

**Proposed Mixed Use Development
470 - 478 Oxford Road, Reading
Air Quality Statement**

19 October 2016

Produced for:
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1 Introduction

Mouchel Limited was commissioned by Prestige Property Ltd to provide an air quality statement in support of a full planning application for a proposed mixed scheme comprising retail and residential use (the 'proposed development'), located at 470 - 478 Oxford Road, Reading.

This report provides a review of existing air quality conditions at and in proximity to the proposed development site, thus enabling an assessment of the suitability of the site for residential use. It also assesses the potential impacts on local air quality due to the demolition and construction phase of the proposed development, particularly fugitive emissions of dust and particulates.

The statement was undertaken in accordance with current technical guidance published by the Department of Environment Food and Rural Affairs (Defra) and other relevant guidance published by the Institute of Air Quality Management (IAQM).

Air pollution in the UK, particularly within urban areas, is dominated by emissions from road vehicles. The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO₂) and fine particulates assessed as the fraction of airborne particles of mean aerodynamic diameter less than 10 micrometres (PM₁₀) and 2.5 micrometres (PM_{2.5}), respectively. These pollutants are most likely to approach their respective air quality objectives in proximity to major roads and in congested urbanised areas. As such, emissions of NO₂ and particulate matter associated with the proposed development form the focus of this statement.

1.1 Site Location, Surrounding Area & Planning History

The site is located within Reading Borough Council's (RBC) jurisdiction, adjacent to A329 Oxford Road. The site occupies approximately 1,025m² (11,000 sq. ft) and currently comprises of a commercial use building and associated storage.

The surrounding area is predominately of residential use. Reading centre is approximately 2 km to the east and Reading Train Station is located approximately 1.8 km to the northeast of the proposed development, respectively.

The site location is presented in **Figure 1**.

1.2 Proposed Development Plans

The applicant for the proposed development is Prestige Property Ltd and the proposal is for the demolition of existing retail/warehouse unit and one residential unit with erection of 10 new residential apartments and one retail unit with associated residential car parking, amenity space and landscaping.

An area of amenity space is proposed on land that currently comprises part of the rear garden of 1 Sherwood Street.

The proposed development layout is presented in **Figure 2**.

2 Legislative Framework and Planning Policy

2.1 European and National Legislation

2.1.1 European CAFE Directive (2008/50/EC)

Air pollution can have adverse effects on both human health and the quality of ecosystems. European Union (EU) legislation provides the foundation for UK air quality policy. The EU Air Quality Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management (Ref 1) was established in September 1996. This became a structure for tackling air quality through provision of European-wide air quality limit values in a series of daughter directives, prescribing how air quality should be assessed and managed by each Member State. Directive 96/62/EC and the first three daughter objectives were pooled to form the new EU Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (CAFE) (Ref 2), which launched in June 2008.

2.1.2 Air Quality Strategy and Air Quality Standards Regulations (2010)

The 1995 Environment Act necessitated the requirement for a national Air Quality Strategy (AQS), which fixed standards for specified air pollutants across the United Kingdom. The Act defined the relevant methods to be undertaken by local authorities with regard to meeting these objectives, through the Local Air Quality Management (LAQM) system.

The UK AQS was initially adopted in 1997 and has been reviewed and updated, when subject to evolving EU Legislation, technical and policy developments and the latest information on health effects of air pollution. The UK Government and the Devolved Administrations published the most recent AQS for England, Scotland, Wales and Northern Ireland in July 2007 (Ref 3).

The standards and objectives relevant to the LAQM system, as contained within the AQS, are prescribed through the Air Quality (England) Regulations 2000 (Ref 4 **Error! Reference source not found.**), the Air Quality (England) (Amendment) Regulations 2002 (Ref 5) and the Air Quality Standards Regulations 2010 (Ref 6). These regulations outline the limit values and objectives for the protection of human health and are presented in **Table 1**, specific to the air pollutants considered within this statement.

Table 1 Air Quality Strategy Objectives (England) for the purpose of LAQM

Air Pollutant	AQS Objective (England)		To be achieved
	Concentration	Averaging Period	
Nitrogen dioxide (NO₂)	200 µg/m ³	1-hour mean not to be exceeded > 18 times per year	31/12/2005
	40 µg/m ³	Annual mean	31/12/2005
Particles (PM₁₀)	50 µg/m ³	24-hour mean not to be exceeded > 35 times per year	31/12/2004
	40 µg/m ³	Annual mean	31/12/2004
Particles (PM_{2.5})	25 µg/m ³	Annual mean	2020

2.2 National Policy Guidance

2.2.1 The National Planning Policy Framework

The National Planning Policy Framework (NPPF) (Ref 7) was adopted in March 2012 and supersedes existing national planning policy in place since 2004.

Paragraph 109 of the NPPF states that “...*The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution.*”

Annex 2 of the NPPF defines ‘Pollution’ as “...*Anything that affects the quality of land, air, water or soils, which might lead to an adverse impact on human health, the natural environment or general amenity. Pollution can arise from a range of emissions, including smoke, fumes, gases, dust, steam, odour, noise and light.*”

The environmental impact of the proposed development will be a material consideration during the planning process. Paragraph 124 of the NPPF requires that planning policies should sustain compliance with, and contribute towards, EU Limit values or national objectives for pollutants, taking account of the presence of Air Quality Management Areas (AQMAs) and the cumulative impacts on air quality for individual sites in local areas. Planning decisions should ensure new development in (or which may affect) an AQMA is consistent with the local Air Quality Action Plan.

2.3 Local Planning Policy

2.3.1 Reading Borough Local Development Framework – Sites and Detailed Policies Document (2012)

Reading’s Local Development Framework (LDF) Sites and Detailed Policies Document was adopted in October 2012, with alterations made in January 2015 (Ref 8).

The Sites and Detailed Policies Document has two main purposes. Firstly, it contains detailed policies to help guide decisions on planning applications including residential amenity, house extensions and the use of residential garden land. It also includes more far-reaching matters such as addressing affordable housing stock and climate change.

Secondly, it identifies a number of development sites and areas for different purposes such as housing and industrial use, and assists in both the regeneration of key areas which suffer deprivation and protection of open spaces, wildlife and landscape.

Policy DM19 of the LDF Sites and Detailed Policies Document (‘Air Quality’) states that, “*Development should have regard to the need to improve air quality and reduce the effects of poor air quality.*”

- 1) *Development that would detrimentally affect air quality will not be permitted unless the effect is to be mitigated. The following criteria should be taken into account:*
 - *Whether the proposal, including when combined with the cumulative effect of other developments already permitted, would significantly reduce air quality;*
 - *Whether the development is within, or accessed via, an Air Quality Management Area; and*

- *Whether it can be demonstrated that a local reduction in air quality would be offset by an overall improvement in air quality, for instance through reduction in the need to travel.*
- 2) *Where a development would introduce sensitive uses (such as residential, schools and nurseries, hospitals, care facilities) into, or intensify such uses within, an Air Quality Management Area, detrimental effects on that use will be mitigated. Mitigation measures should be detailed in any planning application;*
- 3) *Where required, planning obligations will be used to secure contributions to measures to tackle poor air quality or for air quality monitoring.”*

Paragraph 9.2.4 of the document infers that, “*Although concentrations of PM₁₀ in Reading are below Air Quality Objective levels, in some areas levels of nitrogen dioxide (NO₂) are currently exceeding National Air Quality Objective and EU limit value levels. Road traffic has been shown to be the predominant source of pollution.*”

3 Assessment Methodology

This section describes the methodology, including data collation, local authority consultation and assessment criteria applicable to the air quality statement.

3.1 Data and Resources

This air quality statement was undertaken with reference to guidance, data, and other information obtained from relevant sources, as outlined in **Table 2**.

Table 2 Air Quality Statement Sources

Source	Reference	Purpose / Content
Base Mapping	Ordnance Survey Street View® raster map tiles SU66, SU67, SU76, SU77	Base mapping and figure production
Department for the Environment Food and Rural Affairs (Defra)	Defra (2016) <i>Local Air Quality Management Technical Guidance LAQM.TG (16)</i> (Ref 9)	Technical guidance for undertaking air quality assessment
Defra LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps (Ref 10)	Details of background concentrations throughout the UK
	Interactive Monitoring Networks Map found at uk-air.defra.gov.uk/interactive-map (Ref 11)	Information on AQMAs and monitoring network in vicinity of the proposed development
	MAGIC Interactive Ecological Map found at magic.defra.gov.uk (Ref 12)	Web-based interactive map containing information on local designated sites
Institute of Air Quality Management (IAQM)	IAQM (2014) <i>Guidance on the assessment of dust from demolition and construction</i> (Ref 13)	Guidance for assessing the local air quality impacts associated with the construction and operation phases of development
	IAQM (2015) <i>Land-use planning and development control: Planning for air quality</i> (Ref 14)	
Reading Borough Council (RBC)	Reading Borough Council (2015) <i>2015 Air Quality Updating and Screening Assessment for Reading Borough Council</i> (Ref 15)	Local authority air quality monitoring and assessment submissions as part of the LAQM process

3.2 Local Authority Consultation

Pre-application advice was sought from Reading Borough Council (RBC) for the proposed development, which was provided in June 2016. The outcomes of which recognised the potential for increased exposure due to the introduction of residential properties into an existing AQMA.

Mouchel consulted the RBC Environmental Protection & Nuisance department¹ to agree an appropriate methodology for assessing the suitability of the site for residential use, in addition to potential local air quality impacts relating to demolition and construction phase.

The assessment detailed within this report was completed in accordance with the agreed methodology.

¹ Telephone and email correspondence between Declan Alder (Mouchel) and Ross Jarvis (RBC) between 30th November and 2nd December 2015.

3.3 Baseline Conditions

RBC has published a series of Review and Assessment documents in accordance with the LAQM process. The 2015 Air Quality Updating and Screening Assessment was obtained to inform the review of baseline conditions at and in proximity to the proposed development site.

Background pollutant concentrations corresponding to the 1 km² grid square covering the site and identified receptor locations were obtained from the LAQM support tools (Ref 14). Background concentrations between 2015 and 2017 were obtained to represent current and future baseline air quality conditions.

3.4 Demolition and Construction Phase Assessment

Construction phase activities associated with the proposed development may result in the generation of fugitive dust emissions. If transported beyond the site boundary, dust can have an adverse impact on local air quality. The IAQM guidance document (Ref 13) provides an approach to assessing air quality (dust) risk associated with demolition and construction activities.

A qualitative assessment of air quality impacts due to the release of fugitive dust and fine particulates during the construction phase was undertaken in accordance with IAQM guidance.

3.5 Operation Phase Assessment

The proposed development will introduce sensitive receptors within an AQMA, thus there is a requirement to assess the suitability of the site for residential land use within the context of existing air quality.

During the consultation process, it was agreed with RBC¹ that the proposed development is not expected to generate significant amounts of road traffic once operational. As such, assessment of traffic emissions generated by the proposed development were scoped out of the air quality statement.

3.6 Assessment of Significance

3.6.1 Demolition and Construction Phase

The significance of any dust emissions from the demolition and construction of the proposed development was assessed in accordance with IAQM guidance (Ref 13).

The assessment is used to define appropriate mitigation measures to ensure that there will be no significant effects from the demolition and construction phase of the development and as such does not identify specific assessment significance criteria.

4 Baseline

4.1 Local Air Quality Management

During the last round of Review and Assessment, RBC concluded that the national air quality objectives for all pollutants would be met, except for Nitrogen Dioxide (NO₂). No new areas of exceedance have been identified since the last round of Review and Assessment.

As a result of the review and assessment process, RBC declared a single AQMA in April 2009, for exceedances of the annual and hourly NO₂ air quality objectives. The single AQMA covers all major transport routes throughout the district and encompasses the proposed development site.

The latest LAQM report, the 2015 Air Quality Updating and Screening Assessment (Ref 15) stated that “...*This Updating and Screening Assessment has shown that the majority of air quality objectives for all pollutants continue to be achieved, although the NO₂ annual objective continues to be exceeded. None of the areas of exceedance identified fall outside the existing AQMA boundaries.*”

4.2 Air Quality Monitoring in Reading

4.2.1 Nitrogen Dioxide (NO₂)

RBC undertakes ambient monitoring of NO₂ across the borough through the operation of four continuous chemiluminescent monitoring stations and 58 passive NO₂ diffusion tubes.

Three roadside continuous monitoring stations are operated by RBC. Two of the analysers (Caversham Road and Kings Road) are situated more than 2 km to the east and northeast of the proposed development respectively, with one located along A329 Oxford Road, approximately 1 km to the west of the development site. As of February 2016, the monitoring station situated at Kings Road is now closed²

In addition, an urban background location is operated for Defra as part of the Automatic Urban and Rural Network (AURN) and is situated approximately 4.0 km to the east of the proposed development.

Annual mean NO₂ data from 2010 to 2014 taken from the four continuous monitoring locations are presented in **Table 3**, sourced from the 2015 Air Quality Updating and Screening Assessment. Monitoring data for 2015 was sourced from the Air Quality in England ² and the Defra AURN websites accordingly³

Table 3 RBC continuous monitoring results for annual mean NO₂ (2010 to 2015)

Location	OS Grid Ref (m)		Type	Annual Mean Concentration (µg/m ³)					
	X	Y		2010	2011	2012	2013	2014	2015
Reading AURN	473441	173198	Urban BKG	26	27	25	27	27	22
Caversham Road	471153	174429	Roadside	48	46	47	43	41	38

² Air Quality in England (2016) [online] *Reading Borough Council* http://www.airqualityengland.co.uk/local-authority/data?la_id=278

³ Defra (2016) *Data Selector* [online] https://uk-air.defra.gov.uk/data/data_selector

Location	OS Grid Ref (m)		Type	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)					
	X	Y		2010	2011	2012	2013	2014	2015
Kings Road	473057	173205	Roadside	53	53*	54	61	50	49
Oxford Road	468700	174126	Roadside	39	37	38	43*	35	31
Air Quality Objective				40 $\mu\text{g}/\text{m}^3$					

* Annualised - Exceedances in **BOLD**

The results presented in **Table 3** indicate that the annual mean objective has been continuously exceeded at the Kings Road continuous monitoring station since 2009. The results recorded by the analyser positioned at Caversham Road indicated that the annual mean NO_2 objective was exceeded from 2010 until 2015. The analyser situated along A329 Oxford Road exceeded the annual mean objective in 2013.

Each of the three roadside analysers are located along major routes into Reading centre. NO_2 results taken from the Reading AURN site demonstrate that urban background concentrations have remained below the annual mean objective since 2010.

There is one NO_2 diffusion tube which is in proximity to the proposed development, located at 494 Oxford Road. Monitoring at this location commenced in 2009. The results from this diffusion tube, as reported in the 2015 Air Quality Updating and Screening Assessment (Ref 15), are presented in **Table 4**. Monitoring data for 2015 was sourced from the Air Quality in England ² website.

Table 4 RBC diffusion tube monitoring in proximity to development (2010 - 2015)

Site Name	OS Grid Ref (m)		Site Type	NO ₂ Monitored Concentrations (Bias Adjusted)					
	X	Y		2010	2011	2012	2013	2014	2015
494 Oxford Road	469470	173715	Roadside	38	34	38	38	37	35
Annual Mean Objective				40 $\mu\text{g}/\text{m}^3$					

The diffusion tube data in **Table 4** have demonstrated that NO_2 concentrations since 2010 are below the annual mean objective. Concentrations remained steady between 2012 and 2014, with a reduction of $3 \mu\text{g}/\text{m}^3$ occurring in 2015.

4.2.2 Particulate Matter (PM_{10} and $\text{PM}_{2.5}$)

Particulate monitoring is undertaken at the four continuous monitoring locations in Reading. The results of monitoring from 2010 to 2015 are presented in **Table 5**. Monitoring data for 2015 was sourced from the Air Quality in England Website².

Table 5 RBC continuous monitoring results for annual mean PM_{10} (2010 – 2015)

Location	OS Grid Ref (m)		Type	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)					
	X	Y		2010	2011	2012	2013	2014	2015
Reading AURN	473441	173198	Urban BKG	16	19	18*	13	14	13
Caversham Road	471153	174429	Roadside	27	32	32	34	33	28
Kings Road	473057	173205	Roadside	26	31	29	32	31	25
Oxford Road	468700	174126	Roadside	25	25	24	20	21	23
Air Quality Objective				40 $\mu\text{g}/\text{m}^3$					

* Annualised

The results in **Table 5** indicate that although each of the four monitoring sites have demonstrated compliance with the annual mean objective for the previous six years, long term trends have not shown a tendency for concentrations to increase or decrease.

4.3 Background Air Pollutant Concentrations

Background annual mean concentrations of NO_x, NO₂, PM₁₀, and PM_{2.5} obtained from the Defra air pollutant concentration maps are presented in **Table 6**.

Table 6 Defra annual mean background concentrations (1 km x 1 km grid square)

Pollutant / Year	NO _x			NO ₂			PM ₁₀			PM _{2.5}		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
BKG Conc.	29.5	28.4	27.3	19.8	19.1	18.5	15.9	15.7	15.6	11.6	11.5	11.3
Objective	-			40 µg/m ³			40 µg/m ³			25 µg/m ³		

* OS grid square encompassing development site – 469500, 173500

Annual average background concentrations, as displayed in **Table 6** for the years 2015 to 2017, are predicted to be well below the respective air quality objectives.

4.4 Assessment of suitability for residential use

4.4.1 NO₂ Concentrations and Distances from Roads Calculation

A calculator is provided by Defra⁴ that estimates the annual mean NO₂ concentration at a predefined distance from a NO₂ monitoring location, allowing a prediction of annual mean NO₂ concentration at a receptor location near to the monitoring site.

In this instance, there is an identified diffusion tube located adjacent to the proposed development site (494 Oxford Road). An NO₂ annual mean concentration for 2015 was estimated at the proposed development building façade, based on the latest available monitoring data (see **Table 4**).

The inset below shows the calculation steps undertaken:

⁴ Defra (2015) *Nitrogen Dioxide fall off with distance* [online] <http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>

This calculator allows you to predict the annual mean NO₂ concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.



Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)? (Note 1)	5	metres
Step 2	How far from the KERB is your receptor (in metres)? (Note 1)	5.5	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)? (Note 2)	19.8	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)? (Note 2)	35	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor (Note 3)	34.6	µg/m ³

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at <http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm> for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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The predicted annual mean NO₂ concentration at the façade of the proposed residential building (494 Oxford Road) was 34.6 µg/m³ based on 2015 monitoring. This is below the annual mean objective (40 µg/m³).

Although the proposed development is located within an AQMA, based on the latest RBC LAQM monitoring data adjacent to the site and the distance of the proposed residential building from the roadside, **the site is considered suitable for residential use.**

5 Potential Impacts

5.1 Demolition and Construction Phase Dust Emission

5.1.1 Dust Emission Magnitude

At the time of completing this statement, the demolition and construction programme for the proposed development was not finalised. However, all existing buildings onsite will be demolished and proposed scaled plans were made available.

As such, the approximate building volumes to be demolished and constructed, in addition to likely locations for these activities onsite, could be identified. Assumptions were made with respect to expected heavy duty vehicle (HDV) movements during demolition and construction, based on the scale of the site and proposed development.

This enabled the potential dust emission magnitude to be predicted, in accordance with IAQM guidance (Ref 13).

The proposed site activities that could contribute to dust emissions are:

- Demolition of the existing building, including concrete and brick buildings and disposal and recycling of all relevant materials;
- Construction of a building to include the four new residential apartments, each comprising two bedrooms;
- Material import and export, temporary stockpiling of materials and landscaping (earthworks); and
- Associated vehicle movements (including trackout of material by HDV movements).

A summary of the predicted dust emission magnitude for the relevant site activities is provided in **Table 7**. Full details of the magnitude definition are provided in the IAQM guidance (Ref 13).

Table 7 Predicted dust emission magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	Small	Total building volume for demolition is less than 20,000 m ³ with demolition heights no higher than 10m.
Earthworks	Small	Total size of the development site is less than 2,500 m ² . Less than 5 heavy earth moving vehicles active at one time with the total material to be moved is less than 20,000 tonnes
Construction	Small	Construction of 10no residential apartments and one retail unit, with associated residential car parking only, and amenities. Residential Gross Internal Area (GIA) calculated at 584m ² , with retail GIA to be 122m ² and amenities GIA totalling 351m ² . Anticipated that the total building volume will be less than 25,000 m ³ . Potentially dusty materials such as concrete likely to be used in the construction.
Trackout	Small	Assumed that will be less than 10 HDV trips a day to the site, less than 50 m unpaved road, and surface material has low potential for dust release.

5.1.2 Sensitivity of the Area

Residential properties are located in proximity to the proposed development boundaries and approach roads, with closest sensitive 'human' receptors located along Chester Street and Oxford Road, both adjacent to the proposed development site boundary. As the distance to a human receptor is less than 350 m, a dust risk assessment (DRA) was conducted in accordance with the IAQM guidance.

There are no statutory designated ecological sites within 350 m of the proposed development, therefore ecological sites were not considered as part of the construction phase dust assessment.

The approximate number of receptors was determined within the distance bandings defined in Table 2 and Table 3 of the IAQM guidance (Ref 13).

The number and location of existing receptors with reference to the demolition, construction and earthworks phases are detailed in **Table 8** and presented in Figure 3.

Table 8 Dust sensitive receptors – Demolition, Construction, Earthworks

Distance from redline boundary	Approximate receptors	Type(s) of receptors
Less than 20m	10 - 100	Residential
Between 20m and 50m	10 – 100	Residential
Between 50m and 100m	More than 100	Residential, Churches
Between 100m and 200m	More than 100	Residential, Churches
Between 200m and 350m	More than 100	Residential, Churches, Day Centre, School, Recreation Ground

Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50 m from the road network within 500 m of the site access. These are summarised in **Table 9** and presented in Figure 4. The exact construction vehicle access routes were not available for the purpose of this assessment as they will depend on sourcing of materials. This is likely to be decided by the contractor.

As such, it was assumed that traffic will access the site from Chester Street and along Oxford Road. This ensured the maximum potential trackout distance was considered.

Table 9 Dust sensitive receptors – Trackout

Distance from redline boundary	Approximate receptors	Type(s) of receptors
Less than 20m	More than 100	Residential
Between 20m and 50m	More than 100	Residential, Churches, Day Centre, School, Recreation Ground

The site is situated in an urbanised area, with prevailing winds from the southwest⁵. As such, sensitive receptors to the northeast of the site, including multi-storey residential buildings on Chester Street are most likely to be affected by fugitive dust releases.

The sensitivity of the surrounding area to specific potential dust impacts, based on the IAQM guidance criteria (Ref 13), is summarised within **Table 10**.

Table 10 Sensitivity of the surrounding area

Receptor sensitivity	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Medium
Ecological	No statutory designated ecological sites were identified (Ref 12)			

5.1.3 Dust Risk Assessment

The main potential air quality impacts that may arise from the aforementioned activities are:

- Dust deposition, resulting in the soiling of surfaces
- Dust plumes, affecting visibility and amenity
- Elevated ambient PM₁₀ and NO₂ concentrations due to fugitive dust releases and exhaust emissions from Non-Road Mobile Machinery (NRMM) and other vehicles accessing the site.

The potential for sensitive receptors to be affected is dependent on the scale of the operations, where within the development site the dust raising activity takes place, the nature of the activity and controls, and meteorological conditions.

If demolition and construction operations were unmitigated, the effects of dust generated during dry and windy conditions could lead to an increase in the PM₁₀ concentration in proximity to that operation. The 2015 background annual mean PM₁₀ concentration for the grid square encompassing the development is 15.9 µg/m³ (see **Table 6**), which is well below the national objective. It is unlikely that the short-term construction activities will cause the annual mean PM₁₀ objective to be exceeded.

The potential overall risk of dust impacts, dust soiling and human health effects, from demolition and construction activities prior to mitigation, is summarised below:

- *Medium risk* in terms of demolition, *low risk* in terms of construction, earthworks and trackout activities with respect to dust soiling;
- *Negligible* in terms of demolition, construction, earthworks and trackout activities with respect to human health.

These risks are identified prior to mitigation measures being applied. Dust mitigation measures for a *Medium risk* site are set out in Section 6.

⁵ Met Office (2015) *Southern England* [online] <http://www.metoffice.gov.uk/climate/uk/regional-climates/so>

6 Mitigation

6.1 Demolition and Construction Phase Dust Emission

The dust risk assessment concluded that activities associated with the proposed development constitute a *medium risk* site for demolition activities and *low risk* for earthworks, construction and trackout activities.

For those mitigation measures that are general, the highest risk category should be applied, therefore general measures applicable to a medium risk site should be applied.

Air quality control measures relevant to demolition, earthworks, construction, and trackout activities for *medium risk* sites are provided in Section 8 of the IAQM guidance (Ref 13).

These measures could be administered via a Dust Management Plan (DMP). Particular attention should be afforded to operations that unavoidably take place in the immediate vicinity of sensitive receptors.

Measures considered particularly relevant to the proposed development site include:

- Site management
 - 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
 - Record and respond to all dust and air quality pollutant emissions complaints
 - Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site
- Site preparation and maintenance
 - Avoid site runoff of water and/or mud
 - Erect solid screens or barriers around dust activities or the site boundary
 - Full enclosure of specific operations where there is a high potential for dust production
 - Plan site layout so machinery and dust causing activities are located away from receptors, as far as possible
 - Keep site infrastructure clean using wet methods
- Operating vehicles / machinery
 - Ensure all vehicles switch off engines when stationary
 - Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible
 - Use enclosed chutes and conveyors and covered skips
- Operations/ Waste Management
 - Ensure an adequate water supply on the site for effective dust/particulate matter mitigation
 - Use enclosed chutes, conveyors and covered skips
 - Minimise drop heights from all loading and handling equipment and use fine water sprays on such equipment wherever appropriate
 - Avoid bonfires and burning of waste materials

- Specific to Demolition
 - Ensure water suppression is used during demolition operations
 - Bag and remove any biological debris or damp down such material before demolition
- Specific to Earthworks
 - Only remove secure covers in small areas during work and not all at once
- Specific to Construction
 - Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place
- Specific to Trackout
 - Use a water-assisted dust sweeper on access roads, if required
 - Avoid dry sweeping of large areas.
 - Ensure vehicles entering and leaving site are covered

Appropriate provision of the above mitigation measures is expected to result in a *negligible* local air quality impact associated with the demolition and construction phase of the proposed development.

The review of baseline air quality (see Section 4) at and surrounding the site indicates that current ambient levels of PM₁₀ are well below the respective daily and annual mean objectives. With the implementation of the aforementioned control measures, the air pollution risk from the proposed works is expected to be *negligible*.

7 Conclusions

This report documents the air quality statement for a proposed mixed use development, which is located at 470 - 478 Oxford Road, Reading. It considered the local air quality impacts associated with the construction phase of the proposed development and assessed the suitability of the site for residential use.

The assessment methodology was agreed through consultation with the RBC Environmental Protection & Nuisance department¹ prior to commencing this statement.

7.1 Baseline Conditions

The proposed development site is located within the Reading AQMA – designated due to exceedances of the short and long term NO₂ national air quality objectives – and within 20 m of offsite residential properties to the northeast, east and southeast of the site.

Background concentrations of NO₂, PM₁₀ and PM_{2.5} were obtained from Defra maps for the 1 km x 1 km grid square encompassing the site. These were collated for the years 2015 to 2017 with concentrations well below the respective air quality objectives.

Diffusion tube (NO₂) monitoring undertaken by RBC adjacent to the proposed development site indicated that there was no exceedance of the annual mean NO₂ objective between 2010 and 2015 (the latest monitoring data provided by RBC). There is no PM₁₀ monitoring undertaken within close proximity to the site. However, all monitored annual mean PM₁₀ concentrations within Reading borough have been below the national objective in recent years.

7.2 Suitability of site for residential use

A NO₂ distance from roads calculation was undertaken to provide a prediction of the annual mean NO₂ concentration at the proposed residential building façade closest to Oxford Road, based on 2015 monitoring. The predicted annual mean concentration was calculated to be 34.6 µg/m³ at the facade, which is below the national annual mean objective.

Although the proposed development is located within an AQMA, based on the latest RBC LAQM monitoring data adjacent to the site and the distance of the proposed residential building from the roadside, **the site is considered suitable for residential use.**

7.3 Demolition and Construction Phase

A demolition and construction phase assessment was undertaken in accordance with guidance published by the IAQM (Ref 13). The dust risk assessment concluded that activities associated with the proposed development constitute a *medium risk* site for all activities.

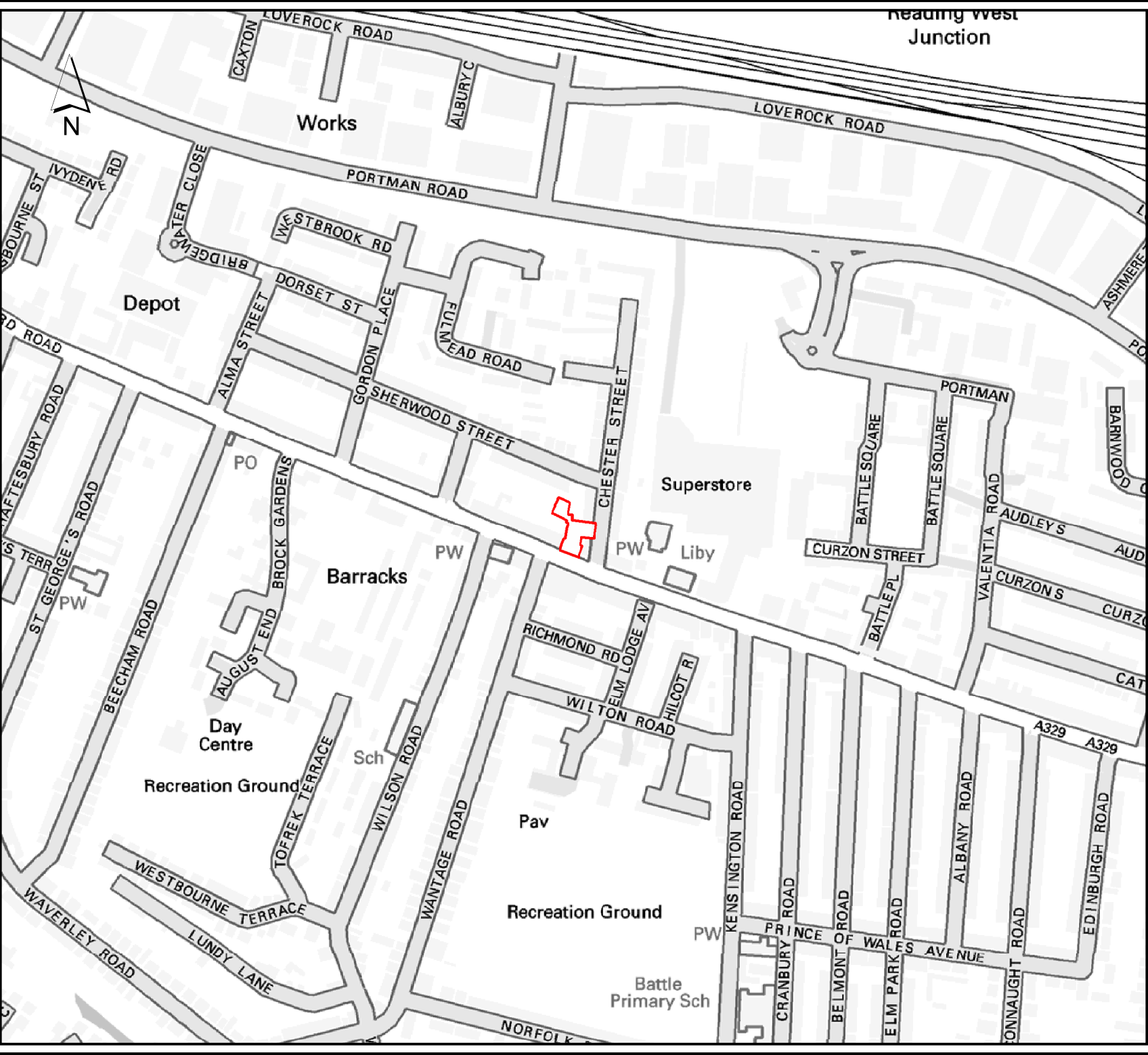
Effective implementation of appropriate mitigation measures for a *medium risk* site, as provided in Section 6, is expected to result in a *negligible* local air quality impact associated with the demolition and construction phase.

8 References

Reference	Title
Ref 1	European Parliament (1996) Council Directive 96/62/EC on <i>Ambient Air Quality Assessment and Management</i>
Ref 2	European Parliament (2008) Council Directive 2008/50/EC on <i>Ambient Air Quality and Cleaner Air for Europe</i>
Ref 3	Department for Environment, Food and Rural Affairs (Defra) (2007) <i>The Air Quality Strategy for England, Scotland, Wales and Northern Ireland</i> , London: HMSO
Ref 4	Her Majesty's Stationary Office (HMSO) (2000) <i>Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000</i> , London: HMSO
Ref 5	HMSO (2002) <i>Statutory Instrument 2002 No. 3043, The Air Quality (England) (Amendment) Regulations 2002</i> , London: HMSO
Ref 6	HMSO (2010) <i>Statutory Instrument 2010 No. 1001, Air Quality Standards (England) Regulations 2010</i> , London: HMSO
Ref 7	Department for Communities and Local Government (DCLG) (2012) <i>National Planning Policy Framework</i> , London: DCLG
Ref 8	Reading Borough Council (2012) <i>Reading Borough Local Development Framework – Sites and Detailed Policies Document</i>
Ref 9	Department for the Environment Food and Rural Affairs (Defra) (2016) <i>Local Air Quality Management Technical Guidance Document LAQM.TG (16)</i> , London: Defra
Ref 10	Defra (2016) <i>Local Air Quality Management 1km x 1km (1km²) grid background pollutant maps</i> http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013 accessed September 2016
Ref 11	Defra (2016) Interactive Monitoring Networks Map http://uk-air.defra.gov.uk/interactive-map , accessed September 2016
Ref 12	MAGIC Interactive Ecological Map http://magic.defra.gov.uk/ , accessed September 2016
Ref 13	Institute of Air Quality Management (2014) <i>Guidance on the assessment of dust from demolition and construction</i>
Ref 14	Institute of Air Quality Management (2015) <i>Land-Use Planning & Development Control: Planning For Air Quality</i>
Ref 15	Reading Borough Council (2015) <i>2015 Air Quality Updating and Screening Assessment for Reading Borough Council</i>

Figures

Figure 1 Site Location Plan



Key

— Proposed Development Boundary

Title

Site Location Plan

Project

Proposed Mixed Use Development
470 - 478 Oxford Road, Reading

Figure

Figure 1

Date

19/10/16

Client

Prestige Property Ltd

Scale

1:5,000 @ A4

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Figure 2 Proposed Development Plan

**Key**

— Proposed Development Boundary

Title

Proposed Development Plan

Project

Proposed Mixed Use Development
470 - 478 Oxford Road, Reading

Figure

Figure 2

Date

19/10/16

Client

Prestige Property Ltd

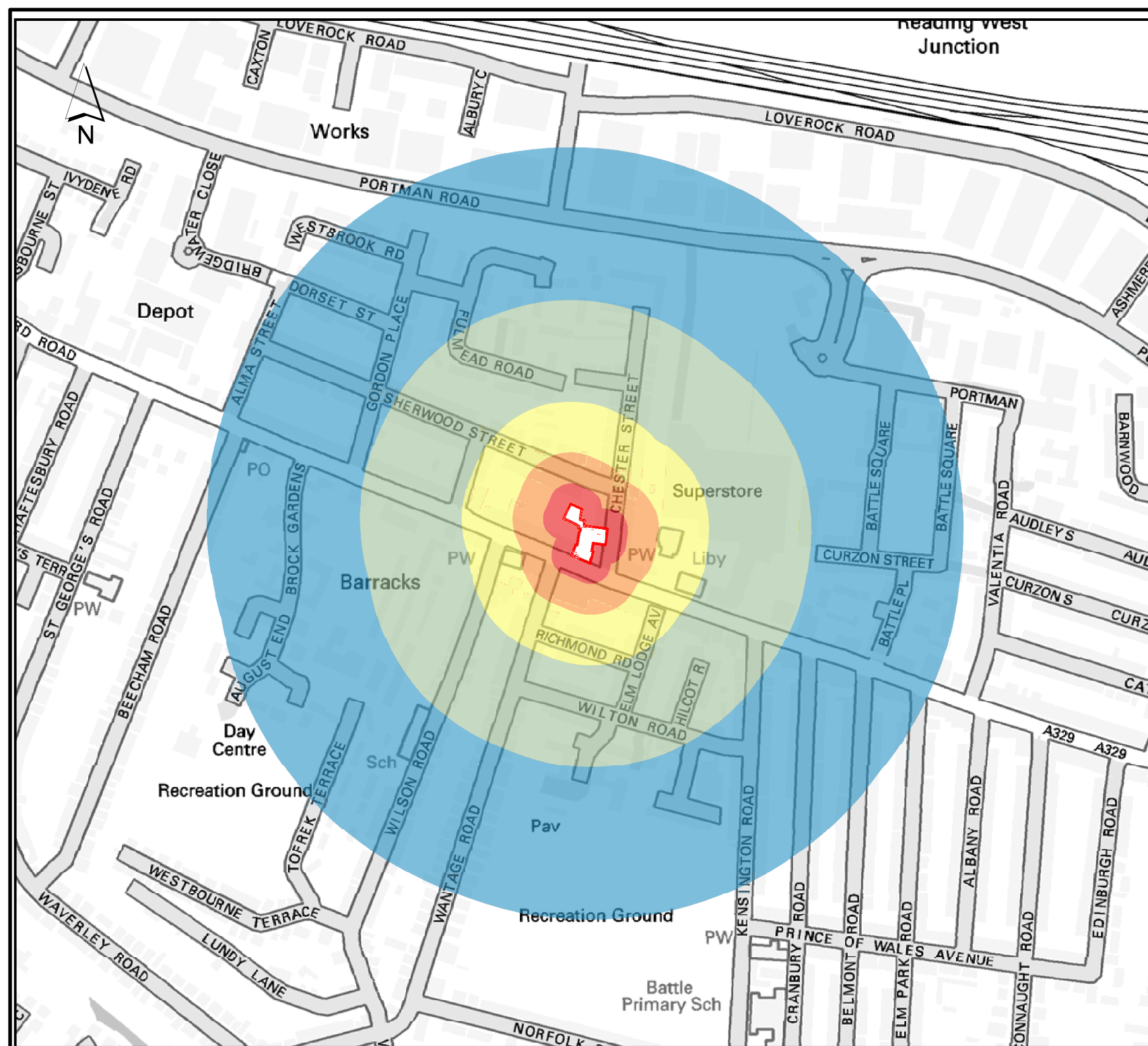
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Figure 3 Construction Phase Dust Distance Bandings – Demolition, Earthworks and Construction Activities



Key

— Proposed Development Boundary

Construction Phase Dust Distance Bandings

	Less than 20m
	Between 20m and 50m
	Between 50m and 100m
	Between 100m and 200m
	Up to 350m

Title

Construction Phase Dust Distance Bandings
Demolition, Earthworks and Construction Activities

Project

Proposed Mixed Use Development
470 - 478 Oxford Road, Reading

Figure

Figure 3

Date

19/10/16

Client

Prestige Property Ltd

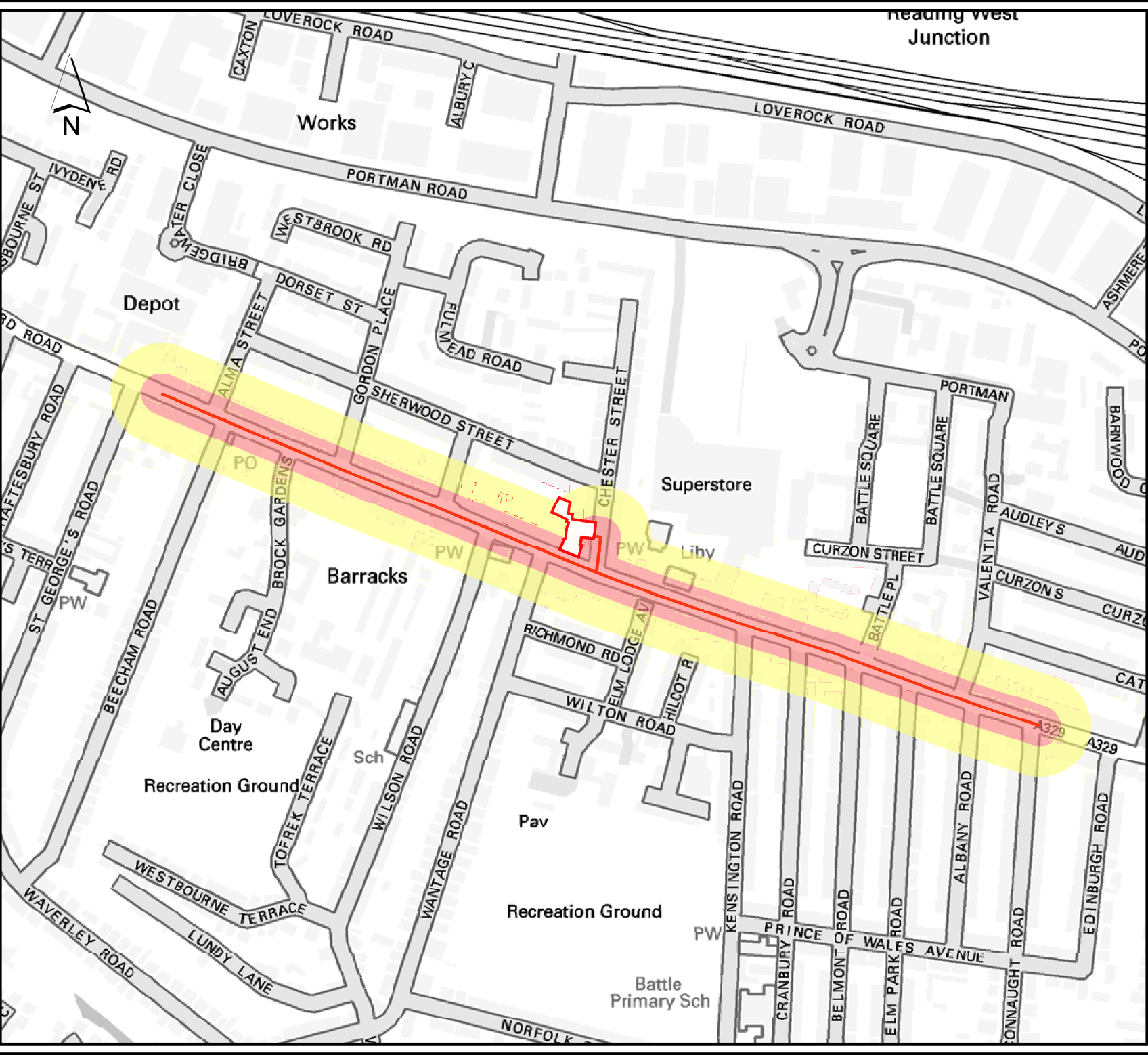
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Figure 4 Construction Phase Dust Distance Bandings – Trackout Activities



Key

Proposed Development Boundary

Construction Phase Dust Distance Bandings

Less than 20m

Up to 50m

Title

Construction Phase Dust Distance Bandings
Trackout Activities

Project

Proposed Mixed Use Development
470 - 478 Oxford Road, Reading

Figure

Figure 4

Date

19/10/16

Client

Prestige Property Ltd

Scale

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