

REPORT

Stone Close, West Drayton

Air Quality Assessment

Client: Orchard Street Investment Management Ltd

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1 Introduction

This report was produced on behalf of Orchard Street Investment Management Ltd as part of a planning application for a proposed business/industrial development at Stone Close, West Drayton.

The report provides a review of existing air quality in proximity to the proposed development and considers the potential impact of the development on existing receptors. The assessment was undertaken in accordance with Local Air Quality Management Technical Guidance provided by Defra¹.

Air pollution in urban areas is generally dominated by emissions from road vehicles. The quantity and composition of vehicle emissions is dependent on the type of fuel used, engine type, size and efficiency, vehicle speeds and the type of exhaust emissions abatement equipment employed.

The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO₂) and fine particulates – normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than 10 (PM₁₀) and less than 2.5 (PM_{2.5}) micrometres. These pollutants are most likely to approach their respective air quality Objectives in proximity to major roads and in congested areas.

1.1 Site Description and Surrounding Area

The proposed development is at Stone Close, West Drayton, in West London. The site is bordered by other business/light industrial units to the north, east and west and by residential properties to the south. The site currently provides 2,948m² of B2 general industrial floorspace in two buildings, served by four vehicular accesses.

The proposed development is located within the London Borough of Hillingdon (LBH) administrative area. The site location is detailed in **Figure 1**.

1.2 Development Proposals

The proposed development will provide 1,943m² of B1, B2, B8 (business/general industrial) floorspace in one building, served by two vehicular accesses. The proposed development would therefore result in two fewer vehicular accesses and a reduction in floorspace of 1,005m² or -34%.

¹ Department for the Environment Food and Rural Affairs (2016) 'Local Air Quality Management Technical Guidance Document LAQM.TG (16)', London: Defra.

2 Legislative Framework and Planning Policy

2.1 National Legislation

2.1.1 The Air Quality Strategy

Air pollution can have adverse effects on the health of humans and ecosystems. European Union (EU) legislation forms the basis for UK air quality policy. The EU Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management entered into force in September 1996². This was a framework for tackling air quality through setting European-wide air quality limit values in a series of Daughter Directives, prescribing how air quality should be assessed and managed by the Member States. Directive 96/62/EC and the first three Daughter Directives were combined to form the new EU Directive 2008/50/EC³ on Ambient Air Quality and Cleaner Air for Europe, which came into force June 2008.

The 1995 Environment Act⁴ required the preparation of a national Air Quality Strategy (AQS) which set air quality standards and Objectives for specified pollutants. The Act also outlined measures to be taken by local planning authorities in relation to meeting these standards and Objectives (the Local Air Quality Management (LAQM) system).

The UK AQS was originally adopted in 1997⁵ and has been reviewed and updated in order to take account of the evolving EU Legislation, technical and policy developments and the latest information on health effects of air pollution. The strategy was revised and reissued in 2000 as the AQS for England, Scotland, Wales and Northern Ireland⁶. This was subsequently amended in 2003⁷ and was last updated in July 2007⁸.

The standards and Objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000)⁹, and the Air Quality (England) (Amendment) Regulations 2002¹⁰; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance¹¹.

The current air quality standards and Objectives (for the purpose of LAQM) of relevance to this assessment are outlined in **Table 1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant Objectives however incorporate future dates by which each standard is to be achieved, taking into account economic considerations, practicability and technical feasibility.

Where an air quality Objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMAs) and take action, along with others, to work towards meeting the Objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the Objectives and improve air quality locally.

² European Parliament (1996) Council Directive 96/62/EC on Ambient Air Quality Assessment and Management.

³ European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe.

⁴ HMSO (1995) 'The Environment Act 1995 (c.25)', London:TSO.

⁵ Department of the Environment (DoE) (1997) 'The UK National Air Quality Strategy', London: HMSO.

⁶ Department of the Environment, Transport & the Regions (DETR) (2000) 'UK Air Quality Strategy'. London:HMSO.

⁷ DETR (2003) 'UK Air Quality Strategy- Addendum'. London:HMSO.

⁸ Department for Environment, Food and Rural Affairs (Defra) (2007) 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', London:HMSO.

⁹ HMSO (2000) 'Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000', London:HMSO.

¹⁰ HMSO (2002) 'Statutory Instrument 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002', London:HMSO.

¹¹ HMSO (2010) 'Statutory Instrument 2010 No. 1001, Air Quality Standards (England) Regulations, 2010'. London:HMSO.

Possible exceedances of air quality Objectives are usually assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the Objective.

Table 1: Air Quality Strategy Objectives (England) for the Purpose of Local Air Quality Management

Pollutant	Air Quality Objective		To be Achieved by
	Concentration	Measured as*	
Nitrogen dioxide (NO ₂)	200µg.m ⁻³	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg.m ⁻³	Annual mean	31/12/2005
Particles (PM ₁₀)	50µg.m ⁻³	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg.m ⁻³	Annual mean	31/12/2004
Particles (PM _{2.5})	25µg.m ⁻³	Annual mean (target)	2020
	15% cut in annual mean (urban background exposure)		2010 - 2020

Note: * how the Objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000)

2.2 National Policy Guidance

2.2.1 National Planning Policy Framework

The National Planning Policy Framework¹² (NPPF) was adopted in March 2012 and refers to the Local Air Quality Management process by recognising that:

- *“Planning policies should sustain compliance with and contribute towards EU limit values or national Objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.”*

The NPPF¹² identifies that local planning authorities should maintain consistency within the Local Air Quality Management process and states that:

- *“Planning decisions should ensure that any new development within Air Quality Management Areas is consistent with the local Air Quality Action Plan.”*

2.2.2 Planning Practice Guidance

The UK Government Planning Practice Guidance provides guidance on how the planning process can take account of the impact new development may have on air quality.

The guidance states that air quality may be relevant to a planning application where:

- Traffic in the vicinity of the development may be affected by increasing volume or congestion or altering the fleet composition on local roads;
- New point sources of air pollution are to be introduced;
- People may be exposed to existing sources of pollution;
- Potentially unacceptable impacts (such as dust) may arise during construction; and
- Biodiversity may be affected.

¹² Department for Communities and Local Government (DCLG) (2012) National Planning Policy Framework

2.3 Local Planning Policy Guidance

The Hillingdon Local Plan¹³ was adopted in November 2012 and sets out the development strategy for the Borough up to 2026. Part 1 of the document, the Strategic Policies, were reviewed and the following planning policies of relevance to air quality and the proposed development were identified:

“Policy EM8: Land, Water, Air and Noise

[...]

Air Quality

All development should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.

All major development within the Air Quality Management Area (AQMA) should demonstrate air quality neutrality (no worsening of impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increased provision for vehicles with cleaner transport fuels; deliver increased planting through soft landscaping and living walls and roofs; and provide a management plan for ensuring air quality impacts can be kept to a minimum.

The Council seeks to reduce the levels of pollutants referred to in the Government’s National Air Quality Strategy and will have regard to the Mayor’s Air Quality Strategy. London Boroughs should also take account of the findings of the Air Quality Review and Assessments and Actions plans, in particular where Air Quality Management Areas have been designated.

The Council has a network of Air Quality Monitoring stations but recognises that this can be widened to improve understanding of air quality impacts. The Council may therefore require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements.

[...]”

“Policy E2

Location of Employment Growth

The Council will accommodate 9,000 new jobs during the plan period. Most of this employment growth will be directed towards suitable sites in the Heathrow Opportunity Area, Strategic Industrial Locations (SILs), Locally Significant Employment Locations (LSEL), Locally Significant Industrial Sites (LSIS), Uxbridge Town Centre and Hayes Town Centre with a particular focus around transport nodes. The Council will promote development in highly accessible locations that delivers sustainable travel patterns and contributes to the improvement of existing networks to reduce emissions and impacts on air quality. The Council will accommodate a minimum of 3,800 additional hotel bedrooms, and new hotels and visitor facilities will be encouraged in Uxbridge, Hayes, on sites outside of designated employment land on the Heathrow perimeter and in other sustainable locations.”

The requirements of these policies were considered in this air quality assessment.

¹³ London Borough of Hillingdon (2012) Local Plan: Part 1 Strategic Policies

3 Methodology and Assessment Criteria

3.1 Data Sources

The assessment was undertaken with reference to information from a number of sources, as detailed in Table 2.

Table 2: Key Information Sources

Data Source	Reference
LBH	2017 Air Quality Progress Report
Department for Environment Food and Rural Affairs (Defra)	Local Air Quality Management Technical Guidance TG(16), 2016
Institute of Air Quality Management (IAQM)	Guidance on the Assessment of Dust from Demolition and Construction ¹⁴ , 2014
Greater London Authority (GLA)	The Control of Dust and Emissions During Demolition and Construction, 2014
IAQM and Environmental Protection UK (EPUK)	Land-use Planning & Development Control: Planning for Air Quality ¹⁵ , 2017

3.2 Consultation

The proposed development lies within the administrative area of LBH. Consultation was undertaken with their Environmental Health Officer¹⁶ to agree the appropriate methodology of assessment, however a response had not been received at the time of writing.

3.3 Baseline Air Quality Conditions

Monitoring data carried out by LBH within the study area were obtained to establish baseline air quality conditions at receptors.

3.4 Construction Phase Assessment

An assessment of potential impacts associated with the construction phase was undertaken in accordance with the IAQM¹⁴ and GLA¹⁷ guidance. A summary of the assessment process is provided below:

Construction phase assessment steps:

- 1) Screen the need for a more detailed assessment;
- 2) Separately for demolition, earthworks, construction and trackout:
 - A. determine potential dust emission magnitude;
 - B. determine sensitivity of the area; and
 - C. establish the risk of dust impacts.
- 3) Determine site specific mitigation; and
- 4) Examine the residual effects to determine whether or not additional mitigation is required.

¹⁴ Institute of Air Quality Management – 2014 IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London

¹⁵ Environmental Protection UK and Institute of Air Quality Management, 2017, Land-use Planning & Development Control: Planning for Air Quality. v1.2. Institute of Air Quality Management

¹⁶ Email sent to LBH on 15/01/2018

¹⁷ Greater London Authority (2014) The Control of Dust and Emissions During Demolition and Construction

It should be noted that trackout is defined as the transport of dust and dirt from the construction site onto the public road network. Full details of the assessment methodology are provided in **Appendix A**.

3.5 Operational Phase Road Traffic Assessment

The number of vehicle trips generated by the proposed development were screened using the criteria detailed in **Table 3** to determine whether a detailed air quality assessment was required.

3.6 Assessment Significance Criteria

3.6.1 Construction Assessment

In assessing the significance of construction dust impacts using the IAQM guidance¹⁴, the dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts prior to mitigation. Full details are provided in **Appendix A**. Once appropriate mitigation measures were identified, the significance of construction phase impacts was determined.

3.6.2 Operational Phase Road Traffic Emissions Assessment

The potential impact on local air quality of traffic movements generated by the proposed development was screened using the methodology detailed in the Design Manual for Roads and Bridges (DMRB) (Highways Agency, 2007) and latest IAQM and EPUK guidance (IAQM and EPUK, 2017).

These documents set out criteria for increases in traffic flows and HDV movements, above which a detailed assessment of air quality impacts may be required. If increases in traffic flows and HDV movements are below the criteria, there are unlikely to be any significant air quality impacts as a result of the development and detailed assessment of air quality is not necessary. The assessment criteria are detailed in **Table 3**.

Table 3: DMRB and IAQM and EPUK Road Traffic Assessment Criteria

Guidance Document	Criteria	
IAQM and EPUK	Light Duty Vehicles (LDVs)	A change in annual average daily traffic (AADT) of more than 100 within or adjacent to an AQMA, or more than 500 elsewhere
	HDVs	An increase in HGV movements of more than 25 per day within or adjacent to an AQMA, or more than 100 elsewhere
DMRB	Light Duty Vehicles (LDVs)	Increase of 1,000 AADT or more
	HDVs	An increase in HGV movements of more than 200 per day

4 Description of Baseline Conditions

4.1 Local Air Quality Management

The proposed development site is located within the borough-wide statutory Air Quality Management Area (AQMA) declared by LBH for exceedances of the annual mean NO₂ Objective.

4.2 Air Quality Monitoring

4.2.1 LBH Monitoring Data

LBH undertakes ambient air quality monitoring at two diffusion tube locations in the vicinity of the proposed development, at locations HD206 and HD207. These tubes are both categorised as 'background' locations, and so are located at a distance from pollution sources such as roads. Monitoring data from 2012 – 2016 for these diffusion tubes are detailed in **Table 4**.

Table 4: Diffusion Tube Monitoring Data for Monitoring Locations in the Vicinity of the Site

Diffusion Tube Reference	Location	Site Type	Monitored NO ₂ Concentrations (µg.m ⁻³)				
			2012	2013	2014	2015	2016
HD206	5-7 Mulberry Crescent	Background	29.5	29.2	35.0	30.0	27.2
HD207	35 Emden Close	Background	30.9	35.2	38.1	31.2	23.6

The monitoring data show that there were no exceedances of the annual mean air quality Objective of 40µg.m⁻³ between 2012 and 2016. This is to be expected from urban background locations, situated away from pollution sources. Receptors close to the proposed development are located adjacent to Horton Road, and therefore may experience higher NO₂ concentrations than those monitored at background locations.

There are no PM₁₀ or PM_{2.5} monitoring locations in the vicinity of the site.

4.3 Background Concentrations

2018 background concentrations of NO₂, PM₁₀ and PM_{2.5} were obtained from air pollutant concentration maps provided by Defra for the grid squares covering the site. The background concentrations used in the air quality assessment are detailed in **Table 5**.

Table 5: 2018 Background Pollutant Concentrations (µg.m⁻³) Obtained for 1km x 1km Grid Squares Covering the Study Area

Grid Square	Pollutant	2018 Background Concentration (µg.m ⁻³)
506500,180500	NO ₂	26.82
	PM ₁₀	15.51
	PM _{2.5}	9.90

Background concentrations of NO₂, PM_{2.5} and PM₁₀ at the site are below their respective annual mean air quality Objectives; the mapped background NO₂ concentrations show a good agreement with the background monitoring data carried out by LBH in the vicinity of the site.

4.4 Identification of Receptor Locations

4.4.1 Construction Phase Assessment

The IAQM¹⁴ guidance states that a Detailed Assessment is required where there are human receptors within 350m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). 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), are also identified at this stage.

Receptor locations were identified within the study area as follows:

- There are human receptors within 350m of the site boundary and within 50m of the planned construction vehicle route; and
- There no ecological receptors within 50m of the site boundary or within 50m of the planned construction vehicle route.

A detailed assessment was therefore required to assess the impact of dust during the construction phase at human receptors only.

The distance boundaries for the construction phase assessment are detailed in **Figure 3**.

5 Impact Assessment

5.1 Construction Phase Assessment

A qualitative assessment of construction phase dust and PM₁₀ emissions was carried out in accordance with the IAQM guidance¹⁴. The methodology for the dust assessment is provided in **Appendix A**.

The construction works associated with the proposed development have the potential to impact on local air quality conditions:

- Dust emissions generated by demolition, excavation, construction and earthwork activities associated with the construction of the proposed development, have the potential to cause nuisance to, and soiling of, sensitive receptors;
- Emissions of exhaust pollutants, especially NO₂ and PM₁₀ from construction traffic on the local road network, have the potential to adversely impact upon local air quality at sensitive receptors situated adjacent to the routes utilised by construction vehicles; and
- Emissions of NO₂ and PM₁₀ from non-road mobile machinery (NRMM) operating within the proposed development site, have the potential to adversely impact local air quality at sensitive receptors in close proximity to the works.

5.1.1 Step 1: Screen the Need for a Detailed Assessment

The IAQM guidance¹⁴ states that a Detailed Assessment is required if there are human receptors located within 350m and ecological sites within 50m of the site boundary. There are human receptors present within 350m. A Detailed Assessment was therefore undertaken.

5.1.2 Step 2A: Define the Potential Dust Emission Magnitude

The IAQM guidance recommends that the dust emission magnitude is determined for demolition, earthworks, construction and trackout. The dust magnitudes for these activities were determined from site plans and in accordance with the IAQM methodology, and are summarised in **Table 6**.

Table 6: Dust Emission Magnitude for the Site

Construction Activity	Dust Emission Magnitude Assessment
Demolition	• Total building volume <20,000m³ • Demolition activities <10m above ground • Thus the magnitude is considered Small.
Earthworks	• The total site area between 2,500m² and 10,000m² • There are anticipated to be 5-10 heavy earth-moving vehicles active at any one time. • Thus the magnitude is considered Medium.
Construction	• The total building volume associated with the new development is anticipated to be less than 25,000m³ and 100,000m³ • Thus the magnitude was considered to be Medium.
Trackout	• There are likely to be between less than 10 outward HGVs in any one day • Thus the magnitude was considered to be Medium.

The risk of potential impact of construction phase dust and PM₁₀ emissions during demolition, earthworks, construction and trackout is used to recommend appropriate mitigation measures. The dust magnitude for construction activities was categorised as 'Small' for demolition, and 'Medium' for earthworks, construction and trackout.

5.1.3 Step 2B: Define the Sensitivity of the Area

The sensitivity of human receptors to dust soiling and health effects of PM₁₀ associated with demolition, earthworks, construction and trackout activities during construction of the proposed development were determined and are summarised in **Table 7**.

The site is located within 20m of between 1 and 10 residential properties which are classified as high sensitivity receptors, located adjacent to the site on Horton Road. The background PM₁₀ concentrations are less than 24µg.m⁻³. The sensitivity of the area to demolition, earthworks and construction activities was therefore considered to be 'Medium' for dust soiling, and 'Low' for human health. There are 10 - 100 residential receptors within 20m of the access roads to the site, up to 500m from the site access, and therefore the sensitivity of the area to trackout was considered to be 'High' for dust soiling and 'Low' for human health.

Table 7: Outcome of Defining the Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low

5.1.4 Step 2C: Define the Risk of Impacts

The dust emission magnitude detailed in **Table 6** is combined with the sensitivity of the area detailed in **Table 7** to determine the risk of impacts with no mitigation applied. The risks concluded for dust soiling and human health are provided in **Table 8**.

Table 8: Summary Dust Risk Table to Define Site-specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Medium Risk	Medium Risk	Medium Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk

The risk of dust soiling impacts during the construction phase were therefore described as 'low risk' for demolition and 'medium risk' for earthworks, construction and trackout. The impacts on human health were described as 'negligible' for demolition and 'low risk' for earthworks, construction and trackout. Step 3 and Step 4 of the guidance, which are the 'site specific mitigation' and 'determining the significant effects', are discussed in **Section 6** of this report.

5.2 Operational Phase Road Traffic Emissions

Due to the reduction in floor space from the current site use with the proposed development, the number of vehicle trips on the road network will decrease during the operational phase, by 185 trips per day across all modes. This therefore represents an air quality benefit to the area, and a detailed air quality assessment was not required.

6 Mitigation Measures

6.1 Construction Phase Assessment

6.1.1 Step 3: Site-Specific Mitigation

Step three of the IAQM¹⁴ guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity.

The dust assessment determined that there was a risk of impacts resulting from construction activities without the implementation of mitigation measures. Additional guidance has been provided by the IAQM in relation to dust and air mitigation measures. It is recommended that the good practice measures outlined in the IAQM guidance are followed.

The recommendations below should be detailed in a Dust Management Plan (DMP) to prevent or minimise the release of dust entering the atmosphere and/or being deposited on nearby receptors. Particular attention should be paid to operations which must unavoidably take place close to the site boundary. The effective implementation of the DMP will ensure that any potential dust releases associated with the construction phase will be reduced.

6.1.1.1 Mitigation Measures Recommended by the IAQM

A list of mitigation measures that are highly recommended for a medium risk site by the IAQM are provided below.

Communications

- Display the head or regional office contact information and display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.

Dust Management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Consider enclosure of site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Take measures to control 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.
- Cover, seed or fence stockpiles to prevent wind whipping where practicable.
- Ensure all vehicles 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.
- 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 where practicable.
- 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.
- Bonfires and burning of waste materials should not be permitted.

Measures Specific to Demolition

- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in a controlled and well-managed manner.

Measures Specific to Trackout

- 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.
- Install hard surfaced haul routes where practicable, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Install 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.
- Locate site access gates at least 10m from receptors where possible.

Measures Specific to Non Road Mobile Machinery (NRMM)

Non Road Mobile Machinery¹⁸ (NRMM) and plant would be well maintained. If any emissions of dark smoke occur then the relevant machinery should stop immediately and any problem rectified. In addition, the following controls should apply to NRMM:

¹⁸ Non-Road Mobile Machinery is defined as any mobile machinery, transportable industrial equipment or vehicle fitted with an internal combustion engine not intended for passenger or goods transport by road. Explanatory Memorandum to the UK Non Road Mobile Machinery (Emissions of Gaseous & Particulate Pollutants) (Amendment) Regulations (2006).

- All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004);
- All NRMM should comply with regulation (EU) 2016/1628 of the European Parliament and of the European Council;
- All NRMM will be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting);
- The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks; and,
- Fuel conservation measures should be implemented, including instructions to (i) throttle down or switch off idle construction equipment; (ii) switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded and (iii) ensure equipment is properly maintained to ensure efficient fuel consumption.

A list of mitigation measures that are desirable for a medium risk site by the IAQM are provided below.

Dust Management

- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas
- Implement a Travel Plan that supports and encourages sustainable travel for contractor operatives and
- staff (public transport, cycling, walking, and car-sharing)

Measures Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible to provide a screen against dust.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- 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 release.

6.1.2 Step 4: Determine Significant Effects

With the implementation of the above mitigation measures, the residual impacts from the construction phase of the proposed development are considered to be **not significant**, in accordance with IAQM guidance¹⁴.

6.2 Operational Phase Road Traffic Emissions Assessment

The proposed development is anticipated to result in a reduction in vehicle trips on the road network, and therefore it is expected that there will be an associated reduction in air pollution during the operational phase. Mitigation measures are therefore not required.

7 Conclusions

This air quality assessment considered impacts associated with the construction and operational phases of a proposed development at Stone Close, West Drayton which would comprise Class B (industrial/business) floor space.

The impact of the construction of the proposed development was considered in accordance with the latest guidance available from the Institute of Air Quality Management¹⁴ and the Greater London Authority¹⁷. The assessment defined the sensitivity of the area and the risk of the site to cause dust impacts. Site specific mitigation was recommended and with the implementation of this mitigation, the residual impacts from construction activities were predicted to be **not significant**.

As the floor space of the proposed development will reduce, there is likely to be a corresponding reduction in vehicle trips generated versus the current site use. This is therefore likely to represent a benefit to local air quality conditions, as there will be a reduction in road traffic emissions on the local road network. Further detailed air quality assessment of road-based emissions was therefore not considered necessary.

Appendix A: Construction Phase Methodology and Assessment

The following section outlines criteria developed by the Institute of Air Quality Management (IAQM)¹⁶ for the assessment of air quality impacts arising from construction activities. The assessment procedure is divided into five steps and is summarised below:

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 and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). Designated ecological sites 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), are also identified at this stage. A designated ecological site refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

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

There were a number of human receptors within 350m of the site boundary; a Detailed Assessment was therefore required. As there were no designated ecological sites within 50m of the site boundary, the impact of dust on ecological sites was not assessed.

Step 2: Assess the Risk of Dust Impacts

A site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (demolition, construction, earthworks and trackout).

Step 2A: Define the Potential Dust Emission Magnitude

The IAQM guidance¹⁴ recommends that the dust emission magnitude is determined for demolition, earthworks, construction and trackout. The dust emission magnitude is based on the scale of the anticipated works. **Table A1** describes the potential dust emission class criteria for each outlined construction activity.

Table A1: Criteria Used in the Determination of Dust Emission Class

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Demolition	- Total building volume <20,000m²; - Material with low potential for dust release - Demolition activities <10m above ground level.	- Total building volume 20,000 – 50,000m²; - Potentially dusty material. - Height of building between 10-20m above ground level.	- Total building volume >50,000m²; - Potentially dusty material. - Demolition activities >20m above ground level.

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Earthworks	- Total site area <2,500m²; <5 heavy moving earth vehicles active at any one time.	- Total site area 2,500 – 10,000m²; 5 – 10 heavy moving earth moving vehicles active at any one time.	- Total site area >10,000m²; >10 heavy earth moving vehicles active at any one time.
Construction	- Total building volume <25,000m³; - Construction material with low potential for dust release.	- Total building volume 25,000 – 100,000m³; - Potentially dusty construction material (e.g. concrete).	- Total building volume >100,000m³; - On site concrete batching.
Trackout	<10 outward HGV trips in any one day; - Unpaved road length <50m.	10 – 50 outward HGV trips in any one day. - Unpaved road length 50 – 100m.	>50 outward HGV trips in any one day; - Unpaved road length >100m.

Step 2B: Define the Sensitivity of the Area

The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- the local background PM₁₀ concentration; and
- site-specific factors, such as the presence of natural shelters, such as trees, to reduce the risk of windblown dust.

Table A3: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity	
	Dust Soiling Effects	Health Effects of PM ₁₀
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM ₁₀
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets

The criteria detailed in **Tables A4 and A5** were used to determine the sensitivity of the area to dust soiling effects and human health impacts. **Figure 2** details the distance bands, as detailed in **Tables A4 and A5**, from the site boundary for use in the construction phase assessment.

Table A4: Sensitivity of the Area to Dust Soiling Effects on People and Property.

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

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
	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 A5: Sensitivity of the Area to Human Health Impacts

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

The sensitivity of the area to dust soiling and human health impacts to each activity is summarised in **Table A6** and **Table 8** within **Section 5.1.4** of the report.

Table A6: Outcome of Defining the Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low

Step 2C: Define the Risk of Impacts

The dust emission magnitude and sensitivity of the area are combined and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied should be determined using the criteria detailed in **Tables A7 – A9**.

Table A7: Risk of Dust Impacts- Demolition and Trackout

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table A8: Risk of Dust Impacts- Earthworks

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table A9: Risk of Dust Impacts- Construction

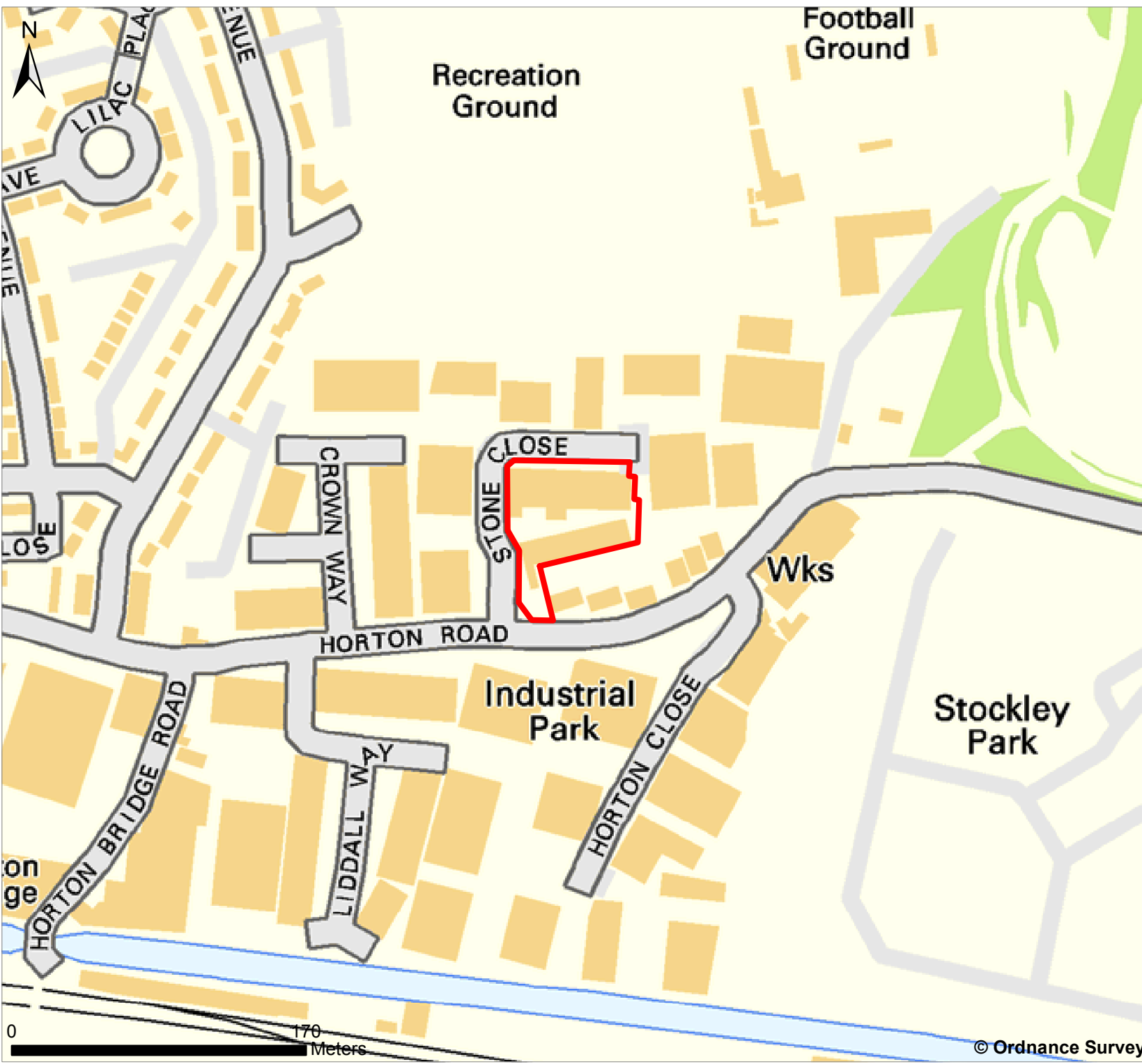
Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Step 3: Site-Specific Mitigation

Step three of the IAQM guidance¹⁴ identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site. The highly recommended mitigation for the proposed scheme are detailed in **Section 6** of this report.

Step 4: Determine Significant Effects

With the implementation of the above mitigation measures, the residual impacts from the construction are considered to be **not significant**, in accordance with IAQM guidance¹⁴.



Key:

 Site Boundary

Title

Air Quality Assessment: Site Boundary

Project

PB6821 Stone Close, West Drayton

Client

Orchard Street Investment Management Ltd

Date

23/04/2018

Scale

1:3043

Figure

Figure 1

Drawn by

CG

Checked by

SN

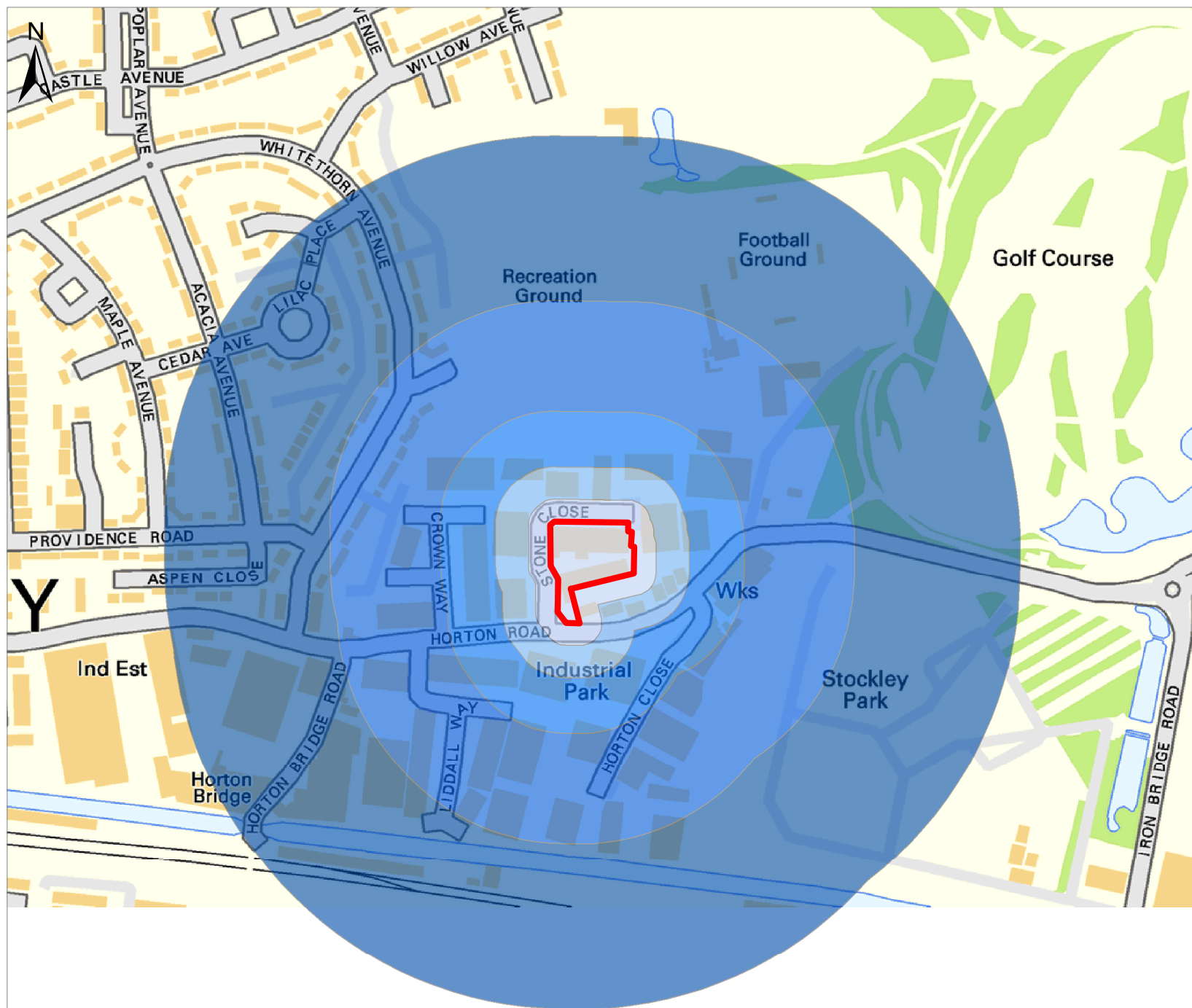
Number

v1



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Key:

- Site Boundary
- 20m buffer
- 50m buffer
- 100m buffer
- 200m buffer
- 350m buffer

Title
Air Quality Assessment: Construction Phase
Distance Boundaries

Project
PB6821 Stone Close, West Drayton

Client
Orchard Street Investment Management Ltd

Date	Scale
23/04/2018	1:5000

Figure
Figure 2

Drawn by	Checked by	Number
CG	SN	v1

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