

8 AIR QUALITY

8.1 INTRODUCTION

8.1.1 Company

WYG

8.1.2 Author

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8.1.3 Chapter Purpose

This chapter of the ES assesses the likely significant effects of the proposed development on the environment in terms of Air Quality. The chapter and its supporting appendices describe the planning policy context, the assessment methodology; the baseline conditions at the application site and surroundings; the likely significant effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the cumulative effects. In summary, the objectives of the chapter are to:

- Review the existing air quality baseline;
- Assess any potential air quality impacts during the Construction phase;
- Assess any potential Air Quality impacts during the Operational phase; and
- Identify any mitigation measures associated with the Construction and/or Operational phase (as required).

8.1.4 Chapter Updates for Revised 2020 Submission

Level 2 Update

In accordance with the methodology outlined in Chapter 2, a Level 2 update has been undertaken. Due to:

- the relevance and scale of the proposed development amendments (including amendments to the construction methodology);
- interim updates in legislation, policy, or guidance; and,
- planning application (ref. 20F/0001) consultation comments received from LCC Environmental Protection Unit, dated 24th March 2020;

limited technical assessment has been undertaken to confirm the validity of the previous conclusions associated with the 'as submitted' scheme. However, the construction phase traffic assessment and proposed boiler system assessment have been undertaken and included in this update.

This Air Quality ES Chapter has also been reviewed against the following aspects and for each it has been confirmed that there are no amendments

required to the content of the chapter:

- Baseline data validity: There are no relevant changes to the baseline data, and assessment;
- Legislation/policy revisions: Although there have been updates to legislation/policy these have no effect on either the methodology or findings of this assessment;
- Operational traffic assessment: There are no changes to the assessment of the operational phase traffic assessment.
- On the 24th March 2020 Keith Dooley of Environmental Protection Unit at Liverpool City Council reviewed the Air Quality Assessment submitted with the planning application (LPA ref. 20F/0001) in December 2019.

Six main comments were raised in relation to the air quality assessment and these are summarised below:

1. Supporter Coaches Parking - Mott MacDonald (transport consultants) have confirmed that publicly available facilities are nearby to help encourage drivers to switch off engines to avoided idling where possible.
2. Outside Broadcasting Compound – Buro Happold have confirmed (within their Energy Statement) that the outdoor broadcasting compound (OBC) will be powered through battery storage technology and not diesel generators. As such there are no emissions associate with the OBC.
3. Fixed Plant within the stadium – This Air Quality Assessment covers the air quality impacts associated with the proposed boiler system to be installed within the stadium. Details of the boilers and locations have been provided by Buro Happold and are in line with their latest Energy Statement.
4. Electric vehicle Parking – This has been covered by Mott Macdonald within the updated Transport Assessment.
5. Shuttle Buses – Shuttle Buses are to be run on a commercial basis and are not within the club's control in terms of specification of vehicle.
6. Disabled Supporter Shuttle Buses; pre-booked shuttle services for disabled supporters which will run between the stadium, a park & ride facility at Stanley Park (existing surface car park owned by LCC) and Sandhills train station.

On this basis, it is considered that all of the points raised in LCC initial planning application consultation response have been robustly addressed in this updated Air Quality Assessment and further updates can be found in the wider updated application submission.

The Air Quality Assessment Appendix 8.1 includes the assessment of the proposed boiler system.

Additional information regarding the Supporter Coaches Parking, Electric Vehicle Parking and the Shuttle Buses are discussed within the Transport Assessment.

Due to the above factors, it is considered that the previously reported mitigation measures remain valid and the residual effects previously identified have changed beneficially.

The sections that have been updated are detailed below:

- Section 8.2.3.4 – Emerging Local Plan
- Table 8.5 – Construction Traffic impacts on receptors, and
- Additional section regarding the inclusion of the assessment of the proposed boilers.

8.1.5 Appendices

- Appendix 8.1: Air Quality Technical Assessment
- Appendix 8.2: Ventilation and Refrigeration Statement

8.2 METHODOLOGY

8.2.1 Guidance

- Department for Environment, Food & Rural Affairs (February 2018) Local Air Quality Management: Technical Guidance (TG16) [1];
- Institute of Air Quality Management (February 2014) Assessment of Dust from Demolition and Construction (Version 1.1) [2];
- Institute of Air Quality Management (January 2017) Guidance on Land-Use Planning and Development Control: Planning for Air Quality (Version 1.2) [3];
- Institute of Air Quality Management (June 2019) A Guide to the Assessment of Air Quality Impact on Designated Nature Conservation Sites (Version 1.0) [4].

8.2.2 Legislation and Policy

8.2.2.1 Global Policy

World Health Organization (2006) WHO Air Quality Guidance for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide: Summary of Risk Assessment.

The WHO air quality guidelines are designed to offer guidance in reducing the health impacts of air pollution. WHO has undertaken to review the accumulated scientific evidence and to consider its implications for its air quality guidelines. The result of this work is presented in this document in the form of revised guideline values for selected air pollutants, which are applicable across all WHO regions. These guidelines are intended to inform policymakers and to provide appropriate targets for a broad range of policy options for air quality management in different parts of the world.

The Air Quality Objective's (AQO's) for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in Table 2.1 and Table 2.2 of the Air Quality Technical Report (Appendix 8.1). This is along with the European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines. The ecological

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levels used within this assessment are based on WHO and Convention on Long-range Transboundary Air Pollution (CLRTAP) guidance.

8.2.2.2 European Policy

The European Commission (June 2008) Directive 2008/50/EC: Ambient Air Quality and Cleaner Air for Europe

This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new AQOs for fine particulates. The consolidated Directives include:

- Directive 1999/30/EC – the First Air Quality "Daughter" Directive – sets ambient air limit values for NO₂ and oxides of nitrogen, sulphur dioxide, lead and PM₁₀;
- Directive 2000/69/EC – the Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene and carbon monoxide; and,
- Directive 2002/3/EC – the Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- Directive 2004/107/EC – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

8.2.2.3 UK Legislation

Department for Environment, Food & Rural Affairs (July 2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1).

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the AQO for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations SI 928, and subsequent amendments.

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in Table 2.1 and Table 2.2 of the Air Quality Technical Report (Appendix 8.1).

Department for Environment, Food & Rural Affairs (October 2017) The Conservation of Habitats and Species Regulations

As part of The Conservation of Habitats and Species Regulations, it requires

competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

8.2.2.4 Local Air Quality Management

Under Section 82 of the Environment Act (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA, the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

The Liverpool City Council and Sefton Metropolitan Borough Council Air Quality Plans have been reviewed. These documents outline the methods which will be followed to achieve the AQO's within the boroughs as quickly as possible through sustainable travel measures, measures to reduce traffic congestion and increase electric vehicle travel.

8.2.3 Planning Policy

Section 38(6) of the Planning and Compulsory Purchase Act 2004 and Section 70(2) of the Town & Country Planning Act 1990 require that planning applications to be determined in accordance with the statutory development plan, unless material considerations indicate otherwise.

The statutory development plan for the City of Liverpool currently comprises the Unitary Development Plan (UDP) which was adopted in 2002.

Relevant materials considerations include:

- National Planning Policy Framework (NPPF) (2019);
- Planning Practice Guidance (as updated);
- Emerging Liverpool Local Plan (Submission Version, May 2018); and
- Other local policy / guidance.

8.2.3.1 Statutory Development Plan

The adopted Unitary Development Plan (UDP) policy of relevance to the air quality assessment is policy EP11 (Pollution) which details that:

1. Planning permission will not be granted for development which has the potential to create unacceptable air, water, noise or other pollution or nuisance.
2. Where existing uses adversely affect the environment through noise, vibration, soot, grit, dust, smoke, fumes, smell, vehicle obstruction or other environmental problems, the City Council will:
 - Seek to reduce the problem on site;

- refuse planning permission for development which would result in a consolidation or expansion of uses giving rise to environmental problems;
- Impose appropriate conditions on any permission which may be granted and/or obtain legal agreements in relation to such a permission, in order to regulate uses;
- Take enforcement action where appropriate; and
- In appropriate circumstances, compulsorily acquire the premises whilst endeavoring to assist in the relocation of the firm, where resources permit.

In the case of new development close to existing uses which are authorised or licensed under pollution control legislation, and which are a potential nuisance to the proposed development, the policy advises that planning permission will not be granted unless the City Council is satisfied that sufficient measures can and will be taken to protect amenity and environmental health.

8.2.3.2 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) was updated in February 2019. In relation to air quality, the NPPF states that:

- Paragraph 170(e) – planning decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of air pollution (amongst others).
- Paragraph 181 - planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas or Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic or travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan'.

8.2.3.3 Planning Practice Guidance (PPG): Air Quality

The PPG details: 'The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health such as particulate matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide (NO₂).

The UK also has national emission reduction commitments for overall UK emissions of 5 damaging air pollutants:

- fine particulate matter (PM_{2.5})

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- ammonia (NH₃)
- nitrogen oxides (NO_x)
- sulphur dioxide (SO₂)
- non-methane volatile organic compounds (NMVOCs)

As well as having direct effects on public health, habitats and biodiversity, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. Odour and dust can also be a planning concern, for example, because of the effect on local amenity.'

8.2.3.4 Emerging Local Plan (Submission Draft, Schedule of Main Modification 9th April 2020)

"In accordance with NPPF paragraph 48, the submission version plan has substantial but not full weight in decision taking as it has yet to be examined. The Local Plan identifies a number of strategic priorities to deliver its Vision. Of relevance are the following strategic policies:

- "Attractive and Safe City with A Strong Local Identity" which requires all new developments to avoid adverse environmental impacts, and
- "Use Resources Efficiently" which ensures that all new development avoids adverse environmental impact and is adaptive and resilient to climate change impacts.

In terms of detailed air quality policies, policy STP2 (Sustainable Growth Principles and Managing Environmental Impacts) states:

- To ensure the sustainable growth of Liverpool, the City Council will support development proposals which address, as appropriate, the following strategic economic, social and environmental principles: New developments should (under part r of the Policy) minimise adverse impacts on, and include measures to improve, air quality within the City.

■ Policy R1 (Air Pollution)

- 1) Development proposals which are likely to have a pollution impact should demonstrate that:
 - a) Appropriate measures are incorporated to avoid pollution to air, water and soil;
 - b) The impact of noise, vibration and lighting will not be significant;
 - c) The proposal will not undermine the achievement of Air Quality Management Area (AQMA) objectives; and
 - d) It will not lead to a significant decline in air quality
- 2) Where existing uses adversely affect the environment through noise, vibration, dust, smoke, fumes, smell, vehicle obstruction or other environmental problems the City Council will:
 - a) Refuse planning permission for proposals which would result in a consolidation or expansion of uses giving rise to environmental problems.

- b) Impose appropriate conditions on any permission which may be granted and/or obtain legal agreements in relation to such a permission in order to regulate uses.
- 3) New development proposals close to existing uses which are authorised or licenced under pollution control legislation, and which are a potential nuisance to the proposed development, will not be permitted unless the City Council is satisfied that sufficient measures will be taken by the developer to protect amenity and environmental health.
- 4) Where appropriate major developments should incorporate measures to reduce and minimise air pollution.

Other Local Policy / Guidance

Liverpool's Clean Air Plan; in August 2019, LCC published their 'Clean Air Plan: Strategic Outline Case' which has been compiled to manage and reduce the pollutant concentration associated with NO₂ in the shortest timescales in line with the AQO's. The final 'Clean Air Plan' was submitted in October 2019.

8.2.4 Consultees & Scoping

The air quality assessment methodology within the EIA scoping report was submitted to LCC and relevant parties (including the Marine Management Organisation (MMO) and MEAS) on 15 May 2017. The formal scoping opinion was received on 8 November 2017, no comments were raised with respect to Air Quality and the methodology put forward was deemed appropriate.

8.2.5 Post Application Submission Consultation Response

On the 24th March 2020 Keith Dooley of Environmental Protection Unit at Liverpool City Council ('LCC') reviewed the Air Quality Assessment (dated December 2019) submitted with the initial planning application (LPA ref. 20F/0001).

Six main comments were raised in relation to the air quality assessment and these are summarised below:

1. Supporter Coaches Parking - Mott MacDonald (transport consultants) have confirmed that publicly available facilities are nearby to help encourage drivers to switch off engines to avoided idling where possible.
2. Outside Broadcasting Compound – Buro Happold have confirmed (within their Energy Statement) that the outdoor broadcasting compound (OBC) will be powered through battery storage technology and not diesel generators. As such there are no emissions associate with the OBC.
3. Fixed Plant within the stadium – This Air Quality Assessment covers the air quality impacts associated with the proposed boiler system to be installed within the stadium. Details of the boilers and locations have been provided by Buro Happold and are in line with their latest Energy Statement.

4. Electric vehicle Parking – This has been covered by Mott Macdonald within the updated Transport Assessment.
5. Shuttle Buses – Shuttle Buses are to be run on a commercial basis and are not within the club's control in terms of specification of vehicle.
6. Disabled Supporter Shuttle Buses; pre-booked shuttle services for disabled supporters which will run between the stadium, a park & ride facility at Stanley Park (existing surface car park owned by LCC) and Sandhills train station.

On this basis, it is considered that all of the points raised in LCC initial planning application consultation response have been robustly addressed in this updated Air Quality Assessment and further updates can be found in the wider updated application submission.

The Air Quality Assessment Appendix 8.1 includes the assessment of the proposed boiler system.

Additional information regarding the Supporter Coaches Parking, Electric Vehicle Parking and the Shuttle Buses are discussed within the Transport Assessment.

8.2.6 Consideration of Climate Change

Global changes associated with Climate Change are not considered to affect the results of the assessment. However, in the future it is believed that fewer polluting vehicles will be on the road network due to the introduction of electric vehicles. This is supported by the UK target to cut the purchasing of new petrol and diesel fuelled cars by 2040 (Business, Energy and Industrial Strategy Committee (2018) Fourteenth Report of Session 2017-2019). It should be noted that this has already been considered within the predicted emissions associated with the traffic flows.

8.2.7 Consideration of Human Health

To determine the predicted exposure of pollutants at any human health receptor the WHO have defined the AQO's for Air Quality Assessments. This criterion, along with any specific National Policy has been used as part of this assessment, consequently, human health has inherently been considered within this assessment.

8.2.8 Consideration of Risk of Major Accidents and/or Disasters

Major accidents and/or disasters are not considered to be relevant in terms of Air Quality impacts and have therefore been 'scoped out' of this ES Chapter.

8.2.9 Alternatives

A comprehensive alternative sites assessment has been undertaken and is addressed within Chapter 5 Alternatives and Design Evolution. An alternative future baseline scenario has been included within the assessment for comparison purposes as stated in Chapter 2 EIA

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In regard to the traffic data that have informed this assessment, the baseline conditions that have been considered include an alternate future baseline scenario as follows:

- a 2019 existing baseline conditions;
- a 2023 base (no development) – future baseline with cumulative development and Liverpool Waters (LPA ref. 10O/2424 – latest non-material amendment is ref. 19NM/1121); and
- 2028 base (no development) – future baseline with cumulative development and Liverpool Waters.

Further details on the traffic data that has formed the basis of the air quality assessment may be found in Chapter 7 Transport and the traffic data used in the assessment of the non-match day/non-event day scenarios is included at Appendix 7.2 of that Chapter.

8.2.10 Assessment of Baseline Conditions & Receptor Sensitivity

8.2.10.1 Study Area

The Air Quality Study Area used for this assessment is defined within Figure 1 of the Air Quality Technical Report (Appendix 8.1). The Air Quality Assessment area is located within the jurisdiction of LCC and Sefton Metropolitan Borough Council (SMBC).

8.2.10.2 Air Quality Baseline Condition Review

As required under section 82 of the Environment Act 1995, LCC has undertaken an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of NO₂ are above the relevant AQOs at locations of relevant public exposure. LCC has one designated Air Quality Management Area (AQMA) for NO₂ that covers the entirety of the City of Liverpool:

- Liverpool City AQMA: An area encompassing the whole of the City of Liverpool.

The application site is within the Liverpool City AQMA; therefore, this has been included within this assessment.

SMBC has four designated AQMA's for NO₂ and PM₁₀ within its jurisdiction. These have been summarised below:

- AQMA 2: An area encompassing Princess Way A5036 from the Ewart Road flyover up to and including the Roundabout and flyover at the junction with Crosby Road South A565;
- AQMA 3: The area around the junction of Millers Bridge A5058 and Derby Road A565;
- AQMA 4: The area around the junction of Crosby Road North A565 and South Road, Waterloo; and,
- AQMA 5: The area around the junction of Hawthorne Road B5422 and

Church Road A5036, Litherland.

A review of the provided traffic data (summarised within Table 6.1 of this report) has shown, that in accordance with the criteria outlined within Table 6.2 of the IAQM Guidance 'Land-Use Planning & Development Control: Planning for Air Quality' (January 2017), an assessment of the SMBC AQMA 3 (located ~1.8km north of the site boundary) is required. Therefore, receptors within the SMBC AQMA 3 have been included within this assessment.

8.2.10.3 Air Quality Monitoring

Monitoring of air quality within LCC and SMBC is undertaken through both continuous and non-continuous monitoring methods. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the application site.

8.2.10.4 Continuous Monitoring

LCC operated one automatic monitoring station, AM1, in 2018. AM1 is located approximately 13 km south-east of the application site. Whereas, SMBC operated four automatic monitoring stations during 2018. The closest automatic monitoring station is, CM3, which is located approximately 2.0 km north of the application site boundary. The most recently available automatic monitoring data is from 2018, which is presented in Table 8.1.

Table 8.1

Monitored Annual Mean NO₂ Concentrations at Automatic Monitoring Stations

SITE ID	LOCATION	INLET HEIGHT (M)	2017 ANNUAL MEAN NO ₂ CONCENTRATION (µg/m ³)	2018 ANNUAL MEAN NO ₂ CONCENTRATION (µg/m ³)
AM1	Speke	1.5	23.6	18.0
CM3	Millers Bridge	1.8	40.6	41.5

As indicated in Table 4.1, automatic monitoring station AM1 monitored a concentration below the AQO for NO₂ (40 µg/m³ annual mean) during 2018. Due to the distance from the application site, automatic monitoring station AM1, was not used as part of the model verification.

Whereas, automatic monitoring station CM3 monitored a concentration above the AQO for NO₂ (40 µg/m³ annual mean) during 2018. Automatic monitoring station CM3 has been included as part of the model verification.

8.2.10.5 Non - Continuous Monitoring

LCC operates a network of passive diffusion tubes. The closest diffusion tube is diffusion tube N20, which is located adjacent to Blackstone Street, approximately 221 m east of the application site. The most recently available diffusion tube data is from 2018 which is presented in Table 8.2.

Table 8.2

Monitored Annual Mean NO₂ Concentrations at Diffusion Tubes

SITE ID	LOCATION	INLET HEIGHT (M)	2018 ANNUAL MEAN NO ₂ CONCENTRATION (µg/m ³)
T2	Leeds Street/Pall Mall Road Sign	3.5	32.0
N9	Kirkdale Rd approaching Marwood Towers. Lamppost kerbside. Right of anchor	3.5	36.0
N10	Scotland Road Service Station. Lamppost outside.	3.5	44.0
N18	Commercial Road. Knowsley PH. Lamppost with bike lane sign	3.5	32.0
N19	Commercial Road. Lamppost before junction with Boundary Road. Opposite Lawtons.	3.5	32.0
N20	Blackstone St./Gt. Howard St. Tai Pan/Supermarket L3 LTS 2202	3.5	34.0
N21	Great Howard St / Bulington St junction on T light nr phone box	3.5	27.0

SMBC operated a network of diffusion tubes with SMBC during 2018. The closest diffusion tube is diffusion tube NBO, which is located adjacent to Douglas Place, located approximately 1.8km north of the application site. The most recently available diffusion tube data is from 2018 which is presented in Table 8.3.

Table 8.3

Monitored Annual Mean NO₂ Concentrations at Diffusion Tubes

SITE ID	LOCATION	INLET HEIGHT (M)	2018 ANNUAL MEAN NO ₂ CONCENTRATION (µg/m ³)
BM	Millers Bridge	2.6	45
BO	Douglas Place	2.7	32.0
BQ	Douglas Place/Millers Bridge, Bootle	2.8	36.0
BR	Derby Road, Bootle	2.6	57.0
BS	Derby Road, Bootle	2.5	43.0
EM	Millers Bridge, Bootle	2.6	47.0

8.2.10.6 Human Health Sensitive Receptors

Receptors considered as part of the air quality assessment are primarily those existing receptors that are situated along routes predicted to experience significant changes in traffic flow as a result of the proposed development.

The existing receptor locations assessed as part of the long-term (annual) assessment are summarised in Table 8.4. With the existing receptor

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locations assessed as part of the short-term (hourly) assessment summarised in Table 8.5. The spatial locations of all of the receptors are illustrated in Figure 1 and Figure 3 of the Air Quality Technical Report (Appendix 8.1).

Traffic data from the consented Liverpool Waters Scheme (LPA ref. 10O/2424 – latest non-material amendment being ref. 19NM/1121) was included within the assessment. Receptors R11 and R12 represent the Liverpool Waters scheme.

Table 8.4

Modelled Sensitive Receptor Locations

DISCRETE SENSITIVE RECEPTOR	RECEPTOR HEIGHT (M)
R1 223 Derby Road	1.5
R2 227a Derby Road	1.5
R3 62 Regent Road	1.5
R4 76 Boundary Street	1.5
R5 154 Commercial Road	1.5
R6 12 St Stephens Place	1.5
R7 5 Stockdale Close	1.5
R8 41 Westmorland Drive	1.5
R9 Flat 1 Blackstock Street	4.0
R10 Flat above Riverside Diner, Waterloo Road	4.0
R11 Liverpool Waters Committed Development	1.5
R12 Liverpool Waters Committed Development	1.5
R13 Proposed Hotel – Regent Road (LPA ref. 20F/0217)	1.5
R14 Proposed Residential Units – Lightbody Street (LPA ref. 20L/1948)	1.5
R15 234 Millers Bridge	1.5

Table 8.5

Modelled Existing Sensitive Receptor Locations

DISCRETE SENSITIVE RECEPTOR	RECEPTOR HEIGHT (M)
ST1 76 Boundary Street	1.5
ST2 94 Boundary Street	1.5
ST3 1 Barmouth Way	1.5
ST4 98 Boundary Street	1.5
ST5 1 Steel Court	1.5

DISCRETE SENSITIVE RECEPTOR	RECEPTOR HEIGHT (M)
ST6 35 New Hedley Grove	1.5

8.2.10.7 Receptors Within Boiler Assessment

Table 8.6

Modelled Existing Sensitive Receptor Locations – Boiler Assessment

DISCRETE SENSITIVE RECEPTOR	RECEPTOR HEIGHT (M)
D1 5 Billings Close	1.5
D2 76 Boundary Street	1.5
D3 32 Snowdon Lane	1.5
D4 84 Snowdon Lane	1.5
D5 3 Landor Close	1.5
D6 66 Colin Drive	1.5
D7 7 Oreilly Court	1.5
D8 6 Fleming Court	1.5
D9 7 Jack Mcbae Court	1.5
D10 Flat 247 Waterloo Quay	1.5
D11 Liverpool Waters Committed Development	1.5
D12 Liverpool Waters Committed Development	1.5
D13 Proposed Hotel – Regent Road (LPA ref. 20F/0217)	1.5
D14 Lightbody Street (LPA ref. 20L/1948)	1.5

8.2.10.8 Ecological Sensitive Receptors

Air quality impacts associated with the proposed development have the potential to impact on receptors of ecological sensitivity within the vicinity of the application site. The IAQM guidance on 'Air Quality Impacts on Designated Nature Conservation Sites' (2019¹) document outlines the types of designated nature sites within 2 km of the application site which require air quality assessment.

A review of all ecological conservation sites within 2km is shown within Table 4.6 of the Air Quality Technical Assessment (Appendix 8.1). Additionally, WYG Air Quality Consultants have liaised with the WYG Project Ecologist to determine whether any additional ecologically sensitive sites which are required to be assessed as part of this assessment. The ecologically sensitive sites have been identified within the ES Volume II, Chapters 12 and 13; and ES Volume III, Appendices 12.1 and 13.1.

Based upon the screening criteria outlined within the IAQM Guidance, only ecological receptors which are located within 200m of the modelled road

network require assessment. Due to the distance from the modelled road network, all ecological receptors identified, including all ecologically sensitive sites, can be 'scoped out' of this Air Quality Assessment.

Guidance within 'Air emissions risk assessment for your environmental permit' (Defra and Environment Agency, August 2016) states that assessments should consider whether conservation sites fall within set distances of the installation:

- Special Protection Area (SPAs), Special Areas of conservation (SACs) or Ramsar sites within 10 km of the installation (or within 15km for coal or oil-fired power stations); and
- Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Local Nature Reserves (LNRs), local wildlife sites and ancient woodland within 2 km of the location of the installation.

All ecological receptors have been included within the assessment of the proposed boiler in Section 7 if Appendix 8.1.

For reference, the spatial locations of all identified ecological conservation sites are available within Figure 2 of the Air Quality Technical Assessment (Appendix 8.1).

8.2.10.9 Sensitive Receptor Scale

Table 8.7 sets out the scale of sensitivity that has been applied to receptors identified and considered within this assessment.

Table 8.7

Scale of Air Quality sensitivity used in the assessment

SENSITIVITY	DESCRIPTION
Very High	Do Minimum pollutant concentration at ≥ 110 of the AQO (Traffic Emissions). Receptors of very high sensitivity to dust, such as: hospitals and clinics, retirement homes, painting and furnishing, hi-tech industries and food processing (Construction). Densely populated areas – more than 100 dwellings within 20m of the development site (Construction).
High	Do Minimum pollutant concentration already 103-109 of the AQO (Traffic Emissions). Receptors of high sensitivity to dust, such as: schools, residential areas, food retailers, glasshouses and nurseries, horticultural land and offices (Construction). Densely populated areas – 10-100 dwellings within 20m of the development site (Construction).

¹ A guide to the assessment of air quality impacts on designated nature conservation sites, Institute of Air Quality Management, v1.0, June 2019

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Medium	Do Minimum pollutant concentration between 95 - 102% of the relevant AQO (Traffic Emissions). Receptors of medium sensitivity to dust, such as: farms, outdoor storage, light and heavy industry (Construction). Suburban or edge of town areas (Construction).
Low	Do Minimum pollutant concentration between 75-90% of the relevant AQO (Traffic Emissions) All other dust sensitive receptors not identified above (Construction). Rural/Industrial areas (Construction).
Negligible	Concentration less than 75% of the relevant AQO (Traffic Emissions) Receptor more than 350m away (Construction)

8.2.11 Assessment of Magnitude

The assessment was undertaken based on the description of development contained in Chapter 3 of this volume of the ES. Table 8.8 indicates the scale of impact magnitude that has been used in undertaking the assessment.

Table 8.8
Scale of magnitude for Air Quality impacts used in the assessment

MAGNITUDE	DESCRIPTION	EXAMPLES
Very large	Impact resulting in a considerable change in baseline environmental conditions with severe undesirable/desirable consequences on the receiving environment.	Air quality varies between the do minimum and do something by more than 10% of the air quality criterion (Emissions). Substantial risk that emissions will generate statutory nuisance complaints, resulting in formal action (Construction).
Large	Impact resulting in a discernible change in baseline environmental conditions with undesirable/desirable conditions	Air quality varies between the do minimum and do something by 5 - 10% of the air quality criterion (Emissions). Moderate risk that emissions will generate statutory nuisance complaints, resulting in formal action (Construction).
Medium	Impact resulting in a discernible change in baseline environmental conditions with undesirable/desirable conditions that can be tolerated.	Air quality varies between the do minimum and do something by 2 - 5% of the air quality criterion (Emissions). Slight risk that emissions will generate statutory nuisance complaints, resulting in formal action (Construction).
Small	Very low discernible change in baseline environmental conditions.	Air quality varies between the do minimum and do something by less than 1-2% of the air quality criterion (Emissions).

MAGNITUDE	DESCRIPTION	EXAMPLES
		Little or no cause for nuisance complaints to be made (Construction).

8.2.12 Assessment of Significance

The assessment of significance within this chapter is based on the matrix presented in Table 8.9.

Table 8.9
Significance Matrix

MAGNITUDE OF EFFECT	SENSITIVITY OF RECEPTOR				
	Very High	High	Medium	Low	Negligible
Very Large	Major Significance	Major Significance	[3]	Moderate Significance	[1]
Large	Major Significance	[3]	Moderate Significance	Minor Significance	[2]
Medium	[3]	Moderate Significant	Minor Significance	[2]	Negligible Significance
Small	Moderate Significance	Minor Significance	[2]	Negligible Significance	Negligible Significance
Negligible	[1]	[2]	Negligible Significance	Negligible Significance	Negligible Significance
[1] The choice between ‘Moderate Significance’, ‘Minor Significance’ and ‘Negligible Significance’ will depend on the specifics of the impact and will be down to professional judgement and reasoning.					
[2] The choice between ‘Minor Significance’ and ‘Negligible Significance’ will depend on the specifics of the impact and will be down to professional judgement and reasoning.					
[3] The choice between ‘Major Significance’ and ‘Moderate Significance’ will depend on the specifics of the impact and will be down to professional judgement and reasoning.					
n.b. ‘Negligible Significance’ includes ‘Neutral’ and ‘No Impact’ assessments.					

8.2.13 Relevant Associated Development

The traffic used as part of the assessment is inclusive of committed development traffic including traffic from the approved Liverpool Waters Scheme (LPA ref. 100/2424 – latest non-material amendment being 19NM/1121). It should be noted that the Liverpool Waters scheme is to be phased with the Northern Docks area, comprising Bramley-Moore Dock (application site) and the adjacent Nelson Dock, proposed to be developed in the 2036-2041 time frame.

8.2.14 Assumptions/Limitations

In undertaking the Air Quality assessment of the application site and wider surrounding area, there are a number of limitations and constraints affecting the outputs from this work. These include during the Construction

Phase:

- The assessment has been undertaken using professional judgement as per the IAQM Guidance. The guidance states:

“Because the diverse range of projects that are likely to be subject to dust impact assessments mean that it is not possible to be prescriptive as to how to assess the impacts. Also, a wide range of factors affects the amount of dust that may arise, and these are not readily quantified.”
- The above guidance ensures that a full range of potential impacts are considered.

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8.3 BASELINE CONDITIONS

KEY RECEPTORS	DESCRIPTION	DISTANCE TO SITE (M)	DIRECTION FROM SITE	BASELINE NO ₂ (µG/M ³) 2018	DO MINIMUM NO ₂ (µG/M ³) 2023	SENSITIVITY	FURTHER INFORMATION
R1 (223 Derby Road)	223 Derby Road is a two-storey residential property location adjacent to the A565	2,022	N	45.76	40.01	Medium (95-102% of the AQO)	Section 6.3 (Model Verification) & Section 6.5 (ADMS Modelling Results), Appendix 8.1
R2 (227a Derby Road)	227a Derby Road is a two-storey residential property location adjacent to the A565	1,970	N	41.59	37.39	Low (75-90% of the AQO)	
R3 (62 Regent Road)	62 Regent Road is a three-storey residential property located adjacent to the application site	19	E	24.65	24.28	Negligible (<75% of the AQO)	
R4 (76 Boundary Street)	76 Boundary Street is a two-storey residential property located adjacent to the railway	417	E	22.96	22.16	Negligible (<75% of the AQO)	
R5 (154 Commercial Road)	154 Commercial Road is a two-storey residential property located on the corner to of the A5038 and Lambeth Road	983	NE	30.29	27.86	Negligible (<75% of the AQO)	
R6 (12 St Stephens Place)	12 St Stephens Place is a two-storey residential property which is located on the corner of the A5036 and the A59	1,725	SE	28.72	27.49	Negligible (<75% of the AQO)	
R7 (5 Stockdale Close)	5 Stockdale Close is a semi-detached bungalow located on the corner of the A5053 and A5038	1,606	SE	29.82	28.28	Negligible (<75% of the AQO)	
R8 (41 Westmorland Drive)	41 Westmorland Drive is a two-storey residential property located adjacent to the A5053	1,569	SE	28.21	27.16	Negligible (<75% of the AQO)	
R9 (Flat 1 Blackstock Street)	Flat 1, Blackstock Street is a residential property located above 'The Eagle' free house on the corner of the A5038 and Blackstock Street	1,307	SE	31.12	29.24	Negligible (<75% of the AQO)	
R10 (Flat above Riverside Diner, Waterloo Road)	Above the Riverside Diner is a residential property which is located on the corner of Waterloo Road and Vulcan Street	899	S	24.99	23.48	Negligible (<75% of the AQO)	
Air Quality Objective: 40 (µG/M ³)							

8.3.1 Future Baseline

KEY RECEPTORS	DESCRIPTION	DISTANCE TO SITE (M)	DIRECTION FROM SITE	DO MINIMUM NO ₂ (μG/M ³) 2023	SENSITIVITY	FURTHER INFORMATION
R11 (Liverpool Waters Committed Development)	Liverpool Waters is a committed residential development location adjacent to the southern boundary of the site	3.0	S	19.30	Negligible (<75% of the AQO)	Section 6.3 (Model Verification) & Section 6.5 (ADMS Modelling Results), Appendix 8.1
R12 (Liverpool Waters Committed Development)	Liverpool Waters is a committed residential development location adjacent to the southern boundary of the site	2.2	S	20.51	Negligible (<75% of the AQO)	
R13 (Proposed Hotel — Regent Road (LPA ref. 20F/0217))	Proposed Hotel Development located East of the site boundary along Regent Road	19	E	24.29	Negligible (<75% of the AQO)	
R14 Proposed Residential units — Lightbody Street (LPA ref. 20L/1948)	Proposed development of 210 residential units and commercial floorspace East of the site boundary along Lightbody Street	420	E	28.10	Negligible (<75% of the AQO)	
Air Quality Objective: 40 (μG/M ³)						

The only development surrounding the proposed site that will change the future baseline in the area is the committed Liverpool Waters Development (LPA ref 10O/2424 – latest non-material amendment being 19NM/1121). Based upon the

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Air Quality ES chapter for the Liverpool Waters Development the residual impact of Air Quality from the development during both the construction and operational phase upon the adjacent receptor to the Proposed Development will be minor adverse to neutral.

The Liverpool Waters scheme has been accounted for within the future year traffic data to account for the effect of this development.

8.4 POTENTIAL SIGNIFICANT IMPACTS

PHASE	DESCRIPTION	ADVERSE/BENEFICIAL
Construction from Application site	Potential effects from dust associated with demolition, construction, earthworks and trackout on sensitive receptors immediately surrounding the application site during the construction phase	Adverse
Construction	Potential effects associated with the additional 128 two-way annual average daily vehicles movements (AADT) during the construction phase	Adverse
Operation (NO ₂)	Potential effects of increased NO ₂ concentrations on the surrounding road network associated with the increased AADT vehicle movements. The provided traffic data is inclusive of an event as well as surrounding committed developments to represent a worst-case scenario.	Adverse
Operation (PM ₁₀)	Potential effects of increased PM ₁₀ concentrations on the surrounding road network associated with the increased AADT vehicle movements. The provided traffic data is inclusive of an event as well as surrounding committed developments to represent a worst-case scenario.	Adverse
Operation (PM _{2.5})	Potential effects of increased PM _{2.5} concentrations on the surrounding road network associated with the increased AADT vehicle movements. The provided traffic data is inclusive of an event as well as surrounding committed developments to represent a worst-case scenario.	Adverse
Building Emissions i.e. from Energy Strategy	The energy strategy for the proposed development states the proposed development will include a proposed boiler system on the Eastern Side of the stadium. These boilers have been included within the assessment and the impacts on surrounding receptors assessed. The proposed outdoor broadcasting compound on the west quay will be powered through battery storage technology and as such no emissions are associated.	Adverse

8.5 ASSESSMENT PRE-MITIGATION (INCLUDING DESIGN INTERVENTION)

PHASE	RECEPTOR(S) AFFECTED	NO ₂ IMPACT (µG/M³)	PM ₁₀ IMPACT (µG/M³)	PM _{2.5} IMPACT (µG/M³)	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction from Application site	All Receptors within 350m	N/A	N/A	N/A		High (Pre-Mitigation)	Yes, Mitigation incorporated into CEMP	Section 5 (Assessment of Air Quality Impacts - Construction Phase) Section 7 (Mitigation), Appendix 8.1
Construction Traffic	R1	0.13	0.03	0.02	Small	Negligible	No	Section 6.5 (ADMS Modelling Results), Appendix 8.1
	R2	0.10	0.03	0.01	Negligible	Negligible	No	
	R3	0.32	0.07	0.04	Small	Negligible	No	
	R4	0.01	<0.01	<0.01	Negligible	Negligible	No	
	R5	<0.01	<0.01	<0.01	Negligible	Negligible	No	
	R6	<0.01	<0.01	<0.01	Negligible	Negligible	No	
	R7	<0.01	<0.01	<0.01	Negligible	Negligible	No	
	R8	<0.01	<0.01	<0.01	Negligible	Negligible	No	
	R9	0.01	<0.01	<0.01	Negligible	Negligible	No	
	R10	<0.01	<0.01	<0.01	Negligible	Negligible	No	
	R11	<0.01	0.01	<0.01	Small	Negligible	No	
	R12	0.08	0.03	0.01	Small	Negligible	No	
	R13	0.32	0.07	0.04	Small	Negligible	No	
	R14	0.51	0.11	0.06	Small	Negligible	No	
	R15	0.10	0.03	0.01	Negligible	Negligible	No	

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PHASE	RECEPTOR(S) AFFECTED	NO ₂ IMPACT (µG/M³)	PM ₁₀ IMPACT (µG/M³)	PM _{2.5} IMPACT (µG/M³)	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation (Long-Term)	R1	0.15	0.04	0.02	Negligible	Negligible	No	Section 6.5 (ADMS Modelling Results), Appendix 8.1
	R2	0.13	0.03	0.02	Negligible	Negligible	No	
	R3	0.24	0.05	0.03	Small	Negligible	No	
	R4	0.05	0.01	0.01	Negligible	Negligible	No	
	R5	0.04	0.01	0.01	Negligible	Negligible	No	
	R6	0.01	<0.01	<0.01	Negligible	Negligible	No	
	R7	0.01	<0.01	0.01	Negligible	Negligible	No	
	R8	0.01	<0.01	<0.01	Negligible	Negligible	No	
	R9	0.03	0.01	0.01	Negligible	Negligible	No	
	R10	0.01	<0.01	<0.01	Negligible	Negligible	No	
	R11	0.14	0.03	0.01	Negligible	Negligible	No	
	R12	0.19	0.03	0.02	Negligible	Negligible	No	
	R13	0.24	0.05	0.03	Small	Negligible	No	
	R14	0.46	0.14	0.07	Small	Negligible	No	
	R15	0.05	0.01	0.01	Negligible	Negligible	No	
Operation (Short-Term)	ST1	26.46	N/A	N/A	Negligible	Negligible	No	Section 6.5 (ADMS Modelling Results), Appendix 8.1
	ST2	32.32	N/A	N/A	Negligible	Negligible	No	
	ST3	28.47	N/A	N/A	Negligible	Negligible	No	
	ST4	32.67	N/A	N/A	Negligible	Negligible	No	
	ST5	29.40	N/A	N/A	Negligible	Negligible	No	
	ST6	26.82	N/A	N/A	Negligible	Negligible	No	
Boiler Emissions (Long Term)	D1	0.016	N/A	N/A	Negligible	Negligible	No	Section 7 (Boiler Modelling Results Appendix 8.1)
	D2	0.041	N/A	N/A	Negligible	Negligible	No	
	D3	0.044	N/A	N/A	Negligible	Negligible	No	
	D4	0.037	N/A	N/A	Negligible	Negligible	No	
	D5	0.032	N/A	N/A	Negligible	Negligible	No	
	D6	0.021	N/A	N/A	Negligible	Negligible	No	
	D7	0.018	N/A	N/A	Negligible	Negligible	No	
	D8	0.013	N/A	N/A	Negligible	Negligible	No	
	D9	0.008	N/A	N/A	Negligible	Negligible	No	
	D10	0.004	N/A	N/A	Negligible	Negligible	No	
	D11	0.03	N/A	N/A	Negligible	Negligible	No	
	D12	0.24	N/A	N/A	Negligible	Negligible	No	
	D13	0.21	N/A	N/A	Negligible	Negligible	No	
	D14	0.045	N/A	N/A	Negligible	Negligible	No	
Boiler Emissions (Short Term)	D1	0.37	N/A	N/A	Negligible	Negligible	No	

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PHASE	RECEPTOR(S) AFFECTED	NO ₂ IMPACT (μG/M ³)	PM ₁₀ IMPACT (μG/M ³)	PM _{2.5} IMPACT (μG/M ³)	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
	D2	0.50	N/A	N/A	Negligible	Negligible	No	
	D3	0.44	N/A	N/A	Negligible	Negligible	No	
	D4	0.43	N/A	N/A	Negligible	Negligible	No	
	D5	0.40	N/A	N/A	Negligible	Negligible	No	
	D6	0.32	N/A	N/A	Negligible	Negligible	No	
	D7	0.26	N/A	N/A	Negligible	Negligible	No	
	D8	0.24	N/A	N/A	Negligible	Negligible	No	
	D9	0.20	N/A	N/A	Negligible	Negligible	No	
	D10	0.19	N/A	N/A	Negligible	Negligible	No	
	D11	0.59	N/A	N/A	Negligible	Negligible	No	
	D12	1.86	N/A	N/A	Negligible	Negligible	No	
	D13	2.42	N/A	N/A	Negligible	Negligible	No	
	D14	0.49	N/A	N/A	Negligible	Negligible	No	
Boiler Emissions Ecology (Long Term)	E1	0.006	N/A	N/A	Negligible	Negligible	No	
	E2	0.003	N/A	N/A	Negligible	Negligible	No	
	E3	0.006	N/A	N/A	Negligible	Negligible	No	
	E4	0.002	N/A	N/A	Negligible	Negligible	No	
	E5	0.003	N/A	N/A	Negligible	Negligible	No	
	E6	0.099	N/A	N/A	Negligible	Negligible	No	
	E7	0.002	N/A	N/A	Negligible	Negligible	No	
	E8	0.002	N/A	N/A	Negligible	Negligible	No	

8.5.1 Future Baseline

KEY RECEPTORS	DESCRIPTION	DISTANCE TO SITE (M)	DIRECTION FROM SITE	DO MINIMUM NO ₂ (μG/M ³) 2023	SENSITIVITY	FURTHER INFORMATION
R11 (Liverpool Waters Committed Development)	Liverpool Waters is a committed residential development location adjacent to the southern boundary of the site (northern extent of development block approved for west quay of Nelson Dock)	3.0	S	19.30	Negligible (<75% of the AQO)	Section 6.3 (Model Verification) & Section 6.5 (ADMS Modelling Results), Appendix 8.1
R12 (Liverpool Waters Committed Development)	Liverpool Waters is a committed residential development location adjacent to the southern boundary of the site (northern extent of development block approved for east quay of Nelson Dock)	2.2	S	20.51	Negligible (<75% of the AQO)	
R13 (Proposed Hotel – Regent Road (LPA ref. 20F/0217))	Proposed Hotel Development located East of the site boundary along Regent Road	19	E	24.29	Negligible (<75% of the AQO)	
R14 Proposed residential units – Lightbody Street (LPA ref. 20L/1948)	Proposed residential development located east of the site boundary at junction of Lightbody Street and Great Howard Street	420	E	28.10	Negligible (<75% of the AQO)	

Air Quality Objective: 40 (μG/M³)

The only development surrounding the proposed site that will change the future baseline in the area is the committed Liverpool Waters Development, the Proposed Hotel Scheme on Regent Road and the proposed residential unit on Lightbody Street. Based upon the Air Quality ES chapter for the Liverpool Waters Development (LPA ref. 10O/2424), the Proposed Hotel – Regent Road (LPA ref. 20F/0217) and the proposed residential unit – Lightbody Street (LPA ref. 20L/1948) the residual impact of Air Quality from the development during both the construction and operational phase upon the adjacent receptor to the Proposed Development will be minor adverse to neutral.



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The Liverpool Waters scheme has been accounted for within the future year traffic data so as to account for the effect of this committed development.

8.6 MITIGATION & ENHANCEMENT MEASURES

PHASE	POSSIBLE EFFECT BEING MITIGATED	MITIGATION MEASURE	TRIGGER	HOW SECURED / TRIGGER	MAGNITUDE POST-MITIGATION	ADVERSE/BENEFICIAL	FURTHER INFORMATION
Construction from application site	Dust associated with demolition, construction, earthworks and trackout	Mitigation within Section 7.1 (Appendix 8.1) to be incorporated into Construction and Environmental Management Plan (CEMP)	Low-Medium Risk	Planning condition	Negligible	Adverse	Section 7.1, Appendix 8.1
Construction Traffic	Exceedance of Long-Term NO ₂ Pollutant AQO	Mitigation in the form of a revised routing plan (such as with more vehicles using Bankhall Street) will need to be undertaken to ensure construction vehicles avoid, where possible the Sefton AQMA.	40 µg/m ³ annual mean	CEMP via a Planning Condition	Negligible	Adverse	Section 6.5, Appendix 8.1
Operation (NO ₂)	Exceedance of Long-Term Pollutant AQO	No exceedances of the AQO, so no mitigation required	40 µg/m ³ annual mean	N/A	Negligible	Adverse	Section 6.5, and 7 Appendix 8.1
Operation (PM ₁₀)	Exceedance of Long-Term Pollutant AQO	No exceedances of the AQO, so no mitigation required	40 µg/m ³ annual mean 3	N/A	Negligible	Adverse	
Operation (PM _{2.5})	Exceedance of Long-Term Pollutant AQO	No exceedances of the AQO, so no mitigation required	25 µg/m ³ annual mean 3	N/A	Negligible	Adverse	
Operation (NO ₂)	Exceedance of Short-Term Pollutant AQO	No exceedances of the AQO, so no mitigation required	200 µg/m ³ 1 hour mean 35 times per year	N/A	Negligible	Adverse	

8.7 ASSESSMENT POST-MITIGATION

Phase	Receptor	Residual Impact	Significance	Residual Effect				
				Adv/Ben	ST/MT/LT	D/Ind	P/T	R/IRR
Construction	All Receptors	The Air Quality associated with the Construction Phase (demolition, construction, earthworks and trackout) on the closest sensitive receptors surrounding the Proposed Development Site.	Negligible	Adverse	Short-term	Indirect	Temporary	Reversible
Operation (Long Term NO ₂)		NO ₂ Pollutant Concentrations associated with increase vehicle movements	Negligible	Adverse	Long-Term	Direct	Permanent	Irreversible
Operation (Long Term PM ₁₀)		PM ₁₀ Pollutant Concentrations associated with increase vehicle movements	Negligible	Adverse	Long-Term	Direct	Permanent	Irreversible
Operation (Long Term PM _{2.5})		PM _{2.5} Pollutant Concentrations associated with increase vehicle movements	Negligible	Adverse	Long-Term	Direct	Permanent	Irreversible
Operation (Short Term NO ₂)		NO ₂ Pollutant Concentrations associated with increase taxi vehicle movements adjacent to the A5054 (Boundary Street)	Negligible	Adverse	Short-term	Direct	Temporary	Irreversible
Key: ADV/BEN = Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible								

8.8 AIR QUALITY: INTER-CUMULATIVE SCHEME IMPACTS

CUMULATIVE SCHEME	SCHEME DESCRIPTION	POTENTIAL FOR CUMULATIVE IMPACTS?	CONSIDERED WITHIN ASSESSMENT?
Liverpool Waters (LPA ref. 100/2424)	Multi-phase mixed-use development proposed for five neighbourhoods spanning from Princes Dock in the south to Bramley-Moore Dock in the north	The Liverpool Waters scheme would have the potential to produce cumulative effects alongside the current proposals associated with Air Quality as a result of the increased vehicle movements within the area. The assessment completed has used traffic data inclusive of that from the Liverpool Waters Scheme.	Yes
R13 (Proposed Hotel – Regent Road (LPA ref. 20F/0217))	Demolition and re-development of site to provide 9 storey hotel with 9 storey multi-storey car park with	The Proposed Hotel Scheme on Regent Road would have the potential to produce cumulative effects alongside the current proposals associated with Air Quality as a result of the increased vehicle movements within the area.	Yes

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CUMULATIVE SCHEME	SCHEME DESCRIPTION	POTENTIAL FOR CUMULATIVE IMPACTS?	CONSIDERED WITHIN ASSESSMENT?
	associated access and servicing.		
R14 Proposed residential units – Lightbody Street (LPA ref. 20L/1948)	Demolition and re-development of site to provide 210 residential units and 716sqm commercial floorspace.	The Proposed residential Scheme on Lightbody Street would have the potential to produce cumulative effects alongside the current proposals associated with Air Quality as a result of the increased vehicle movements within the area.	Yes

PHASE	RECEPTOR	POTENTIAL CUMULATIVE IMPACT	ADDITIONAL MITIGATION (IF REQUIRED)	CUMULATIVE RESIDUAL EFFECT					
				SIGNIFICANCE	ADV/BEN	ST/MT/LT	D/IND	P/T	R/IRR
Construction	All Receptors	Dust associated with demolition, construction, earthworks and trackout	Mitigation within Section 7.1 (Appendix 8.1) to be incorporated into CEMP	Negligible	Adverse	Short-term	Indirect	Temporary	Reversible
Operation	All Receptors	Increased Pollutant Concentrations at existing sensitive receptors	None Required	Negligible	Adverse	Long-Term	Direct	Permanent	Irreversible
Key: ADV/BEN = Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									

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