                 | Low                          | Low    | Low    | Low    | Low  |
|                      |                                                                 | 1-10                | Low                          | Low    | Low    | Low    | Low  |
| Low                  | -                                                               | >1                  | Low                          | Low    | Low    | Low    | Low  |

**Table 2Bc: Sensitivity of the Area to Ecological Impacts**

| Receptor Sensitivity | Distance from the Sources (m) |        |
|----------------------|-------------------------------|--------|
|                      | <20                           | <50    |
| High                 | High                          | Medium |
| Medium               | Medium                        | Low    |
| Low                  | Low                           | Low    |

## STEP 2C – DEFINE THE RISK OF IMPACTS

The dust emissions magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts without mitigation applied. For those cases where the risk category is 'negligible' no mitigation measures beyond those required by legislation will be required.

**Table 2C: Risk of Dust Impacts**

| Sensitivity of surrounding area    | Dust Emission Magnitude |             |             |
|------------------------------------|-------------------------|-------------|-------------|
|                                    | Large                   | Medium      | Small       |
| <b>Demolition</b>                  |                         |             |             |
| High                               | High Risk               | Medium Risk | Medium Risk |
| Medium                             | High Risk               | Medium Risk | Low Risk    |
| Low                                | Medium Risk             | Low Risk    | Negligible  |
| <b>Earthworks and Construction</b> |                         |             |             |
| High                               | High Risk               | Medium Risk | Low Risk    |
| Medium                             | Medium Risk             | Medium Risk | Low Risk    |
| Low                                | Low Risk                | Low Risk    | Negligible  |
| <b>Trackout</b>                    |                         |             |             |
| High                               | High Risk               | Medium Risk | Low Risk    |
| Medium                             | Medium Risk             | Low Risk    | Negligible  |
| Low                                | Low Risk                | Low Risk    | Negligible  |



### **STEP 3 –SITE SPECIFIC MITIGATION**

Having determined the risk categories for each of the four activities it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the site is considered to be a low, medium or high risk site. The IAQM guidance details the mitigation measures required for high, medium and low risk sites as determined in Step 2C.

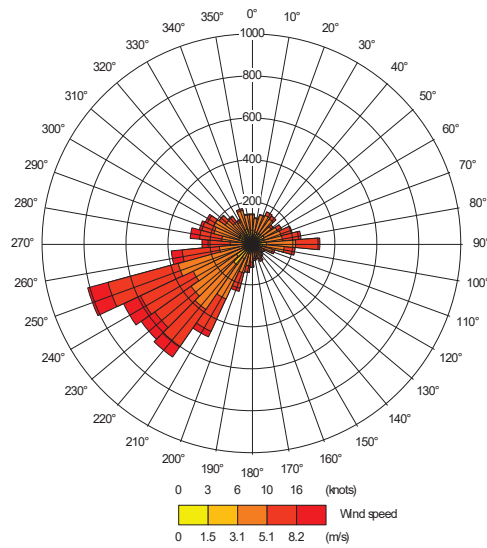
### **STEP 4 – DETERMINE SIGNIFICANT EFFECTS**

Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

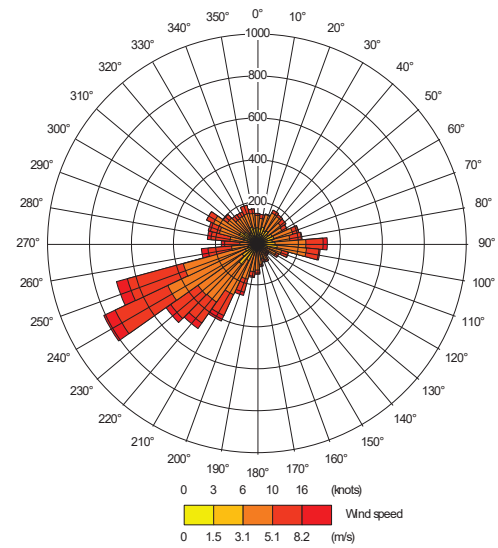
# Appendix C

## **LONDON CITY AIRPORT WINDROSES**

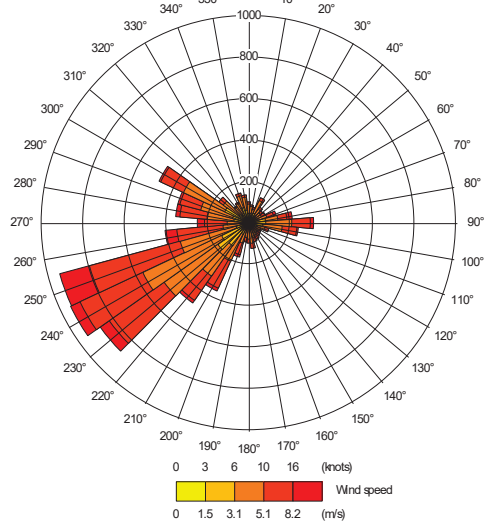




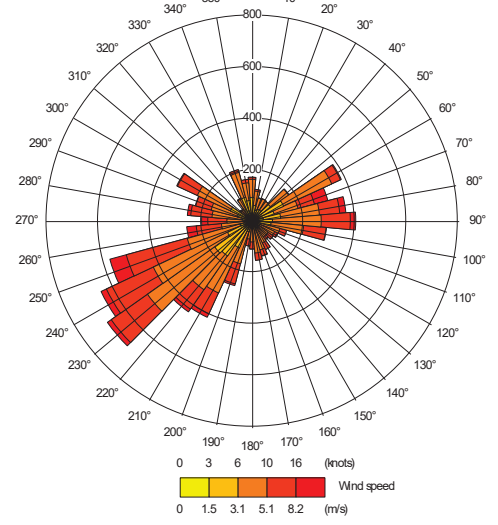
**2015 windrose**



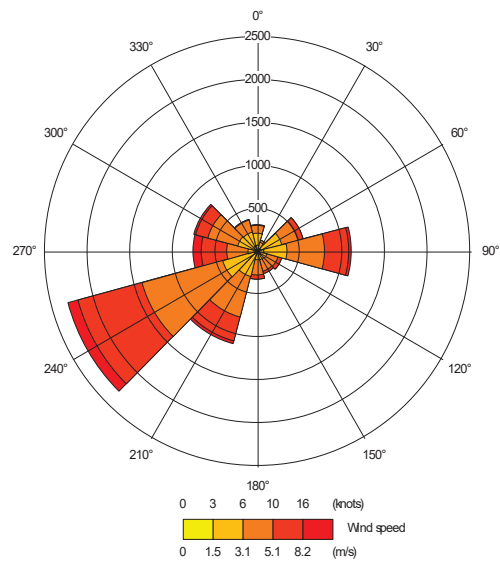
**2016 windrose**



**2017 windrose**



**2018 windrose**



**2019 windrose**

# Appendix D

## MODEL RESULTS



**Table D-1 – Annual mean NO<sub>2</sub> concentrations (µg/m<sup>3</sup>) in the with proposed development scenario (including all committed developments)**

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 11_G/f   | 17 Hale Road   | 1.5        | 0.01        | 0.03             | 19.75 | 49.37             | A          |
| 10_G/f   | Ashley Garden1 | 1.5        | 0.00        | 0.01             | 19.72 | 49.29             | A          |
| 35_G/f   | Ashley Garden1 | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 36_G/f   | Ashley Garden1 | 1.5        | 0.01        | 0.03             | 19.83 | 49.58             | A          |
| 37_G/f   | Ashley Garden1 | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 10_5/f   | Ashley Garden1 | 16.5       | 0.00        | 0.01             | 19.73 | 49.31             | A          |
| 35_5/f   | Ashley Garden1 | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 36_5/f   | Ashley Garden1 | 16.5       | 0.01        | 0.02             | 19.85 | 49.61             | A          |
| 37_5/f   | Ashley Garden1 | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 10_10/f  | Ashley Garden1 | 31.5       | 0.00        | 0.01             | 19.74 | 49.36             | A          |
| 35_10/f  | Ashley Garden1 | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 36_10/f  | Ashley Garden1 | 31.5       | 0.01        | 0.02             | 19.90 | 49.76             | A          |
| 37_10/f  | Ashley Garden1 | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 10_15/f  | Ashley Garden1 | 46.5       | 0.00        | 0.01             | 19.65 | 49.14             | A          |
| 35_15/f  | Ashley Garden1 | 46.5       | 0.00        | 0.01             | 19.64 | 49.11             | A          |
| 36_15/f  | Ashley Garden1 | 46.5       | 0.01        | 0.02             | 19.68 | 49.21             | A          |
| 37_15/f  | Ashley Garden1 | 46.5       | 0.00        | 0.01             | 19.60 | 49.00             | A          |
| 10_20/f  | Ashley Garden1 | 61.5       | 0.00        | 0.01             | 19.53 | 48.82             | A          |
| 35_20/f  | Ashley Garden1 | 61.5       | 0.00        | 0.01             | 19.56 | 48.90             | A          |
| 36_20/f  | Ashley Garden1 | 61.5       | 0.00        | 0.01             | 19.65 | 49.12             | A          |
| 37_20/f  | Ashley Garden1 | 61.5       | 0.00        | 0.01             | 19.52 | 48.80             | A          |
| 10_25/f  | Ashley Garden1 | 76.5       | 0.01        | 0.01             | 19.44 | 48.60             | A          |
| 35_25/f  | Ashley Garden1 | 76.5       | 0.00        | 0.01             | 19.44 | 48.60             | A          |
| 36_25/f  | Ashley Garden1 | 76.5       | 0.01        | 0.01             | 19.44 | 48.60             | A          |
| 37_25/f  | Ashley Garden1 | 76.5       | 0.01        | 0.02             | 19.43 | 48.58             | A          |

| Receptor | Location        | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                 |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 10_30/f  | Ashley Garden1  | 91.5       | 0.01        | 0.02             | 19.40 | 48.49             | A          |
| 35_30/f  | Ashley Garden1  | 91.5       | 0.01        | 0.02             | 19.39 | 48.49             | A          |
| 36_30/f  | Ashley Garden1  | 91.5       | 0.01        | 0.04             | 19.40 | 48.51             | A          |
| 37_30/f  | Ashley Garden1  | 91.5       | 0.01        | 0.03             | 19.40 | 48.50             | A          |
| 9_G/f    | Ashley Garden1A | 1.5        | 0.02        | 0.04             | 19.81 | 49.52             | A          |
| 32_G/f   | Ashley Garden1A | 1.5        | 0.00        | 0.01             | 19.85 | 49.64             | A          |
| 33_G/f   | Ashley Garden1A | 1.5        | 0.01        | 0.01             | 19.79 | 49.48             | A          |
| 34_G/f   | Ashley Garden1A | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 9_5/f    | Ashley Garden1A | 16.5       | 0.02        | 0.04             | 19.82 | 49.56             | A          |
| 32_5/f   | Ashley Garden1A | 16.5       | 0.00        | 0.01             | 19.86 | 49.65             | A          |
| 33_5/f   | Ashley Garden1A | 16.5       | 0.01        | 0.01             | 19.81 | 49.54             | A          |
| 34_5/f   | Ashley Garden1A | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 9_10/f   | Ashley Garden1A | 31.5       | 0.02        | 0.04             | 19.87 | 49.67             | A          |
| 32_10/f  | Ashley Garden1A | 31.5       | 0.00        | 0.01             | 20.01 | 50.04             | A          |
| 33_10/f  | Ashley Garden1A | 31.5       | 0.01        | 0.01             | 19.72 | 49.30             | A          |
| 34_10/f  | Ashley Garden1A | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 9_15/f   | Ashley Garden1A | 46.5       | 0.02        | 0.04             | 19.75 | 49.37             | A          |
| 32_15/f  | Ashley Garden1A | 46.5       | 0.00        | 0.01             | 19.62 | 49.04             | A          |
| 33_15/f  | Ashley Garden1A | 46.5       | 0.01        | 0.01             | 19.59 | 48.98             | A          |
| 34_15/f  | Ashley Garden1A | 46.5       | 0.02        | 0.06             | 19.69 | 49.21             | A          |
| 9_20/f   | Ashley Garden1A | 61.5       | 0.01        | 0.04             | 19.58 | 48.95             | A          |
| 32_20/f  | Ashley Garden1A | 61.5       | 0.00        | 0.01             | 19.55 | 48.88             | A          |
| 33_20/f  | Ashley Garden1A | 61.5       | 0.01        | 0.02             | 19.54 | 48.86             | A          |
| 34_20/f  | Ashley Garden1A | 61.5       | 0.02        | 0.06             | 19.57 | 48.92             | A          |
| 9_25/f   | Ashley Garden1A | 76.5       | 0.01        | 0.04             | 19.45 | 48.62             | A          |
| 32_25/f  | Ashley Garden1A | 76.5       | 0.00        | 0.01             | 19.44 | 48.59             | A          |
| 33_25/f  | Ashley Garden1A | 76.5       | 0.01        | 0.03             | 19.44 | 48.60             | A          |

| Receptor | Location        | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                 |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 34_25/f  | Ashley Garden1A | 76.5       | 0.02        | 0.04             | 19.45 | 48.61             | A          |
| 9_30/f   | Ashley Garden1A | 91.5       | 0.01        | 0.04             | 19.39 | 48.48             | A          |
| 32_30/f  | Ashley Garden1A | 91.5       | 0.01        | 0.03             | 19.39 | 48.48             | A          |
| 33_30/f  | Ashley Garden1A | 91.5       | 0.02        | 0.06             | 19.40 | 48.50             | A          |
| 34_30/f  | Ashley Garden1A | 91.5       | 0.03        | 0.07             | 19.41 | 48.51             | A          |
| 18_G/f   | Ashley House    | 1.5        | 0.01        | 0.03             | 19.79 | 49.47             | A          |
| 19_G/f   | Ashley House    | 1.5        | 0.03        | 0.08             | 19.87 | 49.68             | A          |
| 20_G/f   | Ashley House    | 1.5        | 0.04        | 0.11             | 19.74 | 49.35             | A          |
| 21_G/f   | Ashley House    | 1.5        | 0.04        | 0.11             | 19.77 | 49.42             | A          |
| 18_5/f   | Ashley House    | 16.5       | 0.01        | 0.03             | 19.81 | 49.53             | A          |
| 19_5/f   | Ashley House    | 16.5       | 0.03        | 0.08             | 19.88 | 49.71             | A          |
| 20_5/f   | Ashley House    | 16.5       | 0.04        | 0.11             | 19.76 | 49.39             | A          |
| 21_5/f   | Ashley House    | 16.5       | 0.04        | 0.11             | 19.78 | 49.45             | A          |
| 18_10/f  | Ashley House    | 31.5       | 0.01        | 0.03             | 19.74 | 49.34             | A          |
| 19_10/f  | Ashley House    | 31.5       | 0.03        | 0.07             | 19.76 | 49.39             | A          |
| 20_10/f  | Ashley House    | 31.5       | 0.04        | 0.11             | 19.81 | 49.53             | A          |
| 21_10/f  | Ashley House    | 31.5       | 0.04        | 0.11             | 19.82 | 49.56             | A          |
| 18_15/f  | Ashley House    | 46.5       | 0.01        | 0.03             | 19.59 | 48.97             | A          |
| 19_15/f  | Ashley House    | 46.5       | 0.02        | 0.04             | 19.60 | 49.00             | A          |
| 20_15/f  | Ashley House    | 46.5       | 0.04        | 0.11             | 19.73 | 49.32             | A          |
| 21_15/f  | Ashley House    | 46.5       | 0.04        | 0.11             | 19.74 | 49.36             | A          |
| 18_20/f  | Ashley House    | 61.5       | 0.01        | 0.03             | 19.54 | 48.85             | A          |
| 19_20/f  | Ashley House    | 61.5       | 0.01        | 0.04             | 19.56 | 48.90             | A          |
| 20_20/f  | Ashley House    | 61.5       | 0.04        | 0.11             | 19.60 | 49.01             | A          |
| 21_20/f  | Ashley House    | 61.5       | 0.04        | 0.11             | 19.60 | 49.01             | A          |
| 18_25/f  | Ashley House    | 76.5       | 0.02        | 0.05             | 19.44 | 48.60             | A          |
| 19_25/f  | Ashley House    | 76.5       | 0.02        | 0.05             | 19.44 | 48.60             | A          |

| Receptor | Location          | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                   |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 20_25/f  | Ashley House      | 76.5       | 0.04        | 0.11             | 19.47 | 48.68             | A          |
| 21_25/f  | Ashley House      | 76.5       | 0.04        | 0.11             | 19.48 | 48.69             | A          |
| 18_30/f  | Ashley House      | 91.5       | 0.04        | 0.11             | 19.42 | 48.54             | A          |
| 19_30/f  | Ashley House      | 91.5       | 0.06        | 0.15             | 19.43 | 48.58             | A          |
| 20_30/f  | Ashley House      | 91.5       | 0.04        | 0.11             | 19.42 | 48.54             | A          |
| 21_30/f  | Ashley House      | 91.5       | 0.04        | 0.09             | 19.41 | 48.53             | A          |
| 7_G/f    | Berol House (New) | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 8_G/f    | Berol House (New) | 1.5        | 0.06        | 0.14             | 19.73 | 49.32             | A          |
| 5_G/f    | Berol House (New) | 1.5        | 0.02        | 0.04             | 19.79 | 49.48             | A          |
| 6_G/f    | Berol House (New) | 1.5        | 0.04        | 0.10             | 19.73 | 49.31             | A          |
| 7_5/f    | Berol House (New) | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 8_5/f    | Berol House (New) | 16.5       | 0.06        | 0.14             | 19.75 | 49.37             | A          |
| 5_5/f    | Berol House (New) | 16.5       | 0.02        | 0.04             | 19.81 | 49.53             | A          |
| 6_5/f    | Berol House (New) | 16.5       | 0.04        | 0.10             | 19.75 | 49.38             | A          |
| 7_10/f   | Berol House (New) | 31.5       | 0.01        | 0.04             | 19.96 | 49.91             | A          |
| 8_10/f   | Berol House (New) | 31.5       | 0.06        | 0.14             | 19.83 | 49.59             | A          |
| 5_10/f   | Berol House (New) | 31.5       | 0.02        | 0.04             | 19.84 | 49.61             | A          |
| 6_10/f   | Berol House (New) | 31.5       | 0.04        | 0.10             | 19.80 | 49.51             | A          |
| 7_15/f   | Berol House (New) | 46.5       | 0.01        | 0.04             | 19.79 | 49.48             | A          |
| 8_15/f   | Berol House (New) | 46.5       | 0.06        | 0.14             | 19.87 | 49.69             | A          |
| 5_15/f   | Berol House (New) | 46.5       | 0.02        | 0.04             | 19.81 | 49.54             | A          |
| 6_15/f   | Berol House (New) | 46.5       | 0.04        | 0.10             | 19.87 | 49.67             | A          |
| 7_20/f   | Berol House (New) | 61.5       | 0.01        | 0.04             | 19.64 | 49.10             | A          |
| 8_20/f   | Berol House (New) | 61.5       | 0.06        | 0.14             | 19.65 | 49.13             | A          |
| 5_20/f   | Berol House (New) | 61.5       | 0.02        | 0.04             | 19.62 | 49.05             | A          |
| 6_20/f   | Berol House (New) | 61.5       | 0.04        | 0.10             | 19.64 | 49.10             | A          |
| 7_25/f   | Berol House (New) | 76.5       | 0.01        | 0.04             | 19.45 | 48.62             | A          |

| Receptor | Location           | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|--------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                    |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 8_25/f   | Berol House (New)  | 76.5       | 0.06        | 0.14             | 19.50 | 48.76             | A          |
| 5_25/f   | Berol House (New)  | 76.5       | 0.02        | 0.04             | 19.45 | 48.63             | A          |
| 6_25/f   | Berol House (New)  | 76.5       | 0.04        | 0.10             | 19.49 | 48.74             | A          |
| 7_30/f   | Berol House (New)  | 91.5       | 0.01        | 0.03             | 19.40 | 48.49             | A          |
| 8_30/f   | Berol House (New)  | 91.5       | 0.06        | 0.14             | 19.43 | 48.59             | A          |
| 5_30/f   | Berol House (New)  | 91.5       | 0.02        | 0.04             | 19.40 | 48.51             | A          |
| 6_30/f   | Berol House (New)  | 91.5       | 0.04        | 0.10             | 19.42 | 48.55             | A          |
| 1_G/f    | 2 Berol Yard (New) | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_G/f    | 2 Berol Yard (New) | 1.5        | 0.28        | 0.71             | 20.04 | 50.10             | A          |
| 3_G/f    | 2 Berol Yard (New) | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_G/f    | 2 Berol Yard (New) | 1.5        | 0.30        | 0.76             | 20.06 | 50.15             | A          |
| 1_5/f    | 2 Berol Yard (New) | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_5/f    | 2 Berol Yard (New) | 16.5       | 0.28        | 0.71             | 20.07 | 50.17             | A          |
| 3_5/f    | 2 Berol Yard (New) | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_5/f    | 2 Berol Yard (New) | 16.5       | 0.30        | 0.76             | 20.09 | 50.22             | A          |
| 1_10/f   | 2 Berol Yard (New) | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_10/f   | 2 Berol Yard (New) | 31.5       | 0.28        | 0.71             | 20.15 | 50.37             | A          |
| 3_10/f   | 2 Berol Yard (New) | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_10/f   | 2 Berol Yard (New) | 31.5       | 0.30        | 0.76             | 20.12 | 50.29             | A          |
| 1_15/f   | 2 Berol Yard (New) | 46.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_15/f   | 2 Berol Yard (New) | 46.5       | 0.28        | 0.71             | 20.18 | 50.45             | A          |
| 3_15/f   | 2 Berol Yard (New) | 46.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_15/f   | 2 Berol Yard (New) | 46.5       | 0.30        | 0.76             | 20.14 | 50.35             | A          |
| 1_20/f   | 2 Berol Yard (New) | 61.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_20/f   | 2 Berol Yard (New) | 61.5       | 0.28        | 0.71             | 20.04 | 50.09             | A          |
| 3_20/f   | 2 Berol Yard (New) | 61.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_20/f   | 2 Berol Yard (New) | 61.5       | 0.30        | 0.76             | 20.04 | 50.09             | A          |

| Receptor | Location                | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                         |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 1_25/f   | 2 Berol Yard (New)      | 76.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_25/f   | 2 Berol Yard (New)      | 76.5       | 0.28        | 0.71             | 19.85 | 49.61             | A          |
| 3_25/f   | 2 Berol Yard (New)      | 76.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_25/f   | 2 Berol Yard (New)      | 76.5       | 0.30        | 0.76             | 19.84 | 49.59             | A          |
| 1_30/f   | 2 Berol Yard (New)      | 91.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 2_30/f   | 2 Berol Yard (New)      | 91.5       | 0.28        | 0.71             | 19.67 | 49.17             | A          |
| 3_30/f   | 2 Berol Yard (New)      | 91.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 4_30/f   | 2 Berol Yard (New)      | 91.5       | 0.30        | 0.76             | 19.70 | 49.24             | A          |
| 27_G/f   | Building at Ashley Road | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 61_G/f   | Building at Ashley Road | 1.5        | 0.02        | 0.04             | 19.69 | 49.22             | A          |
| 27_5/f   | Building at Ashley Road | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 61_5/f   | Building at Ashley Road | 16.5       | 0.01        | 0.04             | 19.70 | 49.25             | A          |
| 27_10/f  | Building at Ashley Road | 31.5       | 0.02        | 0.04             | 19.75 | 49.37             | A          |
| 61_10/f  | Building at Ashley Road | 31.5       | 0.01        | 0.03             | 19.72 | 49.30             | A          |
| 27_15/f  | Building at Ashley Road | 46.5       | 0.02        | 0.04             | 19.63 | 49.08             | A          |
| 61_15/f  | Building at Ashley Road | 46.5       | 0.01        | 0.03             | 19.70 | 49.24             | A          |
| 27_20/f  | Building at Ashley Road | 61.5       | 0.02        | 0.04             | 19.58 | 48.96             | A          |
| 61_20/f  | Building at Ashley Road | 61.5       | 0.01        | 0.03             | 19.63 | 49.08             | A          |
| 27_25/f  | Building at Ashley Road | 76.5       | 0.02        | 0.06             | 19.46 | 48.64             | A          |
| 61_25/f  | Building at Ashley Road | 76.5       | 0.02        | 0.05             | 19.47 | 48.69             | A          |
| 27_30/f  | Building at Ashley Road | 91.5       | 0.06        | 0.15             | 19.43 | 48.59             | A          |

| Receptor | Location                | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                         |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 61_30/f  | Building at Ashley Road | 91.5       | 0.05        | 0.11             | 19.42 | 48.55             | A          |
| 22_G/f   | Cannon Factory          | 1.5        | 0.01        | 0.03             | 19.96 | 49.89             | A          |
| 23_G/f   | Cannon Factory          | 1.5        | 0.01        | 0.02             | 19.95 | 49.87             | A          |
| 24_G/f   | Cannon Factory          | 1.5        | 0.03        | 0.07             | 19.86 | 49.66             | A          |
| 25_G/f   | Cannon Factory          | 1.5        | 0.01        | 0.04             | 19.97 | 49.92             | A          |
| 22_5/f   | Cannon Factory          | 16.5       | 0.01        | 0.03             | 19.97 | 49.91             | A          |
| 23_5/f   | Cannon Factory          | 16.5       | 0.01        | 0.02             | 19.96 | 49.89             | A          |
| 24_5/f   | Cannon Factory          | 16.5       | 0.03        | 0.06             | 19.87 | 49.68             | A          |
| 25_5/f   | Cannon Factory          | 16.5       | 0.01        | 0.04             | 19.98 | 49.95             | A          |
| 22_10/f  | Cannon Factory          | 31.5       | 0.01        | 0.02             | 19.99 | 49.98             | A          |
| 23_10/f  | Cannon Factory          | 31.5       | 0.01        | 0.02             | 19.93 | 49.82             | A          |
| 24_10/f  | Cannon Factory          | 31.5       | 0.02        | 0.05             | 19.89 | 49.72             | A          |
| 25_10/f  | Cannon Factory          | 31.5       | 0.01        | 0.04             | 20.03 | 50.07             | A          |
| 22_15/f  | Cannon Factory          | 46.5       | 0.01        | 0.02             | 19.83 | 49.57             | A          |
| 23_15/f  | Cannon Factory          | 46.5       | 0.01        | 0.01             | 19.87 | 49.69             | A          |
| 24_15/f  | Cannon Factory          | 46.5       | 0.01        | 0.03             | 19.91 | 49.77             | A          |
| 25_15/f  | Cannon Factory          | 46.5       | 0.01        | 0.04             | 19.85 | 49.62             | A          |
| 22_20/f  | Cannon Factory          | 61.5       | 0.01        | 0.01             | 19.69 | 49.24             | A          |
| 23_20/f  | Cannon Factory          | 61.5       | 0.01        | 0.01             | 19.56 | 48.90             | A          |
| 24_20/f  | Cannon Factory          | 61.5       | 0.01        | 0.03             | 19.57 | 48.91             | A          |
| 25_20/f  | Cannon Factory          | 61.5       | 0.01        | 0.04             | 19.73 | 49.33             | A          |
| 22_25/f  | Cannon Factory          | 76.5       | 0.01        | 0.02             | 19.44 | 48.59             | A          |
| 23_25/f  | Cannon Factory          | 76.5       | 0.01        | 0.02             | 19.43 | 48.58             | A          |
| 24_25/f  | Cannon Factory          | 76.5       | 0.01        | 0.03             | 19.45 | 48.62             | A          |
| 25_25/f  | Cannon Factory          | 76.5       | 0.01        | 0.01             | 19.44 | 48.60             | A          |
| 22_30/f  | Cannon Factory          | 91.5       | 0.02        | 0.06             | 19.41 | 48.53             | A          |

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 23_30/f  | Cannon Factory | 91.5       | 0.02        | 0.05             | 19.42 | 48.54             | A          |
| 24_30/f  | Cannon Factory | 91.5       | 0.03        | 0.07             | 19.43 | 48.57             | A          |
| 25_30/f  | Cannon Factory | 91.5       | 0.02        | 0.04             | 19.41 | 48.52             | A          |
| 14_G/f   | Community Café | 1.5        | 0.00        | 0.01             | 19.61 | 49.02             | A          |
| 54_G/f   | Ferry Island 1 | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_G/f   | Ferry Island 1 | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_G/f   | Ferry Island 1 | 1.5        | 0.00        | 0.01             | 19.67 | 49.18             | A          |
| 57_G/f   | Ferry Island 1 | 1.5        | 0.00        | 0.01             | 19.58 | 48.96             | A          |
| 54_5/f   | Ferry Island 1 | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_5/f   | Ferry Island 1 | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_5/f   | Ferry Island 1 | 16.5       | 0.00        | 0.01             | 19.66 | 49.16             | A          |
| 57_5/f   | Ferry Island 1 | 16.5       | 0.00        | 0.01             | 19.58 | 48.95             | A          |
| 54_10/f  | Ferry Island 1 | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_10/f  | Ferry Island 1 | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_10/f  | Ferry Island 1 | 31.5       | 0.00        | 0.01             | 19.61 | 49.02             | A          |
| 57_10/f  | Ferry Island 1 | 31.5       | 0.00        | 0.01             | 19.58 | 48.94             | A          |
| 54_15/f  | Ferry Island 1 | 46.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_15/f  | Ferry Island 1 | 46.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_15/f  | Ferry Island 1 | 46.5       | 0.00        | 0.01             | 21.77 | 54.43             | A          |
| 57_15/f  | Ferry Island 1 | 46.5       | 0.00        | 0.01             | 20.84 | 52.11             | A          |
| 54_20/f  | Ferry Island 1 | 61.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_20/f  | Ferry Island 1 | 61.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_20/f  | Ferry Island 1 | 61.5       | 0.00        | 0.01             | 19.68 | 49.19             | A          |
| 57_20/f  | Ferry Island 1 | 61.5       | 0.00        | 0.01             | 19.63 | 49.07             | A          |
| 54_25/f  | Ferry Island 1 | 76.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_25/f  | Ferry Island 1 | 76.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_25/f  | Ferry Island 1 | 76.5       | 0.00        | 0.01             | 19.43 | 48.58             | A          |

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 57_25/f  | Ferry Island 1 | 76.5       | 0.00        | 0.01             | 19.43 | 48.57             | A          |
| 54_30/f  | Ferry Island 1 | 91.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 55_30/f  | Ferry Island 1 | 91.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 56_30/f  | Ferry Island 1 | 91.5       | 0.01        | 0.02             | 19.39 | 48.47             | A          |
| 57_30/f  | Ferry Island 1 | 91.5       | 0.01        | 0.02             | 19.39 | 48.47             | A          |
| 58_G/f   | Ferry Island 2 | 1.5        | 0.00        | 0.01             | 19.73 | 49.32             | A          |
| 59_G/f   | Ferry Island 2 | 1.5        | 0.00        | 0.01             | 19.73 | 49.33             | A          |
| 58_5/f   | Ferry Island 2 | 16.5       | 0.00        | 0.01             | 19.73 | 49.33             | A          |
| 59_5/f   | Ferry Island 2 | 16.5       | 0.00        | 0.01             | 19.73 | 49.31             | A          |
| 58_10/f  | Ferry Island 2 | 31.5       | 0.00        | 0.01             | 19.72 | 49.31             | A          |
| 59_10/f  | Ferry Island 2 | 31.5       | 0.00        | 0.01             | 19.72 | 49.29             | A          |
| 58_15/f  | Ferry Island 2 | 46.5       | 0.00        | 0.01             | 23.99 | 59.97             | A          |
| 59_15/f  | Ferry Island 2 | 46.5       | 0.00        | 0.01             | 23.27 | 58.17             | A          |
| 58_20/f  | Ferry Island 2 | 61.5       | 0.00        | 0.01             | 19.53 | 48.82             | A          |
| 59_20/f  | Ferry Island 2 | 61.5       | 0.00        | 0.01             | 19.52 | 48.80             | A          |
| 58_25/f  | Ferry Island 2 | 76.5       | 0.00        | 0.01             | 19.42 | 48.54             | A          |
| 59_25/f  | Ferry Island 2 | 76.5       | 0.00        | 0.01             | 19.42 | 48.55             | A          |
| 58_30/f  | Ferry Island 2 | 91.5       | 0.01        | 0.02             | 19.38 | 48.45             | A          |
| 59_30/f  | Ferry Island 2 | 91.5       | 0.01        | 0.02             | 19.38 | 48.45             | A          |
| 28_G/f   | The Gessner1   | 1.5        | 0.07        | 0.16             | 19.85 | 49.63             | A          |
| 29_G/f   | The Gessner1   | 1.5        | 0.03        | 0.08             | 19.91 | 49.78             | A          |
| 30_G/f   | The Gessner1   | 1.5        | 0.16        | 0.39             | 20.00 | 50.00             | A          |
| 28_5/f   | The Gessner1   | 16.5       | 0.07        | 0.16             | 19.87 | 49.67             | A          |
| 29_5/f   | The Gessner1   | 16.5       | 0.03        | 0.08             | 19.93 | 49.82             | A          |
| 30_5/f   | The Gessner1   | 16.5       | 0.16        | 0.39             | 20.02 | 50.04             | A          |
| 28_10/f  | The Gessner1   | 31.5       | 0.07        | 0.16             | 19.89 | 49.72             | A          |
| 29_10/f  | The Gessner1   | 31.5       | 0.03        | 0.08             | 19.94 | 49.85             | A          |

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 30_10/f  | The Gessner1   | 31.5       | 0.16        | 0.39             | 20.01 | 50.03             | A          |
| 28_15/f  | The Gessner1   | 46.5       | 0.07        | 0.16             | 21.42 | 53.56             | A          |
| 29_15/f  | The Gessner1   | 46.5       | 0.03        | 0.08             | 20.04 | 50.10             | A          |
| 30_15/f  | The Gessner1   | 46.5       | 0.16        | 0.39             | 20.30 | 50.74             | A          |
| 28_20/f  | The Gessner1   | 61.5       | 0.06        | 0.16             | 19.75 | 49.38             | A          |
| 29_20/f  | The Gessner1   | 61.5       | 0.03        | 0.08             | 19.66 | 49.14             | A          |
| 30_20/f  | The Gessner1   | 61.5       | 0.16        | 0.39             | 19.90 | 49.74             | A          |
| 28_25/f  | The Gessner1   | 76.5       | 0.06        | 0.16             | 19.53 | 48.82             | A          |
| 29_25/f  | The Gessner1   | 76.5       | 0.03        | 0.08             | 19.48 | 48.70             | A          |
| 30_25/f  | The Gessner1   | 76.5       | 0.16        | 0.39             | 19.65 | 49.13             | A          |
| 28_30/f  | The Gessner1   | 91.5       | 0.06        | 0.16             | 19.46 | 48.65             | A          |
| 29_30/f  | The Gessner1   | 91.5       | 0.03        | 0.08             | 19.43 | 48.57             | A          |
| 30_30/f  | The Gessner1   | 91.5       | 0.16        | 0.39             | 19.55 | 48.88             | A          |
| 31_G/f   | The Gessner2   | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 31_5/f   | The Gessner2   | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 31_10/f  | The Gessner2   | 31.5       | 0.03        | 0.07             | 19.87 | 49.69             | A          |
| 31_15/f  | The Gessner2   | 46.5       | 0.03        | 0.07             | 20.06 | 50.14             | A          |
| 31_20/f  | The Gessner2   | 61.5       | 0.03        | 0.07             | 19.65 | 49.12             | A          |
| 31_25/f  | The Gessner2   | 76.5       | 0.03        | 0.07             | 19.48 | 48.70             | A          |
| 31_30/f  | The Gessner2   | 91.5       | 0.03        | 0.08             | 19.42 | 48.54             | A          |
| 51_G/f   | Harris Academy | 1.5        | 0.01        | 0.02             | 19.63 | 49.07             | A          |
| 52_G/f   | Harris Academy | 1.5        | 0.01        | 0.02             | 19.72 | 49.31             | A          |
| 13_G/f   | Lebus St       | 1.5        | 0.02        | 0.06             | 19.59 | 48.97             | A          |
| 16_G/f   | Lebus St       | 1.5        | 0.01        | 0.02             | 19.52 | 48.79             | A          |
| 26_G/f   | Lebus St       | 1.5        | 0.01        | 0.03             | 19.52 | 48.81             | A          |
| 53_G/f   | Lebus St       | 1.5        | 0.02        | 0.05             | 19.56 | 48.89             | A          |
| 13_5/f   | Lebus St       | 16.5       | 0.02        | 0.06             | 19.60 | 48.99             | A          |

| Receptor | Location           | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|--------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                    |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 16_5/f   | Lebus St           | 16.5       | 0.01        | 0.02             | 19.52 | 48.80             | A          |
| 26_5/f   | Lebus St           | 16.5       | 0.01        | 0.03             | 19.53 | 48.83             | A          |
| 53_5/f   | Lebus St           | 16.5       | 0.02        | 0.05             | 19.57 | 48.91             | A          |
| 13_10/f  | Lebus St           | 31.5       | 0.02        | 0.05             | 19.63 | 49.08             | A          |
| 16_10/f  | Lebus St           | 31.5       | 0.01        | 0.02             | 19.52 | 48.81             | A          |
| 26_10/f  | Lebus St           | 31.5       | 0.01        | 0.02             | 19.55 | 48.87             | A          |
| 53_10/f  | Lebus St           | 31.5       | 0.02        | 0.05             | 19.59 | 48.98             | A          |
| 39_G/f   | Millstream Tower 1 | 1.5        | 0.00        | 0.01             | 20.00 | 49.99             | A          |
| 62_G/f   | Millstream Tower 1 | 1.5        | 0.00        | 0.01             | 19.82 | 49.54             | A          |
| 39_5/f   | Millstream Tower 1 | 16.5       | 0.00        | 0.01             | 20.00 | 50.00             | A          |
| 62_5/f   | Millstream Tower 1 | 16.5       | 0.00        | 0.01             | 19.82 | 49.56             | A          |
| 39_10/f  | Millstream Tower 1 | 31.5       | 0.00        | 0.01             | 20.00 | 49.99             | A          |
| 62_10/f  | Millstream Tower 1 | 31.5       | 0.00        | 0.01             | 19.83 | 49.58             | A          |
| 39_15/f  | Millstream Tower 1 | 46.5       | 0.00        | 0.01             | 20.58 | 51.45             | A          |
| 62_15/f  | Millstream Tower 1 | 46.5       | 0.00        | 0.01             | 20.52 | 51.29             | A          |
| 39_20/f  | Millstream Tower 1 | 61.5       | 0.00        | 0.01             | 19.69 | 49.24             | A          |
| 62_20/f  | Millstream Tower 1 | 61.5       | 0.00        | 0.01             | 19.60 | 49.01             | A          |
| 39_25/f  | Millstream Tower 1 | 76.5       | 0.00        | 0.01             | 19.46 | 48.64             | A          |
| 62_25/f  | Millstream Tower 1 | 76.5       | 0.00        | 0.01             | 19.42 | 48.55             | A          |
| 39_30/f  | Millstream Tower 1 | 91.5       | 0.01        | 0.02             | 19.38 | 48.46             | A          |
| 62_30/f  | Millstream Tower 1 | 91.5       | 0.01        | 0.03             | 19.38 | 48.46             | A          |
| 38_G/f   | Millstream Tower 2 | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 38_5/f   | Millstream Tower 2 | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 38_10/f  | Millstream Tower 2 | 31.5       | 0.01        | 0.03             | 19.72 | 49.31             | A          |
| 38_15/f  | Millstream Tower 2 | 46.5       | 0.01        | 0.02             | 19.96 | 49.89             | A          |
| 38_20/f  | Millstream Tower 2 | 61.5       | 0.01        | 0.02             | 19.80 | 49.50             | A          |
| 38_25/f  | Millstream Tower 2 | 76.5       | 0.01        | 0.03             | 19.44 | 48.60             | A          |

| Receptor | Location           | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|--------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                    |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 38_30/f  | Millstream Tower 2 | 91.5       | 0.03        | 0.07             | 19.40 | 48.49             | A          |
| 42_G/f   | One Ashley Road 1  | 1.5        | 0.11        | 0.28             | 20.12 | 50.29             | A          |
| 43_G/f   | One Ashley Road 1  | 1.5        | 0.09        | 0.23             | 20.04 | 50.10             | A          |
| 44_G/f   | One Ashley Road 1  | 1.5        | 0.10        | 0.24             | 20.23 | 50.58             | A          |
| 45_G/f   | One Ashley Road 1  | 1.5        | 0.04        | 0.09             | 20.05 | 50.13             | A          |
| 42_5/f   | One Ashley Road 1  | 16.5       | 0.11        | 0.28             | 20.12 | 50.29             | A          |
| 43_5/f   | One Ashley Road 1  | 16.5       | 0.09        | 0.23             | 20.08 | 50.21             | A          |
| 44_5/f   | One Ashley Road 1  | 16.5       | 0.10        | 0.24             | 20.26 | 50.64             | A          |
| 45_5/f   | One Ashley Road 1  | 16.5       | 0.04        | 0.09             | 20.06 | 50.14             | A          |
| 42_10/f  | One Ashley Road 1  | 31.5       | 0.11        | 0.28             | 20.27 | 50.68             | A          |
| 43_10/f  | One Ashley Road 1  | 31.5       | 0.09        | 0.23             | 20.22 | 50.55             | A          |
| 44_10/f  | One Ashley Road 1  | 31.5       | 0.10        | 0.24             | 20.47 | 51.17             | A          |
| 45_10/f  | One Ashley Road 1  | 31.5       | 0.04        | 0.09             | 20.07 | 50.18             | A          |
| 42_15/f  | One Ashley Road 1  | 46.5       | 0.11        | 0.28             | 20.32 | 50.81             | A          |
| 43_15/f  | One Ashley Road 1  | 46.5       | 0.09        | 0.23             | 20.23 | 50.58             | A          |
| 44_15/f  | One Ashley Road 1  | 46.5       | 0.10        | 0.24             | 20.43 | 51.07             | A          |
| 45_15/f  | One Ashley Road 1  | 46.5       | 0.04        | 0.09             | 20.17 | 50.44             | A          |
| 42_20/f  | One Ashley Road 1  | 61.5       | 0.11        | 0.28             | 19.90 | 49.74             | A          |
| 43_20/f  | One Ashley Road 1  | 61.5       | 0.09        | 0.23             | 19.90 | 49.76             | A          |
| 44_20/f  | One Ashley Road 1  | 61.5       | 0.10        | 0.24             | 19.88 | 49.69             | A          |
| 45_20/f  | One Ashley Road 1  | 61.5       | 0.04        | 0.09             | 19.82 | 49.56             | A          |
| 42_25/f  | One Ashley Road 1  | 76.5       | 0.11        | 0.28             | 19.58 | 48.95             | A          |
| 43_25/f  | One Ashley Road 1  | 76.5       | 0.09        | 0.23             | 19.56 | 48.90             | A          |
| 44_25/f  | One Ashley Road 1  | 76.5       | 0.10        | 0.24             | 19.54 | 48.85             | A          |
| 45_25/f  | One Ashley Road 1  | 76.5       | 0.04        | 0.09             | 19.49 | 48.72             | A          |
| 42_30/f  | One Ashley Road 1  | 91.5       | 0.11        | 0.28             | 19.49 | 48.73             | A          |
| 43_30/f  | One Ashley Road 1  | 91.5       | 0.09        | 0.23             | 19.47 | 48.68             | A          |

| Receptor | Location          | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                   |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 44_30/f  | One Ashley Road 1 | 91.5       | 0.09        | 0.23             | 19.47 | 48.68             | A          |
| 45_30/f  | One Ashley Road 1 | 91.5       | 0.03        | 0.08             | 19.41 | 48.53             | A          |
| 46_G/f   | One Ashley Road 2 | 1.5        | 0.01        | 0.02             | 19.79 | 49.49             | A          |
| 47_G/f   | One Ashley Road 2 | 1.5        | 0.05        | 0.13             | 19.87 | 49.67             | A          |
| 48_G/f   | One Ashley Road 2 | 1.5        | 0.03        | 0.07             | 19.77 | 49.43             | A          |
| 49_G/f   | One Ashley Road 2 | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 46_5/f   | One Ashley Road 2 | 16.5       | 0.01        | 0.02             | 19.81 | 49.53             | A          |
| 47_5/f   | One Ashley Road 2 | 16.5       | 0.05        | 0.13             | 19.92 | 49.79             | A          |
| 48_5/f   | One Ashley Road 2 | 16.5       | 0.03        | 0.07             | 19.80 | 49.50             | A          |
| 49_5/f   | One Ashley Road 2 | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 46_10/f  | One Ashley Road 2 | 31.5       | 0.01        | 0.02             | 19.95 | 49.88             | A          |
| 47_10/f  | One Ashley Road 2 | 31.5       | 0.05        | 0.13             | 20.07 | 50.16             | A          |
| 48_10/f  | One Ashley Road 2 | 31.5       | 0.03        | 0.07             | 19.84 | 49.60             | A          |
| 49_10/f  | One Ashley Road 2 | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 46_15/f  | One Ashley Road 2 | 46.5       | 0.01        | 0.02             | 20.26 | 50.66             | A          |
| 47_15/f  | One Ashley Road 2 | 46.5       | 0.05        | 0.13             | 20.10 | 50.25             | A          |
| 48_15/f  | One Ashley Road 2 | 46.5       | 0.03        | 0.07             | 19.90 | 49.74             | A          |
| 49_15/f  | One Ashley Road 2 | 46.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 46_20/f  | One Ashley Road 2 | 61.5       | 0.01        | 0.02             | 19.78 | 49.46             | A          |
| 47_20/f  | One Ashley Road 2 | 61.5       | 0.05        | 0.13             | 19.77 | 49.43             | A          |
| 48_20/f  | One Ashley Road 2 | 61.5       | 0.03        | 0.07             | 19.67 | 49.16             | A          |
| 49_20/f  | One Ashley Road 2 | 61.5       | 0.01        | 0.04             | 19.70 | 49.24             | A          |
| 46_25/f  | One Ashley Road 2 | 76.5       | 0.01        | 0.02             | 19.47 | 48.68             | A          |
| 47_25/f  | One Ashley Road 2 | 76.5       | 0.05        | 0.13             | 19.51 | 48.78             | A          |
| 48_25/f  | One Ashley Road 2 | 76.5       | 0.03        | 0.07             | 19.50 | 48.76             | A          |
| 49_25/f  | One Ashley Road 2 | 76.5       | 0.01        | 0.04             | 19.50 | 48.74             | A          |
| 46_30/f  | One Ashley Road 2 | 91.5       | 0.01        | 0.02             | 19.39 | 48.47             | A          |

| Receptor | Location          | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                   |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 47_30/f  | One Ashley Road 2 | 91.5       | 0.05        | 0.14             | 19.43 | 48.59             | A          |
| 48_30/f  | One Ashley Road 2 | 91.5       | 0.03        | 0.07             | 19.41 | 48.52             | A          |
| 49_30/f  | One Ashley Road 2 | 91.5       | 0.01        | 0.03             | 19.40 | 48.49             | A          |
| 12_G/f   | The Hale          | 1.5        | 0.01        | 0.02             | 19.52 | 48.79             | A          |
| 12_5/f   | The Hale          | 16.5       | 0.01        | 0.02             | 19.56 | 48.89             | A          |
| 12_10/f  | The Hale          | 31.5       | 0.01        | 0.02             | 19.66 | 49.15             | A          |
| 12_15/f  | The Hale          | 46.5       | 0.01        | 0.02             | 19.70 | 49.25             | A          |
| 12_20/f  | The Hale          | 61.5       | 0.01        | 0.03             | 19.57 | 48.93             | A          |
| 12_25/f  | The Hale          | 76.5       | 0.02        | 0.04             | 19.43 | 48.57             | A          |
| 12_30/f  | The Hale          | 91.5       | 0.02        | 0.06             | 19.40 | 48.50             | A          |
| 40_G/f   | The Island        | 1.5        | 0.00        | 0.01             | 19.58 | 48.96             | A          |
| 41_G/f   | The Island        | 1.5        | 0.00        | 0.01             | 19.58 | 48.96             | A          |
| 40_5/f   | The Island        | 16.5       | 0.00        | 0.01             | 19.59 | 48.98             | A          |
| 41_5/f   | The Island        | 16.5       | 0.00        | 0.01             | 19.59 | 48.98             | A          |
| 40_10/f  | The Island        | 31.5       | 0.00        | 0.01             | 19.66 | 49.16             | A          |
| 41_10/f  | The Island        | 31.5       | 0.00        | 0.01             | 19.66 | 49.16             | A          |
| 40_15/f  | The Island        | 46.5       | 0.00        | 0.01             | 20.19 | 50.47             | A          |
| 41_15/f  | The Island        | 46.5       | 0.00        | 0.01             | 20.19 | 50.47             | A          |
| 40_20/f  | The Island        | 61.5       | 0.01        | 0.02             | 19.52 | 48.79             | A          |
| 41_20/f  | The Island        | 61.5       | 0.01        | 0.02             | 19.52 | 48.79             | A          |
| 40_25/f  | The Island        | 76.5       | 0.01        | 0.02             | 19.40 | 48.50             | A          |
| 41_25/f  | The Island        | 76.5       | 0.01        | 0.02             | 19.40 | 48.50             | A          |
| 40_30/f  | The Island        | 91.5       | 0.02        | 0.05             | 19.39 | 48.47             | A          |
| 41_30/f  | The Island        | 91.5       | 0.02        | 0.05             | 19.39 | 48.47             | A          |
| 17_G/f   | Welbourne         | 1.5        | 0.01        | 0.02             | 19.63 | 49.09             | A          |
| 60_G/f   | Welbourne         | 1.5        | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 17_5/f   | Welbourne         | 16.5       | 0.01        | 0.02             | 19.64 | 49.11             | A          |

| Receptor | Location         | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                  |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 60_5/f   | Welbourne        | 16.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 17_10/f  | Welbourne        | 31.5       | 0.01        | 0.02             | 19.64 | 49.11             | A          |
| 60_10/f  | Welbourne        | 31.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 17_15/f  | Welbourne        | 46.5       | 0.01        | 0.02             | 19.62 | 49.05             | A          |
| 60_15/f  | Welbourne        | 46.5       | 0.00        | 0.00             | 19.36 | 48.40             | A          |
| 17_20/f  | Welbourne        | 61.5       | 0.01        | 0.03             | 19.46 | 48.65             | A          |
| 60_20/f  | Welbourne        | 61.5       | 0.01        | 0.03             | 19.46 | 48.65             | A          |
| 17_25/f  | Welbourne        | 76.5       | 0.01        | 0.03             | 19.41 | 48.52             | A          |
| 60_25/f  | Welbourne        | 76.5       | 0.01        | 0.03             | 19.41 | 48.51             | A          |
| 17_30/f  | Welbourne        | 91.5       | 0.01        | 0.03             | 19.39 | 48.47             | A          |
| 60_30/f  | Welbourne        | 91.5       | 0.01        | 0.03             | 19.39 | 48.47             | A          |
| 15_G/f   | West Apartment 2 | 1.5        | 0.02        | 0.04             | 20.11 | 50.27             | A          |
| 50_G/f   | West Apartment 2 | 1.5        | 0.01        | 0.03             | 20.28 | 50.69             | A          |
| 15_5/f   | West Apartment 2 | 16.5       | 0.02        | 0.04             | 20.12 | 50.29             | A          |
| 50_5/f   | West Apartment 2 | 16.5       | 0.01        | 0.03             | 20.28 | 50.70             | A          |
| 15_10/f  | West Apartment 2 | 31.5       | 0.02        | 0.04             | 20.23 | 50.57             | A          |
| 50_10/f  | West Apartment 2 | 31.5       | 0.01        | 0.03             | 20.28 | 50.70             | A          |
| 15_15/f  | West Apartment 2 | 46.5       | 0.02        | 0.04             | 20.31 | 50.77             | A          |
| 50_15/f  | West Apartment 2 | 46.5       | 0.01        | 0.03             | 20.50 | 51.25             | A          |
| 15_20/f  | West Apartment 2 | 61.5       | 0.02        | 0.04             | 19.71 | 49.28             | A          |
| 50_20/f  | West Apartment 2 | 61.5       | 0.01        | 0.03             | 19.93 | 49.83             | A          |
| 15_25/f  | West Apartment 2 | 76.5       | 0.01        | 0.03             | 19.48 | 48.70             | A          |
| 50_25/f  | West Apartment 2 | 76.5       | 0.01        | 0.03             | 19.49 | 48.73             | A          |
| 15_30/f  | West Apartment 2 | 91.5       | 0.02        | 0.04             | 19.39 | 48.48             | A          |
| 50_30/f  | West Apartment 2 | 91.5       | 0.02        | 0.04             | 19.39 | 48.48             | A          |

**Table D-2 – Short-term mean NO<sub>2</sub> concentrations (µg/m<sup>3</sup>) in the with proposed development scenario (including all committed developments)**

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 11_G/f   | 17 Hale Road   | 1.50       | 0.17        | 0.08             | 40.93 | 20.46             | A          |
| 10_G/f   | Ashley Garden1 | 1.50       | 0.06        | 0.03             | 39.49 | 19.74             | A          |
| 35_G/f   | Ashley Garden1 | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 36_G/f   | Ashley Garden1 | 1.50       | 0.26        | 0.13             | 39.52 | 19.76             | A          |
| 37_G/f   | Ashley Garden1 | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 10_5/f   | Ashley Garden1 | 16.50      | 0.06        | 0.03             | 39.43 | 19.71             | A          |
| 35_5/f   | Ashley Garden1 | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 36_5/f   | Ashley Garden1 | 16.50      | 0.26        | 0.13             | 39.54 | 19.77             | A          |
| 37_5/f   | Ashley Garden1 | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 10_10/f  | Ashley Garden1 | 31.50      | 0.06        | 0.03             | 39.75 | 19.87             | A          |
| 35_10/f  | Ashley Garden1 | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 36_10/f  | Ashley Garden1 | 31.50      | 0.26        | 0.13             | 39.90 | 19.95             | A          |
| 37_10/f  | Ashley Garden1 | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 10_15/f  | Ashley Garden1 | 46.50      | 0.05        | 0.03             | 39.93 | 19.97             | A          |
| 35_15/f  | Ashley Garden1 | 46.50      | 0.07        | 0.04             | 40.04 | 20.02             | A          |
| 36_15/f  | Ashley Garden1 | 46.50      | 0.22        | 0.11             | 39.74 | 19.87             | A          |
| 37_15/f  | Ashley Garden1 | 46.50      | 0.07        | 0.03             | 39.80 | 19.90             | A          |
| 10_20/f  | Ashley Garden1 | 61.50      | 0.06        | 0.03             | 39.89 | 19.95             | A          |
| 35_20/f  | Ashley Garden1 | 61.50      | 0.08        | 0.04             | 40.27 | 20.14             | A          |
| 36_20/f  | Ashley Garden1 | 61.50      | 0.15        | 0.07             | 41.51 | 20.76             | A          |
| 37_20/f  | Ashley Garden1 | 61.50      | 0.08        | 0.04             | 40.26 | 20.13             | A          |
| 10_25/f  | Ashley Garden1 | 76.50      | 0.08        | 0.04             | 39.07 | 19.53             | A          |
| 35_25/f  | Ashley Garden1 | 76.50      | 0.12        | 0.06             | 39.07 | 19.53             | A          |
| 36_25/f  | Ashley Garden1 | 76.50      | 0.17        | 0.08             | 39.09 | 19.55             | A          |
| 37_25/f  | Ashley Garden1 | 76.50      | 0.11        | 0.05             | 39.03 | 19.51             | A          |

| Receptor | Location        | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                 |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 10_30/f  | Ashley Garden1  | 91.50      | 0.22        | 0.11             | 38.95 | 19.48             | A          |
| 35_30/f  | Ashley Garden1  | 91.50      | 0.21        | 0.10             | 38.95 | 19.48             | A          |
| 36_30/f  | Ashley Garden1  | 91.50      | 0.35        | 0.18             | 39.10 | 19.55             | A          |
| 37_30/f  | Ashley Garden1  | 91.50      | 0.26        | 0.13             | 38.99 | 19.49             | A          |
| 9_G/f    | Ashley Garden1A | 1.50       | 0.30        | 0.15             | 39.54 | 19.77             | A          |
| 32_G/f   | Ashley Garden1A | 1.50       | 0.17        | 0.08             | 39.59 | 19.79             | A          |
| 33_G/f   | Ashley Garden1A | 1.50       | 0.11        | 0.06             | 39.57 | 19.78             | A          |
| 34_G/f   | Ashley Garden1A | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 9_5/f    | Ashley Garden1A | 16.50      | 0.30        | 0.15             | 39.56 | 19.78             | A          |
| 32_5/f   | Ashley Garden1A | 16.50      | 0.13        | 0.06             | 39.56 | 19.78             | A          |
| 33_5/f   | Ashley Garden1A | 16.50      | 0.11        | 0.05             | 39.53 | 19.77             | A          |
| 34_5/f   | Ashley Garden1A | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 9_10/f   | Ashley Garden1A | 31.50      | 0.30        | 0.15             | 40.38 | 20.19             | A          |
| 32_10/f  | Ashley Garden1A | 31.50      | 0.11        | 0.05             | 41.53 | 20.76             | A          |
| 33_10/f  | Ashley Garden1A | 31.50      | 0.10        | 0.05             | 40.87 | 20.44             | A          |
| 34_10/f  | Ashley Garden1A | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 9_15/f   | Ashley Garden1A | 46.50      | 0.30        | 0.15             | 40.35 | 20.18             | A          |
| 32_15/f  | Ashley Garden1A | 46.50      | 0.09        | 0.05             | 39.97 | 19.99             | A          |
| 33_15/f  | Ashley Garden1A | 46.50      | 0.09        | 0.04             | 39.76 | 19.88             | A          |
| 34_15/f  | Ashley Garden1A | 46.50      | 0.33        | 0.17             | 40.51 | 20.25             | A          |
| 9_20/f   | Ashley Garden1A | 61.50      | 0.30        | 0.15             | 39.85 | 19.93             | A          |
| 32_20/f  | Ashley Garden1A | 61.50      | 0.08        | 0.04             | 40.10 | 20.05             | A          |
| 33_20/f  | Ashley Garden1A | 61.50      | 0.09        | 0.05             | 39.68 | 19.84             | A          |
| 34_20/f  | Ashley Garden1A | 61.50      | 0.33        | 0.17             | 40.12 | 20.06             | A          |
| 9_25/f   | Ashley Garden1A | 76.50      | 0.30        | 0.15             | 39.21 | 19.60             | A          |
| 32_25/f  | Ashley Garden1A | 76.50      | 0.13        | 0.06             | 39.06 | 19.53             | A          |
| 33_25/f  | Ashley Garden1A | 76.50      | 0.14        | 0.07             | 39.06 | 19.53             | A          |

| Receptor | Location        | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                 |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 34_25/f  | Ashley Garden1A | 76.50      | 0.33        | 0.16             | 39.16 | 19.58             | A          |
| 9_30/f   | Ashley Garden1A | 91.50      | 0.35        | 0.18             | 39.10 | 19.55             | A          |
| 32_30/f  | Ashley Garden1A | 91.50      | 0.26        | 0.13             | 39.00 | 19.50             | A          |
| 33_30/f  | Ashley Garden1A | 91.50      | 0.34        | 0.17             | 39.06 | 19.53             | A          |
| 34_30/f  | Ashley Garden1A | 91.50      | 0.41        | 0.21             | 39.15 | 19.57             | A          |
| 18_G/f   | Ashley House    | 1.50       | 0.17        | 0.08             | 40.22 | 20.11             | A          |
| 19_G/f   | Ashley House    | 1.50       | 0.38        | 0.19             | 41.01 | 20.50             | A          |
| 20_G/f   | Ashley House    | 1.50       | 0.44        | 0.22             | 39.82 | 19.91             | A          |
| 21_G/f   | Ashley House    | 1.50       | 0.44        | 0.22             | 39.59 | 19.80             | A          |
| 18_5/f   | Ashley House    | 16.50      | 0.16        | 0.08             | 40.22 | 20.11             | A          |
| 19_5/f   | Ashley House    | 16.50      | 0.38        | 0.19             | 41.01 | 20.50             | A          |
| 20_5/f   | Ashley House    | 16.50      | 0.44        | 0.22             | 39.82 | 19.91             | A          |
| 21_5/f   | Ashley House    | 16.50      | 0.44        | 0.22             | 39.60 | 19.80             | A          |
| 18_10/f  | Ashley House    | 31.50      | 0.15        | 0.07             | 42.04 | 21.02             | A          |
| 19_10/f  | Ashley House    | 31.50      | 0.35        | 0.17             | 43.72 | 21.86             | A          |
| 20_10/f  | Ashley House    | 31.50      | 0.44        | 0.22             | 40.34 | 20.17             | A          |
| 21_10/f  | Ashley House    | 31.50      | 0.44        | 0.22             | 40.59 | 20.30             | A          |
| 18_15/f  | Ashley House    | 46.50      | 0.13        | 0.06             | 40.03 | 20.02             | A          |
| 19_15/f  | Ashley House    | 46.50      | 0.22        | 0.11             | 40.44 | 20.22             | A          |
| 20_15/f  | Ashley House    | 46.50      | 0.44        | 0.22             | 41.10 | 20.55             | A          |
| 21_15/f  | Ashley House    | 46.50      | 0.44        | 0.22             | 40.89 | 20.45             | A          |
| 18_20/f  | Ashley House    | 61.50      | 0.11        | 0.06             | 39.79 | 19.90             | A          |
| 19_20/f  | Ashley House    | 61.50      | 0.18        | 0.09             | 40.46 | 20.23             | A          |
| 20_20/f  | Ashley House    | 61.50      | 0.44        | 0.22             | 40.01 | 20.00             | A          |
| 21_20/f  | Ashley House    | 61.50      | 0.44        | 0.22             | 39.80 | 19.90             | A          |
| 18_25/f  | Ashley House    | 76.50      | 0.18        | 0.09             | 39.07 | 19.53             | A          |
| 19_25/f  | Ashley House    | 76.50      | 0.25        | 0.13             | 39.07 | 19.54             | A          |

| Receptor | Location          | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                   |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 20_25/f  | Ashley House      | 76.50      | 0.44        | 0.22             | 39.29 | 19.65             | A          |
| 21_25/f  | Ashley House      | 76.50      | 0.44        | 0.22             | 39.29 | 19.64             | A          |
| 18_30/f  | Ashley House      | 91.50      | 0.76        | 0.38             | 39.48 | 19.74             | A          |
| 19_30/f  | Ashley House      | 91.50      | 0.60        | 0.30             | 39.32 | 19.66             | A          |
| 20_30/f  | Ashley House      | 91.50      | 0.56        | 0.28             | 39.30 | 19.65             | A          |
| 21_30/f  | Ashley House      | 91.50      | 0.51        | 0.25             | 39.23 | 19.62             | A          |
| 7_G/f    | Berol House (New) | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 8_G/f    | Berol House (New) | 1.50       | 0.44        | 0.22             | 39.62 | 19.81             | A          |
| 5_G/f    | Berol House (New) | 1.50       | 0.29        | 0.14             | 39.43 | 19.71             | A          |
| 6_G/f    | Berol House (New) | 1.50       | 0.37        | 0.19             | 39.51 | 19.75             | A          |
| 7_5/f    | Berol House (New) | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 8_5/f    | Berol House (New) | 16.50      | 0.44        | 0.22             | 39.63 | 19.81             | A          |
| 5_5/f    | Berol House (New) | 16.50      | 0.29        | 0.14             | 39.46 | 19.73             | A          |
| 6_5/f    | Berol House (New) | 16.50      | 0.37        | 0.19             | 39.51 | 19.76             | A          |
| 7_10/f   | Berol House (New) | 31.50      | 0.28        | 0.14             | 39.82 | 19.91             | A          |
| 8_10/f   | Berol House (New) | 31.50      | 0.44        | 0.22             | 40.27 | 20.14             | A          |
| 5_10/f   | Berol House (New) | 31.50      | 0.29        | 0.14             | 39.81 | 19.91             | A          |
| 6_10/f   | Berol House (New) | 31.50      | 0.37        | 0.19             | 40.02 | 20.01             | A          |
| 7_15/f   | Berol House (New) | 46.50      | 0.28        | 0.14             | 40.33 | 20.17             | A          |
| 8_15/f   | Berol House (New) | 46.50      | 0.44        | 0.22             | 41.41 | 20.71             | A          |
| 5_15/f   | Berol House (New) | 46.50      | 0.29        | 0.14             | 40.49 | 20.25             | A          |
| 6_15/f   | Berol House (New) | 46.50      | 0.37        | 0.19             | 40.96 | 20.48             | A          |
| 7_20/f   | Berol House (New) | 61.50      | 0.28        | 0.14             | 41.08 | 20.54             | A          |
| 8_20/f   | Berol House (New) | 61.50      | 0.44        | 0.22             | 39.96 | 19.98             | A          |
| 5_20/f   | Berol House (New) | 61.50      | 0.29        | 0.14             | 40.76 | 20.38             | A          |
| 6_20/f   | Berol House (New) | 61.50      | 0.37        | 0.19             | 40.23 | 20.12             | A          |
| 7_25/f   | Berol House (New) | 76.50      | 0.28        | 0.14             | 39.14 | 19.57             | A          |

| Receptor | Location           | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|--------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                    |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 8_25/f   | Berol House (New)  | 76.50      | 0.44        | 0.22             | 39.38 | 19.69             | A          |
| 5_25/f   | Berol House (New)  | 76.50      | 0.29        | 0.14             | 39.14 | 19.57             | A          |
| 6_25/f   | Berol House (New)  | 76.50      | 0.37        | 0.19             | 39.37 | 19.68             | A          |
| 7_30/f   | Berol House (New)  | 91.50      | 0.40        | 0.20             | 39.14 | 19.57             | A          |
| 8_30/f   | Berol House (New)  | 91.50      | 0.44        | 0.22             | 39.17 | 19.59             | A          |
| 5_30/f   | Berol House (New)  | 91.50      | 0.29        | 0.15             | 39.03 | 19.51             | A          |
| 6_30/f   | Berol House (New)  | 91.50      | 0.38        | 0.19             | 39.10 | 19.55             | A          |
| 1_G/f    | 2 Berol Yard (New) | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_G/f    | 2 Berol Yard (New) | 1.50       | 0.49        | 0.25             | 39.79 | 19.89             | A          |
| 3_G/f    | 2 Berol Yard (New) | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_G/f    | 2 Berol Yard (New) | 1.50       | 0.49        | 0.24             | 39.74 | 19.87             | A          |
| 1_5/f    | 2 Berol Yard (New) | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_5/f    | 2 Berol Yard (New) | 16.50      | 0.49        | 0.25             | 39.78 | 19.89             | A          |
| 3_5/f    | 2 Berol Yard (New) | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_5/f    | 2 Berol Yard (New) | 16.50      | 0.49        | 0.24             | 39.77 | 19.88             | A          |
| 1_10/f   | 2 Berol Yard (New) | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_10/f   | 2 Berol Yard (New) | 31.50      | 0.49        | 0.25             | 40.14 | 20.07             | A          |
| 3_10/f   | 2 Berol Yard (New) | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_10/f   | 2 Berol Yard (New) | 31.50      | 0.49        | 0.24             | 40.25 | 20.13             | A          |
| 1_15/f   | 2 Berol Yard (New) | 46.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_15/f   | 2 Berol Yard (New) | 46.50      | 0.49        | 0.25             | 41.66 | 20.83             | A          |
| 3_15/f   | 2 Berol Yard (New) | 46.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_15/f   | 2 Berol Yard (New) | 46.50      | 0.49        | 0.24             | 41.94 | 20.97             | A          |
| 1_20/f   | 2 Berol Yard (New) | 61.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_20/f   | 2 Berol Yard (New) | 61.50      | 0.49        | 0.25             | 40.56 | 20.28             | A          |
| 3_20/f   | 2 Berol Yard (New) | 61.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_20/f   | 2 Berol Yard (New) | 61.50      | 0.49        | 0.24             | 41.09 | 20.54             | A          |

| Receptor | Location                | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                         |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 1_25/f   | 2 Berol Yard (New)      | 76.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_25/f   | 2 Berol Yard (New)      | 76.50      | 0.49        | 0.25             | 40.06 | 20.03             | A          |
| 3_25/f   | 2 Berol Yard (New)      | 76.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_25/f   | 2 Berol Yard (New)      | 76.50      | 0.49        | 0.24             | 39.87 | 19.94             | A          |
| 1_30/f   | 2 Berol Yard (New)      | 91.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 2_30/f   | 2 Berol Yard (New)      | 91.50      | 0.49        | 0.25             | 39.25 | 19.63             | A          |
| 3_30/f   | 2 Berol Yard (New)      | 91.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 4_30/f   | 2 Berol Yard (New)      | 91.50      | 0.49        | 0.24             | 39.29 | 19.64             | A          |
| 27_G/f   | Building at Ashley Road | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 61_G/f   | Building at Ashley Road | 1.50       | 0.24        | 0.12             | 41.67 | 20.84             | A          |
| 27_5/f   | Building at Ashley Road | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 61_5/f   | Building at Ashley Road | 16.50      | 0.23        | 0.12             | 41.67 | 20.84             | A          |
| 27_10/f  | Building at Ashley Road | 31.50      | 0.25        | 0.12             | 41.90 | 20.95             | A          |
| 61_10/f  | Building at Ashley Road | 31.50      | 0.22        | 0.11             | 41.55 | 20.78             | A          |
| 27_15/f  | Building at Ashley Road | 46.50      | 0.21        | 0.11             | 40.78 | 20.39             | A          |
| 61_15/f  | Building at Ashley Road | 46.50      | 0.19        | 0.09             | 42.80 | 21.40             | A          |
| 27_20/f  | Building at Ashley Road | 61.50      | 0.20        | 0.10             | 40.02 | 20.01             | A          |
| 61_20/f  | Building at Ashley Road | 61.50      | 0.17        | 0.09             | 40.08 | 20.04             | A          |
| 27_25/f  | Building at Ashley Road | 76.50      | 0.28        | 0.14             | 39.18 | 19.59             | A          |
| 61_25/f  | Building at Ashley Road | 76.50      | 0.23        | 0.11             | 39.39 | 19.70             | A          |
| 27_30/f  | Building at Ashley Road | 91.50      | 0.94        | 0.47             | 39.66 | 19.83             | A          |

| Receptor | Location                | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                         |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 61_30/f  | Building at Ashley Road | 91.50      | 0.82        | 0.41             | 39.54 | 19.77             | A          |
| 22_G/f   | Cannon Factory          | 1.50       | 0.28        | 0.14             | 39.64 | 19.82             | A          |
| 23_G/f   | Cannon Factory          | 1.50       | 0.18        | 0.09             | 39.54 | 19.77             | A          |
| 24_G/f   | Cannon Factory          | 1.50       | 0.29        | 0.15             | 39.53 | 19.76             | A          |
| 25_G/f   | Cannon Factory          | 1.50       | 0.29        | 0.14             | 39.63 | 19.81             | A          |
| 22_5/f   | Cannon Factory          | 16.50      | 0.27        | 0.14             | 39.60 | 19.80             | A          |
| 23_5/f   | Cannon Factory          | 16.50      | 0.18        | 0.09             | 39.54 | 19.77             | A          |
| 24_5/f   | Cannon Factory          | 16.50      | 0.28        | 0.14             | 39.57 | 19.78             | A          |
| 25_5/f   | Cannon Factory          | 16.50      | 0.29        | 0.14             | 39.63 | 19.82             | A          |
| 22_10/f  | Cannon Factory          | 31.50      | 0.22        | 0.11             | 39.80 | 19.90             | A          |
| 23_10/f  | Cannon Factory          | 31.50      | 0.16        | 0.08             | 39.60 | 19.80             | A          |
| 24_10/f  | Cannon Factory          | 31.50      | 0.25        | 0.12             | 39.70 | 19.85             | A          |
| 25_10/f  | Cannon Factory          | 31.50      | 0.29        | 0.14             | 39.78 | 19.89             | A          |
| 22_15/f  | Cannon Factory          | 46.50      | 0.19        | 0.09             | 39.80 | 19.90             | A          |
| 23_15/f  | Cannon Factory          | 46.50      | 0.14        | 0.07             | 39.77 | 19.88             | A          |
| 24_15/f  | Cannon Factory          | 46.50      | 0.19        | 0.09             | 40.55 | 20.27             | A          |
| 25_15/f  | Cannon Factory          | 46.50      | 0.29        | 0.14             | 39.86 | 19.93             | A          |
| 22_20/f  | Cannon Factory          | 61.50      | 0.15        | 0.08             | 42.12 | 21.06             | A          |
| 23_20/f  | Cannon Factory          | 61.50      | 0.12        | 0.06             | 41.66 | 20.83             | A          |
| 24_20/f  | Cannon Factory          | 61.50      | 0.15        | 0.08             | 41.20 | 20.60             | A          |
| 25_20/f  | Cannon Factory          | 61.50      | 0.29        | 0.14             | 42.56 | 21.28             | A          |
| 22_25/f  | Cannon Factory          | 76.50      | 0.19        | 0.09             | 39.10 | 19.55             | A          |
| 23_25/f  | Cannon Factory          | 76.50      | 0.16        | 0.08             | 39.06 | 19.53             | A          |
| 24_25/f  | Cannon Factory          | 76.50      | 0.14        | 0.07             | 39.11 | 19.55             | A          |
| 25_25/f  | Cannon Factory          | 76.50      | 0.13        | 0.07             | 39.20 | 19.60             | A          |
| 22_30/f  | Cannon Factory          | 91.50      | 0.48        | 0.24             | 39.21 | 19.61             | A          |

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 23_30/f  | Cannon Factory | 91.50      | 0.40        | 0.20             | 39.14 | 19.57             | A          |
| 24_30/f  | Cannon Factory | 91.50      | 0.30        | 0.15             | 39.14 | 19.57             | A          |
| 25_30/f  | Cannon Factory | 91.50      | 0.38        | 0.19             | 39.13 | 19.56             | A          |
| 14_G/f   | Community Café | 1.50       | 0.06        | 0.03             | 39.43 | 19.72             | A          |
| 54_G/f   | Ferry Island 1 | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_G/f   | Ferry Island 1 | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_G/f   | Ferry Island 1 | 1.50       | 0.11        | 0.06             | 41.74 | 20.87             | A          |
| 57_G/f   | Ferry Island 1 | 1.50       | 0.11        | 0.05             | 40.42 | 20.21             | A          |
| 54_5/f   | Ferry Island 1 | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_5/f   | Ferry Island 1 | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_5/f   | Ferry Island 1 | 16.50      | 0.11        | 0.06             | 41.74 | 20.87             | A          |
| 57_5/f   | Ferry Island 1 | 16.50      | 0.11        | 0.05             | 40.40 | 20.20             | A          |
| 54_10/f  | Ferry Island 1 | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_10/f  | Ferry Island 1 | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_10/f  | Ferry Island 1 | 31.50      | 0.11        | 0.05             | 40.49 | 20.25             | A          |
| 57_10/f  | Ferry Island 1 | 31.50      | 0.11        | 0.05             | 40.33 | 20.16             | A          |
| 54_15/f  | Ferry Island 1 | 46.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_15/f  | Ferry Island 1 | 46.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_15/f  | Ferry Island 1 | 46.50      | 0.10        | 0.05             | 47.77 | 23.88             | A          |
| 57_15/f  | Ferry Island 1 | 46.50      | 0.10        | 0.05             | 44.69 | 22.35             | A          |
| 54_20/f  | Ferry Island 1 | 61.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_20/f  | Ferry Island 1 | 61.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_20/f  | Ferry Island 1 | 61.50      | 0.09        | 0.05             | 40.90 | 20.45             | A          |
| 57_20/f  | Ferry Island 1 | 61.50      | 0.09        | 0.05             | 40.58 | 20.29             | A          |
| 54_25/f  | Ferry Island 1 | 76.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_25/f  | Ferry Island 1 | 76.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_25/f  | Ferry Island 1 | 76.50      | 0.11        | 0.06             | 39.35 | 19.67             | A          |

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 57_25/f  | Ferry Island 1 | 76.50      | 0.12        | 0.06             | 39.27 | 19.63             | A          |
| 54_30/f  | Ferry Island 1 | 91.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 55_30/f  | Ferry Island 1 | 91.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 56_30/f  | Ferry Island 1 | 91.50      | 0.27        | 0.13             | 39.12 | 19.56             | A          |
| 57_30/f  | Ferry Island 1 | 91.50      | 0.28        | 0.14             | 39.08 | 19.54             | A          |
| 58_G/f   | Ferry Island 2 | 1.50       | 0.08        | 0.04             | 42.35 | 21.18             | A          |
| 59_G/f   | Ferry Island 2 | 1.50       | 0.09        | 0.05             | 42.39 | 21.20             | A          |
| 58_5/f   | Ferry Island 2 | 16.50      | 0.07        | 0.04             | 42.36 | 21.18             | A          |
| 59_5/f   | Ferry Island 2 | 16.50      | 0.09        | 0.04             | 42.40 | 21.20             | A          |
| 58_10/f  | Ferry Island 2 | 31.50      | 0.07        | 0.03             | 42.58 | 21.29             | A          |
| 59_10/f  | Ferry Island 2 | 31.50      | 0.08        | 0.04             | 42.59 | 21.29             | A          |
| 58_15/f  | Ferry Island 2 | 46.50      | 0.06        | 0.03             | 68.81 | 34.41             | A          |
| 59_15/f  | Ferry Island 2 | 46.50      | 0.07        | 0.03             | 53.04 | 26.52             | A          |
| 58_20/f  | Ferry Island 2 | 61.50      | 0.07        | 0.04             | 40.10 | 20.05             | A          |
| 59_20/f  | Ferry Island 2 | 61.50      | 0.07        | 0.04             | 40.57 | 20.28             | A          |
| 58_25/f  | Ferry Island 2 | 76.50      | 0.10        | 0.05             | 39.30 | 19.65             | A          |
| 59_25/f  | Ferry Island 2 | 76.50      | 0.11        | 0.06             | 39.23 | 19.62             | A          |
| 58_30/f  | Ferry Island 2 | 91.50      | 0.25        | 0.13             | 39.09 | 19.55             | A          |
| 59_30/f  | Ferry Island 2 | 91.50      | 0.31        | 0.16             | 39.13 | 19.56             | A          |
| 28_G/f   | The Gessner1   | 1.50       | 0.39        | 0.20             | 39.65 | 19.82             | A          |
| 29_G/f   | The Gessner1   | 1.50       | 0.31        | 0.15             | 39.52 | 19.76             | A          |
| 30_G/f   | The Gessner1   | 1.50       | 0.47        | 0.24             | 39.80 | 19.90             | A          |
| 28_5/f   | The Gessner1   | 16.50      | 0.39        | 0.20             | 39.67 | 19.83             | A          |
| 29_5/f   | The Gessner1   | 16.50      | 0.31        | 0.15             | 39.55 | 19.78             | A          |
| 30_5/f   | The Gessner1   | 16.50      | 0.47        | 0.24             | 39.77 | 19.89             | A          |
| 28_10/f  | The Gessner1   | 31.50      | 0.39        | 0.20             | 40.16 | 20.08             | A          |
| 29_10/f  | The Gessner1   | 31.50      | 0.31        | 0.15             | 39.76 | 19.88             | A          |

| Receptor | Location       | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|----------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 30_10/f  | The Gessner1   | 31.50      | 0.47        | 0.24             | 40.26 | 20.13             | A          |
| 28_15/f  | The Gessner1   | 46.50      | 0.39        | 0.20             | 47.00 | 23.50             | A          |
| 29_15/f  | The Gessner1   | 46.50      | 0.31        | 0.15             | 43.62 | 21.81             | A          |
| 30_15/f  | The Gessner1   | 46.50      | 0.47        | 0.24             | 46.64 | 23.32             | A          |
| 28_20/f  | The Gessner1   | 61.50      | 0.39        | 0.20             | 42.32 | 21.16             | A          |
| 29_20/f  | The Gessner1   | 61.50      | 0.31        | 0.15             | 41.88 | 20.94             | A          |
| 30_20/f  | The Gessner1   | 61.50      | 0.47        | 0.24             | 41.13 | 20.56             | A          |
| 28_25/f  | The Gessner1   | 76.50      | 0.39        | 0.20             | 39.46 | 19.73             | A          |
| 29_25/f  | The Gessner1   | 76.50      | 0.31        | 0.15             | 39.38 | 19.69             | A          |
| 30_25/f  | The Gessner1   | 76.50      | 0.47        | 0.24             | 39.67 | 19.83             | A          |
| 28_30/f  | The Gessner1   | 91.50      | 0.39        | 0.20             | 39.24 | 19.62             | A          |
| 29_30/f  | The Gessner1   | 91.50      | 0.31        | 0.15             | 39.15 | 19.57             | A          |
| 30_30/f  | The Gessner1   | 91.50      | 0.47        | 0.24             | 39.26 | 19.63             | A          |
| 31_G/f   | The Gessner2   | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 31_5/f   | The Gessner2   | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 31_10/f  | The Gessner2   | 31.50      | 0.31        | 0.15             | 40.01 | 20.01             | A          |
| 31_15/f  | The Gessner2   | 46.50      | 0.31        | 0.15             | 42.43 | 21.21             | A          |
| 31_20/f  | The Gessner2   | 61.50      | 0.31        | 0.15             | 41.05 | 20.53             | A          |
| 31_25/f  | The Gessner2   | 76.50      | 0.31        | 0.15             | 39.37 | 19.68             | A          |
| 31_30/f  | The Gessner2   | 91.50      | 0.32        | 0.16             | 39.13 | 19.57             | A          |
| 51_G/f   | Harris Academy | 1.50       | 0.06        | 0.03             | 39.56 | 19.78             | A          |
| 52_G/f   | Harris Academy | 1.50       | 0.08        | 0.04             | 39.52 | 19.76             | A          |
| 13_G/f   | Lebus St       | 1.50       | 0.17        | 0.08             | 39.32 | 19.66             | A          |
| 16_G/f   | Lebus St       | 1.50       | 0.09        | 0.04             | 39.21 | 19.60             | A          |
| 26_G/f   | Lebus St       | 1.50       | 0.15        | 0.08             | 39.17 | 19.59             | A          |
| 53_G/f   | Lebus St       | 1.50       | 0.31        | 0.16             | 39.37 | 19.69             | A          |
| 13_5/f   | Lebus St       | 16.50      | 0.13        | 0.07             | 39.38 | 19.69             | A          |

| Receptor | Location           | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|--------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                    |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 16_5/f   | Lebus St           | 16.50      | 0.09        | 0.04             | 39.24 | 19.62             | A          |
| 26_5/f   | Lebus St           | 16.50      | 0.15        | 0.07             | 39.20 | 19.60             | A          |
| 53_5/f   | Lebus St           | 16.50      | 0.31        | 0.16             | 39.39 | 19.70             | A          |
| 13_10/f  | Lebus St           | 31.50      | 0.12        | 0.06             | 39.69 | 19.85             | A          |
| 16_10/f  | Lebus St           | 31.50      | 0.08        | 0.04             | 39.31 | 19.66             | A          |
| 26_10/f  | Lebus St           | 31.50      | 0.14        | 0.07             | 39.36 | 19.68             | A          |
| 53_10/f  | Lebus St           | 31.50      | 0.31        | 0.16             | 39.47 | 19.73             | A          |
| 39_G/f   | Millstream Tower 1 | 1.50       | 0.12        | 0.06             | 42.54 | 21.27             | A          |
| 62_G/f   | Millstream Tower 1 | 1.50       | 0.08        | 0.04             | 42.35 | 21.17             | A          |
| 39_5/f   | Millstream Tower 1 | 16.50      | 0.11        | 0.06             | 42.54 | 21.27             | A          |
| 62_5/f   | Millstream Tower 1 | 16.50      | 0.08        | 0.04             | 42.35 | 21.17             | A          |
| 39_10/f  | Millstream Tower 1 | 31.50      | 0.11        | 0.05             | 42.82 | 21.41             | A          |
| 62_10/f  | Millstream Tower 1 | 31.50      | 0.07        | 0.04             | 42.66 | 21.33             | A          |
| 39_15/f  | Millstream Tower 1 | 46.50      | 0.10        | 0.05             | 44.65 | 22.32             | A          |
| 62_15/f  | Millstream Tower 1 | 46.50      | 0.06        | 0.03             | 51.57 | 25.78             | A          |
| 39_20/f  | Millstream Tower 1 | 61.50      | 0.10        | 0.05             | 40.57 | 20.29             | A          |
| 62_20/f  | Millstream Tower 1 | 61.50      | 0.07        | 0.03             | 40.95 | 20.48             | A          |
| 39_25/f  | Millstream Tower 1 | 76.50      | 0.12        | 0.06             | 39.64 | 19.82             | A          |
| 62_25/f  | Millstream Tower 1 | 76.50      | 0.10        | 0.05             | 39.25 | 19.63             | A          |
| 39_30/f  | Millstream Tower 1 | 91.50      | 0.22        | 0.11             | 39.09 | 19.54             | A          |
| 62_30/f  | Millstream Tower 1 | 91.50      | 0.26        | 0.13             | 39.02 | 19.51             | A          |
| 38_G/f   | Millstream Tower 2 | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 38_5/f   | Millstream Tower 2 | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 38_10/f  | Millstream Tower 2 | 31.50      | 0.16        | 0.08             | 40.34 | 20.17             | A          |
| 38_15/f  | Millstream Tower 2 | 46.50      | 0.16        | 0.08             | 42.55 | 21.27             | A          |
| 38_20/f  | Millstream Tower 2 | 61.50      | 0.13        | 0.07             | 40.71 | 20.36             | A          |
| 38_25/f  | Millstream Tower 2 | 76.50      | 0.16        | 0.08             | 39.23 | 19.62             | A          |

| Receptor | Location           | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|--------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                    |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 38_30/f  | Millstream Tower 2 | 91.50      | 0.38        | 0.19             | 39.13 | 19.57             | A          |
| 42_G/f   | One Ashley Road 1  | 1.50       | 0.46        | 0.23             | 41.03 | 20.51             | A          |
| 43_G/f   | One Ashley Road 1  | 1.50       | 0.39        | 0.20             | 40.57 | 20.29             | A          |
| 44_G/f   | One Ashley Road 1  | 1.50       | 0.43        | 0.21             | 41.51 | 20.76             | A          |
| 45_G/f   | One Ashley Road 1  | 1.50       | 0.33        | 0.16             | 41.56 | 20.78             | A          |
| 42_5/f   | One Ashley Road 1  | 16.50      | 0.46        | 0.23             | 40.70 | 20.35             | A          |
| 43_5/f   | One Ashley Road 1  | 16.50      | 0.39        | 0.20             | 40.63 | 20.32             | A          |
| 44_5/f   | One Ashley Road 1  | 16.50      | 0.43        | 0.21             | 41.51 | 20.76             | A          |
| 45_5/f   | One Ashley Road 1  | 16.50      | 0.33        | 0.16             | 41.50 | 20.75             | A          |
| 42_10/f  | One Ashley Road 1  | 31.50      | 0.46        | 0.23             | 40.58 | 20.29             | A          |
| 43_10/f  | One Ashley Road 1  | 31.50      | 0.39        | 0.20             | 40.76 | 20.38             | A          |
| 44_10/f  | One Ashley Road 1  | 31.50      | 0.43        | 0.21             | 41.51 | 20.76             | A          |
| 45_10/f  | One Ashley Road 1  | 31.50      | 0.33        | 0.16             | 40.97 | 20.48             | A          |
| 42_15/f  | One Ashley Road 1  | 46.50      | 0.46        | 0.23             | 42.61 | 21.30             | A          |
| 43_15/f  | One Ashley Road 1  | 46.50      | 0.39        | 0.20             | 42.05 | 21.02             | A          |
| 44_15/f  | One Ashley Road 1  | 46.50      | 0.43        | 0.21             | 43.16 | 21.58             | A          |
| 45_15/f  | One Ashley Road 1  | 46.50      | 0.33        | 0.16             | 43.40 | 21.70             | A          |
| 42_20/f  | One Ashley Road 1  | 61.50      | 0.46        | 0.23             | 40.00 | 20.00             | A          |
| 43_20/f  | One Ashley Road 1  | 61.50      | 0.39        | 0.20             | 40.04 | 20.02             | A          |
| 44_20/f  | One Ashley Road 1  | 61.50      | 0.43        | 0.21             | 40.03 | 20.02             | A          |
| 45_20/f  | One Ashley Road 1  | 61.50      | 0.33        | 0.16             | 39.96 | 19.98             | A          |
| 42_25/f  | One Ashley Road 1  | 76.50      | 0.46        | 0.23             | 39.92 | 19.96             | A          |
| 43_25/f  | One Ashley Road 1  | 76.50      | 0.39        | 0.20             | 40.05 | 20.02             | A          |
| 44_25/f  | One Ashley Road 1  | 76.50      | 0.43        | 0.21             | 39.53 | 19.77             | A          |
| 45_25/f  | One Ashley Road 1  | 76.50      | 0.33        | 0.16             | 39.22 | 19.61             | A          |
| 42_30/f  | One Ashley Road 1  | 91.50      | 0.47        | 0.23             | 39.20 | 19.60             | A          |
| 43_30/f  | One Ashley Road 1  | 91.50      | 0.39        | 0.20             | 39.16 | 19.58             | A          |

| Receptor | Location          | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                   |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 44_30/f  | One Ashley Road 1 | 91.50      | 0.42        | 0.21             | 39.16 | 19.58             | A          |
| 45_30/f  | One Ashley Road 1 | 91.50      | 0.37        | 0.19             | 39.11 | 19.55             | A          |
| 46_G/f   | One Ashley Road 2 | 1.50       | 0.33        | 0.16             | 40.22 | 20.11             | A          |
| 47_G/f   | One Ashley Road 2 | 1.50       | 0.38        | 0.19             | 40.31 | 20.15             | A          |
| 48_G/f   | One Ashley Road 2 | 1.50       | 0.42        | 0.21             | 40.34 | 20.17             | A          |
| 49_G/f   | One Ashley Road 2 | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 46_5/f   | One Ashley Road 2 | 16.50      | 0.33        | 0.16             | 40.35 | 20.17             | A          |
| 47_5/f   | One Ashley Road 2 | 16.50      | 0.38        | 0.19             | 40.38 | 20.19             | A          |
| 48_5/f   | One Ashley Road 2 | 16.50      | 0.42        | 0.21             | 40.37 | 20.18             | A          |
| 49_5/f   | One Ashley Road 2 | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 46_10/f  | One Ashley Road 2 | 31.50      | 0.33        | 0.16             | 40.64 | 20.32             | A          |
| 47_10/f  | One Ashley Road 2 | 31.50      | 0.38        | 0.19             | 40.52 | 20.26             | A          |
| 48_10/f  | One Ashley Road 2 | 31.50      | 0.42        | 0.21             | 39.73 | 19.86             | A          |
| 49_10/f  | One Ashley Road 2 | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 46_15/f  | One Ashley Road 2 | 46.50      | 0.33        | 0.16             | 43.93 | 21.97             | A          |
| 47_15/f  | One Ashley Road 2 | 46.50      | 0.38        | 0.19             | 42.56 | 21.28             | A          |
| 48_15/f  | One Ashley Road 2 | 46.50      | 0.42        | 0.21             | 41.72 | 20.86             | A          |
| 49_15/f  | One Ashley Road 2 | 46.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 46_20/f  | One Ashley Road 2 | 61.50      | 0.33        | 0.16             | 40.07 | 20.04             | A          |
| 47_20/f  | One Ashley Road 2 | 61.50      | 0.38        | 0.19             | 39.92 | 19.96             | A          |
| 48_20/f  | One Ashley Road 2 | 61.50      | 0.42        | 0.21             | 39.98 | 19.99             | A          |
| 49_20/f  | One Ashley Road 2 | 61.50      | 0.39        | 0.19             | 39.91 | 19.95             | A          |
| 46_25/f  | One Ashley Road 2 | 76.50      | 0.32        | 0.16             | 39.84 | 19.92             | A          |
| 47_25/f  | One Ashley Road 2 | 76.50      | 0.38        | 0.19             | 39.81 | 19.91             | A          |
| 48_25/f  | One Ashley Road 2 | 76.50      | 0.42        | 0.21             | 39.56 | 19.78             | A          |
| 49_25/f  | One Ashley Road 2 | 76.50      | 0.39        | 0.19             | 39.73 | 19.87             | A          |
| 46_30/f  | One Ashley Road 2 | 91.50      | 0.31        | 0.16             | 39.09 | 19.55             | A          |

| Receptor | Location          | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|-------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                   |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 47_30/f  | One Ashley Road 2 | 91.50      | 0.38        | 0.19             | 39.11 | 19.56             | A          |
| 48_30/f  | One Ashley Road 2 | 91.50      | 0.42        | 0.21             | 39.16 | 19.58             | A          |
| 49_30/f  | One Ashley Road 2 | 91.50      | 0.39        | 0.19             | 39.15 | 19.57             | A          |
| 12_G/f   | The Hale          | 1.50       | 0.07        | 0.03             | 39.86 | 19.93             | A          |
| 12_5/f   | The Hale          | 16.50      | 0.06        | 0.03             | 39.86 | 19.93             | A          |
| 12_10/f  | The Hale          | 31.50      | 0.07        | 0.03             | 40.08 | 20.04             | A          |
| 12_15/f  | The Hale          | 46.50      | 0.07        | 0.04             | 40.74 | 20.37             | A          |
| 12_20/f  | The Hale          | 61.50      | 0.09        | 0.05             | 40.52 | 20.26             | A          |
| 12_25/f  | The Hale          | 76.50      | 0.25        | 0.12             | 39.37 | 19.69             | A          |
| 12_30/f  | The Hale          | 91.50      | 0.48        | 0.24             | 39.21 | 19.60             | A          |
| 40_G/f   | The Island        | 1.50       | 0.05        | 0.03             | 40.16 | 20.08             | A          |
| 41_G/f   | The Island        | 1.50       | 0.05        | 0.03             | 40.16 | 20.08             | A          |
| 40_5/f   | The Island        | 16.50      | 0.05        | 0.03             | 40.16 | 20.08             | A          |
| 41_5/f   | The Island        | 16.50      | 0.05        | 0.03             | 40.16 | 20.08             | A          |
| 40_10/f  | The Island        | 31.50      | 0.05        | 0.02             | 40.16 | 20.08             | A          |
| 41_10/f  | The Island        | 31.50      | 0.05        | 0.02             | 40.16 | 20.08             | A          |
| 40_15/f  | The Island        | 46.50      | 0.05        | 0.03             | 49.49 | 24.75             | A          |
| 41_15/f  | The Island        | 46.50      | 0.05        | 0.03             | 49.49 | 24.75             | A          |
| 40_20/f  | The Island        | 61.50      | 0.07        | 0.03             | 40.56 | 20.28             | A          |
| 41_20/f  | The Island        | 61.50      | 0.07        | 0.03             | 40.56 | 20.28             | A          |
| 40_25/f  | The Island        | 76.50      | 0.12        | 0.06             | 39.19 | 19.59             | A          |
| 41_25/f  | The Island        | 76.50      | 0.12        | 0.06             | 39.19 | 19.59             | A          |
| 40_30/f  | The Island        | 91.50      | 0.41        | 0.21             | 39.14 | 19.57             | A          |
| 41_30/f  | The Island        | 91.50      | 0.41        | 0.21             | 39.14 | 19.57             | A          |
| 17_G/f   | Welbourne         | 1.50       | 0.07        | 0.03             | 39.49 | 19.75             | A          |
| 60_G/f   | Welbourne         | 1.50       | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 17_5/f   | Welbourne         | 16.50      | 0.07        | 0.03             | 39.52 | 19.76             | A          |

| Receptor | Location         | Height (m) | Annual mean |                  |       |                   | APEC Level |
|----------|------------------|------------|-------------|------------------|-------|-------------------|------------|
|          |                  |            | PC          | PC (% objective) | PEC   | PEC (% objective) |            |
| 60_5/f   | Welbourne        | 16.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 17_10/f  | Welbourne        | 31.50      | 0.07        | 0.04             | 39.69 | 19.84             | A          |
| 60_10/f  | Welbourne        | 31.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 17_15/f  | Welbourne        | 46.50      | 0.09        | 0.05             | 39.75 | 19.88             | A          |
| 60_15/f  | Welbourne        | 46.50      | 0.00        | 0.00             | 38.72 | 19.36             | A          |
| 17_20/f  | Welbourne        | 61.50      | 0.12        | 0.06             | 40.18 | 20.09             | A          |
| 60_20/f  | Welbourne        | 61.50      | 0.12        | 0.06             | 40.31 | 20.15             | A          |
| 17_25/f  | Welbourne        | 76.50      | 0.16        | 0.08             | 39.03 | 19.52             | A          |
| 60_25/f  | Welbourne        | 76.50      | 0.16        | 0.08             | 39.00 | 19.50             | A          |
| 17_30/f  | Welbourne        | 91.50      | 0.16        | 0.08             | 38.92 | 19.46             | A          |
| 60_30/f  | Welbourne        | 91.50      | 0.16        | 0.08             | 38.92 | 19.46             | A          |
| 15_G/f   | West Apartment 2 | 1.50       | 0.24        | 0.12             | 41.46 | 20.73             | A          |
| 50_G/f   | West Apartment 2 | 1.50       | 0.17        | 0.09             | 43.13 | 21.56             | A          |
| 15_5/f   | West Apartment 2 | 16.50      | 0.24        | 0.12             | 41.47 | 20.74             | A          |
| 50_5/f   | West Apartment 2 | 16.50      | 0.17        | 0.09             | 43.15 | 21.58             | A          |
| 15_10/f  | West Apartment 2 | 31.50      | 0.24        | 0.12             | 41.47 | 20.74             | A          |
| 50_10/f  | West Apartment 2 | 31.50      | 0.17        | 0.09             | 43.22 | 21.61             | A          |
| 15_15/f  | West Apartment 2 | 46.50      | 0.24        | 0.12             | 43.41 | 21.71             | A          |
| 50_15/f  | West Apartment 2 | 46.50      | 0.17        | 0.08             | 43.46 | 21.73             | A          |
| 15_20/f  | West Apartment 2 | 61.50      | 0.24        | 0.12             | 39.85 | 19.93             | A          |
| 50_20/f  | West Apartment 2 | 61.50      | 0.17        | 0.08             | 44.72 | 22.36             | A          |
| 15_25/f  | West Apartment 2 | 76.50      | 0.17        | 0.09             | 39.68 | 19.84             | A          |
| 50_25/f  | West Apartment 2 | 76.50      | 0.17        | 0.08             | 39.70 | 19.85             | A          |
| 15_30/f  | West Apartment 2 | 91.50      | 0.25        | 0.12             | 39.04 | 19.52             | A          |
| 50_30/f  | West Apartment 2 | 91.50      | 0.26        | 0.13             | 39.07 | 19.54             | A          |



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