Northfields
EIA Scoping Report

St. George Developments Ltd.

August 2017
# Quality information

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1. Introduction

St. George Developments Ltd. (hereafter referred to as the ‘Applicant’) is seeking planning permission for a residential-led, mixed use development (the ‘Proposed Development’) at Northfields Industrial Estate (the ‘Site’). The application is an outline application for the whole Site with details submitted for Phase 1. The Site is bound by Beresford Avenue to the north, existing warehouses and the Paddington Branch of the Grand Union Canal to the west and south-west, and existing commercial units and the North Circular Road to the south-east. The Site is bisected by the River Brent and falls within the administrative boundary of the London Borough of Brent (LBB), approximately 25m from the boundary with the London Borough of Ealing (LBE). The Site location and boundary for the planning application are shown in Figure 1.

The Site is approximately 9.15 hectares (ha) in area and is centred on National Grid Reference TQ193838. The Site is a former industrial estate which is currently vacant with circa 150,000sqft (c.14,000m²) of existing industrial units. The majority of the Site has been largely cleared. The Site has been used for a variety of industrial uses since 1938, including car workshops and car dealers, plant storage, metal fabrication and scaffold companies.

The local area is characterised by late 1930s housing to the north of Beresford Avenue and industrial land uses to the south. The details of the Site location and surrounding context are shown in Figure 2.

Given the likely scale of the development, the location of the Site and the potential for likely significant environmental effects, the Applicant has chosen to submit an Environmental Statement (ES) alongside the planning application for the Proposed Development. AECOM has been commissioned to undertake the Environmental Impact Assessment (EIA) on behalf of the Applicant in line with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the ‘EIA Regulations’) (Ref. 1).

1.1 The Requirement for EIA

Planning applications for development that falls within the scope of the EIA Regulations are termed ‘EIA Applications’. Screening of developments to identify whether an EIA is necessary is based on the likelihood of significant effects arising from the project. ‘EIA Developments’ are divided into Schedule 1 and Schedule 2 applications under the EIA Regulations.

Schedule 1 developments constitute those that are likely to have significant effects, such as major chemical or petrochemical projects and construction of ground or air transport infrastructure, and for which EIA is mandatory. For all other developments that fall under Schedule 2, the need for EIA is determined on the basis of set criteria as follows:

- It is within one of the classes of development stated in Schedule 2; AND
- EITHER it meets or exceeds the applicable threshold criteria for that class of development in Schedule 2; OR it is to be carried out in part or all of a sensitive area (as defined in Part 1 of the EIA Regulations); AND
- It is likely to have significant effects on the environment by virtue of factors such as its nature, size or location.

The Proposed Development is anticipated to fall within Schedule 2 of the EIA Regulations, section 10 (b) urban development projects. Given the scale and nature of the Proposed Development, there is considered to be the potential for likely significant environmental effects to arise during demolition, construction and operation of the scheme and therefore the Proposed Development is considered to be ‘EIA Development’ under the provisions of the EIA Regulations.

1.2 The Purpose of Scoping in the EIA Process

EIA Scoping forms one of the first stages of the EIA process and refers to the activity of identifying the environmental ‘topics’ that should be considered within the EIA. In addition, EIA Scoping allows for the early identification of the receptors that may be affected or impacted by a proposed development. Through consideration of environmental ‘topics’ and potential receptors (both existing and introduced as a result of the proposed development), EIA Scoping initiates the process of determining the potential for significant impacts, which in turn results in the identification of the issues to be addressed in the EIA.

Regulation 15 of the EIA Regulations allows for an Applicant to ask the Local Planning Authority (LPA), in this case LBB (who in turn seek the opinion of other relevant Statutory Consultees), to state in writing their opinion as
to the scope of the EIA. This report constitutes a request for a Scoping Opinion under Regulation 15 of the EIA Regulations.

1.3 Structure of this Scoping Report

This Scoping Report presents the following:

- An overview of the existing Site and potential sensitive receptors;
- An overview of the Proposed Development;
- Key legislative and planning policy documents;
- A preliminary list of EIA consultees;
- The environmental ‘topics’ to be addressed within the EIA;
- Other environmental considerations;
- The environmental topics to be ’scoped out’ of the EIA;
- The proposed structure of the ES; and
- Summary and conclusions of EIA Scoping.

A number of baseline reports have informed the preparation of this EIA Scoping report and are included in Appendices A – C respectively. Further details of the baseline reports are provided in Sections 2 and 8.
Figure 1 Site Location Plan
2. Overview of the Existing Site and Sensitive Receptors

2.1 Site Description and Context

2.1.1 General Context

The Site is bounded by Beresford Avenue to the north, existing warehouses and the Paddington Branch of the Grand Union Canal to the west and south-west, and existing commercial units and the North Circular Road to the south-east. The River Brent bisects the southern part of the Site.

The Site is a former industrial estate which is currently vacant and largely cleared, having been used for a variety of industrial uses since 1938, including (but not limited to) car workshops, car dealerships, plant storage, metal fabrication and scaffold companies.

The Site is included within The Alperton Masterplan adopted as a Supplementary Planning Document to the Brent Council’s Local Development Framework (LDF) Core Strategy on 18 July 2011 (Ref. 2 and Ref. 3). The entire Site is within the Alperton Housing Zone as designated by the Greater London Authority (GLA) in 2015.

The majority of the Site (with the exception of a small part in the north-west of the Site, north of the Grand Union Canal and south of Beresford Avenue) is designated as a Strategic Industrial Location by the Greater London Authority (GLA) in the 2016 London Plan (see Figure 2) (Ref. 4). However Policy DMP 14 of the Brent Local Plan, Development Management Policies Document (November 2016) (Ref. 5) identifies that SIL allocations will be released in certain circumstances, such as where “…it is a low quality employment site identified as suitable for release in the Employment Land Demand Study”, which applies to the Northfields Industrial Estate.

The Site’s surrounding context is urban and high density, and is characterised by a mix of late 1930s housing to the north and a range of commercial and industrial units, with associated hard infrastructure, including servicing and car parks, to the south.

There are a number of mixed-use developments in the vicinity of the Site. These include Wembley Stadium located 1.5km to the north of the Site including hotels and apartment buildings of up to 17 storeys in height, Wembley Point (21 storeys) located approximately 515m to the north-east of the Site, the eight storey block of flats and commercial buildings on the redeveloped Guinness site approximately 650m to the south-west, a cluster of 14 to 17 storey buildings 650m to 950m to the west of the Site, and the recently approved Minavil House development located approximately 1.1km to the west of the Site which is the tallest proposed building within LBB (up to 26 storeys). In addition, two 10 storey buildings have also been erected on the north of the North Circular Road (A406) located approximately 100m to 220m respectively to the south-west of the Site.

2.1.2 Socio-Economic Context

The Site is located within the Alperton Housing Zone as designated by the Mayor of London in October 2015, an objective of which is to provide 3,213 new homes by 2025, of which 34% will be affordable.

The Park Royal Opportunity Area, as designated in the Old Oak and Park Royal Opportunity Area Planning Framework (OAPF) Supplementary Planning Guidance to the London Plan (2015) (Ref. 6), is situated adjacent to the southern boundary of the Site.

A number of primary and secondary schools are located within 1 kilometre (km) of the Site. The closest primary school is Lyon Park Primary School situated approximately 375m to the north-west and the nearest secondary school, Alperton Community School, is located approximately 1km to the west of the Site.

The nearest hospital to the Site is the Central Middlesex Hospital located approximately 1.4km to the south of the Site. Other local healthcare facilities situated within 1km of the Site include:

- Alperton Medical Centre (approximately 800m to the north-west of the Site);
- Stanley Corner Medical Centre (approximately 960m to the north-west of the Site);
- The Law Group Medical Practice (approximately 960m to the north-east of the Site); and
- Hazeldene Medical Centre (approximately 960m to the north-east of the Site).

There are numerous open spaces and play spaces in the vicinity of the Site, with the nearest open space being Heather Park, located approximately 50m north of the Site.
2.1.3 Transport Context

The existing Site has a varied Public Transport Accessibility Level (PTAL), ranging from level 0 in the west to level 3 in the north and east of the Site.

The Site is located approximately 445m south-west of Stonebridge Park Station which serves the London Underground Limited (LUL) Bakerloo Line, and approximately 1.3km east of Alperton Station, which serves the Piccadilly LUL Line.

Alperton is well served by bus routes, including services to South Harrow, Ealing, Park Royal and Wembley and there are number of bus stops in the vicinity of the Site along Beresford Road to the north. The Site is also easily accessible from the North Circular (A406) to the east.

2.1.4 Air Quality Context

The area to the south of the North Circular Road and all housing, schools and hospitals along the North Circular Road, Harrow Road, Bridgewater Road, Ealing Road, Watford Road, Kenton Road, Kingsbury Road, Edgware Road, Blackbird Hill, Forty Lane, Forty Avenue and East Lane is designated as an Air Quality Management Area (AQMA) for nitrogen dioxide (NO$_2$) and particulate matter (PM$_{10}$) (Ref. 7). The AQMA designation includes the Site.

2.1.5 Geo-Environmental Context

A Geo-Environmental Site Condition Report and Outline Remediation Strategy were prepared by Delta Simons for the Site in July 2016 (Ref. 8). The report identified that the Site is currently occupied by industrial units and associated hardstanding, with reinforced concrete former floor-slabs overlying Made Ground which varies between <1.0m to 11.8m in thickness. The underlying soils comprise London Clay Formation with areas of drift deposits of Alluvium and/or Taplow Gravel Formation (Secondary A Aquifer). A number of heavy metal, inorganic and organic contaminants were identified in soils and groundwater which are likely to be a consequence of the Site’s former industrial use.

2.1.6 Ecology Context

An Extended Phase 1 Habitat Survey of the Site was undertaken by Delta Simons in July 2016 to assess the ecological potential of the Site and surrounding area (Ref. 9). The nearest statutory designated ecological site is Foxwood Local Nature Reserve (LNR) located approximately 1.9km to the south-west. The Site is also located within the Risk Impact Zone for the Brent Reservoir, Hampstead Heath Woods and Syon Park Sites of Special Scientific Interest (SSSIs). However, due to the distance of the Site from these designated sites and the nature of the surrounding area, it is considered unlikely that the Proposed Development will have an impact on the LNR and SSSIs.

The Grand Union Canal lies adjacent to the western boundary of the Site and is designated as a Site of Importance for Nature Conservation (SINC) (Metropolitan Level). The River Brent, part of which bisects the Site, is also designated as a SINC (Borough Importance) (River Brent West of Stonebridge), and supports a variety of riverside vegetation. Both watercourses are designated as Green Chains in the London Plan. The locations of these designations are shown on Figure 2. The remainder of the Site, consisting of former industrial buildings and hardstanding, is considered to be of low ecological value.

2.1.7 Water Resources and Flood Risk Context

As indicated above, the River Brent bisects the Site and the Grand Union Canal is adjacent to the Site’s western boundary. The area along the southern boundary of the Site and the eastern corner of the Site are located within Flood Zones 2 and 3 (medium and high risk of flooding respectively) as designated by the Environment Agency (Ref. 10). The remainder of the Site is located within Flood Zone 1 (low risk of flooding).

Based on a site visit undertaken in May 2017 the following observations were made regarding the water quality within the Grand Union Canal in proximity to the Site. Water quality was poor with low levels of dissolved oxygen levels and a blue/green algae was noted blooming on the margins. The macroinvertebrate community was characteristic of a freshwater system under the combined pressures of poor water quality and homogenous flow and extensive areas of macrophytes dominated by nutrient tolerant species were observed.
The water quality of the River Brent in proximity to the Site was moderate with dissolved oxygen levels at 78%. The banks and the river bed both comprise reinforced concrete throughout and the river bed had a thin layer of silt overlaying the concrete which supported an extensive coverage of blanketweed, *Cladophora glomerata agg.* The macroinvertebrate community was poor. The reach of the Brent adjacent to the Site could be described as a flood alleviation channel, extensively re-sectioned and reinforced.

### 2.1.8 Heritage Context

The Site does not lie within a Conservation Area or an Archaeological Priority Area (APA). The nearest APA is the site of the Medieval Moated Manor APA located 500m to the south-west of the Site.

Due to the Site's former industrial use it is considered to have a low potential for archaeological and heritage assets. An Archaeological Desk-Based Assessment (DBA) (June 2016) and Built Heritage Statement (April 2017) for the Site, prepared by CgMs Consulting (Ref. 11 and Ref. 12), identified four statutory listed buildings within 1km of the Site:

- Robert Stephenson Railway Bridge (also known as the ‘Brent Viaduct’) (Grade II) situated approximately 85m to the north-east of the Site;
- Garden Wall to the North of Twyford Abbey (Grade II) situated approximately 310m to the south-west of the Site;
- Twyford Abbey (Grade II) situated approximately 700m to the south-west of the Site; and
- Church of St. Mary (Grade II) situated approximately 570m to the south-west of the Site.

In addition the following locally listed buildings in proximity to the Site have also been identified:

- Ace Café situated approximately 10m to the east of the Site; and
- Canal Cottage, Twyford Abbey Road situated approximately 530m to the south of the Site.

### 2.2 Potential Environmental Sensitivities / Sensitive Receptors

When undertaking an EIA it is important to identify potential sensitive receptors which are to be considered within the various technical assessments. Initial studies have identified the following potential sensitive receptors to the Proposed Development:

- Adjacent residential and commercial properties;
- Local community facilities including schools and healthcare facilities;
- Community amenity facilities, including:
  - Heather Park (50m to the north of the Site);
  - Abbey Estate Open Space (575m to the south-west of the Site);
  - Mount Pleasant Open Space (850m to the west of the Site);
- Local road networks and public transport, including the local bus and cycle network;
- Pedestrians, cyclists and road users in proximity of the Site;
- Underlying aquifers (Secondary A) and the surrounding drainage system;
- Ecological receptors, including:
  - SINCs, such as the River Brent (Metropolitan Level) and the Grand Union Canal SINCs (Borough Level);
  - Green Chains;
  - Wildlife Corridors;
- Listed buildings in the vicinity of the Site including:
  - Robert Stephenson Railway Bridge (also known as the ‘Brent Viaduct’) (Grade II) situated approximately 85m to the north-east of the Site;
  - Garden Wall to the North of Twyford Abbey (Grade II) situated approximately 310m to the south-west of the Site;
– Twyford Abbey (Grade II) situated approximately 700m to the south-west of the Site;
– Church of St. Mary (Grade II) situated approximately 570m to the south-west of the Site;

• Key short, medium and long-distance views; and
• Below-ground utilities and services.
Figure 2  Site Designations Map
3. The Proposed Development

3.1 The Application

It is the intention of the Applicant to submit an outline planning application with details submitted for Phase 1 for a residential-led, mixed use scheme (referred to as the ‘Proposed Development’).

The Proposed Development will be brought forward in ten phases. Planning consent will be sought with the planning application being submitted in detail (‘full’ details to be provided) for Phase 1 with the remaining phases to be submitted in outline (with all matters reserved in relation to scale, appearance, access, landscaping and layout). Further details relating to the anticipated construction phasing are provided in the following section.

3.2 The Proposed Development

The Proposed Development will comprise 12 buildings (referred to as Buildings A, B, C, D, E, F, G, H, J, K, L and N) ranging in height from 5 storeys to 25 storeys. The buildings will be set within publicly accessible open landscaped areas, including public squares and gardens. Courtyard gardens and balconies will provide private and semi-private amenity space for residents.

The Proposed Development will provide up to 2,750 homes (a proportion of which will be affordable homes) and a proportion of commercial/employment floorspace (including A1-A5, B, D1 and D2 uses). Undercroft car parking will serve the residents of each building and it is anticipated that an energy centre will be provided as part of the proposals.

Phase 1 of the Proposed Development will be submitted in detail and will comprise the provision of circa 375 homes, a proportion of commercial/employment floorspace and a community centre. The remainder of the Proposed Development will be subject to an outline planning consent.

Highway works will be required to accommodate traffic associated with the Proposed Development e.g. to Beresford Avenue and the North Circular along with works to upgrade utilities infrastructure as required.

Demolition works are anticipated to commence in autumn 2018 (following receipt of planning consent in spring 2018) and construction is likely to take approximately 19 years, with phased occupation of the buildings within each phase as they are completed. The anticipated construction programme is summarised as follows (indicative timings):

- **Phase 1A** construction is expected to commence in quarter (Q) 1, 2019 with first occupation anticipated in Q2, 2021;
- **Phase 1B** construction is expected to commence in Q3, 2019 with first occupation anticipated in Q2, 2022;
- **Phase 2** construction is expected to commence in Q2, 2021 with first occupation anticipated in Q2, 2024;
- **Phase 3** construction is expected to commence in Q4, 2022 with first occupation anticipated in Q3, 2026;
- **Phase 4** construction is expected to commence in Q1, 2025 with first occupation anticipated in Q3, 2028;
- **Phase 4A** construction is expected to commence in Q4, 2025 with first occupation anticipated in Q1, 2028;
- **Phase 5** construction is expected to commence in Q1, 2027 with first occupation anticipated in Q1, 2031;
- **Phase 6** construction is expected to commence in Q3, 2029 with first occupation anticipated in Q2, 2032;
- **Phase 7** construction is expected to commence in Q3, 2030 with first occupation anticipated in Q3, 2034; and
- **Phase 8** construction is expected to commence in Q1, 2032 with first occupation anticipated in Q2, 2037.

The indicative phasing of the Proposed Development is shown in Figure 3 below.

The ES will assess the likely significant environmental impacts during the enabling works, demolition and construction. Given the duration of the construction programme the impact assessment will include consideration of ‘timeslices’, defined as certain points during the construction works where there is an overlap of demolition and construction activities occurring at the same time as when future residents may partially occupy the Proposed Development (and as such when ‘worst case’ impacts may arise). The following timeslices are proposed to be assessed:
• Q4 2020 when Phases 1A and 1B are under construction;
• Q2 2027 when Phases 1-3 are complete and occupied and construction works are ongoing for Phases 4, 4A and 5; and
• Q1 2032 when Phases 1-5 are complete and occupied and construction works are ongoing for Phases 6, 7 and 8.

The above timeslices will be incorporated into the technical assessments as appropriate to provide a comprehensive understanding of environmental effects during the construction works.
Figure 3  Indicative Construction Phasing Plan
4. **Key Legislative and Planning Policy Documents**

4.1 **EIA Statutory Requirements and Guidance**

The ES will be prepared in accordance with the EIA Regulations and current best practice guidance for EIA, in particular:

- Preparation of Environmental Statements for Planning Projects that require Environmental Assessment: Good Practice Guide, Department of the Environment (DoE) 1995 (Ref. 13);
- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment, 2004 (as amended 2006) (Ref. 14); and

4.2 **Planning Policy Context**

Each of the technical chapters within the ES will include reference to relevant national, regional and local planning policy, a summary of which is given below.

4.2.1 **National Planning Policy and Guidance**

The ES will have regard to the National Planning Policy Framework (NPPF) (2012) (Ref. 16). The NPPF sets out the Government’s economic, environmental and social planning policies for England. The policies contained within the NPPF articulate the Government’s vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

The ES will also take into consideration the Planning Practice Guidance (PPG) (Ref. 17) which is an online resource that became effective in March 2014. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date.

4.2.2 **Regional Planning Policy and Guidance**

The ES will have regard to the following key regional strategic planning documents. Any additional documents considered relevant to the assessment for individual technical ES chapters will also be identified.

- The London Plan: The Spatial Development Strategy for Greater London Consolidated with Alterations Since 2011 (2016);
- Sustainable Design and Construction SPG (2014) (Ref. 18);
- Clearing the Air: The Mayor’s Air Quality Strategy (2010) (Ref. 19);
- The Control of Dust and Emissions during Construction and Demolition (2014) (Ref. 20);
- Housing SPG (2016) (Ref. 21);
- Shaping Neighbourhoods: Play and Informal Recreation SPG (2012) (Ref. 22);
- Accessible London: Achieving an Inclusive Environment SPG (2014) (Ref. 23);
- Shaping Neighbourhoods: Character and Context (2014) (Ref. 24); and

4.2.3 **Local Planning Policy and Guidance**

The following local planning policy documents will be taken into consideration within the ES:

- London Borough Brent Core Strategy (2010);
- Development Management Policies Document (2016);
- Site Specific Allocations Document (2011) (Ref. 26);
- Alperton Masterplan Supplementary Planning Document (2011); and
5. **EIA Consultation**

The process of consultation is important to the development of a comprehensive and balanced ES. Responses received from statutory consultees (the LBB, the Environment Agency, Natural England and Historic England) and views of the interested parties will serve to focus the environmental studies and to identify specific issues that require further investigation.

Consultees involved in the evolution of the design of the Proposed Development and preliminary assessment of environmental effects will include, but are not limited to:

- London Borough of Brent (LBB);
- Greater London Authority (GLA);
- Environment Agency (EA);
- Transport for London (TfL);
- Historic England (HE);
- Natural England (NE); and
- Neighbourhood / residents associations local to the Site; and
- Canals and Rivers Trust (CRT).

Consultation is an ongoing process and comments will be fed back into the design of the Proposed Development as appropriate. A summary of the key consultation responses received from consultees and interested parties which are relevant to the EIA process will be included within the ES.
6. **Environmental Topics to be Addressed within the EIA**

6.1 Overview

The EIA and associated technical studies will reflect current guidelines and relevant legislation and will be carried out in accordance with statutory requirements, including the requirements for the contents of an ES. For the EIA to be an effective decision-making tool, the ES needs to focus on the main or likely significant environmental effects, within a range of technical topics. These issues have been identified through a review of existing information, baseline studies and preliminary review of the emerging design and nature of the Proposed Development.

The EIA will consider the potential significant effects associated within the following environmental topics:

- Socio-Economics;
- Transportation and Access;
- Noise and Vibration;
- Air Quality;
- Wind Microclimate;
- Daylight, Sunlight and Overshadowing;
- Ground Conditions;
- Water Resources, Drainage and Flood Risk; and
- Townscape and Visual Impact Assessment.

In relation to the provisions within the EIA Regulations, the assessments undertaken within the ES will consider human receptors such as local residents, employees and construction workers. Therefore, the effects of the Proposed Development in relation to health and population will, where relevant, be considered in the technical chapters of the ES as relevant, such as noise, air quality and socio-economics. Given that the effects of the Proposed Development on population and human health will be addressed within the respective chapters, and mitigation measures will be recommended to address any significant adverse effects, a separate health impact assessment is not considered to be necessary and is not proposed.

The Site is not located in an area that is anticipated to be at risk of foreseeable major disasters or accidents. However, the area along the southern boundary of the Site and the eastern corner are within Flood Zones 2 and 3 (the remainder of the Site is within Flood Zone 1) and therefore, with the predictions relating to climate change, there is the potential risk for flooding to occur. This risk will be assessed within the Water Quality, Flood Risk and Water Resources ES Chapter and the Flood Risk Assessment that will be prepared in support of the planning application. Given the nature of the Proposed Development and the Site location it is therefore concluded that no further consideration of natural disasters or major incidents is required for the purposes of the ES.

Climate change impacts, adaptation and mitigation measures will be taken into account during the design evolution of the Proposed Development and such considerations will be factored into the design where possible. Where relevant, a summary of the likely impacts on the Proposed Development in relation to climate change and how these impacts will be mitigated will be included within the ES and other supporting application documents such as the Energy Statement and Sustainability Statement.

During the enabling works and the construction phase, measures to mitigate climate change will include reducing carbon dioxide (CO₂) emissions from construction equipment as well as reducing, reusing and recycling Site waste. These measures will be described within the Demolition and Construction Chapter of the ES. In terms of the operation of the Proposed Development once it is completed, the choice of materials and other design related measures will be detailed in the Proposed Development Chapter of the ES whereas atmospheric pollutants and flood risk will be covered within the Air Quality and Water Quality, Flood Risk and Water Resources ES Chapters, respectively.

The following sub-sections of this Scoping Report provide details on each of the above environmental ‘topics’, specifically, the works proposed to fulfil the requirements of the EIA process.

In addition to the above, the following chapters will be provided as part of the ES:

- Introduction;
6.2 Methodology

The EIA will address the direct effects of the Proposed Development in addition to the indirect, cumulative, short, medium and long term, permanent, temporary, beneficial and adverse likely significant effects arising from the Proposed Development. The main mitigation measures envisaged in order to avoid, reduce or remedy significant adverse effects will be described. The concluding chapters of the ES will provide a summary of the effect interactions and residual effects of the Proposed Development.

For the outline element of the Proposed Development, Parameter Plans will be prepared to enable the EIA team to establish an appropriate physical ‘development scenario’ for testing which will enable the identification and assessment of the likely significant environmental effects of the Proposed Development.

As an example, parameters will be set for maximum building heights (i.e. vertical limits of deviation above ground) where ‘scale’ and ‘layout’ are Reserved Matters. Within the outline element of the application all matters (access, appearance, landscaping, layout and scale) will be reserved. The Parameter Plans set out the minimum information required to allow the environmental effects of the Proposed Development to be assessed with sufficient certainty.

The massing-dependent studies of the EIA (i.e. Wind Microclimate, Daylight, Sunlight and Overshadowing, and Heritage, Townscape and Visual Impact Assessment) will consider the maximum permissible building envelope defined by the maximum scale and layout parameters to be shown on the Parameter Plans.

Using the maximum scale and layout parameters as the basis for the technical assessments is considered a robust worst case assessment of the effects. It is likely that the massing of the Proposed Development that will come forwards through the detailed design and Reserved Matters Applications may be reduced in accordance with the principles established in the Design Specification. In addition, the maximum permissible development (in terms of scale and layout or “massing”) is considered to represent the worst case scenario as a larger development massing would lead to for example, potentially increased view obstruction and increased wind speeds.

For the detailed element (Phase 1), the EIA will assess the detail as presented within the architectural and landscape drawings and as such will assess a fixed / detailed massing and quantum of development for the detailed element of the Proposed Development.

Each technical chapter of the ES will define the baseline against which the potential significant environmental effects of the Proposed Development will be assessed. The baseline conditions will be taken as the current (2017) conditions on-site, i.e. the existing buildings and hardstanding on-site. The impact of the Proposed Development will be assessed during the demolition and construction phase, and on completion and occupation of the Proposed Development. Where relevant and appropriate, a ‘future baseline’ will be identified for some ES topics, such as Transportation and Access. The future transport baseline will consider the transport conditions when the Proposed Development is expected to be complete and operational and may consider other developments and any highway improvements that are considered to have an impact on the Proposed Development’s study area. For other topics, such as Daylight, Sunlight and Overshadowing, the future baseline will include any consented neighbouring schemes that are under construction at the time of the planning submission. Where appropriate reference to, and inclusion of, a future baseline will be fully explained within the relevant ES chapter(s).

Following on from the definition of baseline conditions, the impact of the Proposed Development will be assessed during the demolition and construction phase (with reference to the timeslices identified in Section 3 as
appropriate), and on completion and occupation of the Proposed Development. Mitigation measures will be identified to eliminate, mitigate or reduce adverse effects and, following the incorporation of mitigation measures, the significance of any remaining residual effects will be defined by applying a standard set of significance criteria. Interactions between effects and cumulative effects will then be assessed (see Section 6.4 below for further details).

In summary, each technical ES chapter will:

- Define baseline conditions (the existing Site);
- Assess the likely effects of the Proposed Development; and
- Assess the likely effects of the Proposed Development in addition to a number of other schemes considered as having the potential to give rise to cumulative effects.

6.3 Environmental Design and Management Measures

Throughout the ES, where applicable, the way that potential environmental effects have been or will be avoided, prevented, reduced or offset through design and/or management measures will be described. These are measures that are inherent in the design and demolition and construction of the Proposed Development, and include measures such as the implementation of a Construction Environmental Management Plan (CEMP) to be prepared in advance of any construction works. Proposed environmental enhancements to be implemented as part of the Proposed Development will also be described, where applicable.

These design measures will be considered prior to the assessment of effects to avoid considering assessment scenarios that are unrealistic in practice, i.e. do not take account of such measures even though they are likely to be standard practice. These will then be followed through the assessment to ensure that realistic environmental effects are identified.

6.4 Cumulative Effects Assessment

In accordance with the EIA Regulations, the EIA will give consideration to ‘cumulative effects’. By definition, these are effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. For the cumulative effects assessment, two types of effect will be considered:

- The combined effect of individual effects, for example noise, airborne dust or traffic on a single receptor; and
- The combined effects of nearby consented or under construction development schemes, which may, on an individual basis be insignificant but, cumulatively, have a likely significant effect.

Development schemes that will be considered within the cumulative assessment comprise those:

- With planning permission (or with a resolution to grant consent) and those under construction which are located within an approximate 1km radius of the Site; and
- Result in an increase of more than 10,000m² gross external area (GEA) in floor area (or over 150 residential units).

It should be noted that some of the schemes are ‘under construction’ and as a result, these schemes may be considered as ‘built’ within the baseline (particularly those studies that involve massing modelling, such as wind microclimate studies). Where applicable, this will be stated within the ES chapter.

Table 1 sets out the proposed list of schemes to be considered within the Proposed Development’s cumulative effects assessment (referred to as ‘cumulative schemes’). The locations of these cumulative schemes are illustrated on Figure 4.

Further to the list in Table 1, additional schemes outside the 1km distance from the Site may be considered in connection with specific environmental topics as relevant, e.g. the Transport Assessment (TA) and Townscape and Visual Impact Assessment. Justification of the reasons for the inclusion of other schemes within the aforementioned studies will be provided in each technical ES chapter where relevant.
<table>
<thead>
<tr>
<th>Ref</th>
<th>Name / Address</th>
<th>Application Number</th>
<th>Description</th>
<th>Status as of 30th May 2017 (LDD Database (Ref. 28))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100 Beresford Avenue</td>
<td>16/0389</td>
<td>Outline application for demolition of existing warehouse and 3 storey offices and erection of one six storey and one three storey building comprising 71 residential units (24 x 1bed, 27 x 2bed and 20 x 3bed) and children's nursery, with associated basement level for car and cycle parking spaces, bin stores, landscaping, amenity space and fencing.</td>
<td>Submitted (29/01/2016)</td>
</tr>
<tr>
<td>2</td>
<td>Minavil House, Rosemont Road</td>
<td>16/2629</td>
<td>Demolition of existing two storey commercial buildings and erection of a mixed used development ranging from ten to twenty six storeys in height, comprising 251 residential flats (83 x 1bed, 136 x 2bed and 32 x 3bed), 1,942 sqm retail foodstore (Use class A1) on the ground floor, 622sqm of office space (Use Class B1) on the first floor, 634sqm retail floorspace for flexible use as cafe, bar or restaurant (Use class A1, A4 or A3) at lower ground floor and ground floor level; together with associated vehicular access, car and cycle parking spaces, bin stores, plant room, landscaping and private and communal amenity space.</td>
<td>Approved (05/06/2017)</td>
</tr>
<tr>
<td>3</td>
<td>255 Ealing Road</td>
<td>14/2276</td>
<td>Construction of a 3 to 9-storey building comprising 125 residential units and 277 sqms of affordable workspace (Use Class B1) and/or community floorspace (Use Class D1) and associated parking, access, landscaping and related ancillary works.</td>
<td>Under Construction (Approved 11/12/2011)</td>
</tr>
<tr>
<td>4</td>
<td>Twyford Abbey, Twyford Abbey Road, Park Royal, London NW10 7DP</td>
<td>17/2220FUL</td>
<td>Redevelopment of the site for use as a secondary and sixth form school (D1 Use Class) involving the construction of two part three-storey and part four storey buildings; construction of a single storey building within the walled garden; construction of a single storey building with swimming pool; construction of two buildings to provide ancillary offices and accommodation; exterior works to Twyford Abbey including demolition of later additions; and associated tree works; boundary treatments; hard and soft landscaping including the provision of a multi-use games area; and access and parking provision (following the demolition of a two-storey extension, the gatehouse lodge and other structures on-site).</td>
<td>Pending Consideration (Submitted 03/05/2017)</td>
</tr>
<tr>
<td>5</td>
<td>Abbey Wharf and Delta Centre and 152 Mount Pleasant, Wembley, HA0</td>
<td>16/4478</td>
<td>Demolition of existing buildings at Abbey Wharf, Delta Centre and 152 Mount Pleasant and redevelopment to provide a residential-led, mixed-use development of up to 6 storeys comprising 135 residential units (34 x 1bed, 79 x 2bed and 22 x 3bed) and 247sqm of commercial space (A1, A2, A3, B1, D1 and D2 Use Classes), landscaped amenity space, car and cycle parking and associated works.</td>
<td>Resolution to Grant (24/05/2017)</td>
</tr>
<tr>
<td>6</td>
<td>245-249 and 253 Ealing Road, Wembley, HA0 1EX</td>
<td>16/3606</td>
<td>Redevelopment of the site to provide two new buildings of part 9 and part 10 storeys high to accommodate 92 flats (7 x studios, 45 x 1 bed, 26 x 2 bed and 14 x 3 bed units), ground floor commercial uses within Use class A4 (drinking establishment); or Use class D1 (community centre) with associated basement for car and cycle parking spaces and storage, vehicular crossover, bin stores, amenity space, landscaping and associated works.</td>
<td>Registered (16/08/2016)</td>
</tr>
<tr>
<td>7</td>
<td>First Central, Lakeside Drive, London</td>
<td>17/2611</td>
<td>Residential-led, mixed-use redevelopment of the site to provide three new courtyard blocks, ranging from 5 storeys to 27 storeys in height comprising 807 residential units (Use Class C3), 1359sqm (GIA) of flexible retail/employment/community floor space (Use Classes A1, A2, B1 and D1) with publicly accessible open space, private and shared amenity space; hard and soft landscaping; alterations to existing, and creation of new, vehicular accesses and pedestrian routes; substation; servicing bay on Lakeside Drive, car and cycle parking and associated works.</td>
<td>Registered (09/06/2017)</td>
</tr>
</tbody>
</table>
Figure 4 Location of Cumulative Schemes in Relation to the Site
6.5 Significance Criteria

For each technical ES chapter the significance of effects will be evaluated with reference to definitive standards, accepted criteria and legislation where available. Where it has not been possible to quantify effects, qualitative assessments will be carried out based on expert opinion and professional judgement. Where uncertainty exists, this will be noted in the relevant chapter of the ES.

Specific significance criteria for each technical discipline will be developed, based on a common set of significance criteria, giving due regard to the following:

- Extent and magnitude of the impact;
- Effect duration (short, medium or long term);
- Effect nature (direct, indirect, reversible or irreversible);
- Whether the effect occurs in isolation, is cumulative or interactive;
- Performance against any relevant environmental quality standards;
- Sensitivity of the receptor; and
- Compatibility with environmental policies.

In order to provide a consistent approach across the different technical disciplines addressed within the ES, the following terminology will be used throughout the ES to define residual effects (i.e. the effects after the implementation of any required mitigation measures):

- Adverse – Detrimental or negative effects to an environmental resource or receptor; or
- Negligible – Imperceptible effects to an environmental resource or receptor; or
- Beneficial – Advantageous or positive effect to an environmental resource or receptor.

In general, residual effects found to be ‘moderate’ or ‘major’ are deemed to be ‘significant’. Effects found to be ‘minor’ are considered to be ‘not significant’, although they may be a matter of local concern. ‘Negligible’ effects are considered to be ‘not significant’ and not a matter of local concern.

Each technical chapter of the ES will provide further explanation and definition on the scale of effect significance, i.e. minor through to major. Broadly, short to long-term (temporary) effects will be considered to be those associated with the demolition and construction phase, and permanent effects will be those associated with the completed operational Proposed Development. Local effects will be defined as those affecting the Site and neighbouring receptors, whilst effects upon receptors in the LBC will be considered to be at a district / borough level. Effects affecting Greater London will be considered to be at a regional level, whilst effects, which affect different parts of the country or England as a whole, will be considered to be at a national level.

Mitigation measures will then be identified to either eliminate or reduce adverse effects. These will be incorporated into either the design of the Proposed Development; demolition and construction commitments or operational or managerial standards / procedures.

Where mitigation measures are inherent (e.g. industry standard best practice) this will be described in the ES chapter and included within the assessment of effects.

6.6 Alternatives Assessment

The EIA process provides an opportunity to consider alternative development options with their respective environmental effects before a final decision is taken on the final design. In accordance with the EIA Regulations and statutory guidance, the ES will describe the alternatives that were considered by the Applicant, project team and architects, including:

- ‘Do nothing scenario’ – the consequences of no redevelopment taking place on the Site;
- ‘Alternative Sites’ – the rationale behind choosing the Site. It will be outlined that alternative sites have not been considered by the Applicant; and
- ‘Alternative designs’ – the ES will summarise the evolution of the design of the Proposed Development; the design modifications which have taken place to date and environmental considerations which have led to those modifications. A summary of the main alternatives considered, such as alternative combinations of
use classes, massing, and materials will be presented together with a summary justification of the final design.

6.7 Demolition and Construction

The ES will provide details of the indicative demolition and construction programme, together with proposed demolition and construction activities and methods, and their anticipated duration. Information will be provided on, but not limited to, site preparation, demolition and construction logistics, including site access and egress; materials and waste management; land or soil remediation; welfare facilities; and working hours. Details of any assumptions made will be included in the narrative.

Estimates of the quantities of materials to be generated during the demolition and construction phase will be considered, and an estimate of the peak periods of daily heavy goods vehicle (HGV) movements during this phase will be provided.

The ES will define and assess the potential effects of a reasonable worst-case scenario. The peak period or level of activity will be assessed in terms of traffic, noise and air quality effects. The peak period will be defined on the basis of the maximum number of HGV movements and an indication of the location of plant and equipment on-site in relation to the excavation, demolition and construction boundary.

The Demolition and Construction ES chapter will present the outline structure of a CEMP. The mitigation measures identified as a result of the site preparation, excavation, demolition and construction assessment will be presented in the ES for future inclusion within a CEMP, to be agreed with LBB as part of any future standard planning condition. It is likely that specific mitigation measures will be defined to reduce effects specifically on or arising from:

- Site preparation, excavation, demolition and construction traffic and workforce presence on-site;
- Working close to neighbouring boundaries;
- Site access and egress (including mitigation for any loss of public right of way and road closures);
- Noise and vibration;
- Soil removal and land remediation;
- Water usage and Site drainage;
- Energy usage and monitoring;
- Emission of dust and other pollutants; and
- Waste generation, management and disposal.

The mitigation measures and CEMP will take account of the requirements of the London Councils' Guidance on 'The Control of Dust and Emissions from Construction and Demolition' (2014).

6.8 Socio-Economics

6.8.1 Summary Baseline Context

Given the location of the Proposed Development within London Borough Brent (LBB) and adjacent to the London Borough Ealing (LBE) this assessment will consider the socio-economic conditions within both London boroughs.

The LBB is an outer London borough, located in the north west of Greater London and has an estimated population of 324,000. In comparison LBE has an estimated population of 343,100. The proportion of the population that is of working age in Brent (67.8%) is slightly higher than that recorded within LBE (66.8%) but lower than that recorded for London (68.1%). Micro enterprises (1 to 9 employees) make up the majority of businesses both LBB and LBE (both 92.2%) in which is a slightly greater proportion compared to London as a whole (90.6%).

Average workplace based earnings are higher than residence based earnings in both LBB and Greater London, in contrast to LBE where resident earnings are greater than workplace earnings. Within LBB and LBE both resident and workplace earnings are significantly lower than the Greater London averages. The LBB is among the 20% most deprived areas in England as defined by the English indices of deprivation (2015) (Ref. 29); in contrast to LBE which among the 20% least deprived areas in England. Within LBB there are significant barriers to access housing and services. In addition rates of violent crime are slightly higher within LBB compared to that
recorded within Greater London and LBE. Residents within LBB are generally less qualified compared to both LBE and Greater London as a whole and the unemployment rate is higher (7.9%) than the LBE (6.3%) and London average (5.8%). Residents of Brent are as likely to live in the social rented sector as the average across London, in contrast to LBE which has a higher proportion of private owned dwellings.

The LBB contains 59 primary schools and 15 secondary schools, whilst LBE contains 68 primary schools and 14 secondary schools. Both boroughs also contain a number of private / independent sector establishments. The LBB contains several large parks and open spaces, including Barham Park, Welsh Harp, Fryent Country Park, Gladstone Park, Roundwood Park as well as Roe Green Park. The Proposed Development lies some distance from these parks with Heath Park, Tokyngton Recreation Ground and Abbey Estate open space located within 1.2km of the Site. There are no identified large parks or open spaces within LBE which are located within 1.2km of the Site.

6.8.2 Potential Impacts

The Proposed Development is expected to generate a range of socio-economic effects, some of which would be temporary, whilst others would be long-term and permanent. For the purposes of the ES, due consideration will be given to the Proposed Development in terms of the following:

- Temporary employment during the demolition and construction phase;
- Creation of long-term employment opportunities from the proposed commercial uses on-site including a consideration of existing employment uses on-site;
- Provision of housing, including affordable housing;
- Additional local spending by residents;
- Impacts on the provision/utilisation of education and health infrastructure including consideration of the provision of new infrastructure on-site; and
- The provision of public and private amenity space, open space and child play space.

6.8.3 Outline Scope of Assessment

The socio-economic assessment will review the relevant policy at the local (the LLB and LBE), regional (Mayor of London, GLA) and national levels to identify the key issues of relevance to the Proposed Development. This will include the Brent Local Plan, relevant SPG, the London Plan, NPPF and PPG.

A baseline assessment will be undertaken as part of the Socio-economics ES Chapter and will use a range of sources to provide a description of the socio-economic conditions within the local area and at the LLB and LBE level, including employment and the economy. This will be carried out using established statistical sources such as:

- 2001 and 2011 Census Data (Ref. 30);
- Business Register and Employment Survey (BRES) (2015) (Ref. 31);
- Claimant Count Data (2016) (Ref. 32); and

An assessment of effects will be undertaken to assess the impact of the Proposed Development on the baseline socio-economic conditions. The methodology for assessing socio-economic impacts will follow standard EIA guidance and will entail:

- Consideration of local policy, plans and development constraints;
- Review of baseline conditions at the Proposed Development Site area, locally (within the LLB and LBE) and in the Greater London area;
- Assessment of the likely scale, permanence and significance of effects associated with:
  - Direct, indirect and induced employment during the construction phase of the Proposed Development;
  - Direct, indirect, and induced net employment once the Proposed Development is operational; and
  - Delivery of new homes and the impact of this on public services and social infrastructure such as: primary healthcare, education and play space provision.
• Identification of avoidance and mitigation measures (if and where relevant) and thus an assessment of the residual effects of the Proposed Development; and

• An assessment of the potential cumulative effects with other schemes within the surrounding area.

6.9 Transportation and Access

6.9.1 Summary Baseline Context

The Site is located within the south of the LBB between Stonebridge Park and Alperton stations (which are located to the north-east and west of the Site respectively). The highway network surrounding the Site consists of Beresford Avenue to the north and the Old North Circular Road to the south. These single carriageway roads are adopted and are managed and maintained by LBB.

The Site currently has two active vehicle accesses from Beresford Avenue and two from Old North Circular Road. The Site is also served by Wycombe Road, an adopted single carriageway and non-through road, that is accessed from Beresford Avenue and extends into the Site. A ‘Stopping Up’ Traffic Order under Section 248 of the Town and Country Planning Act 1990 (Ref. 35) is being prepared for Wycombe Road on behalf of the Applicant as this road will not be required within the Proposed Development.

Beyond the local highway network, the dual three lane A406 North Circular is located to the immediate south of Old North Circular Road. This adopted road is managed and maintained by Transport for London (TfL).

The Site has a varied Public Transport Accessibility Level (PTAL), ranging from level 0 in the west to level 3 in the north and east of the Site.

The Site is served by four bus stops within the northern frontage of the Site on Beresford Avenue, which support Service Number 224 which links Brent Park and Wembley Stadium. Following recent discussions with LBB, it is understood that Service Number 83 between Golders Hill and Alperton could be extended to Stonebridge Park Station via Beresford Avenue, however this is subject to a current study by TfL.

There are a further two bus stops within 100m of the south east of the Site on Old North Circular Road. These support Service Number 112, which provides a route between Brent Cross and Ealing Town Centre and Service Number 440, which provides a route between Stonebridge Park Station and Gunnersbury. Following recent discussions with LBB, it is understood that Service Number 440 could be extended to Wembley Eastern Lands with major development at that location proposed in the near future.

Stonebridge Park is a Network Rail station located on Argenta Way and is approximately 445 metres north east of the Site. The station is located between Tokyngton and Stonebridge and is also served by London Overground (Watford DC Line) and London Underground (Bakerloo line) services, which use the same platforms.

The baseline conditions relating to transportation and access will be identified using a combination of Site observations, traffic surveys, desktop studies and reviews of available information such as information provided by TfL and LBB. Site visits will be undertaken to determine the general operation of the existing highway and pedestrian networks. The accessibility of the Site will be assessed for all modes including walking, cycling, public transport and vehicles. The frequency of existing public transport services will be obtained by reviewing timetable information from the TfL website.

6.9.2 Potential Impacts

The environmental effects of changes in traffic as a result of the demolition and construction of the Proposed Development will be determined using pre-defined significance criteria for each mode of travel, as set out within the Institute of Environmental Management and Assessment (IEMA) publication ‘Guidelines for Environmental Impact Assessment’ (2004) (referred to as the ‘IEMA Guidelines’) (Ref. 14). The criteria will be based on the net change in journeys as a result of the Proposed Development. The significance criteria will establish the magnitude of any beneficial or adverse traffic and transport effects of the Proposed Development.

The key areas that will be assessed to determine the transportation and access effects of the Proposed Development (during the demolition and construction phase and once the scheme is complete and occupied) are as follows:

• **Severance** - the perceived division that can occur within a community, when it becomes separated by a major traffic artery and describes a series of factors that separate people from places and other people.
Such division may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself.

- **Pedestrian delay** – this is defined in the IEMA Guidelines as an issue, which is affected by changes in the volume, composition and / or speed of traffic may affect the ability of people to cross roads. Typically, increases in traffic levels result in increased pedestrian delay, although increased pedestrian activity itself also contributes.

- **Pedestrian amenity** – this is defined in the IEMA Guidelines as the relative pleasantness of a journey and can include fear and intimidation if they are relevant. As with pedestrian delay, amenity is affected by traffic volumes and composition along with pavement width and pedestrian activity.

- **Driver delay** – this is identified in the IEMA Guidelines as an issue, which can occur at several points on the network, although the effects are only likely to be significant when the traffic on the highway network is predicted to be at or close to the capacity of the system.

- **Accidents and safety** – these are not defined in the IEMA Guidelines, which suggests that professional judgement will be required to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents. The full results of the accident analysis will be reported in the Transport Assessment (TA) and drawn on in the Transportation and Access ES Chapter as appropriate.

**Demolition and Construction Impacts**

The principal transport issues, which may arise as a result of the Proposed Development during the demolition and construction phase are:

- Traffic generation;
- Construction vehicle routing; and
- Impacts on the highway network and junctions.

**Complete and Operational Impacts**

The principal transport issues, which may arise as a result of the Proposed Development when it is complete and occupied are:

- Traffic generation
- Vehicle routing;
- Highway network and junction impact; and
- Public transport capacity.

The effects of the Proposed Development will be identified by assessing the likely effect of the Proposed Development on the local transport network. Drawing on the findings from the Transport Assessment (TA), the Transportation and Access ES Chapter will assess the potential effects of the Proposed Development on the five key areas defined above (severance, pedestrian delay, pedestrian amenity, driver delay and accidents and safety).

Key receptors for the assessment of effects will be existing residential properties on Beresford Avenue, and the proposed residential receptors within the Site. Sensitive receptors will be identified using the IEMA Guidelines.

Categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidelines, and include the following:

- The need to identify particular groups or locations which may be sensitive to changes in traffic conditions;
- The list of affected groups and special interests set out in the IEMA Guidelines;
- The identification of links or locations where it is felt that specific environmental problems may occur; and
- Such locations that “would include accident blackspots, conservation areas, hospitals, links with high pedestrian flows etc.”
6.9.3 Outline Scope of Assessment

The transportation and access impact assessment will be based on the key findings of the TA that will consider the likely transport impact of the Proposed Development during demolition and construction, and once the Proposed Development is complete and operational.

The TA will be prepared in accordance with TfL's Transport Assessment Best Practice Guidance document (April 2010) (Ref. 36). The TA will be based on a separate TA Scoping Report, which will be agreed with the LBB and TfL as part of the pre-application process for the Proposed Development. Following the submission of the TA Scoping Report, transport pre-application meetings have been held with both TfL and LBB to agree the scope of the TA. Further details relating to the scope of the TA are provided below.

The Transportation and Access ES Chapter will include a review of relevant planning policy documents at national, regional and local levels that will be considered in respect of the Proposed Development. The chapter will identify whether any mitigation measures are required and provide an assessment of the residual effect.

The Transportation and Access ES Chapter will set out the methodology to be applied to assess the potential effects of the Proposed Development, in terms of transport and access. In undertaking the assessment, reference will be made to the IEMA Guidelines and guidance published by the Department for Transport (DfT) in order to identify significance criteria applicable to the assessment. Where there are no existing available thresholds of significance, interpretation and judgement will be applied based on professional experience and knowledge of the Site and the surrounding area.

Baseline Assessment

Baseline peak hour traffic flows will be calculated using the traffic surveys undertaken in February 2017, together with any additional surveys deemed necessary through the TA scoping process.

A baseline walking and cycling assessment of the existing key routes surrounding the Site will be undertaken using a Pedestrian Environment Review System (PERS) audit and Cycle Environment Review System (CERS) audit.

Bus service capacity will be identified using TfL Bus Origin and Destination Survey (BODS) data. London Underground capacity will be identified using TfL Rolling Origin and Destination Survey (RODS) data.

Assessment of Transportation and Access Effects of the Proposed Development

National, regional and local planning policy and best practice guidance as well as local policies relating to transport, including the LBB Long Term Transport Strategy 2015-2035 (Ref. 37), will be used to inform the assessment.

The methodology to be utilised in the assessment will reflect the guidance for preparing traffic and transportation ES chapters contained within:

- The Guidelines for the Environmental Assessment of Road Traffic published by The Institute of Environmental Assessment in 1993 (now IEMA) (Ref. 38);
- Volume 11 of the Design Manual for Roads and Bridges (DMRB) (Highways Agency) – Environmental Assessment (Ref. 39); and
- The Department for Communities and Local Government (DCLG) Planning Practice Guidance on Environmental Impact Assessment and Travel Plans, Transport Assessments and Statements in Decision-Taking (Ref. 40).

The proposed geographical scope of the assessment will be determined based on the results of the TA Scoping and will include an agreed schedule of committed schemes and developments and the distribution of Proposed Development trips onto the local transport network.

The proposed temporal scope of the TA comprises:

- **Construction of Proposed Development** – construction of the Proposed Development is anticipated to commence in 2019, subject to obtaining the relevant planning consents. The transport impact of construction traffic will be assessed based on the maximum construction traffic movements.
- **The primary Site access junctions** - It is proposed to assess the construction effects of the Proposed Development for an assessment year of 2018.
• **Completion of Proposed Development** – the Proposed Development is expected to be complete in 2037, and therefore it is proposed that operational effects are assessed for this year.

**Demolition and Construction Phase**

Predicted peak construction traffic will be calculated using either a first-principles approach based on the likely worst-case construction scenario or assessment based upon information supplied by a construction contractor. The Proposed Development construction traffic flows, along with baseline traffic flows, will be used to determine the potential effects.

The potential mitigation measures associated with the construction phase of the Proposed Development will be managed for the duration of the works using a Construction Method Statement (CMS) and CEMP that will be agreed with LBB and TfL prior to commencement of construction.

**Complete and Operational Phase**

As part of the proposed access junctions, the potential mitigation measures associated with the operational phase of the Proposed Development will include pedestrian crossing and cycling facilities, which are likely to range between dropped kerbs and tactile and pedestrian table tops providing level access across the junction mouth. Proposed improvements to the walking and cycling route to Stonebridge Park Station will also be considered as part of the proposals to encourage sustainable non-car travel.

The residential homes will be supported by a Residential Travel Plan (TP), while the commercial land uses will be supported by an Employment Framework Travel Plan (FTP). Prior to occupation of the Development, individual commercial occupier Travel Plans or Travel Plan Statements will be prepared and approved by LBB in accordance with LBB and TFL Travel Planning Guidance. The Residential TP and Commercial FTP will include a range of measures that are designed to reduce single occupancy car travel, where practicable and encourage travel by sustainable modes. The Travel Plans will include details of the on-site and/or surrounding car club and resident and occupier welcome packs.

Operational residential weekday peak hour multimodal flows will be calculated based upon a combination of Trip Rate Information Computer System (TRICS) daily person trip rates and 2011 Census Journey to Work (JtW) data. These will also be factored to 24-hour Annual Average Daily Traffic (AADT) flows for the purposes of the road traffic noise and air quality assessments.

Operational commercial weekday and weekend peak hour multimodal flows will also be calculated using the TRICS database for each of the land uses proposed across the Proposed Development. Surveys will be selected based on similar characteristics to the Proposed Development. These will also be factored to 24-hour Annual Average Daily Traffic (AADT) flows for the noise and air quality assessments.

The operational traffic flows, along with baseline traffic flows will be used to determine the potential effects of the Proposed Development on the local transport network.

For the purposes of the assessment, cyclists will also be considered wherever pedestrians are considered.

The proposed methodology and scope of the assessment of transport impacts of the Proposed Development on noise and air quality are considered in Sections 6.11 and 6.12 of this Scoping Report.

**6.10 Noise and Vibration**

**6.10.1 Summary Baseline Context**

An environmental noise survey will be undertaken in order to establish the baseline noise levels around the Site. The results of the survey would be used to calibrate a computer generated 3D noise model of the existing Site (and relevant adjacent buildings) in order to review the incident environmental noise levels across the Site and assess the effects of the Proposed Development. The survey would be undertaken over a 24-hour (1 day) period on a typical weekday (e.g. not during school holidays).

Existing noise sources in proximity to the Site include the surrounding road network (in particular the North Circular Road), adjacent industrial uses and the nearby London Overground and National Rail line serving Stonebridge Park Station. Existing vibration sources also include the nearby railway lines.
6.10.2 Potential Impacts

The principal noise and vibration impacts with respect to the proposed development are likely to comprise:

- Noise from the local road network, particularly the North Circular to the south of the Site and Beresford Avenue to the north;
- Noise and vibration from the nearby London Overground line and Stonebridge Park Station;
- Noise from the existing adjacent industrial uses around the Site;
- Noise from the existing Ace Café, which is a popular venue for motorbike gatherings and music events;
- Noise generated from the proposed industrial and commercial uses within the development on existing and proposed noise-sensitive receptors;
- Noise and vibration due to construction activities;
- Noise and vibration due to construction road traffic;
- Noise due to the increase in road traffic noise during operation of the Proposed Development;
- Noise generated by commercial floor space (Class A1, A2, A3, B, D1-D4 uses), and community space within the Proposed Development.

6.10.3 Outline Scope of Assessment

The proposed scope of the noise and vibration assessment is presented below and the significance criteria which are proposed to be applied in this assessment are presented in Appendix A. Noise and vibration generated by construction activities at the Proposed Development would be assessed at nearby existing noise sensitive receptors in accordance with guideline threshold values outlined within BS5228:2009+A1:2014 (Ref. 41).

Construction traffic noise will be assessed by considering the short-term increase in traffic flows during construction works following the principles of the Calculation of Road Traffic Noise (CRTN) (Ref. 42) and the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7.

The effect of operational road traffic noise associated with the Proposed Development would be assessed in terms of the change to the existing sound climate at nearby existing receptors using the calculation procedures detailed within CRTN. The computer acoustic model would be used to calculated sound levels for the future scenarios using traffic flow data provided to us by the projects’ Transport consultants and would be assessed following the principles of the CRTN and the DMRB, Volume 11, Section 3, Part 7.

In accordance with the NPPF and the Noise Policy Statement for England (NPSE) (Ref. 43), it would be necessary to identify LOAEL and SOAEL levels for the above to ensure adverse effects are mitigated and minimised.

Considering that the noise from the operation of building services plant and servicing noise within the Proposed Development will be mitigated at the detailed design stage so as to meet the requirements of LBB, negligible effects would be anticipated and it is considered unnecessary to define absolute LOAEL and SOAEL values for building services and servicing noise as a result.

An assessment of the sites’ suitability of the site for residential development would be undertaken based on the results of calculations for the future development scenarios. Guidance levels detailed within BS8233:2014 (Ref. 44) and WHO Guidelines for Community Noise (Ref. 45) would be used to define LOAEL and SOAEL values for the assessment, in line with the NPPF and the NPSE.

Where information on energy centre noise emissions is available, the impacts will be assessed to ascertain whether significant impacts are likely with reference to the requirements of LBB.

The impact of cumulative schemes will be considered in relation to the potential for construction activities to interact in the event of the construction programmes overlapping. This will be undertaken by incorporating predicted traffic data flow from the cumulative schemes into the assessment.

All practical and reasonable measures that can be implemented to mitigate any significant adverse effects associated with construction and operation of the proposed scheme will be considered, and highlighted within the Noise and Vibration ES chapter.
6.11 Air Quality

6.11.1 Summary Baseline Context

The Site lies within LBB and on the edge of the LBE. The LBB have investigated air quality within its area and declared certain areas of the borough an Air Quality Management Area (AQMA) due to exceedances of the annual mean nitrogen dioxide (NO$_2$) objective and the daily mean PM$_{10}$ objective. The area south of the North Circular Road and all housing, schools and hospitals along the North Circular Road, Harrow Road, Bridgewater Road, Ealing Road, Watford Road, Kenton Road, Kingsbury Road, Edgware Road, Blackbird Hill, Forty Lane, Forty Avenue and East Lane are designated as an AQMA. The whole of LBE has been declared an AQMA, also due to exceedances of the NO$_2$ and PM$_{10}$ objectives. The Site lies within the Brent AQMA and is adjacent to the Ealing AQMA.

Air quality monitoring is undertaken adjacent to the main roads within the LBB and LBE and automatic monitoring for NO$_2$ and PM$_{10}$ concentrations is undertaken adjacent to the Hangar Lane Gyratory system. Monitoring using diffusion tubes for NO$_2$ concentrations is also undertaken at a number of locations in the vicinity of the Site. Monitored concentrations have generally been well above the objectives in recent years immediately adjacent to the main roads in the area; and the concentrations reduce with distance from the North Circular Road (A406). As the Site is over 100m from the North Circular, pollutant concentrations may be below National Air Quality Strategy Objectives within the Site, although this will need to be assessed.

The latest monitoring data will be obtained from the LBB and the LBE, and background data will be obtained from the national predictions produced by the Department for Environment, Food and Rural Affairs (Defra). Baseline concentrations at existing residential receptor locations will be predicted by atmospheric dispersion modelling of road traffic emissions.

6.11.2 Potential Impacts

The principal air pollutants of concern with respect to the Proposed Development will be:

- Nitrogen Dioxide (NO$_2$);
- Fine airborne particles (PM$_{10}$ and PM$_{2.5}$); and
- Dust.

The main local sources of these pollutants are likely to be road vehicles (nitrogen dioxide, PM$_{10}$ and PM$_{2.5}$); and construction activities (dust and PM$_{10}$). Professional experience indicates that any impacts associated with other air pollutants will be negligible.

6.11.3 Outline Scope of Assessment

National planning policy and practice guidance as well as local policies relating to local air quality, including the LBB Air Quality Action Plan, will be used to inform the assessment. The technical assessment of the impacts of road traffic emissions will be undertaken in accordance with Defra Technical Guidance TG(16) (Ref. 46); and the significance of air quality impacts and effects will be assessed with reference to guidance issued by the Institute of Air Quality Management (IAQM) and Environment Protection UK (EPUK) in their document: Land-use Planning & Development Control: Planning for Air Quality (January 2017) (Ref. 47).

The potential impacts of dust during construction will be assessed with reference to the IAQM Guidance on the Assessment of Dust from Demolition and Construction (February 2016) (Ref. 48) and the London Mayor’s SPG on The Control of Dust and Emissions during Construction and Demolition.

The assessment will cover two potential air quality issues:

- The impact of the Proposed Development on the surrounding area, during both the construction and operational phases; and
- The impact of existing local pollution sources, in particular local road traffic emission, on the future occupiers of the Proposed Development.

Existing local air quality, the likely future air quality in the absence of the Proposed Development and the likely future air quality if the development goes ahead will be defined. The assessment of construction impacts will focus on the anticipated duration of works. The assessment of operational impacts will focus on the earliest year that the Proposed Development is likely to be operational to provide a worst case assessment. Based on the
anticipated construction programme (presented in Section 3 above) the earliest occupation of the Site will be Quarter 2 of 2021.

The study area will be identified based on where the air quality effects of the Proposed Development are anticipated to be significant. For construction dust impacts, these would likely be within 350m of the Site and within 50m of roads affected by trackout of dust onto the highway. For operational road traffic emissions, the study area would be where road traffic increases are significant, which would generally be an increase of traffic of more than 100 Annual Average Daily Traffic (AADT), depending on the presence of receptors. For emissions from the energy centre, the study area will be the immediate vicinity of the emission point where effects are likely to be most significant.

Consultation will be undertaken with the LBB Air Quality officer to agree the scope and methodology of the assessment.

Air quality will be assessed at a range of worst-case receptors. For construction activities these will be existing properties which could be affected by dust emissions or emissions from on-site construction equipment. For traffic-related impacts these will be the existing and proposed residential properties that are closest to the main roads in the vicinity of the Proposed Development, in particular those close to junctions, where traffic emissions are greatest.

There are no statutory objectives for dust; and therefore a qualitative assessment will be undertaken to identify the level of risk and to identify the appropriate mitigation measures to employ. With mitigation in place, the effects of construction dust are anticipated to be not significant.

The assessment of operational road traffic impacts will be undertaken using the ADMS Roads detailed dispersion model using one years’ worth of meteorological data equivalent to the model verification year. The model will be used to predict concentrations within the development site to assess the suitability of the site for residential development, and also at off-site receptors to assess the impacts of additional traffic associated with the development.

Road traffic model outputs will be verified against local air quality monitoring data using the last complete year of data that is available (anticipated to be 2016). The modelling will make use of mapped background concentration data provided by Defra and of traffic flow projections. Air quality will be assessed in relation to the national air quality objectives, established by the Government to protect human health.

Where information on energy centre emissions is available, the impacts will be assessed to ascertain if significant impacts are likely by reference to Environment Agency screening criteria. Where emissions have potentially significant impacts, the emissions will be modelled using the ADMS 5 atmospheric dispersion modelling programme. Emissions from the energy centre will be compliant with the London Mayor’s Sustainable Design and Construction SPG.

The impact of cumulative schemes will be considered in relation to the potential for construction activities to interact in the event of the construction programmes overlapping. This will be undertaken by incorporating predicted traffic data flow from the cumulative schemes into the assessment.

All practical and reasonable measures that can be implemented to mitigate any significant adverse effects associated with construction and operation of the proposed scheme will be considered, and highlighted within the Air Quality ES chapter.

In addition, an assessment of the quantity of emissions from the energy centre and road traffic will be undertaken to assess compliance with the Air Quality Neutral requirements of the London Mayor’s Sustainable Design and Construction SPG.

6.12 Wind Microclimate

6.12.1 Summary Baseline Context

The wind climate in the south of the UK is reasonably consistent with prevailing winds blowing from the southwest throughout the year and secondary prevailing wind from the northeast during late spring and early summer. The north-easterlies are not as strong as the south-westerlies but occur for a similar amount of time during this period and are cold winds. Winds from the south-westerly quadrant typically account for around 45% of all wind for the site.
6.12.2 Potential Impacts

The wind microclimate assessment will focus on the relative comfort and safety of site users and users of the areas surrounding the site on completion of the Proposed Development. The following specific likely significant effects have been identified:

- Temporary changes in the local wind environment during the demolition and construction works;
- A change in the wind conditions on surrounding roads and pavements once the Proposed Development is completed;
- A change in the pedestrian activity within and around the Proposed Development; and
- The safety and comfort of pedestrians using the site, notably within new areas of public realm and at building entrances.

6.12.3 Outline Scope of Assessment

The Wind Microclimate ES Chapter will be prepared by RWDI, a specialist wind engineering consultancy. RWDI will also prepare a supporting document in the form of a technical report to accompany the ES chapter. The assessment of the wind microclimate will be based on the results from a series of wind tunnel tests.

The wind microclimate will be benchmarked against the Lawson Comfort Criteria (Ref. 49) which have been previously used to assess the wind microclimate on many urban developments in London and across the UK. The scale of the model for the Proposed Development will be 1:300 and will cover an area with a 360m radius from the centre of the Site. The tests will be carried out in an atmospheric boundary layer wind tunnel capable of reproducing the wind characteristics for the Site, both mean and peak (gust) wind speeds will be measured. The suitability of the wind microclimate for different pedestrian activities from sitting through to more transient activities such as crossing the road will be determined.

The assessment will consider the following configurations:

- Baseline – The existing site with existing surrounds;
- The Proposed Development with existing surrounding buildings; and
- The Proposed Development with cumulative buildings.

The wind microclimate assessment will include modelling of the current Site, in its existing form, in order to establish the current conditions at the Site. The baseline assessment will evaluate the existing wind microclimate at the Site and benchmark those conditions against the Lawson Comfort Criteria. These measurements will then be compared with the Proposed Development configurations outlined above where applicable.

When a new development is built, wind flow patterns within the site and its immediate surrounds are often modified; this could either result in increased wind speeds or increased shelter at certain locations and for certain wind directions. The wind assessment will take account of the wind microclimate for all wind directions in order to provide a fully quantifiable assessment of the calm and windy zones around and within the Site.

The wind microclimate assessment will quantify the potential changes to the local wind environment (both on-site and within the immediately surrounding area) in terms of sensitive pedestrian areas such as entrances, thoroughfares amenity and public open space and quantify these in relation to their ‘usability’ for a range of pedestrian activities defined by the well-known and established Lawson Comfort Criteria.

The receptors will be positioned at ground level to cover amenity areas, entrances, pick-up/drop-off/meeting points and main pedestrian thoroughfares. Selected off-site receptors may also be chosen but the majority of receptors will be within the Site and its immediate surrounding streets, because this is the region that is most affected by new buildings. Where appropriate, selected roof terraces will also be instrumented.

The wind conditions will be primarily compared with the intended pedestrian use of the Proposed Development because this assessment will take into account changes in pedestrian activities that accompany development. The likely significant adverse impacts would therefore relate to a wind microclimate that is too windy for the intended use of an area. The generation of strong winds, capable of impeding movement, will also be determined but treated separately from the comfort criteria. If, after development, wind speeds are higher this would be acceptable provided the wind microclimate satisfied the conditions for the desired activity at that receptor.
Comfort conditions will be assessed using the well-established Lawson Comfort Criteria. The criteria rate the usability of a location in relation to its wind characteristics for the following range of pedestrian activities: sitting, standing, strolling and walking.

The significance of the wind microclimate assessment will be described as beneficial if the measured winds are calmer than required, negligible if the wind microclimate is equivalent to the desired activity and adverse if the wind microclimate is windier than desired. All effects classified as minor to major will be considered significant whereas negligible effects will be considered not significant.

Mitigation will be recommended as necessary to address any adverse impacts. Initially no landscaping and planting will be included as part of the wind tunnel model in order to provide a conservative, i.e. relatively windy, representation of the wind microclimate.

6.13 Daylight, Sunlight and Overshadowing

6.13.1 Summary Baseline Context

The existing site is predominantly cleared of any obstructions with the exception of a handful of low-storey commercial structures. It is envisaged that the baseline context to be considered as part of the daylight, sunlight and overshadowing assessments will be the existing Site conditions at the time of the submission of the planning application.

A full detailed 3D survey of the existing site and surrounding properties has been undertaken in order to construct a 3D contextual model upon which the daylight, sunlight and overshadowing assessments will be based.

The sensitive receptors which will be assessed comprise the existing residential properties located along Beresford Avenue to the north of the Site, as well as Prospect House, located on the North Circular Road to the south.

6.13.2 Potential Impacts

The Proposed Development will result in a significant change to the massing on the Site which will likely result in changes to the availability of daylight and sunlight within surrounding residential properties. The extent of overshadowing in the area surrounding the Site may alter as a result of the Proposed Development.

The following likely significant effects with respect to daylight, sunlight and overshadowing, light pollution and solar glare have been identified:

- Temporary changes to daylight, sunlight and overshadowing during the demolition and construction works; and
- Changes to the duration and quality of daylight and sunlight, as well as the incidence and duration of overshadowing experienced by surrounding sensitive receptors on completion of the Proposed Development.

6.13.3 Outline Scope of Assessment

A daylight and sunlight assessment of the Proposed Development will be undertaken with respect to the aforementioned microclimatic issues. The sensitive receptors have been identified as the existing residential dwellings along Beresford Avenue to the north and Prospect House, the residential block to the south of the Site.

The assessment of daylight and sunlight will be based upon the Building Research Establishments (BRE) Site Layout Planning for Daylight and Sunlight; A Guide to Good Practice 2011 (Ref. 50) and BS8206-2:2008 (Ref. 51).

The assessment will be based on a survey-based scale three-dimensional contextual computer model of the existing Site and Proposed Development situations.

Sun hours on the ground and transient overshadowing assessments will be undertaken, using the above analysis model in order to establish the extent to which surrounding areas of amenity space and those within the Proposed Development are affected by the construction of the Proposed Development.

A qualitative assessment of the likely significant daylight, sunlight and overshadowing effects of the demolition and construction works will be undertaken using professional judgement.
Residential accommodation within the Proposed Development will require acceptable levels of daylight and sunlight amenity and any areas of open amenity space within the Proposed Development would require acceptable levels of sun on ground. A separate quantitative assessment will also be undertaken in respect of the internal daylight and sunlight levels within the Proposed Development, as well as a study of the sun on ground levels to each of the public amenity areas/open spaces within the Site. This assessment will form the basis of a standalone Internal Daylight, Sunlight and Overshadowing Report, which will be submitted as a separate report in support of the planning application.

6.14 Ground Conditions

6.14.1 Summary Baseline Context

The Site baseline conditions have been established by way of reference to a variety of information sources including, though not limited to:

- Records held by an environmental data provider (including historical maps, registers of contaminated sites, former and current landfills etc.);
- On-line information (including Environment Agency hydrogeological maps, groundwater Source Protection / Vulnerability Zones, abstraction wells / boreholes, discharge consents & pollution incidents, British Geological Survey [BGS] borehole records etc.); and
- Previous desk-based studies, intrusive site investigations, risk assessments and/or remediation works.

A significant amount of work has previously been undertaken to determine existing ground conditions and assess the nature and extent of any contamination arising from historical and/or contemporary uses of the Site. This includes several phases of intrusive investigation (carried out by Delta-Simons and other parties) which has enabled the formulation of a ground model (a summary of existing geological and hydrogeological conditions) and a conceptual site model (CSM), which represents the relationships between contaminant sources, pathways and receptors, to support the identification and assessment of Possible Pollutant Linkages (PPL) for human health, controlled waters and the built environment.

The findings of these investigations (including a review of those investigations undertaken by other parties) are presented in the following reports, which will be included as technical appendices to the Ground Conditions ES Chapter:

- Geo-Environmental Site Condition Report & Outline Remediation Strategy – Grand Union Place - South (Ref: 16-0122.02; dated 20th June 2016); and
- Geo-Environmental Site Condition Report & Outline Remediation Strategy – Grand Union Place - North (Ref: 16-0122.02; dated 8th July 2016).

In summary, these investigations have established the following:

- Ground conditions across the Site predominantly comprise hard-standing (including buildings and associated reinforced concrete former floor-slabs) overlying Made Ground;
- The Made Ground comprised both cohesive (firm, locally firm to stiff, gravelly, sandy, silty clay) and granular (brick, concrete and stone gravel) soils and showed significant variation in thickness across the Site (<1.0 m to up to 11.8 m);
- The underlying natural soils comprised either Alluvium and/or Taplow Gravel Formation superficial deposits. These are in turn underlain by London Clay Formation strata;
- Groundwater is present within the superficial deposits, and monitoring has indicated that groundwater flow directions (and hydraulic connectivity to local surface waters) is relatively complex, in part due to the construction of the River Brent within a concrete-lined culvert to the south and east of the site; and
- Contamination arising from historical and/or more recent uses of the Site is characterised by both inorganic and organic contaminants and asbestos, and is present within both soils and groundwater. It is considered plausible that at least some of the contamination encountered within soils and groundwater at the Site may originate from off-site sources.
6.14.2 Potential Impacts

The likely significant effects of the Proposed Development relating to ground conditions can be differentiated into those effects that could be realised during the construction and operational phases. These include, though are not limited to, the following:

Demolition and Construction Phase

- Preliminary engineering operations have the potential to mobilise existing sources of contamination via:
  - Creation of contaminated run-off impacting receiving watercourses;
  - Fugitive emissions of dust from demolition works or exposed contaminated soils potentially impacting both site workers and off-site human health receptors (effect of dust would be covered in the Air Quality Assessment);
  - Piling operations creating potential contaminant migration pathways.
- Ground workers have the potential to be exposed to contaminated soils during construction of foundations (including arisings from piling operations) and services;
- During the construction works, potential new sources of contamination would be introduced and stored on the Site in the form of, inter alia, diesel fuel, oils, chemicals and construction materials. As a result, there would be a potential risk related to material or fuel leakages or spillages directly or indirectly to ground and/or groundwater;
- The activities associated with the construction of the Site have the potential to impact on the quality of groundwater and surface waters, including:
  - Introduction of new potentially polluting activities to the site temporarily during construction;
  - Release of sediment-laden run-off to surface waters during earthworks operations;
  - Piling may introduce new contaminant migration pathways;
  - Dewatering of excavations (if required) and appropriate disposal;
  - Removal of hardstanding may increase mobilisation of contaminants from the Made Ground underlying the Site;
  - Leaching and/or contaminated run-off from stockpiles of potentially contaminated material; and
  - Earthworks movements may temporarily increase the leaching of soluble contaminants within Made Ground.

Operational Phase

- Existing contamination has the potential to have significant adverse effects upon future site users without appropriate mitigation measures being implemented;
- The Proposed Development may introduce sources of contamination such as the storage of fuels, oils and chemicals, or spillages from vehicles, and groundwater and surface water may become contaminated should uncontrolled spillages and leaks from these sources occur;
- Due to the reduction in hardstanding cover anticipated as part of the Proposed Development compared to that which currently exists at the Site, there is an increased potential for both existing contaminants in the Made Ground and contaminants introduced during the operational phase of the Site to be mobilised to surface and groundwaters; and,
- Existing contamination has the potential to impact upon buried structures and services without appropriate design (e.g. suitable class of concrete to mitigate against chemical attack from contaminants such as sulphates) or the adoption of suitable construction materials (e.g. the use of an appropriate specification of water supply pipes to mitigate against permeation of organic contaminants such as aromatic hydrocarbons and chlorinated solvents).

6.14.3 Outline Scope of Assessment

The methodology for preparing the Ground Conditions ES Chapter will follow published guidance, in particular the principles contained in the Model Procedures for the Management of Land Contamination CLR11 published by Defra and the EA.
The assessment method will follow a risk-based approach, with potential environmental risks assessed qualitatively using the ‘source-pathway-receptor pollutant linkage’ concept to assess risk, as introduced in the Environmental Protection Act 1990 (EPA, 1990) (Ref. 52). This allows the identification of potential pollutant linkages and whether these linkages have the potential to pose significant harm to human health, pollution of controlled waters or risks to the built environment in relation to the proposed development. With regard to ground and groundwater contamination, the assessment will focus on:

- The potential for existing contamination to be present on the Site, and whether this could be mobilised by the Proposed Development, during both the construction and operational phases; and
- Whether the Proposed Development could result in any additional (incremental) contamination of the Site during both the construction and operational phases.

There is no published EIA guidance for transposing a risk-based contaminated land assessment into significance criteria for the purposes of EIA. The likelihood of ground contamination on the Site, and its potential effect (consequence) on sensitive receptors, has been assessed using a conceptual model and risk-based framework, using a combination of knowledge of the characteristics and extent of the contamination identified. The assumption is that all areas of the Site would be subject to disturbance as part of the works required for the Proposed Development. Accordingly, an assessment of the potential for impact on human health or consequent impacts on other environmental receptors has been undertaken.

In the absence of published guidance, the assessment of significance will be determined using relevant guidance, in particular with reference to CIRIA Report C552 ‘Contaminated Land Risk Assessment: A Guide to Good Practice’ (Rudland et al., 2001) (Ref. 53), CLR11 (Ref. 54) and professional judgement.

The effects to groundwater quality and resources will be assessed in the Ground Conditions ES Chapter and effects relating to surface water management and flood risk will be presented in the Water Quality, Flood Risk and Water Resources Chapter of the ES (see Section 6.15 below).

### 6.15 Water Resources, Drainage and Flood Risk

#### 6.15.1 Summary Baseline Context

The River Brent bisects the Site and the Grand Union Canal is situated adjacent to the eastern boundary of the Site.

The Environment Agency’s (EA) online flood zone maps show that the area of the Site to the north of the River Brent is predominantly located in Flood Zone 1 (low risk) with a small section of land within Flood Zones 2 (medium risk) and 3 (high risk) directly adjacent to the River Brent corridor. Land to the south of the River Brent is located entirely within Flood Zone 3. The EA Flood Zones are defined below and the areas of Flood Zones 2 and 3 is shown on Figure 2:

- **Flood Zone 1** comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1% AEP);
- **Flood Zone 2** comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1% AEP), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1% AEP); and
- **Flood Zone 3** comprises land assessed as having greater than 1 in 200 annual probability of sea flooding (>0.5% AEP) or greater than 1 in 100 annual probability of fluvial flooding (>1% AEP).

The flood zone maps also indicate that the Site is not located in an area which benefits from flood defences.

The LBB Surface Water Management Plan (SWMP) (Ref. 55) shows that the Site lies within the Critical Drainage Area (CDA) known as North Circular – Group 2_042 where the main flood risk is stated as “surface water ponding flow in topographical low spots”. However, the majority of the Site is shown to be at very low risk of surface water flooding on the EA Risk of Surface Water Flooding maps and no historical surface water flooding incidents at the Site are recorded within the LBB Strategic Flood Risk Assessment (SFRA) (Ref. 56).

The EA groundwater maps (Ref. 57), the British Geological Survey website (Ref. 58) and site investigations completed at the Site indicate that the geology beneath the Site consists of Taplow Gravel and Alluvium superficial deposits (partially designated as Secondary A Aquifer) and the London Clay Formation bedrock (undesignated). The EA defines a Secondary A Aquifer as “permeable layers capable of supporting water
supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers”. The Secondary Aquifer is noted as having a high vulnerability to pollution sources.

The Site is not located within a groundwater Source Protection Zone (SPZ).

The following potential receptors have been identified:

- The Proposed Development;
- Future residents/users;
- Public drainage network;
- Groundwater; and
- Surrounding rivers and other water bodies.

6.15.2 Potential Impacts

The key issues relating to water quality, water resources and flood risk as a result of the Proposed Development comprise the following (during the construction and operational phases):

- Possible surface and groundwater pollution during the construction and operational phases;
- Effect on surface water attributes, including water quality, recreation, etc.;
- Effect on groundwater quality;
- Impact of the development, if any, on Water Framework Directive (WFD) objectives that have been set for the River Brent and the Grand Union Canal in the vicinity of the Site;
- Increase in demand for potable water due to the change of use of the Site;
- Increased on and off site flood risk (e.g. from rivers, surface water, sewers and water mains); which will be informed by the Flood Risk Assessment (FRA) which is being prepared to support the planning application; and
- Impact on the public drainage network (foul and surface water), both in terms of water quality and capacity.

6.15.3 Outline Scope of Assessment

The Water Resources, Drainage and Flood Risk ES Chapter will include a review and summary of relevant legislation and national, regional and local planning policy relevant to the water environment.

The assessment will be carried out in parallel with the ground conditions assessment (see Section 6.14 above), as ground conditions and water quality issues are closely interrelated.

The assessment methodology and significance criteria will be clearly defined and an evaluation of the magnitude of effect against the sensitivity of the receptor will be undertaken to determine the significance of effect. The proposed methodology used to assess the significance of effects on water resources and flood risk will be based on the methodology given in the Department for Transport’s document ‘The Water Environment Sub-Objective’ Transport Analysis Guidance (TAG) Unit A3 - Environmental Impacts (Ref. 59).

A desk-based assessment will be carried out in order to establish sensitive water receptors and the potential effects that the Proposed Development might have on those receptors during the construction and operational phases. The assessment will comprise:

- Determination of Site geology and hydrogeology in collaboration with the specialist preparing the Ground Conditions ES Chapter;
- Review of existing sources of data relating to the water regime (including discharge consents, abstraction licenses, etc.);
- Review of flood risk and drainage related constraints, informed mainly the FRA and Drainage Strategy that will be prepared to support the application;
- Consideration of the historic uses, drainage regime and the soils and contamination status of the Site and surrounding area in order to determine the existing water quality and regime;
Consideration of environmental design and management measures to minimise flood risk, such as the use of sustainable drainage systems (SuDS), water efficiency methods and consideration of best practice guidance (Environment Agency Pollution Prevention Guidelines, whilst these have been revoked and no longer reflect current policy they contain useful best practice guidance);

Review of the development proposals and reports from other technical studies being undertaken in support of the planning application, such as the utilities strategy etc.;

Investigation of appropriate mitigation measures to avoid where possible, or, minimise any negative effects on water quality, drainage and flood risk during the construction and operational phases that remain following the implementation of environmental design and management measures; and

A high level assessment of the potential impacts of the Proposed Development, if any, on WFD objectives that have been set for the River Brent and the Grand Union Canal in the vicinity of the Site will be included within the ES Chapter.

An assessment of the potential direct and indirect effects of the Proposed Development, for both the demolition and construction, and the operational phases, will be undertaken. The ES chapter will summarise the findings and recommendations of the FRA. Recommendations will be made for mitigation measures in order to minimise the potential effects of the Proposed Development on water quality, drainage and flood risk. Any residual effects will be identified as well as the potential for cumulative effects associated with other developments nearby.

6.16 Townscape and Visual Impact Assessment

6.16.1 Summary Baseline Context

The baseline study will define the theoretical visibility of the Proposed Development, record and evaluate townscape character and identify the townscape and visual receptors that are likely to be sensitive to change.

A Zone of Theoretical Visibility ('ZTV') has been prepared using digital terrain modelling/ LIDAR data to show the screening provided by the landform and existing buildings (however trees and vegetation have been excluded to provide a robust worst-case approach) (see Figure 5) based on the current masterplan which includes a building up to 25 storeys in height. Desk–based research has been undertaken to identify potentially sensitive townscape and visual receptors within the ZTV using available mapping, aerial photography and reference documents/websites. The potential townscape and visual receptors and visibility of the Proposed Development have been verified by fieldwork. The ZTV establishes a starting point for fieldwork. The additional extent of screening/ filtering of views provided by trees and vegetation has been reviewed in the field in order to refine understanding of the theoretical visibility of the Proposed Development.

The townscape character of the Site and surrounding area and the location and relationship of receptors to the Site will be recorded and evaluated to establish the baseline conditions.

The character and quality of the townscape of the Site and surrounding area will be analysed. Consideration will be given to the topography, geology, historic evolution and wider context of the area including reference to the National Character Area Profiles (Northern Thames Basin – 111) (Ref. 60), historic maps, ordnance survey data, information on the Magic.gov.uk website and local authority websites. It is noted that there are no conservation areas in the surrounding area and other than the Brent Viaduct, no listed buildings. However, the Ace café is locally listed.

Broad Townscape Character Areas (TCAs) around the Site will be defined, described and mapped. These are areas that share common characteristics (e.g. land-use and activity; urban structure and grain; movement patterns; scale form and massing of buildings; architectural details and materials; public realm/landscape elements and other perceptual qualities). An initial review has confirmed that the townscape character of the Site and surrounding area is of generally low value. Potential sensitive townscape receptors that will be considered in the assessment include the Grand Union Canal, the local landmark role of the Ace Cafe and the residential area to the north.
Figure 5  Zone of Theoretical Visibility for the Proposed Development
Sensitive visual receptors (i.e. people whose activities and attention are more likely to be focussed on the visual amenity or specific views) are likely to include:

- Residents, particularly where there is likely to be a direct view from habitable rooms that will change noticeably as a result of the proposals. This will include consideration of the potential for significant effects on adjacent residents along Beresford Avenue;
- Pedestrians and cyclists using public footpaths, bridleways or cycleways in the surrounding area whose focus is on amenity (e.g. Grand Union Canal); and
- People using public open spaces (including Heather Park, Mount Pleasant Park, Tokyngton Recreation Ground, One Tree Hill, Roundwood Park).

The 21 following representative views shown in Figure 6 have been selected to inform the visual assessment:

- Viewpoint 1 North Circular/ Brent Viaduct;
- Viewpoint 2 North Circular (footpath/ cycle link to east side);
- Viewpoint 3 Heather Park;
- Viewpoint 4 Footpath connection to Beresford Avenue;
- Viewpoint 5 Highcroft Avenue/ Heather Park Parade;
- Viewpoint 6 Junction Mount Pleasant/ Beresford Avenue;
- Viewpoint 7 Lyon Park Avenue/ Woodstock Road;
- Viewpoint 8 Mount Pleasant Open Space;
- Viewpoint 9 Grand Union Canal (west);
- Viewpoint 10 Footbridge over Grand Union Canal;
- Viewpoint 11 Grand Union Canal (Site frontage);
- Viewpoint 12 Grand Union Canal (south);
- Viewpoint 13 Tokyngton Recreation Ground (north);
- Viewpoint 14 Tokyngton Recreation Ground (south);
- Viewpoint 15 Chalfont Avenue;
- Viewpoint 16 Aldbury Avenue (junction with Wigginton Avenue);
- Viewpoint 17 Roundwood Park;
- Viewpoint 18 Chalkhill Park;
- Viewpoint 19 One Tree Hill;
- Viewpoint 20 Bodmin Fields; and
- Viewpoint 21 Queensbury Road

Photographs from these viewpoints are provided in Appendix F.

These viewpoints are situated within approximately 3km of the centre of the Site. Fieldwork has been undertaken to verify the locations that are considered to be most representative of effects and to scope out other areas of potential visibility where due to various factors, significant effects are not expected. This may be due to the extent of screening provided by vegetation, the distance of the receptors from the Site, limited nature of the potential effect, the limited sensitivity of receptors to change or a combination of these factors.

Accurate Visual Representations (AVRs) will be prepared and a methodology statement for their preparation provided. The Proposed Development will be shown as a ‘wireline’ image superimposed on the baseline photograph; the detailed scope for this will be agreed with the Council. In addition, a separate image showing the relevant committed developments (the cumulative schemes) in addition to the Proposed Development will be shown.
Figure 6  Location of Viewpoints to be considered within the Visual Impact Assessment
6.16.2 Potential Impacts

The main townscape and visual effects arising from the Proposed Development are likely to be:

- Changes to the townscape character of the Site and how this integrates with the surrounding area. Key considerations will include the effects on the townscape character of the Grand Union Canal, the residential areas to the north of the Site and contribution to legibility; and
- The potential effect on views obtained by people who may be susceptible to changes to views and visual amenity having regard to the quality of the existing view and the scale and nature of the change.

The following townscape and visual effects are anticipated as a result of the Proposed Development:

- Construction activity and its effect on: the townscape and users of the Grand Union Canal; the townscape and residents within the existing residential area to the north of the Site, people using local open spaces and new residents within the scheme due to the phased nature of the Proposed Development;
- The townscape effect associated with the regeneration of the Site and the introduction of a taller and more dense urban character within increased residential use along the Grand Union Canal, the adjacent residential area and the local landmark role of the Ace Café (adjacent to the east of the Site); and
- Visual effects arising from the introduction of taller buildings in views from the surrounding area.

6.16.3 Outline Scope of Assessment

An assessment will be undertaken of the effect of the Proposed Development on the character and quality of the surrounding townscape, views and visual amenity, referred to as a Townscape and Visual Impact Assessment (TVIA). The assessment will be undertaken in accordance with the Guidelines for Landscape and Visual Assessment (3rd edition) (GLVIA3) published by the Landscape Institute and IEMA (Ref. 61) and other relevant guidance.

The assessment will consider the townscape effects on the Site itself and within the local area within a radius of up to 500m from the boundary of the Site. Significant townscape effects are not expected beyond this. Effects beyond this distance will be primarily visual and will be considered as part of the visual assessment.

The significance of the townscape and visual effect will be evaluated having regard to the nature (sensitivity) of the receptor and nature (degree) of the effect. The nature of receptors is determined based on the judgement of experienced assessors having regard to the value of the townscape or view and the susceptibility of the receptor to change. The nature of the effect will be determined having regard to the geographical extent, scale, duration and permanence of the effect. The nature of the effect on townscape character, view or visual amenity is defined as beneficial, neutral or adverse. Neutral effects occur when the change is compatible with the existing character or quality/ function/ role of the townscape or view.

In accordance with the approach advocated in GLVIA3, the determination of significance will be based on professional judgement having regard to the significance criteria presented in Table 2 below rather than strict adherence to a matrix. Commentary will be provided to ensure that the basis of the reasoning and judgement is clear and transparent. The assumptions will be clearly set out. It should be recognised that whilst the nature of change can be largely objectively defined, judgements on the significance of the effect and whether it will be beneficial, neutral or adverse are subjective and based on the experience of the assessor. The assessment will be undertaken by a team experienced and suitably qualified in undertaking similar assessments.

<table>
<thead>
<tr>
<th>Effect</th>
<th>TVIA Significance Criteria</th>
<th>Significant?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Adverse</td>
<td>Loss/ alteration of valued/characteristic townscape feature(s) such that the integrity of a highly sensitive townscape is undermined.</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Extensive/ wholesale loss or alteration of positive townscape character/ features such that the integrity of a townscape of medium sensitivity is undermined</td>
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<td></td>
<td>Introduction of discordant/prominent element within an important or protected view that obscures/ distracts from a key feature.</td>
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<td>Extensive, incongruous change to view obtained by highly sensitive receptors.</td>
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<tr>
<td>Effect</td>
<td>Significance Criteria</td>
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| **Moderate Adverse** | Marked uncharacteristic alteration to/partial loss of sensitive townscape character/ features that gives rise to some loss of integrity of feature/ townscape character  
Introductio n of an element within a sensitive view that may be noticeable due to its scale, incompatibility with the existing scene and relationship to important elements | May be Significant |
| **Minor Adverse**  | Limited or localised alteration to valued townscape component or characteristic.  
Slight reduction in the integrity of positive townscape character/ features  
Limited harmful change to view obtained by sensitive receptors/ minor incongruous element in protected/ important view.                                                                                   | Unlikely to be Significant |
| **Negligible** | Change to townscape character or view would be imperceptible. Can be adverse, beneficial or neutral.                                                                                                                  | Not Significant |
| **Nil** | No change to townscape character or view – no effect                                                                                                                                                                 | Not Significant |
| **Neutral** | Change would be evident but entirely consistent with the townscape character or view. Can be major, moderate, minor or negligible.                                                                                     | Not Significant |
| **Minor Beneficial** | Limited change to the view or townscape character that is positive/ reinforces existing positive characteristics/ introduces a positive and compatible new feature  
Small improvement to existing view | Not Significant |
| **Moderate Beneficial** | Marked change to the view or townscape character that is positive/ reinforces existing positive characteristics/ introduces new elements that are compatible with policy objectives  
Distinct improvement to existing view | Unlikely to be Significant |
| **Major Beneficial** | Extensive change to townscape character or view that is positive/ reinforces existing positive townscape characteristics or introduces new elements that are compatible with policy objectives.  
Considerable improvement to existing view | Significant |

Should major adverse effects be identified, mitigation will be integrated into the design of the Proposed Development to seek to avoid these in the first instance. In addition the potential for enhancement of the townscape and views will be considered. The need for further mitigation of remaining significant effects will be considered (reduction, remediation or compensation) and recommendations made. These would be most likely to be implemented and monitored through the discharge of planning conditions.

Residual townscape and visual effects will be assessed having regard to any recommendations for mitigation that have been identified and are a firm commitment.
7. Other Environmental Considerations

7.1 Energy and Sustainability

Hodkinson Consultancy is preparing an Energy Statement and a Sustainability Statement that will be submitted as separate application reports. The scope and methodology for preparing these documents is summarised below.

The Sustainability Statement will address LBB and London Plan policy requirements, and will explain and outline the scheme's approach to achieving high standards of sustainability. The measures identified will apply across the entire masterplan. BREEAM pre-assessments for the non-residential components of the Proposed Development will be appended to the Sustainability Statement, and the report will identify key issues in BREEAM that have been considered through the planning design process. The BREEAM pre-assessments will present appropriate routes to achieving Very Good certification, but will allow flexibility through the detailed design stage for alternative credits to be sought where appropriate.

The Energy Statement will specifically address the London Plan requirement for a 35% reduction in regulated CO₂ over Part L (2013) (Ref. 62), and will identify the Zero Carbon Homes payment for the site in accordance with the GLA Guidance on the Preparation of Energy Statements (2016) (Ref. 63). The Energy Statement will follow the London Plan energy hierarchy (Be Lean, Be Clean, Be Green) and the strategy will consider a site wide heat network. The Energy Statement will set out an appropriate energy strategy for the entire site and it will be expected that Phase 1 of the Proposed Development will come forward initially in line with this strategy.

A Dynamic Overheating Assessment will be appended to the Energy Statement and will specifically address the overheating risk of Phase 1 of the Proposed Development. The assessment will model six representative unit types from Phase 1 in dynamic modelling software for a range of different weather scenarios, to ensure that the risk of future overheating is appropriately mitigated. Complex solar design techniques will be used to appropriately balance overheating risk with useful solar ingress (for daylight and solar gain) across Phase 1, and liaison is being held with the architects regarding solar design across the masterplan to make environment design improvements. Hodkinson’s approach will follow the recently published CIBSE TM59 guidance (Ref. 64). The GLA are due to adopt this and replace existing CIBSE TM52 guidance (Ref. 65) currently referenced in their Guidance on the Preparation of Energy Statements.
8. Environmental Topics to be Scoped Out of the Environmental Statement

The aim of EIA Scoping is to focus the EIA on those environmental aspects that may be significantly impacted by the Proposed Development. In so doing, the significance of effects associated with each environmental aspect becomes more clearly defined, resulting in certain aspects being considered ‘non-significant’.

It is the intention to scope the following assessment chapters out of the ES:

8.1 Waste and Recycling

As a part of the Proposed Development, the existing buildings on the Site will be demolished and the areas of hardstanding removed. In accordance with the principles of the Waste Management Plan for England (2013) (Ref. 66) and the National Planning Policy for Waste (2014) (Ref. 67), a principal aim during construction will be to reduce the amount of waste that is generated and exported from the Site. This will include measures such as ‘just in time deliveries’, the secure storage of materials and prevention of stockpiling to minimise the potential for waste. This approach complies with managing waste towards the higher end of the Waste Hierarchy (Ref. 68), where the intention is first to prevent, reuse, recycle and as a last resort, to dispose of waste off-site as necessary. All relevant demolition and construction contractors will be required to investigate opportunities to minimise and reduce waste generation in line with WRAP’s ‘Halving Waste to Landfill’ initiative (Ref. 69).

It is anticipated that, with the exception of contaminated materials, waste arising during the demolition and construction phase will be inert and non-hazardous in nature. In line with the London Plan and the proximity principle, it is anticipated that this waste will be managed and re-used within London where possible. In addition, contractors will seek to manage the waste towards the higher end of the Waste Hierarchy where appropriate, in order to minimise waste being sent to landfill. Specialist contractors will be employed to remediate the Site to an appropriate standard for the proposed residential and commercial uses. Ground and water contamination will be considered within the Ground Conditions, and Water Resources, Flood Risk and Water Quality ES Chapters. These ES Chapters will assess potential effects pertaining to groundwater pollution, surface water run-off, and the mobilisation of contaminants during the site clearance and demolition works.

Whilst the requirement for Site Waste Management Plans was revoked on 1st December 2013, it is considered best practice to produce a Construction Resource Management Plan (CRMP). The CRMP will outline the ways in which the Waste Hierarchy will be adhered to and waste will be managed during demolition and construction of the Proposed Development in order to avoid environmental impacts. The CRMP will be prepared during the post-planning phase, once the necessary details concerning demolition and construction are known (such as the detailed construction programme, details of appointed contractors and details of proposed construction methods).

An Operational Waste Management Strategy will be prepared as a separate planning application report. It will include estimated volumes of waste arisings and details of their management once the Proposed Development is complete and occupied. The Operational Waste Management Strategy will outline the relevant legislation and national (England), regional (London), district (West London Waste Authority (WLWA)) and local (LBB) waste policy and guidance and how compliance with these requirements will be achieved for the Proposed Development. Consultation will be held with the LBB during preparation of the Operational Waste Management Strategy.

The LBB is a constituent borough of the WLWA, which comprises the London Boroughs of Brent, Ealing, Harrow, Hillingdon, Hounslow, and Richmond upon Thames. Under this partnership the WLWA and its six constituent Boroughs are working together to plan for the future management of waste produced in their areas. The WLWA operates three waste transfer stations located in South Ruislip, Brent and Brentford. The West London Waste Strategy details how the constituent Boroughs will work together to manage the waste in the West London area until 2020 and the separate Waste Prevention Plan (Ref. 70), seeks to reduce the volume of waste generated in West London. These plans and strategies provide a framework for effective management of existing and additional waste arisings from new developments in West London.

Whilst the Proposed Development will result in an increase in waste arisings when compared to the baseline, in particular through the provision of residential dwellings on site, it is considered that the LBB and WLWA have provisions in place to manage this uplift. Given the anticipated scale of the Proposed Development, it is considered that the Proposed Development will generate approximately 8,300 tonnes of waste per annum once complete and operational. When considered alongside the 107,555 tonnes of local authority collected waste in 2015/16, this represents approximately 8% of the total volume of waste collected in the LBB and approximately 1% of the total volume of waste collected by the WLWA. It is envisaged that waste arisings from the commercial
elements of the Proposed Development will be managed under a commercial contract. Due to the residential and commercial land uses proposed, it is not anticipated that the Proposed Development will produce hazardous waste materials (such as chemicals, medical waste, animal by-products etc.). Therefore, it is considered that the Proposed Development will not have a significant environmental effect on the LBB’s or WLWA’s waste management infrastructure.

Given the above, as no significant effects relating to waste and recycling are likely as a result of waste arisings from the Proposed Development, waste management is scoped out of the ES.

8.2 Electronic Interference

Electronic interference relates to the degradation or loss of reception of certain services received electronically (i.e. terrestrial or satellite television (TV)). Interference to TV signals may occur due to buildings physically blocking and absorbing the signals.

A desk based assessment and site visit were undertaken in May 2017 to ascertain the areas around the Site where TV reception is likely to be at risk from the Proposed Development (the TV shadow). The predicted TV shadow associated with the Proposed Development was determined using calculations following the International Radio Committee / International Telecommunications Union (CCIR/ITU) criteria (Ref. 71). Potential TV shadows associated with the Proposed Development were mapped for both satellite and terrestrial TV reception. The results of the desk study and site visit are presented in Appendix B of this report.

It was found that no residential properties in the vicinity of the Site are at risk of losing satellite reception, as the satellite TV shadow associated with the Proposed Development does not fall across residential dwellings. Whilst it was found that some residential dwellings are at risk of interference to terrestrial TV services (namely those without readily identified satellite receiving equipment), mitigation measures such as upgrading existing terrestrial TV aerials, providing non-subscription alternative sources or connecting the properties through available cable TV (CATV) services would result in no significant residual effect. Furthermore, it is proposed that a complaints register will be established by the LBB whereby residents can report any disruption or loss of service and if required mitigation measures will be implemented.

Therefore, it is considered that there will be no significant effects to TV and radio reception as a result of the Proposed Development and therefore the electronic interference is scoped out of the ES. This is because a high proportion of the residential dwellings located within the terrestrial TV shadow have access to satellite TV and / or CATV. Furthermore, any residential dwellings at risk of a disruption or loss of terrestrial TV services can be equipped with mitigation measures so as to continue to receive TV services with the Proposed Development in place.

8.3 Ecology

An Extended Phase 1 Habitat Survey and Bat Roost Potential Survey were carried out at the Site in March 2016 by Delta-Simons Environmental Consultants Ltd using the standardised Joint Nature Conservation Committee (JNCC) Phase 1 habitat classification and mapping methodology (JNCC, 2010) (Ref. 72).

The results of the desk study indicated there are no statutory designated sites within 1 km of the centre of the Site. Whilst the Site falls within three Sites of Special Scientific Interest (SSSI) Impact Risk Zones, it comprises previously developed land and is of sufficient distance from the SSSI boundaries that it is considered unlikely that the Proposed Development would cause any significant adverse impact on these designated sites.

There are two Sites of Importance for Nature Conservation (SINC) close to the Site, which have the potential to be affected by the Proposed Development. These comprise the River Brent West of Stonebridge, of which a section falls within the Site, and the Grand Union Canal, which forms part of the London Canals SINC. The section of the River Brent within the Site boundary will be retained as part of the Proposed Development and will receive appropriate protection in order to retain its structural integrity and avoid any pollution events occurring during the construction and operational phases of the Proposed Development.

The Extended Phase 1 Habitat Survey concluded that the majority of the Site is of low ecological value, comprising predominantly buildings and hardstanding habitat. However, the River Brent and associated woodland embankment provide habitat for local bird species and the river provides a potential corridor for bats and otter. The River Brent and the Grand Union Canal and their associated habitats have been identified by Greenspace information for Greater London (GiGL) as a Green Corridor within the local area and as such their corridor features should be retained.
Within the Site the woodland habitat along the River Brent and scattered broadleaved trees provide habitat for nesting birds, whilst the buildings on-site may provide opportunities for nesting on the flat roof structures. Any clearance or management works to the woodland and demolition of the buildings has the potential to disturb nesting birds, if present, and mitigation will be implemented to avoid such disturbance.

At the time of the Extended Phase 1 Habitat Survey the buildings at the Site were considered to be unsuitable to support a bat roost and were assessed as having negligible bat roost potential (BRP). However, it was considered that should Buildings 5 and/or 6 deteriorate in condition prior to the commencement of development works, and the feral pigeons leave Building 5, there is the potential for their suitability to support roosting bats to increase. It was therefore proposed that further inspections of all existing buildings on site would be undertaken in order to ascertain their current suitability to support roosting bats.

It is also considered that the river and canal corridors may provide opportunities for foraging and commuting bats. Redevelopment of the Site has the potential to alter light levels along these watercourses and appropriate mitigation will be implemented within the Proposed Development to retain the dark corridor along these linear habitats.

The Site is not considered suitable to support an otter holt, however, there is the possibility of this species commuting along the river and canal corridors to the west and south of the Site. Increased lighting as a result of the Proposed Development may therefore alter the suitability of this linear feature and appropriate mitigation will be considered to maintain its ecological value, such as not directly floodlighting the waterways and planting along the banks.

Both giant hogweed and Japanese knotweed were recorded at the Site during the Extended Phase 1 Habitat Survey. These were predominantly associated with the banks of the Grand Union Canal and River Brent. Buddleia and snowberry were also recorded at the Site and are listed on the London Invasive Species List (London Invasive Species Initiative) (Ref. 73). The spread of these species will therefore be prevented during any works at the Site, and any invasive species located within the Site will be removed and treated in accordance with applicable policy, legislation and following Environment Agency guidance.

A follow up site visit was made by AECOM in May 2017 with respect to the following that required further assessment in order to fully establish the existing baseline ecological condition of the Site and to take account of the potential for ecological effects as a result of the Proposed Development. The findings of the May 2017 site visit are summarised below and the 2017 Ecological Update and Preliminary Ecological Appraisal report is presented in Appendix C of this report.

8.3.1 The River Brent and the Grand Union Canal (SINC)

Assessment of the River Brent and Grand Union Canal was limited in the Phase 1 Habitat Survey Reports (Delta-Simons, 2016) and did not investigate the condition of River Brent within or adjacent to the Site or the features for which it is designated (specifically aquatic invertebrates and fish). This is relevant in the context of the Water Framework Directive (WFD) particularly as near the Site the river has just come out of a culverted section.

In the Grand Union Canal, the water quality was poor with low, 39%, dissolved oxygen levels and a water temperature of 20.5°C. There appeared to be a blue/green algae blooming on the margins and the macroinvertebrate community was characteristic of a freshwater system under the combined pressures of poor water quality, and homogenous flow and geomorphological habitats. There were extensive areas of macrophytes dominated by nutrient tolerant species.

Water quality in the River Brent was moderate with dissolved oxygen levels at 78%, pH 8.15 and temperature of 17.2°C. The fluvial and geomorphological habitats were homogenous, with both banks and the river bed reinforced concrete throughout. A step weir was recorded approximately 190 metres downstream of the upstream extent of the survey reach, where it came out of culvert after 400 metres. The river bed had a thin layer of silt, approximately 5 cm, overlaying the concrete which supported an extensive coverage of blanketweed, Cladophora glomerata agg. The macroinvertebrate community was poor, characterised by hog louse and biting midge larvae. The reach of the Brent within and immediately adjacent to the Site could be described as a flood alleviation channel, extensively re-sectioned and reinforced.

It is anticipated that the macroinvertebrate and macrophyte data for the surveyed reach of the Brent would probably result in Poor / Bad characterisation (to be confirmed following completion of a separate aquatic ecology report).
Improvements to the river (and canal) could probably be achieved at minimal cost and some biodiversity gain is likely to accrue due to treatment of the Japanese knotweed and giant hogweed along the riverbanks. The biodiversity gain afforded by the Proposed Development could be substantial in relation to its interface with these watercourses.

Based on the assessment of the reach of the River Brent and the Grand Union Canal, aquatic ecology can be scoped out. Given the likely interest of the Environment Agency in the River Brent with respect to the Proposed Development, consultation will be held with the relevant Team Lead for the River Brent and likewise with the Canal and River Trust.

8.3.2 Bats

As recommended in the Phase 1 Habitat Survey Report, a follow up check was made of those buildings identified in the report as needing a resurvey if the development had not begun within 18 months of preparing the report. The site visit reviewed the condition of each building, in order to re-assess their potential to be utilised by roosting bats. The buildings have not deteriorated since the previous survey; both internal and external features are considered unsuitable due to the lack of cracks, crevices, and gaps that could be used by roosting bats. The evaluation of the buildings for roosting bats remains unchanged, and the buildings are therefore of negligible potential. It is considered no further assessment is required for bats. The findings of the bat roost building inspection are included in the 2017 Ecological Update and Preliminary Ecological Appraisal Report in Appendix C.

8.3.3 Insects and Other Invertebrates

The Phase 1 Habitat Survey did not take into account insects and other invertebrates that may be present within the Site. Given the current high profile of disturbed ground and brownfield areas and their invertebrate fauna, a check was made of the insect fauna supported at the Site, e.g. beetles, moths and bees. The site visit provided an appraisal of the current habitats on site that could host invertebrate assemblages, and evidence was noted of the species present. The Site lacks artificial substrates, such as cracked and crumbling concrete, exposed earth banks, and gravel substrate that produce a nutrient poor growing medium that provides high numbers of food plants for invertebrates, and important nesting areas. No further assessment for invertebrates is required.

8.3.4 Additional Land Within the Site

The Phase 1 habitat Survey did not access all areas of the Site within which the Proposed Development will be accommodated; namely land occupied by a main sewer owned by Thames Water and three industrial units in the northern part of the Site which front onto Beresford Avenue. Therefore the May 2017 site visit also took into consideration the additional land not previously assessed. The habitats present in these areas were common and widespread, and therefore are of low ecological value. However giant hogweed an invasive non-native species listed on the Wildlife Countryside Act 1981 (Ref. 74) was present. It is recommended that an appropriate treatment plan will need to be implemented in order to eradicate this species from the Site before any redevelopment works commence.

A protected species walkover was also carried out, including an initial assessment of the potential for any of the buildings and trees within the additional land to support roosting bats. It is considered that the buildings are not suitable for bats; this is due to the lack of roosting features, such as a roof void, bargeboards and loose tiles that could be utilised. The three industrial units are currently occupied, therefore are regularly disturbed and continuously exposed to high levels of light which will further deter bats from using them. Furthermore, bat foraging habitat was limited due to the poorly connected tree lines and hedgerows. It is therefore considered that the buildings are of negligible potential for roosting bats. The trees within the additional land consisted of semi mature specimens lacking snagged branches, loose bark, and other features that could provide bats with roosting opportunities; it is considered that these are of low/negligible potential for roosting bats.

The habitats located within the land owned by Thames Water provide basking areas, suitable refugia including debris, brash and corrugated sheets that offer the potential for common reptile species. However due to the lack of connection to other suitable habitat, the overall habitat potential is considered low. Therefore it is recommended that a precautionary method of working is adopted through the production of a method statement that must be adhered to by on-site contractors during vegetation clearance. The trees and scrub are considered suitable for common breeding birds; therefore avoidance measures must be followed in order for construction works to avoid the bird nesting period. Other protected species including amphibians, other mammals such as badger and invertebrates are not considered to be present and do not require further assessment.
Based on the above, it is appropriate to scope ecology out of the ES. Whilst ecological considerations will inform the design of the Proposed Development, in particular the landscaping strategy, there is no potential for significant ecological effects to arise as a result of the Proposed Development. Nevertheless, whilst not included within the scope of the ES, the baseline ecological reports will be submitted in support of the planning application. The Delta-Simons Ecological Reports and the 2017 Ecological Update and Preliminary Ecological Appraisal prepared by AECOM are presented in Appendix C of this Scoping Report.

8.4 Archaeology

A Desk-Based Assessment (DBA) has been prepared for the Site by CgMs and is provided in Appendix D of this report. A summary of the key findings of the DBA is presented below.

The Site is not located within an Archaeological Priority Area as defined by the LBB, nor does it contain any designated or non-designated heritage assets.

The Site is considered to have a generally low archaeological potential for all past periods of human activity. Past post depositional impacts are considered to be severe as a result of previous development and land raising within the Site (with Made Ground recorded to depths of between 2.5m and 12m below ground level across the Site).

Overall, while it is possible that previously unknown archaeological remains may be present within the Site, the balance of probability is that these will be of local (low) importance. Therefore on the basis of the available information and as no significant effects are considered likely as a result of the Proposed Development, archaeology is excluded from the scope of the ES.

8.5 Built Heritage

A Heritage Statement has been prepared for the Site by CgMs and is provided in Appendix E of this report. A summary of the key findings of the Heritage Statement is presented below.

There are no nationally or locally designated built heritage assets on the Site. The Site is bounded on its western side by the Grand Union Canal. Whilst the canal is designated as a Conservation Area in neighbouring Ealing, the part of the canal located in Brent, including the part adjacent to the Site, is not a designated Conservation Area. It is nevertheless a heritage asset, as is the River Brent (or Twyford) Aqueduct that abuts the Site. The Proposed Development has the potential to enhance the setting of both the aqueduct and the canal.

There is a small cluster of nationally designated and locally designated heritage assets nearby to the eastern boundary of the Site, including the locally-listed early post-war Ace Café, the Grade II Brent Viaduct and a pillbox recorded on the Greater London Historic Environment Record (HER) (Ref. 75). These designated heritage assets together with the locally-listed Ace Café and undesignated Heather Park House and former Rizla House (now Trading Post), form part of a small area of surviving ‘North Circular’ landscape at the junction of the old course of the North Circular road and Beresford Avenue. Given the present condition of both the Site and the immediate surroundings of these designated and non-designated assets, it is unlikely that the Proposed Development would result in any significant adverse effects on built heritage.

The remaining heritage assets within a 1km radius of the Site comprise a locally-listed canal cottage 530m south of the Site and a cluster of Grade II Listed buildings between 310m and 700m south west of the Site on the site of the historic Twyford Manor. The fragmentary park surrounding Twyford Abbey and its walled garden is largely subsumed by 1930s and modern suburban development on three sides and abutted on the north side by the North Circular Road. Because of its height, the taller parts of the Proposed Development may be visible in some local views of these assets, but due to the existing immediate setting, existing nearby large buildings and ongoing development proposals within the surviving parkland, it is unlikely that the Proposed Development would result in any significant adverse effects.

Due to the existing appearance of the Site and its surroundings and because of the low and medium importance of the locally designated and Grade II assets nearby, the Proposed Development has the potential to be visible over a wide area, potentially affecting the settings of more distant assets of medium and high importance. Whilst the Proposed Development will be distantly visible from a number of high natural vantage points in the wider area and from some of the heritage assets situated upon them, no significant adverse effects are predicted, because of distance and existing visual impacts in the view, both low-rise and high-rise intervening development. Further, there are no obvious built heritage assets in the area with which the Proposed Development might compete for dominance (e.g. church spires or steeples) that are visually prominent (or generally even visible) between these high vantage points and the Site. Therefore, despite the height of the Proposed Development, the low-lying nature of the surrounding uses and the height of surrounding vantage points, the Proposed Development is unlikely to result any significant adverse effects on any built heritage assets.
On the basis of the available information and as no significant effects are considered likely as a result of the Proposed Development, built heritage is excluded from the scope of the ES.

8.6 Solar Glare

As the planning application will be submitted in outline for the majority of the Proposed Development, the façade materials will be determined at a later stage and therefore it will not be possible, at this stage, to undertake a solar glare assessment. The potential for solar glare concerns will be considered as part of future reserved matters applications for the Proposed Development.

In terms of Phase 1, which will be submitted in detail, the design process is currently ongoing and the façade materials are not yet fixed. However it is likely that these will not comprise a large expanse of reflective cladding or glazing but more likely will be a brick façade with punched windows, as is typical of residential development. On this basis, and combined with the orientation and scale of the development in terms of sensitive viewpoints, it is unlikely the Proposed Development will result in any significant adverse effects and therefore this assessment is scoped out of the ES.

8.7 Light Pollution

The Proposed Development includes some commercial office space and other commercial uses at the ground floor with residential areas above, where artificial lighting will be used, and therefore has the potential to result in light spill which could affect nearby residential properties as well as natural/ecological receptors (such as the nearby watercourses which are designated as SINCs). As part of the detailed design a lighting scheme will be adopted to ensure that the proposed lighting within these areas will not result in any light intrusion to neighbouring receptors. In addition, any external lighting will be designed in accordance with the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (Ref. 76) and therefore a light pollution assessment is not considered necessary and light pollution is scoped out of the ES.

9. Proposed Structure of the Environmental Statement

9.1 The Environmental Statement (ES)

The ES will comprise the following:

- Environmental Statement: Volume I – Main ES text comprising the following chapters:
  - 1. Introduction;
  - 2. EIA Methodology;
  - 3. Alternatives and Design Evolution;
  - 4. The Proposed Development;
  - 5. Demolition and Construction;
  - 6. Socio-Economics;
  - 7. Transportation and Access;
  - 8. Noise and Vibration;
  - 9. Air Quality;
  - 10. Wind Microclimate;
  - 11. Daylight, Sunlight and Overshadowing;
  - 12. Ground Conditions;
  - 14. Effect Interactions;
  - 15. Mitigation Measures;
  - 16. Residual Effects and Conclusions; and
  - 17. Glossary and Abbreviations.
• **Environmental Statement: Volume II** – Townscape and Visual Impact Assessment

• **Environmental Statement: Volume III** – Technical Appendices, including the following:
  – Appendix A: EIA Scoping (including Preliminary Ecological Appraisal, Electronic Interference Scoping Memo and Archaeology Desk-Based Assessment);
  – Appendix B: Supplementary Technical Information (including Parameter Plans);
  – Appendix C: Traffic Data;
  – Appendix D: Noise Technical Information;
  – Appendix E: Air Quality Neutral Assessment;
  – Appendix F: Wind Microclimate Technical Report;
  – Appendix G: Daylight, Sunlight and Overshadowing Modelling Results;
  – Appendix H: Ground Conditions Phase 1 Land Contamination Assessment; and
  – Appendix I: Flood Risk Assessment and Drainage Strategy.

• **Environmental Statement Non-Technical Summary (NTS).**

9.2 **Planning Application Documents**

In addition to the above list of ES documents, the planning application will be supported by various documents including:

• Application Form and Certificates;
• Notices;
• Application Fee;
• CIL Additional Information Form;
• Site Location Plan;
• Topographic Survey;
• Detailed Plans, Elevations and Sections, relating to the detailed component;
• Design and Access Statement, including Landscaping proposals;
• Planning Application Summary Document;
• Planning Statement;
• Draft Planning Obligations Heads of Terms;
• Affordable Housing Statement;
• Sunlight and Daylight Study;
• Statement of Community Engagement;
• Financial Viability Assessment;
• Energy Statement;
• Sustainability Statement and Checklist;
• Utilities Statement;
• Transport Assessment and Appendices;
• Framework Travel Plan;
• Delivery and Servicing Plan;
• Demolition Method Statement;
• Biodiversity Survey and Reports;
• Retail Impact Assessment;
• Framework Construction Method Statement / Logistics Plan;
• Tree Surveys and Arboricultural Impact Statement; and
• Operational Waste Management Strategy.
10. Summary and Conclusions

This EIA Scoping Report presents a comprehensive scope of work based on previous experience of the assembled team of specialists and existing knowledge of the Site. The EIA will be undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

We would like to formally request a Scoping Opinion of LBB pursuant to Regulation 15 of the EIA Regulations, LBB and consultees are invited to consider the contents of this Report and comment as to whether the scope and methodology proposed are acceptable within the five-week period prescribed by the EIA Regulations.
11. References

Ref. 1 Her Majesty’s Stationery Office (HMSO), (2017); The Town and Country Planning (Environmental Impact Assessment) Regulations 2017

Ref. 2 London Borough of Brent (LBB), (2011); Alperton Masterplan Supplementary Planning Document (SPD)

Ref. 3 LBB, (2010); London Borough of Brent Local Plan – Core Strategy

Ref. 4 Greater London Authority (GLA), (2016); The London Plan: The Spatial Development Strategy for London Consolidated with Alterations Since 2011

Ref. 5 LBB, (2016); London Borough of Brent Local Plan – Development Management Polices

Ref. 6 GLA, (2015); Old Oak Common and Park Royal Opportunity Area Planning Framework (OAPF)

Ref. 7 Department for Environment, Food and Rural Affairs (DEFRA), (2017); London Borough of Brent Air Quality Management Area (AQMA). Available at: https://uk-air.defra.gov.uk/aqma/details?aqma_id=191

Ref. 8 Delta Simons, (2016); Geo-Environment Site Condition Report and Outline Remediation Strategy

Ref. 9 Delta Simons, (2016); Extended Phase 1 Habitat Survey

Ref. 10 Environment Agency (EA), (2017); Flood Map for Planning. Available at: https://flood-map-for-planning.service.gov.uk/

Ref. 11 CgMS Consulting, (2016); Archaeological Desk-Based Assessment

Ref. 12 CgMS Consulting, (2017); Built Heritage Statement

Ref. 13 Department of the Environment, (1995); Preparation of Environmental Statements for Planning that require Environmental Assessment: Good Practice Guide

Ref. 14 Institute of Environmental Management and Assessment (IEMA), (2006); Guidelines for Environmental Impact Assessment 2004 (as amended 2006)

Ref. 15 Office of the Deputy Prime Minister (ODPM), (2006); Environmental Impact Assessment – A Guide to Procedures

Ref. 16 Department for Communities and Local Government (DCLG), (2012); The National Planning Policy Framework

Ref. 17 DCLG, (2015); Planning Practice Guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance

Ref. 18 GLA, (2014); The Sustainable Design and Construction Supplementary Planning Guidance (SPG)

Ref. 19 GLA, (2010); Clearing the Air: The Mayor’s Air Quality Strategy

Ref. 20 GLA, (2014); Control of Dust and Emissions during Construction and Demolition SPG

Ref. 21 GLA, (2016); Housing SPG

Ref. 22 GLA, (2012); Shaping Neighbourhoods: Play and Informal Recreation SPG

Ref. 23 GLA, (2014); Accessible London: Achieving an Inclusive Environment SPG

Ref. 24 GLA, (2014); Shaping Neighbourhoods: Character and Context

Ref. 25 GLA, (2009); London Regional Flood Risk Appraisal

Ref. 26 LBB, (2011); Site Specific Allocations Document

Ref. 27 LBB, London Borough of Ealing (LBE), London Borough of Harrow (LB Harrow), London Borough of Hounslow (LB Hounslow), London Borough of Richmond upon Thames (LBR) and the Old Oak and Park Royal Development Corporation (OOPRDC), (2015); West London Waste Plan
Ref. 28 GLA, (2017); The London Development Database. Available at: https://maps.london.gov.uk/map/?idd
Ref. 29 DCLG, (2015); English Indices of Deprivation
Ref. 30 Office of National Statistics (ONS), (2011); 2001 and 2011 Census Data
Ref. 31 ONS, (2016); Business Register and Employment Survey (BRES)
Ref. 32 ONS, (2016); Claimant Count Data
Ref. 33 ONS, (2016/17); Labour Force Survey
Ref. 34 ONS, (2016); Local Statistics
Ref. 35 HMSO, (1990); The Town and Country Planning Act 1990
Ref. 36 Transport for London (TfL), (2006); Transport Assessment Best Practice Guidance Document
Ref. 37 LBB, (2015); Brent Long Term Transport Strategy 2015 -2035
Ref. 38 Institute of Environmental Management and Assessment (IEMA), (1993); Guidelines for the Environmental Assessment of Road Traffic
Ref. 39 Highways Agency, (2011); Design Manual for Roads and Bridges (DMRB) Vol. 11 Highways Assessment
Ref. 40 DCLG, (2014); Planning Practice Guidance on Travel Plans, Transport Assessments and Statements
Ref. 42 Department of Transport / Welsh Office, (1998); Calculation of Road Traffic Noise (CRTN)
Ref. 43 Department for Environment, Food and Rural Affairs (DEFRA), (2010); Noise Policy Statement for England (NPSE)
Ref. 44 BSI, (2014); BS8233: 2014 Guidance on sound insulation and noise reduction for buildings
Ref. 45 World Health Organisation (WHO), 1999; Guidelines for Community Noise
Ref. 46 DEFRA, (2016); Local Air Quality Management Technical Guidance 2016 LAQM. TG(16).
Ref. 47 Institute of Air Quality Management (IAQM) and EPUK, (2015); Guidance on land-use planning and development control: Planning for air quality. 2015.
Ref. 48 IAQM, (2016); Guidance on the assessment of dust from demolition and construction.
Ref. 49 T.V. Lawson, (2001); Building Aerodynamics. Imperial College Press.
Ref. 52 HMSO, (1990); Environmental Protection Act 1990
Ref. 54 EA, (2004); CLR11 – Model Procedures for the Management of Lane Contamination
Ref. 55 LBB, (2011); Surface Water Management Plan (SWMP)
Ref. 56 LBB and Jacobs, (2007); Strategic Flood Risk Assessment
Ref. 57 EA, (2017); Groundwater [online] http://maps.environment-agency.gov.uk/wiwy/wiwyController?value=HA0+1nW&submit.x=0&submit.y=0&submit=Search%09&lang= e&ep=map&topic=groundwater&layerGroups=default&scale=9&textonly=off
Ref. 58  British Geological Survey (BGS), (2017); Groundwater Data and Information [online] http://www.bgs.ac.uk/research/groundwater/datainfo/datainformation.html

Ref. 59  Department for Transport, (2015); The Water Environment Sub-Objective’ Transport Analysis Guidance (TAG) Unit A3 - Environmental Impacts


Ref. 62  DCLG, (2014); Conservation of Fuel and Power: Approved Document L


Ref. 64  CIBSE, (2017); TM59: Design Methodology of the Assessment of Overheating Risk in Homes

Ref. 65  CIBSE, (2013); TM52: The Limits of Thermal Comfort: Avoiding Overheating in European Buildings

Ref. 66  DEFRA, (2013); Waste Management Plan for England

Ref. 67  DCLG, (2014); National Planning Policy for Waste


Ref. 70  LBB, LBE, LB Harrow, LB Hounslow, London Borough of Hillingdon, LBR and the OOPRDC, (2016); Waste Prevention Plan

Ref. 71  The International Radio Committee and International Telecommunications Union (CCIR / ITU) Criteria

Ref. 72  Joint Nature Conservation Committee (JNCC), (2010); Phase 1 Habitat Classification and Methodology

Ref. 73  London Invasive Species Initiative (LISI), (2017); London Invasive Species List

Ref. 74  HMSO, (1981); Wildlife and Countryside Act 1981

Ref. 75  Historic England, (2017); Greater London Historic Environment Record [online] https://historicengland.org.uk/services-skills/our-planning-services/greater-london-archaeology-advisory-service/greater-london-historic-environment-record/

Ref. 76  Institute of Lighting Professionals, (2011); Guidance Notes for Reduction of Obtrusive Light
Appendices
Appendix A Significance Criteria to be Used in the Noise and Vibration Assessment
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

In respect of the EIA Regulations, the beneficial and adverse effect levels of noise and vibration have been related to the generic significance levels presented Table 1. Based on the descriptions of the adverse effect levels in the PPG for noise (Department for Communities and Local Government, 2014), recommended actions for each significance level have been provided. The noise and vibration significance criteria are presented in Table 2.

Table 1: Generic Significance Criteria

<table>
<thead>
<tr>
<th>Significance Level</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>Only adverse effects are assigned this level of significance as they represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites and features of international, national or regional importance. A change at a regional or borough scale site or feature may also enter this category.</td>
</tr>
<tr>
<td>Major</td>
<td>These effects are likely to be important considerations at a local or borough scale but, if adverse, are potential concerns to the project and may become key factors in the decision-making process.</td>
</tr>
<tr>
<td>Moderate</td>
<td>These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.</td>
</tr>
<tr>
<td>Minor</td>
<td>These effects may be raised as local issues but are unlikely to be of importance in the decision-making process.</td>
</tr>
<tr>
<td>Not Significant</td>
<td>No effect or effect which is negligible or beneath the level of perception, within normal bounds of variation or within the margin of forecasting error.</td>
</tr>
</tbody>
</table>

Table 2: Noise and Vibration Significance Criteria

<table>
<thead>
<tr>
<th>Significance Level</th>
<th>Noise and Vibration Adverse Effect Level</th>
<th>Impact and Action (to be applied to potential effects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe</td>
<td>-</td>
<td>Noise causes extensive and regular changes in behaviour and could lead to psychological stress or physiological effects. This level is unacceptable and should be prevented.</td>
</tr>
<tr>
<td>Major</td>
<td>SOAEL</td>
<td>Noise causes a material change in behaviour and/or attitude. This level should be avoided.</td>
</tr>
<tr>
<td>Moderate</td>
<td>-</td>
<td>Noise can be heard and causes small changes in behaviour or attitude. Noise should be mitigated and reduced to a minimum.</td>
</tr>
<tr>
<td>Minor</td>
<td>LOAEL</td>
<td>Noise can be heard but does not cause a change in behaviour or attitude. No specific mitigation measures are required.</td>
</tr>
<tr>
<td>Not Significant</td>
<td>NOEL</td>
<td>Noise has no effect. No specific measures required</td>
</tr>
</tbody>
</table>

A beneficial effect may be considered to occur where noise levels fall below the NOEL, where specified (e.g. for the operational road traffic noise assessment, where there is no change or a decrease in noise levels).
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

1.1.1 Outline Scope of Assessment

Construction Noise

The noise levels generated by construction activities and experienced by nearby noise-sensitive receptors will depend on a number of variables, the most significant of which are anticipated to be:

- The noise generated by plant or equipment used on-site, or on-site activities (i.e. the physical demolition), generally expressed as sound power levels (LW);
- The periods of operation of the construction plant on the Site, known as its ‘on-time’;
- The distance between the noise source and the receptor; and
- The attenuation provided by ground absorption and any intervening barriers.

The assessment of construction noise effects at residential properties will be undertaken according to the ‘example method 1 – the ABC method’ as defined in BS 5228-1: 2009+A1:2014, Annex E.

Table 3: Demolition and Construction Noise Level Thresholds of Potential Significant Effect at Dwellings

<table>
<thead>
<tr>
<th>Assessment Category and threshold Value Period</th>
<th>Threshold Value $L_{A_{eq,T}}$ (dB) façade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night-time (23:00 – 07:00)</td>
<td>45 50 55</td>
</tr>
<tr>
<td>Evenings and Weekends (d)</td>
<td>55 60 65</td>
</tr>
<tr>
<td>Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)</td>
<td>65 70 75</td>
</tr>
</tbody>
</table>

NOTE 1: A potential significant effect is indicated if the $L_{A_{eq,T}}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{A_{eq,T}}$ noise level for the period increases by more than 3 dB due to site noise.

NOTE 3: Applied to residential receptors only.

(a) Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
(b) Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as Category A values.
(c) Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Category A values.
(d) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays, 07:00 – 23:00 Sundays.

For residential properties where construction noise levels associated with the Proposed Development are predicted to exceed the ABC thresholds, the assessment of the significance of the effect will be determined based on professional judgement, taking into account a range of other factors including:

- The layout and orientation of the property relative to the works;
- The number of receptors affected and the character of the impact; and
- The timing, duration, frequency or likelihood of the effect.

In accordance with the NPPF and NPSE it is also necessary to identify receptors that exceed the LOAEL and SOAEL, and ensure adverse effects are mitigated and minimised.
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

Table 4 defines the suggested LOAEls and SOAEls for the noise effect levels of construction on residential properties.

Table 4: Noise and Vibration Significance Criteria

<table>
<thead>
<tr>
<th>Day</th>
<th>LOAE L_Aeq, T (dB)</th>
<th>SOAE L_Aeq, T (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07:00 – 19:00 Weekdays</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>07:00 – 13:00 Saturday</td>
<td>55</td>
<td>65</td>
</tr>
<tr>
<td>Evenings and Sundays:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19:00 – 23:00 Weekdays</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>13:00 – 23:00 Saturdays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07:00 – 23:00 Sundays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night-time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23:00 – 07:00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Should the existing ambient noise level already exceed the SOAEI, then on the basis that construction noise should not increase the ambient noise level by more than 3 dB, the SOAEI is re-defined as equivalent to the ambient noise level.

As the ABC assessment method is only applicable to residential receptors, a different approach to defining the SOAEI will be applied for non-residential receptors.

Table 6 defines the LOAEI and SOAEI for other non-residential uses for this assessment.

Table 5: Construction Noise Level Thresholds of Potential Significant Effect at Non Residential (External Façade Levels)

<table>
<thead>
<tr>
<th>Use</th>
<th>Time</th>
<th>LOAE L_Aeq, T (dB)</th>
<th>SOAE L_Aeq, T (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail / Offices</td>
<td>All time periods when in normal use</td>
<td>80 ^1</td>
<td>90 ^2</td>
</tr>
</tbody>
</table>

^1 Based on the guidance from the Wilson Committee on acceptable daytime noise levels during construction in urban areas near main roads, taking account of improvements in glazing since the guidance was issued in the 1960s.

^2 Based on a +10 dB increase corresponding to a doubling in subjective loudness and a conservative estimate of the sound reduction provided by closed windows of 25 dB.

Construction Vibration

The effects of human response to whole body vibration in buildings are defined in BS 6472-1: 2008. This presents effects in terms of Vibration Dose Value (VDV). However, for human response to construction related vibration, it is considered more appropriate to measure Peak Particle Velocity (PPV mm/s), as suggested in BS 5228-2:2009- A1:2014 Code of practice for noise and vibration control on construction and open sites (BSI, 2014). Part 2: Vibration.

The limit of human perception to vibration is between about 0.15mms^-1 and 0.3mms^-1 PPV. The sensitivity of the human body also varies according to different frequencies of vibration, with perception generally possible between 1Hz to 80Hz.
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

Table 6 presents significance criteria for vibration based on the guidance on the annoyance effects of vibration as provided in BS 5228-2:2009 + A1:2014 Annex B.

The onset of significant effects (the LOAEL) is classified as 1 mms-1 PPV, the level at which construction vibration can be tolerated with prior warning.

Table 6: Guidance on Effects of Vibration Levels

<table>
<thead>
<tr>
<th>Vibration Level PPV mm/s</th>
<th>Description of Effects</th>
<th>Effect</th>
<th>Adverse Effect Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.3</td>
<td>Vibration is unlikely to be perceptible in even the most sensitive situations for most vibration frequencies associated with construction.</td>
<td>Negligible</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>Increasing likelihood of perceptible vibration in residential environments.</td>
<td>Minor</td>
<td>LOAEL</td>
</tr>
<tr>
<td>10</td>
<td>Increasing likelihood of complaint in residential environments, but can be tolerated at the lower end of the scale if prior warning and explanation has been given to residents.</td>
<td>Moderate</td>
<td>SOAEL</td>
</tr>
<tr>
<td>&gt;10</td>
<td>Vibration is likely to be intolerable for any more than a very brief exposure to a level of 10mms-1.</td>
<td>Major</td>
<td>-</td>
</tr>
</tbody>
</table>

Residents and office/retail workers are deemed to be equally sensitive to annoyance effects from construction vibration. Further consideration of whether an effect is significant will be undertaken using professional judgement, taking account of the duration and frequency of the effect as well as the time of day.

Building Damage

BS 7385-2: 1993 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from re-radiated vibration provides guidance on vibration levels likely to result in cosmetic damage, and is referenced in BS 5228-2: 2009 + A1:2014. Guide values for transient vibration, above which cosmetic damage could occur, are suggested in Table 7.

Table 7: Transient Vibration Guide Values for Cosmetic Damage

<table>
<thead>
<tr>
<th>Type of Building</th>
<th>Peak Component Particle Velocity in Frequency Range of Predominant Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 Hz to 15 Hz</td>
</tr>
<tr>
<td></td>
<td>15 Hz and Above</td>
</tr>
<tr>
<td>Reinforced or framed structures</td>
<td>50 mms-1 at 4 Hz and above</td>
</tr>
<tr>
<td></td>
<td>Reinforced or framed structures</td>
</tr>
<tr>
<td>Industrial and heavy commercial buildings</td>
<td>15 mms-1 at 4 Hz increasing to 20 mms-1 at 15 Hz</td>
</tr>
<tr>
<td></td>
<td>Industrial and heavy commercial buildings</td>
</tr>
</tbody>
</table>

NOTE 1: Values referred to are at the base of the building.

NOTE 2: For un-reinforced or light framed structures and residential or light commercial buildings, a maximum displacement of 0.6mm (zero to peak) is not to be exceeded.

BS7385-2:1993 states that the probability of building damage tends to be zero for transient vibration levels less than 12.5 mms-1 PPV. For continuous vibration the threshold is considerably less at around half this value.
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

It is also noted that these values refer to the likelihood of cosmetic damage. ISO 4866:2010 (ISO, 2010) defines three different categories of building damage:

- Cosmetic – formation of hairline cracks in plaster or drywall surfaces and in mortar joints of brick/concrete block constructions;
- Minor – formation of large cracks or loosening and falling of plaster or drywall surfaces or cracks through brick/block; and
- Major – damage to structural elements, cracks in support columns, loosening of joints, splaying of masonry cracks.

BS 7385-2:1993 defines that minor damage occurs at a vibration level twice that of cosmetic damage and major damage occurs at a vibration level twice that of minor damage. Therefore, this guidance can be used to define the magnitude of vibration impacts.

To determine what effects are caused by these vibration impacts, the sensitivity of the receptor will also be considered.

**Construction Traffic Noise**

Construction traffic noise will be assessed by considering the short-term increase in traffic flows during construction works following the principles of the Calculation of Road Traffic Noise (CRTN) and the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7.

Table 8 provides the criteria for the assessment of the magnitude of impact due to road traffic noise changes arising from construction works that has been taken from Table 3.1 of the DMRB.

**Table 8: Change in Noise Levels in the Short Term due to Construction Traffic**

<table>
<thead>
<tr>
<th>Adverse Effect Levels</th>
<th>Change in Short Term Ambient Noise Level due to Construction Traffic (dB)</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOAEL</td>
<td>3.0</td>
<td>Major</td>
</tr>
<tr>
<td>LOAEL</td>
<td>1.0</td>
<td>Minor</td>
</tr>
<tr>
<td>NOEL</td>
<td>0.9</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

**Operational Road Traffic Noise**

The assessments of road traffic noise implements the noise prediction procedures as detailed in CRTN. The assessment uses criteria to compare changes between the existing traffic noise levels and the potential future traffic noise levels at nearby sensitive receptors.

As stated in the DMRB, Volume 11, Section 3 Part 7:

‘A change in noise level of 1 dB $L_{A10,18h}$ is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged and a change in noise level of 3 dB $L_{A10,18h}$ is equivalent to a 100% increase or a 50% decrease in traffic flow;’

The additional road traffic associated with the operational phase of the Proposed Development should ideally not increase the ambient noise levels at nearby existing noise sensitive premises by more than 3 dB during the daytime or night-time.

**Industrial and Commercial Noise Including Fixed Plant Noise/Building Services and Service Yard Noise Associated with the Proposed Development**

Considering that the noise from the operation of building services plant and servicing noise within the Proposed Development will be mitigated at the detailed design stage so as to meet the requirements of the Local Authority,
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

negligible effects would be anticipated and it is considered unnecessary to define absolute LOAEL and SOAEL values for building services and servicing noise as a result.

Internal and External Ambient Noise Levels in Proposed Residential Units

British Standard 8233: 2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’ sets out desirable guideline values in habitable rooms, such as living rooms and bedrooms.

The guideline values relate to steady external noise without a specific character, previously termed ‘anonymous noise’. According to the standard, noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate. Examples of noise with a character may include tonal/intermittent plant noise emissions, music playback, and workshop noise. Examples of external steady noise sources may include environmental noise sources such as busy road traffic. Table 9 presents the desirable internal ambient noise levels for dwellings.

Table 9: BS-8233 Desirable Internal Ambient Noise Levels for Dwellings

<table>
<thead>
<tr>
<th>Activity</th>
<th>Location</th>
<th>07:00 to 23:00 hours</th>
<th>23:00 to 07:00 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting</td>
<td>Living room</td>
<td>35 dB L_{Aeq,16h}</td>
<td>-</td>
</tr>
<tr>
<td>Dining</td>
<td>Dining room/area</td>
<td>40 dB L_{Aeq,16h}</td>
<td>-</td>
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<td>Sleeping (daytime resting)</td>
<td>Bedroom</td>
<td>35 dB L_{Aeq,16h}</td>
<td>30 dB L_{Aeq,8h}</td>
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*Note 4* Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or L_{Amax,T}, depending on the character and number of events per night. Sporadic noise events could require separate values.

*Note 5* If relying on closed windows to meet the guide values, there needs to be an appropriate alternative source of ventilation that does not compromise the façade insulation or the resulting noise levels.

*Note 7* Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

BS 8233 also provides advice in relation to design criteria for external noise. It states that:

“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB L_{Aeq,T}, with an upper guideline value of 55 dB L_{Aeq,T} which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable.

In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

In high-noise areas, consideration should be given to protecting these areas by screening or building design solutions to achieve the lowest practicable levels. Achieving levels of 55 dB L_{Aeq,T} or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space.”

LOAELs for Transportation Airborne Noise Affecting Outdoor Amenity Areas

Outdoor sound levels of 50 dB L_{Aeq, 16 h} and 40 dB L_{Aeq, 8 h} are considered the LOAELs for airborne noise associated with transportation sources.
Appendix A: Significance Criteria to be Used in the Noise and Vibration Assessment

In the WHO Night Noise Guidelines for Europe a level of 40 dB L_{A_{eq}, 8 \text{ h}} outdoors is said to be "equivalent to the LOAEL for night noise".

For the daytime level, the information used to support the WHO Guidelines for Community Noise indicate that daytime sound levels of less than 50 dB L_{A_{eq}, 16 \text{ h}} cause little or no serious annoyance in the community.

**SOAEs for Transportation Airborne Noise Affecting Outdoor Amenity Areas**

Sound levels of 64 dB L_{A_{eq}, 16 \text{ h}} and 55 dB L_{A_{eq}, 8 \text{ h}} are considered the SOAEs for airborne noise from increases in road traffic noise.

The daytime SOAEL is consistent with the daytime trigger level in the UK’s Noise Insulation Regulations. The WHO Night Noise Guidelines for Europe sets the Interim Target at 55 dB L_{A_{eq}, 8 \text{ h}} outside dwellings. This noise threshold has been taken to be the night-time SOAEL.

**LOAEL and SOAEL for Transportation Airborne Noise Affecting Indoor Residential Levels**

Incident façade levels should not be considered in isolation of the sound reduction provided by the external building fabric. The guidance within Planning Policy Guidance states that “consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations.”

Based on the advice within BS:8233-2014 an indoor noise level of 35 dB L_{A_{eq}, 16 \text{ h}} during the daytime and 30 dB L_{A_{eq}, 8 \text{ h}} during the night-time may be considered as the LOAEL for transportation noise.

Similarly an indoor noise level of 50 dB L_{A_{eq}, 16 \text{ h}} and 45 dB L_{A_{eq}, 8 \text{ h}} during the night-time may be considered as the SOAEL for transportation noise.

The WHO Guidelines for Community Noise also identify 60 dB L_{AF_{Max}} outside as the guideline value for sleep disturbance with windows open. For this reason, a sound level of 60 dB L_{AF_{Max}} at the façade is considered the LOAEL.

With considered research findings on adverse effects on nonrestorative sleep which indicate that adverse effects on sleep can be avoided if the maximum noise level inside the bedroom do not exceed 65 dB when more than 20 discreet events occur. For this reason, a sound level of 80 dB L_{AF_{Max}} at the façade are considered the SOAEs for noise levels at night.

Alternative means of ventilation (to opening windows) should only be provided in order to ensure suitable background ventilation rates are achieved. Purge ventilation rates should be achieved via means of opening windows.

Incident noise levels (other than transportation noise) from existing sources should not exceed an internal noise level in habitable rooms of 15 dB L_{A_{eq}, T} under background ventilation conditions.

The above applies to noise emanating indoors from non-residential uses i.e. a restaurant located below an apartment.
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**Status:** Final  
**Client Company Name:** St George Developments Ltd  
**Issued By:** AECOM  
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1 Introduction

The objective of this technical memorandum (the ‘Memo’) is to identify the potential extent of electronic interference (specifically degradation to terrestrial and satellite TV reception or loss of services) to surrounding residential receptors as a result of the changes in building massing on the former Northfields Industrial Estate as a result of the proposed Northfields development (the ‘Proposed Development’). This Memo also details measures for avoiding or mitigating potential electronic interference impacts.

1.1 Site Location and Context

This Memo relates to Proposed Development site (the ‘Site’), which is centred on National Grid Reference TQ193 838. The Site is a former industrial estate which is currently vacant and largely cleared, having been used for a variety of industrial uses since 1938, including more recently car workshops and car dealers, plant storage, metal fabrication and scaffold companies.

The Site is bound by Beresford Avenue to the north, existing warehouses and the Paddington Branch of the Grand Union Canal to the west and south-west, and existing commercial units and the North Circular Road to the south-east. The Site is bisected by the River Brent and falls within the administrative boundary of the London Borough of Brent (LBB) and close (approximately 25m north) to the London Borough of Ealing (LBE). The Site location is shown in Figure 1.

The Site’s surrounding context is urban and high density, and is characterised by a mix of late 1930s housing to the north and a range of commercial and industrial units, with associated hard infrastructure, including servicing and car parks, to the south.

There are a number of mixed-use developments in the vicinity of the Site. These include Wembley Stadium located 1.5km to the north of the Site including hotels and apartment buildings of up to 17 storeys in height, Wembley Point (21 storeys) located approximately 515m to the north-east of the Site, the eight storey block of flats and commercial buildings on the redeveloped Guinness site approximately 650m to the south-west, a cluster of 14 to 17 storey buildings 650m to 950m to the west of the Site, and the recently approved Minavil House development located approximately 1.1km to the west of the Site which is the tallest proposed building within LBB (up to 26 storeys). In addition, two 10 storey buildings have also been erected on the north of the North Circular Road (A406) located approximately 100m to 220m respectively to the south-west of the Site.
Figure 1. Site Location Plan
1.2 Proposed Development

St. George Developments Ltd. (hereafter referred to as the ‘Applicant’) is seeking outline planning permission (with detail for phase 1) for a residential-led, mixed use development at the former Northfields Industrial Estate.

The Proposed Development will comprise 12 buildings (referred to as Buildings A, B, C, D, E, F, G, H, J, K, L and N) ranging in height from 5 storeys to 25 storeys. The buildings will be set within publicly accessible open landscaped areas, including public squares and gardens. Courtyard gardens and balconies will provide private and semi-private amenity space for residents.

The Proposed Development will provide up to 2,750 homes (a proportion of which will be affordable homes) and a proportion of commercial/employment floorspace (including A1 - A5, B, D1 and D2 uses). Undercroft car parking will serve residents of each building and it is anticipated that an energy centre will be provided as part of the proposals.

Taking into consideration the existing ground level on-site of approximately 30 metres (m) above ordnance datum (AOD), the tallest element of the Proposed Development (a tower of up to 25 storeys) is anticipated to reach approximately 120mAOD (see Figure 2).
Figure 2. Proposed Building Layouts and Heights (not to scale)
2 Overview

Electronic interference relates to the degradation or loss of reception of certain services received electronically (i.e. terrestrial and satellite TV). Terrestrial TV signals are transmitted in digital format (Freeview). The only relevant interference mechanism affecting digital terrestrial TV signals is attenuation due to buildings physically blocking and absorbing the signals, and therefore terrestrial TV can be blocked by the introduction of new buildings. This same mechanism affects satellite TV signals. If the TV signals are too weak the picture may deteriorate into random ‘blocks’, or disappear altogether. The area in which this effect is experienced is classified as the TV shadow, which occurs as a result of the Proposed Development. This disruption will, even for the tallest of buildings, only extend for two or three kilometres (km) (often less in an urban environment). Note: An urban environment, in this case, is one that is inhabited by significant numbers of buildings which are taller than standard two storey domestic dwellings. These two storey domestic dwellings are the receptors likely to be most affected by interference to their TV reception.

The impacts of the Proposed Development on terrestrial and satellite TV reception have been reviewed through desk-based calculations and an on-site survey undertaken on 18 May 2017. Impacts on mobile phone reception were also taken into consideration.

It should be noted that radios use signals at lower frequencies than TV signals. As a result, radio signals can bend to a greater extent around obstructions and are able to make constructive use of reflected signals. Therefore, as radio signals are able to operate successfully in urban environments, there is considered to be ‘no significant’ risk to radio reception (both analogue and digital) as a result of the Proposed Development. It should also be noted that Cable TV (CATV) services are not at risk as a result of the Proposed Development as they are not transmitted through the air, and therefore radio signals and CATV services are not considered further within this Memo.
3 Methodology

Desk-based calculations were used to identify the angle at which the Site receives terrestrial TV signals. The existing terrestrial TV shadow was calculated based on the height of buildings currently on-site and those within approximately 250m of the Site.

To identify those areas where TV reception is likely to be at risk, the proposed changes in the physical form or mass of buildings on-site as a result of the Proposed Development have been placed on a 1:10,000 scale map and calculations have been carried out using International Radio Consultative Committee / International Telecommunication Union (CCIR / ITU) criteria\(^1\), specifically the Appendix A3.1 Parameters to map the area of potential interference ('shadow'). Similar calculations were also used to determine the area of potential satellite TV shadow, which is determined to fall at an angle of 326° East of True North (ETN) due to the location of geostationary TV satellites in relevance to London.

The predicted terrestrial and satellite TV shadows are based on the draft design information dated May 2017.

\(^1\) International Radio Consultative Committee / International Telecommunication Union (CCIR / ITU), Appendix A3.1 Parameters.
4 Baseline Conditions

Terrestrial TV signals in the vicinity of the Site are provided by the Crystal Palace transmitter located approximately 19.2 kilometres (km) to the south-east of the Site.

Most existing buildings in the area are generally of 2 and 3 storeys. As previously noted, there are a number of taller developments in the vicinity of the Site, including Wembley Stadium located 1.5km to the north with nearby hotels and apartment blocks of up to 17 storeys, and Wembley Point Wembley Point (21 storeys) located approximately 515m to the north-east of the Site. However, due to their location in relation to the Proposed Development, these buildings do not contribute to the baseline TV shadow area.

Due to the location of geostationary TV satellites in relevance to London, satellite TV reception shadows fall at an angle of 326° ETN i.e. to the north-west of the Site.

No mobile phone masts were identified in proximity of the Site during the site survey undertaken on 18 May 2017. Additionally, mobile telephone communications use frequencies which are able to pass through solid objects, including buildings, and it is therefore unlikely that the Proposed Development will have a significant effect on mobile telephone signals. Consequently, it is considered that the Proposed Development will not have any effect on mobile phone reception, and therefore mobile phone reception is not considered further within this Memo.

There are considered to be no likely significance adverse effects on mobile phone reception, CATV services and analogue and digital radio reception as a result of the Proposed Development.
5 Potential Extent of the Terrestrial and Satellite TV Shadow

The terrestrial TV reception shadow generated as a result of the Proposed Development (see Figure 3) has been calculated to extend for a maximum of approximately 2km to the north-west of the Site at its longest point.

This terrestrial TV reception shadow extends over an area of commercial and residential properties. In total, the site survey identified approximately 672 sensitive receptors (i.e. residential properties\(^2\)) within the anticipated terrestrial TV shadow generated as a result of the Proposed Development.

Of these 672 sensitive receptors, there were 104 receptors observed to have terrestrial aerials only (i.e. no satellite dishes were observed to be readily visible on these dwellings during the site survey); however, following observations noted during the site survey, and analysis of the cable coverage checker\(^3\), it should be noted that access to CATV is available to all these residential receptors. Despite this, the usage of CATV services cannot be quantified at this stage (this would require door-to-door questioning of the users), and of these 104 sensitive receptors, it is unknown how many depend solely on terrestrial TV services.

The satellite TV reception shadow generated as a result of the Proposed Development is anticipated to extend to the north-west of the Site for approximately 160m at its longest point (see Figure 3). This shadow will not extend over any existing residential properties, only existing commercial properties. It is therefore considered that the Proposed Development will have no effect on satellite TV reception received by nearby residents.

---

\(^{2}\) Receptors where TV is part of a commercial offering (such as hotels, offices and shops) are not considered to be a sensitive receptor for the purposes of this assessment. This differentiation has been consistently used by the relevant United Kingdom (UK) government agencies (currently the Office of Communications (OFCOM)) since the inception of TV services in the UK.

\(^{3}\) CATV availability checker. Accessed online 22\(^{nd}\) May 2017 [URL: https://www.cable.co.uk]
6 Mitigation Measures

Mitigation measures can be implemented if required to avoid disruption to TV reception in the vicinity of the Site.

To avoid disruption to services carried by communication cables (copper and fibre) to neighbouring properties (such as accidental cutting of cables) during demolition and construction works, the contractor is advised to obtain information from the service providers on any cable routes that run across and close to the Site. This information can then be used to avoid any potential disruption to existing services.

It is good practice to mitigate for the impact from the Proposed Development for those properties that are likely to experience an impact to their TV reception. For those residential properties anticipated to receive a loss or degradation to TV reception, mitigation measures can include upgrading the existing terrestrial TV aerials by increasing their height and/or gain, or providing a non-subscription satellite service which is available from either the BBC and ITV ('Freesat') or 'Sky' for a one-off cost. Alternatively, these properties could be connected to the available CATV service at a one-off cost (if they are not connected already). As identified in Section 5 above, observations during the site survey and analysis of the cable coverage checker identified that access to CATV is available to all residential properties in the vicinity of the Site however the usage of CATV services cannot be quantified at this stage

Following completion of the Proposed Development, it is recommended that the LBB sets up a complaints register to allow residents to report any resulting disruption or loss of TV signal. Following investigation of the complaint, appropriate mitigation measures can be implemented if it is found that the disruption or loss of service can be attributed to the Proposed Development.

Following the implementation of the advised mitigation measures, residual effects on TV reception are considered to be negligible.
Figure 3. Anticipated TV Reception Shadows Anticipated as a Result of the Proposed Development
7 Conclusions

In conclusion, it is considered that there will be no significant environmental effects on TV and radio reception as a result of the Proposed Development provided suitable mitigation measures are implemented. This is because a high proportion of the residential properties located within the terrestrial TV shadow associated with the Proposed Development have access to satellite TV and / or CATV. Furthermore, any residential properties at risk of a disruption or loss of terrestrial TV services can implement mitigation measures so as to continue to receive TV services.

It is considered that the Proposed Development will have no effect on satellite TV reception received by residential receptors as the satellite TV reception shadow generated as a result of the Proposed Development will not extend over any existing residential properties.

There are considered to be no likely significance adverse effects on mobile phone reception, CATV services and analogue and digital radio reception as a result of the Proposed Development.

Based on the conclusions presented within this Memo it is considered that an Environmental Statement (ES) chapter relating to electronic interference is not required, and an assessment of electronic interference effects can be scoped out of the ES.
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Appendix C Ecological Information
Northfields
Ecological Update and Preliminary Ecological Appraisal

St George Developments Limited

Project Number: 60542764
August 2017
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Executive Summary

AECOM ecologists undertook a walkover survey of the Site on 31st May 2017 to determine whether or not there had been any changes in biodiversity since the initial appraisal undertaken in March 2016 by Delta Simons. This included an update inspection of the buildings on site for bat roost potential, invertebrate habitat appraisal, and assessment of ecological value along with the aquatic ecology of the River Brent and Grand Union Canal. Additionally, two areas of land now within the Site not included in the March 2016 appraisal, Thames Water Land and three units along Beresford Avenue, were assessed for their ecological value, the latter from outside the properties. These two areas of land have recently been incorporated into the planning application boundary.

The Site was found to be in a very similar condition to that in March 2016 with low ecological value and no potential for bat roosts. Giant hogweed, an invasive non-native plant was found on the Thames Water Land which was also found to have potential for supporting reptiles.

Recommendations include:

- Measures to deal with birds on the Site with respect to nesting;
- Production of a Method Statement, to avoid the potential injuring or killing of common reptiles that might use the Thames Water Land;
- Implementation of an Invasive Species Management Plan;
- Production of an aquatic technical report and river naturalisation input; and
- Proposals for the enhancement of the Site.

Assuming these measures are taken into account, the proposed development would achieve an overall enhancement to the biodiversity of the Site.
1. Introduction

AECOM was instructed by St George Developments Limited in May 2017 to carry out work to inform an ecological update to the initial ecological appraisal of the Northfields redevelopment site ('the Site'), including an additional Preliminary Ecological Appraisal (PEA) of land not previously accessed and owned by Thames Water, along with three building units at Beresford Avenue (see Figure 1 for locations of these areas).

The central grid reference for the Site is TQ 19255 83803 and the boundary of the Site is shown in Figure 1 (see Appendix D). The Site is 9.15 ha in size and currently comprises several commercial buildings and several temporary structures surrounded by hardstanding, with some scattered vegetation including trees around the periphery of the Site.

The Site is situated within a largely urban setting with surrounding residential and commercial properties. The River Brent defines the south-eastern Site boundary whilst the Grand Union Canal defines the Site to the west. Beresford Avenue defines the northern Site boundary, with residential properties beyond this.

The proposed redevelopment of the Site will be through a sustainable mixed-use development that will deliver residential accommodation along with commercial and employment uses, generating activity that will enhance the wider area within an urban environment and provide new high quality buildings and public realm (the ‘Proposed Development’).

1.1 Northfields Industrial Estate (Main Site)

Delta-Simons Environmental Consultants Ltd was instructed by Savills on behalf of Brixton Northfields (Wembley 1) Limited to undertake Extended Phase 1 Habitat and Bat Roost Potential surveys of an area of land at Northfields Industrial Estate to the north and south of the River Brent in Wembley. The surveys were undertaken on 16th March 2016 and have been appended to this report for reference (see Appendix C). Habitats and the potential of the Site for protected species were assessed during the Extended Phase 1 Habitat Survey. The survey was undertaken in order to inform the client of any ecological constraints relating to the future redevelopment of the Site.

The report produced by Delta Simons provides the ecological baseline report that should be read alongside this report. This ecological baseline report contains local planning policy, legislation, and associated Phase 1 habitat maps of the areas surveyed.

A review process was undertaken by AECOM ecologists in May 2017 to determine if there was a need to update the baseline report. This review identified three areas where additional information was required, see Table 1 below:

Table 1: Additional Requirements

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<td>The Extended Phase 1 Habitat Survey Grand Union Place – North recommended that if a redevelopment of the Site was not undertaken within 18 months of the survey, that the buildings at the Site, particularly Buildings 5 and 6, should be reassessed for their suitability to support roosting bats.</td>
<td>An update internal and external inspection of the structures to be undertaken on 31 May 2017 in line with the Bat Conservation Trust (BCT) survey guidelines.</td>
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Invertebrates

In order to gain an understanding of the Site's potential for invertebrates, an appraisal of potential disturbed ground, and brownfield areas is carried out.

An appraisal carried out on 31 May 2017 by a suitably qualified ecologist to focus on open mosaic habitats, evidence of previous disturbance; either through soil being removed, or the addition of materials such as industrial spoil, with spatial variation developing across the Site that could be valuable for invertebrates.

Aquatic: River Brent and Grand Union Canal

Further assessment is required on aquatic non-statutory sites that are adjacent to the Site, in order to investigate if the Proposed Development will affect the River Brent and Grand Union Canal.

An aquatic walkover survey on 31 May 2017 to establish hydrological, geomorphological and conservative physical-chemical water quality data in addition to an evaluation of the macroinvertebrate & macrophyte communities and fish habitat availability.

1.2 Thames Water Land and Beresford Avenue Units

Additionally, a PEA was commissioned to cover the two areas of land recently incorporated into the planning application boundary to inform the EIA scoping exercise. The aim of the PEA was to identify whether there are known or potential ecological receptors that may constrain or influence the design and implementation of the Proposed Development.

The approach applied to this PEA accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM 2013)\textsuperscript{2}. The PEA addresses relevant wildlife legislation and planning policy as summarised in Chapter 2 of this report.

In order to deliver the PEA, an extended Phase 1 Habitat Survey was undertaken by two appropriately experienced ecologists, to identify ecological features within the Proposed Development and the wider potential zone of influence of the Proposed Development. Additional details are provided in Chapter 2: Methods.

The purpose of the PEA was to:

- identify and categorise all habitats present and any areas immediately outside of the Site where there may be potential for direct or indirect effects;
- carry out an appraisal of the potential of the habitats recorded to support protected or notable species of fauna and flora;
- identify the presence of any invasive non-native plant species; and
- provide advice on any potential ecological constraints and opportunities in the zone of influence, including the identification (where relevant) of any requirements for follow-up habitat and species surveys and/or requirements for ecological mitigation or enhancement.

The purpose of this report is to provide a high level appraisal of the ecological risks and opportunities associated with Thames Water Land and the Beresford Avenue Units in support of the forthcoming planning application. The desk-study data is excluded from this evaluation, as this was carried out by Delta Symonds in 2016 and comprehensively covers the two additional areas of land.
2. Methods

2.1 Northfields (Main Site)

2.1.1 Initial Bat Roost Assessment

An update inspection of the buildings on site was undertaken on 31st May 2017 by two experienced AECOM ecologists, the survey was conducted in line with the BCT survey guidelines. Close focusing binoculars were used to conduct an external assessment of the buildings and an internal assessment where access permitted. All potential access/egress points and features with the potential to support roosting bats (e.g. cracks, crevices, roof voids) were identified and recorded along with any evidence which may have indicated the location of roosts, such as:

- stains around entrance holes (resulting from the deposition of oil secretions in bat fur);
- scratch marks around entrance holes (resulting from bat claw holds);
- bat droppings;
- feeding remains; and
- odours or noise characteristic of bats.

On the basis of the internal and external survey, the overall risk of the building supporting roosting bats was classified according to the scale outlined in Table 2 below:

Table 2: Criteria Used to Describe Bat Roost Risk

<table>
<thead>
<tr>
<th>Type of Roost</th>
<th>Habitat Suitability/ Level of Risk</th>
<th>Summer or transitional roost used by non-breeding bats</th>
<th>Maternity Roost</th>
<th>Hibernation Roost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmed</td>
<td>Presence of bats or evidence of bats. Confirmation of roost status may require further survey.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Feature with multiple roosting opportunities for one or more species of bat. With good connectivity to high quality foraging habitat.</td>
<td>Feature with multiple roosting opportunities for breeding bats (size, temperature). With proximity and connectivity to high quality foraging habitat.</td>
<td>Large site that offers cool stable conditions with multiple roosting opportunities. With proximity and connectivity to high quality foraging habitat.</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>Feature with some roosting opportunities. With connectivity to moderate or high quality foraging habitat.</td>
<td>Feature providing some roosting opportunities. With some connectivity and proximity to moderate or high quality foraging habitat.</td>
<td>Medium sized feature with some roosting opportunities. With some connectivity and proximity to moderate or high quality foraging habitat.</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Feature with a limited number of roosting opportunities. With poor connectivity to foraging habitat.</td>
<td>Feature with a limited number of roosting opportunities for breeding bats. With low proximity and connectivity to low or moderate quality foraging habitat.</td>
<td>Small sized feature or feature which may be subject to disturbance or environmental variations, with a limited number of roosting opportunities. With poor connectivity to foraging habitat.</td>
<td></td>
</tr>
<tr>
<td>Negligible</td>
<td>Feature with no or very limited roosting opportunities for</td>
<td>Feature with no suitable roosting opportunities for</td>
<td>Feature with no suitable roosting opportunities for</td>
<td></td>
</tr>
</tbody>
</table>
### Type of Roost

<table>
<thead>
<tr>
<th>Habitat Suitability/ Level of Risk</th>
<th>Summer or transitional roost used by non-breeding bats</th>
<th>Maternity Roost</th>
<th>Hibernation Roost</th>
</tr>
</thead>
<tbody>
<tr>
<td>opportunities for bats or where the feature is isolated from foraging habitat.</td>
<td>breeding bats.</td>
<td>hibernating bats.</td>
<td></td>
</tr>
</tbody>
</table>

#### 2.1.2 Invertebrate Habitat Appraisal

An appraisal of the Site was carried out informed by Buglife guidance⁴, in order to establish whether the habitats present are valuable for invertebrate populations. Habitat features were noted such as:

- Artificial Substrate- cracked or crumbling concrete coupled with a lack of topsoil produce a nutrient poor growing medium, promoting high plant diversity that could allow a variety of food plants for invertebrates; and

- High plant diversity and flower abundance, patches of bare ground and exposed earth banks, can provide important nesting and foraging areas for invertebrates. This disturbance leads to various stages of succession within sites, adding to the all-important variety of species.

#### 2.1.3 Aquatic Walkover Survey: River Brent and Grand Union Canal

An aquatic walkover survey of the Site was undertaken on 31st May 2017. These data were used to evaluate the condition of the waterbody in terms of its aquatic ecological potential and to inform future river naturalisation proposals.

The survey aimed to:

- provide water quality data for the Grand Union Canal and the River Brent;
- describe the hydrological and geomorphological conditions for both waterbodies i.e.: flow type and diversity, degree of naturalness or modification, substrate type;
- assess the macroinvertebrate and macrophyte communities present; and
- describe fish habitat availability.

#### 2.2 Thames Water Land & Beresford Avenue Units

#### 2.3 Field Survey

The field survey comprised an extended Phase 1 Habitat Survey and an appraisal was made of the potential suitability of the habitats present to support protected and notable species.

#### 2.3.1 Phase 1 Habitat Survey

A Phase 1 Habitat Survey was undertaken on 31 May 2017 in accordance with the standard survey method (Joint Nature Conservation Committee, 2010)⁵. A Phase 1 Habitat Survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 Habitat Survey method can be “extended” to record target notes on protected, notable and invasive species.
The survey was undertaken on the 31st May 2017 by two suitably qualified AECOM ecologists who recorded and mapped all habitat types present within the Thames Water Land and Beresford Avenue Units (as shown in Appendix D), along with any associated relevant ecological receptors observed.

Where relevant ecological receptors were present, target notes (Appendix B) were recorded and the position of these shown on the Phase 1 Habitat map. Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey.

### 2.3.2 Appraisal of potential suitability of habitats to support protected and notable species

An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals. Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys were carried out for any particular species.

Prior to undertaking the extended Phase 1 Habitat Survey, aerial photography and 1:2,500 Ordnance Survey mapping were examined to attempt to identify all ponds within 500 m of the two land parcels. This process could not guarantee to definitively identify all ponds present, but is the best that can be achieved within the limits of available data. Specific searches were made for ponds within and adjacent to the Thames Water Land and the Beresford Avenue Units when undertaking the extended Phase 1 Habitat Survey, however no ponds where identified therefore this is not considered further.

An initial bat roost potential assessment was also undertaken (see Section 2.1.1 for details).

A note was made of visible instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), including Japanese knotweed (*Fallopia japonica*). Locations of plants or stands of any such invasive non-native plant species found were recorded.

### 2.4 Field Survey Limitations

All buildings were entered, both internally and externally; however certain areas could not be fully viewed due to safety reasons. The inability to view all aspects of the buildings is not considered a constraint as this did not prevent a comprehensive assessment for roosting bats to be undertaken.

Where habitat boundaries coincide with physical boundaries recorded on OS maps the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field. Where areas of habitat are given they are approximate and should be verified by measurement on site where required for design or construction.
3. Results

3.1 Northfields (Main Site)

3.1.1 Initial Bat Roost Assessment

Building 1: This is located within the western extent of the Site, and comprises a two storey brick structure, supporting a flat roof to the north and pitched roof structure to the south with a gently sloping metal roof and skylight panels also present here. The windows are well sealed, and the brick walls, (including the mortar), and guttering do not provide any gaps or crevices for roosting bats.

This building was occupied at the time of the survey (although subsequently it became unoccupied), and due to the use of the building as a mechanical workshop there was regular noise and disturbance throughout the day, and security lighting present at night. The western aspect of the building remains partially demolished, allowing exposure to draught and inclement weather not suitable for roosting bats. It is considered on this basis that the building is of negligible potential for roosting bats.

Building 2: This is located within the western extent of the Site, similar in construction to Building 1, comprising brick walls, and a flat roof. The building previously supported office space, and contains a suspended ceiling, lacking a roof void. The windows are boarded up, and do not contain any gaps or crevices that could be utilised by bats. It is considered on this basis that the building is of negligible potential for roosting bats.

Building 3: This is located within the western extent of the Site between Building 1 and 2. This consists of a small single storey wooden structure with a pitched roof, containing wooden boarding, which appeared in good condition. This is currently in use as a café, but was not open at the time of the survey. There were two large windows present, exposing the internal building to natural light. It is considered that the building is of negligible potential for roosting bats.

Building 4: This is located within the centre of the Site. It is a two storey brick building containing both flat and pitched roofs. There is no roof void present, due to the presence of a suspended ceiling. The brick structure is in relatively good condition, with no gaps in the mortar present, the guttering is intact, and the windows are boarded up. No access or egress points were noted. It is considered on this basis that the building is of negligible potential for roosting bats.

Building 5: This building is located within the south-eastern extent of the Site and comprised a large two-storey brick building supporting a pitched corrugated sheet roof and a single storey extension to the south supporting a gently sloping corrugated sheet roof. This building is disused, and appears to have been previously used for vehicle maintenance. The external structure appeared in poor condition, the brickwork is chipped, with some holes present within the mortar, while the windows are largely broken. There are several wooden panels however these are well sealed to the building. The internal structure is well sealed, and exposed to sunlight. There are no cracks/crevices present that could be utilised by bats. It is considered that the building is of negligible potential for roosting bats.

Building 6: This is located within the southern extent of the Site, and comprises a single storey brick structure with a pitched corrugated sheet roof. This building was unoccupied at the time of the survey and was in a deteriorating condition. No cracks or crevices were noted on the exterior of this building, and no access or egress points noted. It is considered that the building is of negligible potential for roosting bats.

Building 7: This comprises a wooden and stone panel double garage. The structure appeared relatively new and was not seen to feature any major cracks, crevices or access points for bats. It is considered that the building is of negligible potential for roosting bats.

Building 8: This is located at the entrance of the Site along the northern boundary with Beresford Avenue, in the form of a security hut which is occupied. This single storey building was of brick construction with a large window and flat roof. There were wooden barge boards and associated cladding which appeared tightly fitted to the wall. It is considered that the internal area of the building will be lit 24 hours a day and regularly disturbed making it further unsuitable for roosting bats. It is considered that the building is of negligible potential for roosting bats.
Overall, the site continues to experience disturbance from noise and lighting levels described above decreasing the potential for roosting bats compared to conditions in March 2016. It is considered no further survey or mitigation is required for bats. Photographs of Buildings 1 and 5 are found in Appendix D of this report.

3.1.2 Invertebrate Habitat Appraisal

A significant area of the Site is made up of large areas of hardstanding. These were where buildings had been recently demolished and the demolished materials removed. This has left areas of impervious concrete and other foundation materials and some piles of rubble. There were also areas of asphalt where roads and car parks had been. Apart from the rubble piles, none of this type of substrate provides habitat for insects or other invertebrates due to its impenetrability, i.e. absence of cracks and exposed earth, gravel etc., and lack of niches to provide for vegetation growth, refuge and nesting space.

In consequence, there were very few patches of ruderal vegetation and those that were noted were small and relatively recent having had little time to have developed any diversity of species. The Site from this viewpoint, again, does not provide habitat for insects including such groups as pollinators and others that provide a food source for birds and mammals.

The situation on the Site is in marked contrast to brownfield habitat which has been allowed to develop over time, often decades, in which a diversity of substrates including porous materials typically including nutrient poor growing media that provide high numbers of food plants for invertebrates, and important refuge and nesting areas within the substrate.

It is concluded that the Site has low to no value for terrestrial invertebrates. No further assessment for invertebrates is required.

3.1.3 Aquatic Walkover Survey: River Brent and Grand Union Canal

Assessment of the River Brent and Grand Union Canal is limited in the Phase 1 Habitat survey carried out by Delta Simons and this did not investigate the condition of the river or what it was designated for, e.g. aquatic invertebrates and fish. This is relevant in the context of the Water Framework Directive (WFD) particularly as the river emerges from a culverted section just upstream from the Site.

In the Grand Union Canal, the water quality was poor with low dissolved oxygen levels (39%) and a water temperature of 20.5°C. There appeared to be a blue/green algae blooming on the margins and the macroinvertebrate community was characteristic of a freshwater system under the combined pressures of poor water quality, homogenous flow and geomorphological habitats. There were extensive areas of macrophytes dominated by nutrient tolerant species.

Water quality in the River Brent was moderate with dissolved oxygen levels at 78%, pH 8.15 and temperature of 17.2°C. The fluvial and geomorphological habitats were homogenous, with both banks and the river bed reinforced concrete throughout. A step weir was recorded approximately 190 metres downstream of the upstream extent of the survey reach, where it came out of culvert after 400 metres. The river bed had a thin layer of silt, approximately 5 cm, overlaying the concrete which supported an extensive coverage of blanketweed, *(Cladophora glomerata agg)*. The macroinvertebrate community was poor, characterised by hog louse and biting midge larvae. The reach of the River Brent adjacent to the Site could be described as a flood alleviation channel, extensively re-sectioned and reinforced.

Improvements to the river (and canal) could probably be achieved at minimal cost and some biodiversity gain is likely to accrue anyway, e.g. treatment of the Japanese knotweed and giant hogweed along the riverbanks. The environmental gain could be a strong positive for the project in terms of local biodiversity.

It is recommended that the Environment Agency (with the relevant Team Lead for the River Brent and likewise with the Grand Union Canal) and Canal and River Trust are consulted, this is described within Section 4 of this report.
3.2 Thames Water Land & Beresford Avenue Units

3.3 Habitats

3.3.1 Phase 1 Habitat Types

The habitats recorded, their extent and distribution are shown in Table 3 and Appendix A, Figure 1. The areas are approximate only. The associated target notes are provided in Appendix B, and illustrative photographs are provided as appropriate in Appendix D.

Table 3: Habitats present, based on spatial area occupied

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Brief description</th>
<th>% of Site area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadleaved Trees</td>
<td>There were several semi mature sycamore (<em>Acer pseudoplatanus</em>) present within the Thames Water Land. These are considered to be self-sown.</td>
<td>5%</td>
</tr>
<tr>
<td>Scattered Scrub</td>
<td>This habitat is present within the Thames Water Land sporadically and is dominated by bramble (<em>Rubus fruticosus</em>), elder (<em>Sambucus nigra</em>) and butterfly bush (<em>Buddleja davidii</em>)</td>
<td>15%</td>
</tr>
<tr>
<td>Tall Ruderal</td>
<td>This is present within the Thames Water Land dominant species include creeping thistle (<em>Cirsium arvense</em>), bristly oxtongue (<em>Picris (Helminthotheca) echioiides</em>), and perforate St John’s wort (<em>Hypericum perforatum</em>)</td>
<td>15%</td>
</tr>
<tr>
<td>Buildings and Hardstanding</td>
<td>There are three commercial warehouses present on Beresford Avenue, these are all currently occupied. Hardstanding is present in the form of the previously used road throughout the Thames Water Land.</td>
<td>65%</td>
</tr>
</tbody>
</table>

The habitats are described in greater detail below.

3.3.1.1 Broadleaved Trees

There are several semi mature trees present throughout the Thames Water Land; these consist largely of sycamore, with occasional common ash (*Fraxinus excelsior*) saplings.

3.3.1.2 Scattered Scrub

This is present throughout Thames Water Land, and consists of bramble, elder and butterfly bush. Less common species include creeping field bindweed (*Convolvulus arvensis*) and occasional dog rose (*Rosa canina*). The variation in vegetation, basking areas, suitable refugia including debris, brash and corrugated sheets offer potential for common reptile species (TN1). Furthermore it is considered that the scrub provides nesting and sheltering habitat for common breeding birds (TN2).

3.3.1.3 Tall Ruderal

The is present throughout Thames Water Land, dominant species include creeping thistle, bristly oxtongue, and perforate St John’s-wort, common nettle (*Urtica dioica*) and oxford ragwort (*Senecio squalidus*). There is giant hogweed (*Heracleum mantegazzianum*) (TN3) a non-native invasive species present.

3.3.1.4 Buildings and Hardstanding

There are three commercial warehouses on Beresford Avenue, these are two storeys in height, flat roofed consisting of brick and currently in use. Hardstanding is present in the form of derelict roads, and pavement at Thames Water Land.
3.3.2 Notable Habitats

No notable habitats (i.e. those likely to qualify as habitat of principal importance under Section 41 of the Natural Environment and Rural Communities Act) were present.

3.3.3 Protected and Notable Species

The species present are those for which recent direct observation or field signs confirmed presence. Species which are possibly present are those for which there is potentially suitable habitat based on the results of the Phase 1 Habitat Survey, or this combined with desk study records that are provided within the Delta Simons Report\(^1\).

Where species are identified, these are considered likely to represent legal constraints or may be material to the determination of a planning application. Further surveys will or may be required to determine the presence or probable absence. Requirements for further survey are identified in Chapter 4 of this report.

3.3.3.1 Reptiles

The scrub habitat present at Thames Water Land is considered to provide potential sheltering, foraging, and basking habitat for common reptile species. There are a number of corrugate sheets, waste piles, and brash cuttings that provide refuge, the bare-ground patches provide basking opportunities, the mosaic of habitat, and varied topography provide further provide suitability for reptiles. Further requirements are outlined in Section 4 of this report.

3.3.3.2 Birds

The dense scrub and trees within Thames Water Land have the potential to support sheltering and breeding habitat for common nesting bird species. Further requirements are outlined in Section 4 of this report.

3.3.3.3 Invasive Non-Native Species

Giant hogweed was present within the tall ruderal habitat at Thames Water Land; are listed on Schedule 9 of the Wildlife and Countryside Act 1981. Further requirements for this species are outlined in Section 4 of this report.

3.3.3.4 Bats

The commercial warehouses at Beresford Avenue were assessed for their risk to support a bat roost. The buildings had no visible features and was therefore assessed as having negligible potential of supporting roosting bats.

The semi mature trees throughout Thames Water Land did not provide suitable features to support roosting bats, this includes snagged branches, loose bark or callous rolls which provide suitable cavities. No further assessment for bats is required.

4. Identification of Ecological Constraints and Recommendations

4.1 Approach to the Identification of Ecological Constraints

Relevant ecological receptors that may represent constraints to the Proposed Development, or that provide opportunities to deliver ecological enhancement in accordance with planning policy, are identified below.

The National Planning Policy Framework (NPPF) and local planning policy specify requirements for the protection of features of importance for biodiversity. Planning policy is a material consideration when determining planning applications.
Compliance with planning policy requires that the Proposed Development considers and engages the following mitigation hierarchy where there is potential for impacts on relevant ecological receptors:

1. Avoid features where possible;
2. Minimise impact by design, method of working or other measures (mitigation) e.g. by enhancing existing features; and
3. Compensate for significant residual impacts, e.g. by providing suitable habitats elsewhere (whether in the control of the client or otherwise legally enforceable through planning condition or Section 106 agreement).

This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered. The rationale for the proposed mitigation and/or compensation should be provided with planning applications, including sufficient detail to show that these measures are feasible and would be provided.

In pursuance of the objective within the NPPF of providing net gains in biodiversity where possible, consideration should be given to the scope for enhancement as part of the Proposed Development. This should represent biodiversity gain over and above that achieved through mitigation and compensation. Enhancement could be achieved on and/or off the Site.

The likelihood of the relevant ecological receptors constraining the Proposed Development has been assessed with reference to the scale described in Table 4. The higher the importance of the ecological receptor for the conservation of biodiversity at national and local scales, the more likely it is to be a material consideration during determination of the planning application for the Proposed Development.

Opportunities for ecological enhancement are not scaled in Table 4, but are identified in the accompanying appraisal. There may be scope for ecological enhancement where existing habitat features could be improved or enhanced within the Proposed Development as designed, or with only minor amendment to the design of the Proposed Development. Ecological enhancement may not be possible where there is little scope to accommodate enhancement within the Proposed Development, e.g. due to a lack of utilisable space, or where land is required for essential mitigation. Consideration could be given to enhancing biodiversity in the vicinity of the Site.

The constraints outlined in this report will need to be reassessed if there is a significant change to the type or scale of development proposed as set out in Section 1, or if there are any significant changes in the use or management of the land that would affect the habitats and species. If a planning application is made two years or more after a PEA it is advisable to review and update the survey data.

**Table 4: Scale of Constraint to Development**

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td>An actual or potential constraint that is subject to relevant legal protection and is likely to be a material consideration in determining the planning application (e.g. statutory nature conservation designations and European/nationally protected species). Further survey likely to be required (as detailed in this report) to support a planning application.</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>An actual or potential constraint that is covered by national or local planning policy and, depending on the level of the potential impact as a result of the Proposed Development, may be a material consideration in determining the planning application. Further survey may be required (as detailed in this report) to support a planning application.</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>Unlikely to be a constraint to development or require further survey prior to submission of a planning application. Mitigation is likely to be covered in a Construction Environmental Management Plan or precautionary working method statement (e.g. generic requirements for the management of risks associated with nesting birds).</td>
</tr>
</tbody>
</table>
4.2 Northfields (Main Site)

4.2.1 Constraints and Requirements for Further Survey: Habitats

4.2.1.1 Aquatic Technical Report: River Brent and Grand Union Canal

An experienced aquatic ecologist will establish the value of the baseline ecology of the River Brent and Grand Union Canal in the local area, based on data recorded during the ecology walkover survey undertaken by AECOM ecologists on 31st May 2017 and historic data received from the Environment Agency in June 2017. The findings will be set out in a separate aquatic ecology report.

The Environment Agency will be consulted to explore opportunities for ecological enhancements to the River Brent which could be brought forward as part of the Proposed Development.

4.2.2 Constraints and Requirements for Further Survey: Species

No further survey or assessment is required for protected species.

4.3 Thames Water Land and Beresford Avenue Units

4.3.1 Reptiles

The areas of scrub throughout the Thames Water Land have the potential to support common reptile species. Therefore it is recommended that a method statement is produced which will detail the measures required prior to and during clearance or construction works to minimise the low risk of reptiles present at the Site, and ensure that works are compliant with nature conservation legislation.

The clearance must be completed while reptiles are still active and before they enter hibernation (considered to be from October onwards, although this is dependent on the prevailing temperatures). It is recommended that a visit from a suitability qualified ecologist is conducted in order to undertake a toolbox talk prior to the clearance, and the method statement issued to on-site contractors.

4.3.2 Common Nesting Birds

The areas of scrub and trees within the Site have the potential to support nesting common bird species. Therefore, there is a potential for construction works to lead to the destruction or disturbance of active nests. All species of wild bird in the UK are protected under Part 1 Section 1(1) of the Wildlife and Countryside Act 1981 (as amended) against intentional killing, injuring or taking of wild birds, as well as taking, damaging or destroying nests in use or being built, and taking or destroying eggs.

No further survey works are required. However depending on the timing of works, checks for the presence of nesting birds may be required prior to the commencement of vegetation clearance in order to prevent an offence occurring.

Assuming any vegetation clearance works occur during the period of September to February inclusive (i.e. avoiding the key nesting period) then no impacts on nesting birds are anticipated and no further ecological inputs will be required.

If vegetation removal is required during the period March to August inclusive, an ecologist will be required to undertake a check to confirm the absence of active bird nests immediately prior to the commencement of works.

4.3.3 Non-Native Invasive Species

The Phase 1 Habitat survey identified plants of giant hogweed on the Site. This invasive non-native species is listed on Schedule 9 of the Wildlife and Countryside Act (as amended 1981). It is an offence to cause the plant to spread in the wild. Contact with this plant by skin in sunlight can result in severe blistering and a rash which can be recurrent in following years.
It is recommended that an Invasive Species Management Plan (currently being drawn up by Ebsford Environmental) is implemented not only to deal with the giant hogweed on the Site but also to specify biosecurity measures to minimise the risk of giant hogweed being reintroduced into the Site (it is widespread in this part of west London) as well as Japanese knotweed and any other species.

Relevant stakeholders should be informed straightaway of the locations of the giant hogweed to prevent anyone being injured by the plant and to prevent the risk of spread outside the Site.

4.4 Opportunities for Ecological Enhancement

In accordance with the NPPF and the London Plan, no net loss of biodiversity and the provision for ecological protection, enhancements, and habitat creation are provided for in the recommendations above. Local planning policy encourages the inclusion of living roofs, landscaping and tree planting in a development and also for the enhancement of biodiversity opportunities.

At present, limited detail regarding landscaping is available as the design is currently evolving. The following ecological enhancement measures are recommended for consideration within the landscape and ecology masterplan for the Proposed Development:

- Sowing of native wildflower species within an urban meadow;
- Planting of native tree and shrub species (including roof planting);
- Integrating vegetation such as areas of green wall;
- Sowing biodiverse green roof areas with species attractive to urban pollinators;
- Installation of insect habitats such as an urban insect box, urban bee nester, and beepot (concrete planter and bee hotel); and
- Installation of self-cleaning bat shelters.

5. Conclusion

The Site was found to be in a very similar condition to that in March 2016 with low ecological value and no potential for bat roosts. Giant hogweed, an invasive non-native plant was found on the Thames Water Land which was also found to have potential for supporting reptiles.

Recommendations include:

- Measures to deal with birds on the Site with respect to nesting;
- Production of a Method Statement, to avoid the potential injuring or killing of common reptiles that might use the Thames Water Land;
- Implementation of an Invasive Species Management Plan;
- Production of an aquatic technical report and river naturalisation input; and
- Proposals for the enhancement of the Site.

Assuming these measures are taken into account, the Proposed Development would achieve an overall enhancement to the biodiversity of the Site.

6. References

1. Delta-Simons: Extended Phase 1 Habitat Surveys: Grand Union Place - North and Grand Union Place - South (2016)


Appendix A Phase 1 Habitat Map
Appendix B Target Notes

1. Potential habitat, in the form of scrub that could provide basking, foraging and sheltering opportunities for common reptiles.
2. There are several areas of scrub and trees that have the potential to support nesting common bird species.
3. Giant hogweed, an non-native invasive species, was found within the ruderal habitat through the Site.
Appendix C Delta Simons Extended Phase 1 Habitat Surveys
Appendix D Photographs

Photograph 1: The southern extent of the Site, Building 5.

Photograph 2: The north western extent of the Site, Building 1
Photograph 3: Overview of the centre of the Site.

Photograph 4: Thames Water Land
Photograph 5: Giant Hogweed present to the south west of Thames Water Land

Photograph 6: Grand Union Canal on the western boundary of the Site.