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London Borough of Haringey

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HALE WHARF
EIA SCOPING REPORT

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1 INTRODUCTION

1.1 Overview

1.1.1 Ramboll UK Limited has been commissioned to produce an Environmental Impact Assessment (EIA) Scoping Report on behalf of a joint venture between Muse Developments and the Canal and River Trust ('the Applicant') for the proposed Hale Wharf development at Tottenham Hale (hereafter referred to as the 'proposed development').

1.1.2 The application site is located off the A503 Ferry Road at Tottenham Hale within the London Borough of Haringey (LBH), which bounds the site to the south. The application site measures approximately 2.09 hectares and currently comprises multiple light industrial units on the eastern part of the application site and an existing commercial office building, a restaurant and an electricity substation on the southern part. The application site is surrounded by the River Lee Navigation Channel to the west and the River Lee Flood Relief Channel to the east.

1.1.3 The application site has been designated as a Local Employment Area within the Haringey Local Plan and is also designated under the Draft Tottenham Area Action Plan (AAP), as an allocated site for a residential-led mixed used scheme with associated public space and bridge links across the River Lee channels.

1.1.4 The proposed development is for a residential-led mixed use scheme, comprising circa 500 residential units and associated car parking in a series of block buildings arranged along the waterfront around a linear central open space, plus approximately 300 sqm commercial space which is to be located towards the southern end of the application site.

1.1.5 The application site is intended to provide a single vehicular access route from Ferry Lane and through design will aim to facilitate the wider green link connectivity for pedestrians to access the recreational areas to the east.

1.2 Purpose of the Report

1.2.1 This EIA Scoping Report has been prepared for submission to LBH to request a Scoping Opinion under Part 4, Regulation 13 of the Town Planning (Environmental Impact Assessment) Regulations 2011 (hereafter referred to as the 'EIA Regulations'). The Scoping Opinion received from LBH will set out the information to be provided in the subsequent Environmental Statement (ES) for the proposed development.

1.2.2 The aim of the EIA is to ensure that the proposed development has due regard for the environment, minimising adverse environmental effects and identifying opportunities for environmental enhancement. The report prepared at the end of the EIA; the Environmental Statement (ES), will provide sufficient information to allow LBH to make an informed decision on the planning application.

1.2.3 This report explains the proposed approach to the EIA and provides a formal opportunity for LBH to gain opinions and comments from stakeholders. It reviews the possible environmental impacts that may be associated with the proposed development, including those that could affect sensitive receptors. It subsequently identifies potential impacts which may result in significant environmental effects and would, therefore, need to be assessed within the EIA. This report also provides details of the methodologies that are proposed to assess those effects.

1.3 Report Structure

1.3.1 The structure of this EIA Scoping Report is outlined in Table 1.1.

Table 1.1: Structure of the EIA Scoping Report

Chapter Number	Title	Content
1	Introduction	Introduction to the objectives and structure of the EIA Scoping Report.
2	Application Site and Proposed Development	A brief description of the application site (size, location, topography and surrounding area) and the key elements of the proposed development.
3	The EIA Process and Scoping	Overview of the EIA process and the proposed methodology, including for the assessment of significance and cumulative effects. Overview of the methodology for the scoping of potential environmental effects and a summary of disciplines proposed to be included within the EIA scope.
4	Transport	Chapters 4 to 15 provide technical information and preliminary analysis on each of the environmental disciplines proposed to be included within the scope of the EIA, and outline the proposed methodologies for the assessment of potential effects associated with these topics.
5	Air Quality	
6	Noise and Vibration	
7	Ecology	
8	Townscape, Heritage and Visual Impact	
9	External Lighting	
10	Daylight, Sunlight and Overshadowing	
11	Wind Microclimate	
12	Ground Conditions and Contamination	
13	Archaeology	
14	Surface Water and Flood Risk	
15	Socio-economics	
16	Environmental Topics Scoped Out	Justification for environmental topics to be scoped out of the EIA.
17	Cumulative Schemes	List of schemes proposed for consideration in the cumulative impact assessment of the EIA.
18	The Environmental Statement	The proposed structure of the Environmental Statement (ES).
19	Conclusions	Summary of key conclusions from the EIA Scoping Report.
20	References	List of references.

1.4 EIA Technical Team

1.4.1 This EIA Scoping Report has been prepared by Ramboll, as the lead EIA consultant, with technical input from the specialists outlined in Table 1.2.

Table 1.2: EIA Technical Team

Topic	Technical Specialist
Proposed Development	Ramboll
Townscape, Heritage and Visual Impact	City Designer
Transport	Odyssey Markides
Air Quality	Ramboll
Noise and Vibration	Ramboll
Ground Conditions and Contamination	Ramboll
Archaeology	Ramboll
Surface Water and Flood Risk	Ramboll
Daylight, Sunlight and Overshadowing	Hilson Moran
Wind Microclimate	Element Energy
Ecology	Ramboll
Socio-economics	Ramboll
External Lighting Impact Assessment	Ramboll

2 APPLICATION SITE AND PROPOSED DEVELOPMENT

2.1 Introduction

2.1.1 This chapter provides details of the application site and surrounding area and outlines the proposals for the proposed development.

2.2 Application Site

2.2.1 The application site, known as 'Hale Wharf' is located off the A503 Ferry Road at Tottenham Hale and is centred at National Grid Reference TQ 34836, the nearest post code being N17 9NF. It is located within the administrative area of LBH.

2.2.2 The application site measures approximately 2.09 hectares. The boundaries are illustrated by the intended application boundary (the redline boundary) and the assessment boundary (the black dashed boundary) set out in Appendix 1 (at the end of this document).

2.2.3 There are currently multiple light industrial units on the eastern part of the application site, including motor vehicle workshops, a waste transfer site, a pallet company and a wood joinery facility. At the southern end of the application site there is an existing commercial office building, a restaurant, and, an electricity substation.

2.2.4 The surface covering of the application site is predominantly hardstanding with a footpath running along the western boundary of the application site until it reaches the land occupied by the pallet company to the north. Temporary fencing separates the footpath from a series of car parking spaces used for either vehicles for repair associated with the motor vehicle workshops or containers for the waste transfer site.

2.2.5 The application site has been designated as a Local Employment Area within the Haringey Local Plan (1) and also falls under the Draft Tottenham Area Action Plan (AAP) (2), as a Designated Employment Area with Regeneration Area status, which allocates the application site for a residential-led mixed used scheme with associated public space and bridge links across the River Lee channels. Within this allocation lies two other smaller sites known as the 'Lock Keepers Cottage' to the west of the River Lee Navigation Channel and the 'Garage Site' situated to the east of the River Lee Flood Relief Channel.

2.2.6 Hale Wharf as a collective site under the draft Tottenham AAP, therefore requires a co-ordinated approach to redevelopment in this location. The Lock Keepers Cottage and the Garage Site will be considered as part of the future baseline within the EIA cumulative assessment. Please refer to Section 3.2 which explains the inclusion of these two sites within the EIA.

2.3 Surrounding Area

2.3.1 The application site is bound by the River Lee Navigation Channel (also referred to as 'River Lea Navigation Channel') immediately to the west and the River Lee Flood Relief Channel (also referred to as 'River Lea Diversion Channel') immediately to the east. Pymmes Brook, a minor tributary to the River Lee, runs along the western side of the River Lee Navigation Channel. These controlled waters form part of the Blue Ribbon network under the London Plan.

2.3.2 Mooring of boats takes place along the western application site boundary, either on the bank or a jetty, which is accessible from the centre of the application site.

2.3.3 Immediately south of the application site is the A503 Ferry Road, which provides the only road access to the application site. Other transport links include Tottenham Hale

railway station, approximately 300 m to the west of the application site and bus stops on Ferry Lane opposite the application site.

2.3.4 The application site and its surrounding areas form part of the Lee Valley Regional Park. A Community Nature Park and area of Green Belt named 'The Paddock' is located to the east of the application site across the River Lee Flood Relief Channel.

2.3.5 The Paddock and the River Lee channels to the east and west of the application site form part of a large composite Metropolitan Site of Importance for Nature Conservation (SINC). The associated areas to the SINC also include Walthamstow Marshes and Reservoirs, located within approximately 15 m to the east of the application site across the River Lee Flood Relief Channel from its closest point. These form part of the Lee Valley Special Protection Area (SPA), Ramsar site, Important Bird Area and Walthamstow Reservoirs Site of Special Scientific Interest (SSSI).

2.3.6 The above designations are presented as an environmental constraints map at Appendix 2 (located at the end of this document).

2.3.7 The area to the south of the application site is predominantly residential. The area to the west comprises industrial land and a number of recently developed residential blocks and areas under construction, the latter of which form part of the framework to regenerate the area under the Tottenham Hale Masterplan by LBH.

2.3.8 In addition, to the east of the application site beyond The Paddock is the administrative boundary of the London Borough of Waltham Forest (LBWF).

2.4 Proposed Development

2.4.1 The proposed development comprises a residential-led mixed use scheme, allowing for approximately 300sqm of commercial space and circa 500 residential units in a series of block buildings arranged along the waterfront, around a linear central open space. Mooring accommodation will continue be included for businesses along the River Lee Navigation Channel located on the western edge of the application site, along with an allocated landing area for the intended footbridge which will link the application site to the Hale Village to the west.

2.4.2 Building heights will range from four to 21 storeys, with accommodation blocks descending in stepped heights from the south at Ferry Lane, towards the northern end of the application site.

2.4.3 The application site is intended to have a single access route from Ferry Lane and to provide approximately 65 car parking spaces. Landscaping of central communal areas is also intended.

2.5 Form of Application

2.5.1 A 'hybrid' planning application will be submitted for the proposed development, including an outline application for the whole site and a detailed application for the first phase of the development (phase 1). Subsequently, reserved matters applications will be submitted for the remaining phase (2/3).

2.5.2 A bridge landing will be provided for a footbridge across the River Lee Navigation Channel to the west of the application site, which will form part of a separate planning application.

2.5.3 Section 3: The EIA Process and Scoping sets out how the EIA approach will address the issues concerned with a hybrid planning application.

2.6 Construction

2.6.1 An indicative construction methodology for the proposed development is to be confirmed, which will inform the EIA and be set out in the ES. It is considered likely that the demolition and construction will involve the following activities:

- Demolition of existing buildings and enabling works (earthworks);
- Diversion and installation of below ground utilities;
- Construction of building structures, including foundations, which may include piling; and
- Hard and soft landscaping.

2.6.2 The construction works are scheduled as three separate phases, likely to span over a four year period, starting with phase 1 in quarter one of 2017. Construction of phase 1 is likely to take place over a 24 month period with operation anticipated in quarter one of 2019. Phase 2/3 is also likely to be constructed over a 24 month period starting in quarter one of 2019 following conclusion of phase 1. Completion of the overall site is anticipated in quarter one of 2021.

3 THE EIA PROCESS AND SCOPING

3.1 Need for an Environmental Impact Assessment (EIA)

3.1.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2011, as amended 2015 and effective from 6th April 2015 (hereafter referred to as the 'EIA Regulations'), require that for certain types of development an EIA must be undertaken before planning permission can be granted.

3.1.2 The proposed development does not fall under the description of a Schedule 1 Development, as defined by the EIA Regulations, which would automatically require an EIA. However, the proposed development is considered to fall under Category 10(b) of Schedule 2 to the EIA Regulations which includes 'urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas'.

3.1.3 The application site area exceeds both the 2011 threshold (0.5 hectares) and the amended 2015 threshold (1 hectare) for 'urban development projects' as stated in column 2 of Schedule 2 of the EIA Regulations. In addition, the application site is in close proximity to the Walthamstow Marshes SSSI, Lee Valley Ramsar Site and SPAs. As a result of these considerations, the Screening Opinion provided by LBH (Appendix 3), dated 6th November 2014, specified that the proposed development is an EIA development and requires an ES to be submitted alongside the planning application.

3.2 The EIA Process

General Approach

3.2.1 EIA is a process which provides information to planners, other regulators and authorising bodies, interested parties, and the public about certain proposed developments and their likely effects on the environment. The EIA process, as set out in the EIA Regulations, aims to ensure that the competent authority and the public properly understand the likely significant environmental effects, and the scope for reducing them, before a decision on the application for planning permission is made.

3.2.2 The EIA process consists of a number of defined steps, of which the Scoping stage forms a part. Figure 3.1 overleaf illustrates this process.

3.2.3 As shown in the figure, EIA is an iterative process. An initial impact assessment of the proposed development is undertaken, on the basis of which mitigation and enhancement measures are identified and incorporated into the design of the development, where possible. Such measures that become incorporated into the design are termed 'design interventions'. The revised design then undergoes a further impact assessment and, on the basis of this, additional mitigation and enhancement measures (which are not incorporated into the design and/or relating to the management of the proposed development) are identified. The ES will include an assessment of residual effects which are those likely to arise after the proposed mitigation and enhancement has been applied.

3.2.4 Iterations of the design will be discussed as part of consideration of alternatives within the ES.

3.2.5 To inform the proposed methodologies and assessment areas of the EIA, consultation with stakeholders will be undertaken throughout the EIA process. Consultation is a statutory requirement and will be undertaken during the EIA as part of the planning process.

3.2.6 This EIA Scoping Report will be submitted to LBH and made available by LBH to statutory consultees for formal consultation. Comments received by LBH will be used to inform the Scoping Opinion and subsequent scope of the EIA.

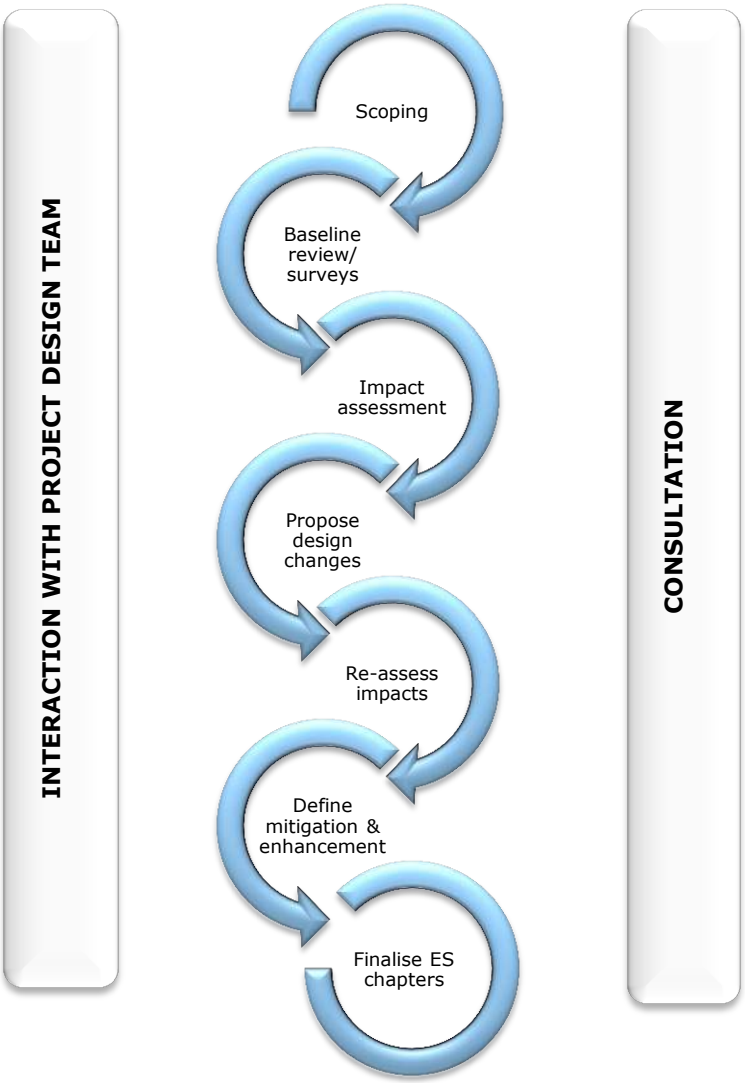

Figure 3.1: EIA Approach

Assessing a Hybrid Application – Maximum Parameters Approach

3.2.7 In accordance with the 'Rochdale Envelope' approach the assessment will be undertaken based on a number of fixed and outline maximum parameters.

3.2.8 As planning permission for the proposed development is being sought via a hybrid application with detailed planning permission being sought for phase 1 and outline planning permission sought for phase 2/3, the EIA will assess the environmental effects associated with all phases collectively. The EIA will also consider the intended location of the Green Link Bridge to the west which forms enabling development, although subject to a separate planning application submission. The intended assessment boundary for the purpose of the EIA is detailed at Appendix 1.

3.2.9 The 'Rochdale Envelope' arises from two cases: R. v Rochdale MBC ex parte Milne (No. 1) and R. v Rochdale MBC ex parte Tew [1999] and R. v Rochdale MBC ex parte Milne (No. 2) [2000]. These cases dealt with outline planning applications for a proposed business park in Rochdale. The judgement within these cases set out the following key points that comprise the Rochdale Envelope approach to assessment of an outline application:

- the outline application should acknowledge the need for details of a project to evolve over a number of years, within clearly defined parameters;

- the environmental assessment must take account of the need for such evolution, within those parameters, and reflect the likely significant effects of such a flexible project in the environmental statement;
- the permission (whether in the nature of the application or achieved through 'masterplan' conditions) must create 'clearly defined parameters' within which the framework of development must take place. It is for the local planning authority in granting outline planning permission to impose conditions to ensure that the process of evolution keeps within the parameters applied for and assessed;
- taken with those defined parameters of the project, the level of detail of the proposals must be such as to enable a proper assessment of the likely environmental effects, and necessary mitigation - if necessary considering a range of possibilities:
    - 'The assessment may conclude that a particular effect may fall within a fairly wide range. In assessing the 'likely' effects, it is entirely consistent with the objectives of the Directive to adopt a cautious 'worst case' approach. Such an approach will then feed through into the mitigation measures envisaged…. It is important that these should be adequate to deal with the worst case, in order to optimise the effects of the development on the environment' (para.122 of the Judgment);
- the level of information required is: 'sufficient information to enable 'the main,' or the 'likely significant' effects on the environment to be assessed…., and the mitigation measures to be described….' (para.104 of the Judgment).

3.2.10 The following parameters have informed the approach proposed by this scoping report. Such parameters will also form the basis for the EIA as set out in the ES. As design development continues the final assessed parameters may be subject to change.

- Total Site Area: 2.09 ha;
- Total residential units: circa 500 units;
- Total commercial space: approximately 300 sqm;
- Three mooring spaces on the River Lee Navigation Channel for business barges;
- Minimum building height: four storeys;
- Maximum building height: 21 storeys; and
- Car parking spaces; approximately 65 spaces.

Sensitive Receptors

3.2.11 Sensitive receptors for each technical discipline are specified within the respective chapters of this scoping report. Receptors which are identified by multiple disciplines are as follows:

- Future site users;
- Adjacent residents;
- Adjacent commercial occupants;
- Users and residents of moored boats;
- Construction workers;
- Controlled waters (River Lee);
- Lee Valley SPA, Ramsar site and Important Bird Area; and
- Walthamstow Reservoirs SSSI.

Assessing the Significance of Impacts in the EIA

3.2.12 The EIA process is concerned with determining whether the likely impacts associated with the proposed development are deemed to have significant effects or not.

3.2.13 For some technical EIA disciplines, specific guidance exists, which details how the impact of a development should be assessed. In general, this involves an element of professional judgement with regard to the application of the guidance to the specific site under consideration.

3.2.14 These guidance documents are often accepted as best practice and therefore, will be used, where available and appropriate, in the EIA along with professional judgement. The specific methodology to be adopted will be described within the relevant technical reports.

3.2.15 However, overall the main approach will be based on the technical approach that significance reflects the relationship between two factors:

- The value or sensitivity of the affected receptor; and
- The nature, magnitude or severity of the impact (i.e. the predicted change taking place to the environment).

3.2.16 The sensitivity, importance or value of the receptor is normally derived from:

- Its designated status within the land use planning system;
- The number of individual receptors, such as residents;
- An empirical assessment on the basis of characteristics, such as rarity or condition; and
- The ability of the receptor to absorb change.

3.2.17 The magnitude of an impact represents a level of certainty and the degree by which a particular receptor is compromised. Magnitude is often quantifiable in terms of, for example, the extent of land take, loss of biodiversity or predicted change in noise levels.

3.2.18 Thus, significant effects occur where valuable or sensitive receptors are subject to effects of considerable magnitude. Effects are unlikely to be significant where low value or non-sensitive receptors are subject to minor effects.

3.2.19 For all technical assessments where specific best practice guidance is not provided, the significance of the effects will be assessed based on the magnitude of the potential impact and the relative sensitivity of the identified receptors.

3.2.20 Table 3.1 below sets out how impact magnitude and receptor sensitivity interact to provide the significance of the effect.

Table 3.1: Significance Matrix

	Impact Magnitude			
Receptor Sensitivity/Value	**Negligible**	**Minor**	**Moderate**	**Major**
Low	Negligible	Negligible	Negligible	Slight
Medium	Negligible	Negligible	Slight	Moderate
High	Negligible	Slight	Moderate	Substantial
Very High	Slight	Moderate	Substantial	Substantial

3.2.21 The EIA Regulations stipulate that an ES should, where possible, identify, describe and assess the likely significant effects of the development on the environment, including the consideration of:

- Beneficial and adverse effects;
- Short, medium and long term effects;
- Direct and indirect effects;
- Permanent and temporary effects; and
- Cumulative effects and impact interactions.

3.2.22 The above considerations and terminology will be used in the ES when considering the significance of effects.

Assessment of Cumulative Effects in the EIA

3.2.23 The requirement to refer to the cumulative effects of a proposed development is included in Schedule 4, Part I of the EIA Regulations, where it is stated an ES should include:

3.2.24 'A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development...'.

3.2.25 The IEMA guidance (3) sets out two types of cumulative effects:

- Inter-project effects – incremental changes caused by other reasonably foreseeable development schemes, occurring together with the proposed development, and the cumulative effects combining to worsen the effect of a particular impact; and
- Intra-project effects – are those that occur as a result of impact interaction between different environmental topics within the same project. For example, a project might affect bird species as a result of direct loss of habitat and by noise and light disturbance. Each of these when considered in isolation may have a limited effect but taken together, the sum is greater than the parts.

17.1.1 In terms of the potential inter-project effects, Chapter 17 describes in detail the approach to the inter-project cumulative assessment which is to include the following:

- The Green Link Bridge to the west which is considered to be enabling development;
- The Garage Site to the east;
- Reasonably foreseeable developments including all relevant major developments (100 residential units or more and schemes proposing 10,000 sqm floorspace or more) within 1km, identified by LBH that have been submitted as of 26th November 2015 or given planning permission but have not yet started construction within the last three years, and all those that are in the process of being built;
- Applications within 1km that do not fall under the definition of major developments (based on unit numbers or floor space) but are considered to have the potential to give rise to cumulative effects on the ecological designations adjacent to the application site (for example the SSSI) as a result of enabling activity such as improved access and increased visitor numbers; and
- Allocated sites identified under the draft Tottenham AAP (4) within 1km of the application site.

3.2.26 A list of schemes proposed for consideration in the cumulative impact assessment of inter-project effects is included in Chapter 17 Cumulative Schemes.

3.3 EIA Scoping

Purpose of Scoping in the EIA Process

3.3.1 The primary purpose of the scoping stage is to define the extent of the subsequent EIA, ensuring that only potentially significant environmental effects are carried forward to the assessment. This enables the EIA to be focussed on the most important environmental issues.

3.3.2 The scoping stage determines the topics or areas of potential likely impacts to be addressed, and, the geographical area and timeframe over which they will be considered.

3.3.3 It also sets out the methods to be used by the EIA to determine the likely significant environmental effects that will arise temporarily during the project's construction, and from its permanent physical impacts and operation. The scoping process also enables certain potential impacts to be scoped out, as not being likely to give rise to significant environmental effects.

3.3.4 Part 13 of the EIA Regulations provides the applicant with the opportunity to seek a Scoping Opinion from the relevant planning authority, to confirm the information to be contained within the ES. This report sets out the proposed scope of the ES, and will be submitted to LBH and consulted upon, so that LBH can provide a Scoping Opinion. Therefore, this Scoping Report will form the basis for on-going consultation on the EIA with statutory authorities and other relevant stakeholders. Its contents, having taken account of comments received during consultation, will be incorporated within the ES.

Scoping Methodology

3.3.5 The stages of EIA scoping are illustrated in Figure 3.2 and the methodology for determining which impacts from the proposed development should be assessed in the EIA is described overleaf.

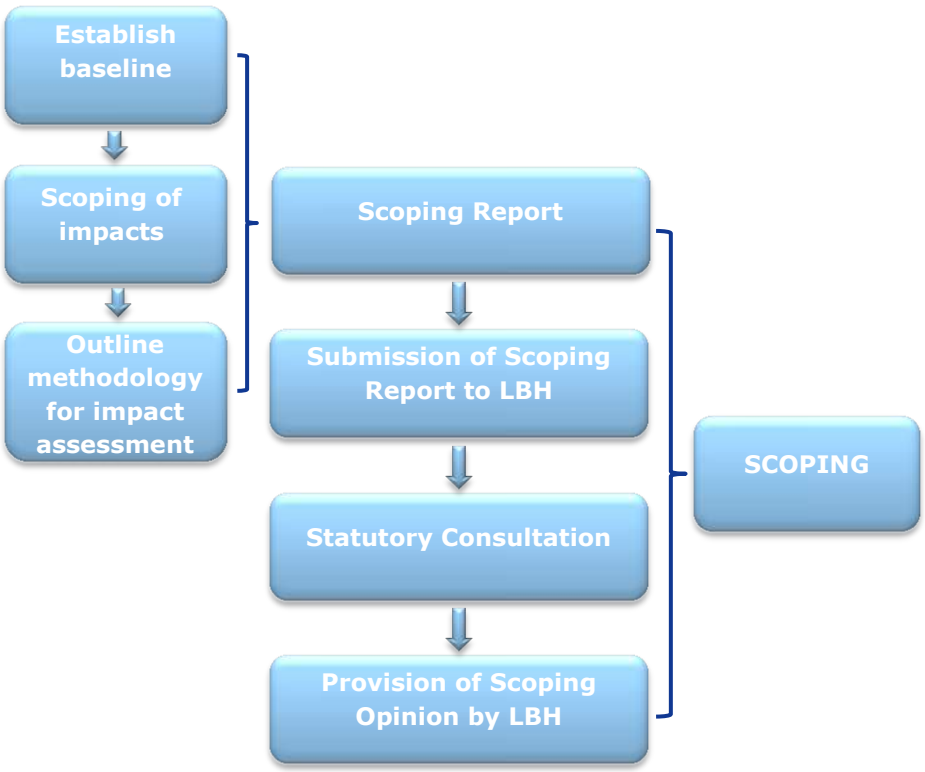

Figure 3.2: EIA Scoping Process

Establishing the Baseline

3.3.6 Initial baseline identification has been undertaken using desk based searches of available information and surveys undertaken to date. A number of site walkovers have also been undertaken.

Scoping of Impacts

3.3.7 Within this Scoping Report, potential impacts from the proposed development have been identified on the basis of the following:

- Current understanding of the proposed development (including its operation and construction);
- A site walkover;
- Review of readily available baseline information;
- Reference to published guidance documents;
- Reference to existing surveys undertaken to date; and
- Knowledge, expertise and previous experience of the project team.

3.3.8 A qualitative assessment of the potential impacts has been undertaken to determine which of the impacts could be potentially significant and therefore, should be taken forward and assessed in the subsequent EIA. The qualitative assessment has been undertaken in terms of the relationship between two factors:

- The magnitude of the potential impacts (direct or indirect), including the consideration of duration and reversibility; and
- The importance of the receptor (the entity that is vulnerable to the effects of the impact), in terms of its value and sensitivity to the impact.

3.3.9 A list of sensitive receptors on which potentially significant effects could occur, as a result of the magnitude of the impact and the sensitivity of the identified receptor, is also provided.

Methodology for Impact Assessment

3.3.10 A summary of the proposed methodology to be used for each technical discipline is outlined in line with relevant guidance documents, where available, within each individual chapter. The temporal, spatial and technical scope of the assessment is defined and reference to consultation made, where this is proposed or has already been undertaken.

3.4 Climate Change

3.4.1 The European Union (EU) EIA Directive 2014/52/EU, now stipulates that the consideration of climate change resilience and adaptation is to be given within the EIA process and as such this will be transposed into the EIA Regulations in 2017.

3.4.2 Looking ahead and acknowledging the recognised scientific evidence now available on the impacts of climate change, the Mayor of London is taking steps to tackle climate change through new policies and programmes which seek to reduce London's carbon dioxide emissions and to manage resources more effectively. In developing the London Plan the latest UK Climate Projections 2009 (UKCP09) (5) have been utilised to set the climate change projection for London. The UKCP09 suggests that London could:

3.4.3 "By the 2020s, see an increase in summer mean temperature of 1.5 degrees Celsius, a decrease in mean summer rainfall of six per cent and an increase in mean winter rainfall of six per cent, all from a 1961–1990 baseline.

3.4.4 By the 2050s, see an increase in mean summer temperature of 2.7 degrees, an increase in mean winter rainfall of 15 per cent and a decrease in mean summer rainfall of 18 per cent.

3.4.5 By the 2080s, see an increase in mean summer temperature of 3.9 degrees, an increase of 20 per cent in mean winter rainfall and a decrease in mean summer rainfall of 22 per cent." (6)

3.4.6 Each technical discipline will therefore consider the potential effects of the climate change projection for London, within their assessments and where appropriate demonstrate the design measures considered and incorporated for climate change resilience and adaptation. The technical disciplines will individually outline the scope of climate change within their respective chapters.

3.4.7 This approach concurs with that advised by Joe Baker, Head of Carbon Management at Haringey Council (email correspondence to Robbie McNaugher, dated 9th November 2015).

3.5 Technical Areas to be Assessed

3.5.1 The following technical areas are considered relevant to be scoped in to the EIA and therefore, are proposed for inclusion in the ES:

- Transport;
- Air quality;
- Noise and vibration;
- Ecology;
- Townscape, heritage and visual;
- External lighting;
- Daylight, sunlight and overshadowing;
- Wind microclimate;
- Ground conditions and contamination;
- Archaeology;
- Surface water and flood risk; and
- Socio-economics.

3.5.2 The potential effects relating to these disciplines are presented in Chapters 4 – 15 of this report, in line with the methodology described above.

3.5.3 Topics proposed to be scoped out of the EIA are discussed in Chapter 16 and include the following:

- Waste management;
- Sustainability;
- Electronic interference; and
- River Navigation.

4 TRANSPORT

4.1 Introduction

4.1.1 This section of the Scoping Report identifies potential impacts with regard to transport that may occur during the construction and operation of the proposed development.

4.1.2 The ES Transport chapter will be informed by a Transport Assessment (TA) which will be submitted as a stand-alone document as part of the planning application. The TA will be produced in accordance with national guidance published by the Department for Communities and Local Government (7) and regional guidance published by Transport for London (TfL) (8).

4.2 Baseline

4.2.1 The application site is located within a highly accessible area, adjacent to established pedestrian and cycle networks, both of which have seen recent improvements associated with the removal of the Tottenham Hale gyratory. The application site also benefits from being within close proximity (350m straight line distance) of the Tottenham Hale public transport interchange, accessed via the pedestrian network along Ferry Lane, which provides access to a number of bus routes, the Victoria London Underground line and National Rail services into London Liverpool Street, including the Stansted Express. This interchange has benefited from recent improvement with the introduction of a new bus station and public square.

4.2.2 Existing uses at the application site, which include a number of industrial, storage and distribution units and an office building, already generate existing vehicle movements throughout the day, a reasonable proportion of which are heavy goods vehicles (HGVs). A traffic survey undertaken at the site access point in April 2014 recorded the following entry/exit vehicle movements into the application site and the two-way link flow along Ferry Lane, detailed below in Table 4.1.

Table 4.1: Existing Observed Vehicle Movements

Time Period	IN	OUT	TOTAL	Two Way Ferry Lane Link Flow
07:00-08:00	14 (3 HGVs)	7 (4 HGVs)	21 (7 HGVs)	1217 (79 HGVs)
08:00-09:00	16 (3 HGVs)	11 (1 HGV)	27 (4 HGVs)	1180 (94 HGVs)
09:00-10:00	29 (2 HGVs)	14 (1 HGV)	43 (3 HGVs)	1048 (117 HGVs)
16:00-17:00	31 (5 HGVs)	37 (3 HGVs)	68 (8 HGVs)	1374 (83 HGVs)
17:00-18:00	24 (4 HGVs)	37 (5 HGVs)	61 (9 HGVs)	1530 (58 HGVs)
19:00-20:00	11	28 (1 HGV)	39 (1 HGV)	1357 (47 HGVs)

4.2.3 In addition to vehicle movements, the Baseline Scenario will be informed by pedestrian/cycle counts across the local footway/cycle network. Where necessary, secondary sourced data will be accessed to establish baseline occupation levels of the adjacent public transport infrastructure, including buses, the Victoria Line and National Rail.

4.2.4 It is against this Baseline Scenario, with the existing land uses being operational, that the Do Something Scenario, (with the development proposed development being operational), will be assessed.

4.2.5 The Baseline Scenario will potentially include TfL's approved proposals (planning reference HGY/2013/2610) to improve access to the adjacent Tottenham Hale public transport interchange, through the introduction of a new bridge connection to Hale Village. This scenario will also likely include increased National Rail service frequency to Tottenham Hale that will result after the implementation of the funded Stratford to Angel Road (STAR) proposals. Whilst Tottenham Hale has also been identified as a potential station on the Crossrail 2 route, this is unlikely to be operational at the assumed opening year of the proposed development.

4.2.6 The Baseline Scenario will also include committed developments up to the assumed opening year of the proposed development. Further details on currently known developments are provided at chapter 17, cumulative schemes.

4.3 Receptors

4.3.1 The following list details the receptors upon which potentially significant effects could occur, as a result of the magnitude of the impact and/or the sensitivity of the identified receptor:

- Adjacent residents (e.g. Hale Village);
- Adjacent commercial occupants (e.g. Hale Village);
- Ferry Lane local highway network and baseline vehicle movements;
- Ferry Lane local highway network and baseline cycle movements;
- Ferry Lane footway network;
- Hale Village footway network; and
- Tottenham Hale public transport interchange.

4.4 Scoping of Impacts

4.4.1 The impacts of the proposed development will be considered for both the construction and operational phases.

4.4.2 Subject to the potential construction phasing strategy and rate of occupation, it may also be necessary to consider the impact of later construction phases on parts of the proposed development that are already operational.

4.4.3 Impacts during operation will be influenced by the adopted car parking strategy for the application site and the ability of occupants to access a vehicle as a mode of travel.

4.4.4 In terms of potential road traffic impacts, it should be highlighted that existing guidance published by the Institute of Environmental Assessment (9) suggests the following two broad rules, which will inform the scope of the assessment:

- Include road links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%) and;
- Include any specifically sensitive areas where traffic flows would increase by 10% or more.

4.4.5 Table 4.2 and Table 4.3 identify the potential transport impacts and whether they should be assessed within the EIA based on the anticipated significance.

Table 4.2: Potential Transport Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Impact of construction traffic on Ferry Lane Link Flow Capacity	Yes	The construction phase will potentially increase the number of vehicles during the day, including HGVs, on the local road network, when compared to the Baseline Scenario with the existing conditions in place.
Impact of construction traffic on future site occupants, dependant on construction phase and rate of occupation	Yes	The construction phase and rate of occupation may result in parts of the site being constructed when other parts are occupied. This impact, in terms of number of movements, will be assessed.
Impact of construction traffic on off-site junction capacity	No	It is not anticipated that the number of construction vehicles during any specific hour will result in a significant increase above Baseline Scenario levels to necessitate any junction capacity assessments.
Impact of construction site workers accessing the site via non-car modes of travel	Yes	The construction phase will increase the number of person trips using non-car modes of travel to access the application site, when compared to the Baseline Scenario with the existing conditions in place.

Table 4.3: Potential Transport Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Impact of vehicle movements generated by the scale of proposed development	Yes	The With Development Scenario will result in a change in the vehicle trip generation to/from the application site, influenced by the adopted car parking provision. Where it is demonstrated that the impact is either not significant or would result in a reduction of vehicle trip generation, off-site junction capacity analysis will not be undertaken.
Impact of residents using non-car modes to access the site, including: - Direct pedestrian - Cycle - Bus (and pedestrian) - Tube (and pedestrian) - National Rail (and pedestrian)	Yes	The With Development Scenario, with the introduction of the proposed development, will result in a change in the number of non-vehicle trips generated by the site. This impact will be assessed.
Impact on pedestrian/cyclist amenity, safety and severance	Yes	The With Development Scenario, with the introduction of the proposed development, will potentially result in a change in the pedestrian and cyclist environment, which may impact upon amenity, safety and severance.

4.5 Methodology for Impact Assessment

4.5.1 A range of traffic surveys and non-vehicle surveys will be undertaken to establish the levels of existing demand generated by the current site occupants and link flow along the site frontage and any areas that reflect the likely dominant desire line to/from the application site and therefore defines the spatial scope of the assessment.

4.5.2 The assessment will consider traditional AM and PM peak periods and, where data is freely available, will also consider inter-peak and daily periods.

4.5.3 A baseline level of demand, including any potential redistribution of existing movements, will then be established by taking into account the impact of committed development proposals up to an assumed opening year of development.

4.5.4 The anticipated scale of construction movements will be sourced from an independent contractor and the impact of this will be assessed.

4.5.5 A multimodal trip generation assessment will then be undertaken to establish the impact of trips generated by the proposed development compared to the Baseline Scenario. Pedestrian impact will be assessed in accordance with TfL's Pedestrian Comfort Guidance.

4.5.6 The significance of the effect will then be considered as a product of the magnitude of any impact and the sensitivity of any receptor.

4.5.7 Where there are any residual effects, mitigation strategies will be promoted, such as the implementation of a Travel Plan.

4.5.8 Transport matters such as car and cycle parking, delivery and servicing strategy will be discussed within the stand-alone TA.

4.6 Climate Change

4.6.1 Key climate change projections for the UK are hotter and drier summers, milder and wetter winters, reduced snowfall, very cold days, and more frequent storm events with extreme rainfall and winds.

4.6.2 In the context of transport for this specific EIA, it is not considered that climate will have a material impact on the significance of any effect of the development in terms of regular mode of travel. Climate change will not therefore be considered within the transport chapter.

5 AIR QUALITY

5.1 Introduction

5.1.1 This section of the Scoping Report identifies potential impacts with regard to air quality that may occur during the demolition, construction and operation of the proposed development and outlines how these will be addressed in the ES.

5.2 Baseline

5.2.1 The application site is located in an urban area where air quality is mainly influenced by emissions from road transport. The primary influences on air quality at the application site are considered to be the elevated background concentrations throughout Tottenham and the adjacent roads to the application site. There are no major industrial or combustion pollution sources in the immediate vicinity of the application site that will affect air quality.

5.2.2 LBH have declared the whole Borough an Air Quality Management Area (AQMA) for the annual mean objective for nitrogen dioxide (NO_2) and the daily mean objective for particulate matter (PM_{10}). The neighbouring local authority (LBWF), have also declared a whole-Borough AQMA for the annual mean objective for NO_2 and the daily mean objective for PM_{10}.

DEFRA Modelled Background Data

5.2.3 The UK-AIR: Air Information Resource operated by DEFRA, includes computer modelled predictions of background concentrations of air pollutants over the whole of the UK with a grid resolution of 1km^2. Background concentrations are those levels that would be observed away from specific sources such as roads and industry. DEFRA mapping (10) relevant to the application site has provided background nitrogen oxides (NO_X), NO_2, PM_{10} and $PM_{2.5}$ for 2014, which are displayed in Table 5.1 below.

Table 5.1: DEFRA Background Pollutant Concentrations at the Application Site (2014)

DEFRA Mapping Grid Square	Pollutant	2014
534500, 189500	NO_X	47.8
	NO_2	30.4
	PM_{10}	22.5
	$PM_{2.5}$	15.3

Local Authority Monitoring Data

5.2.4 LBH monitors air quality within the Borough using automatic monitors and diffusion tubes. LBH are part of the Automatic Urban and Rural Network (AURN) which is the UK's largest automatic monitoring network and is the main network used for compliance reporting against the Ambient Air Quality Directives. The nearest AURN location to the application site is classified as a roadside location and is along High Road outside Haringey Town Hall (GR 533891, 190707), approximately 1.45 km to the north-west of the application site.

5.2.5 The nearest diffusion tube monitoring location to the application site is HR07, an urban background location (GR 534400, 190160), approximately 700 m to the north-west of the application site.

5.2.6 Monitoring data (annual means) for these locations is presented below in Table 5.5.2.

Table 5.5.2: Local Authority Monitoring Data (2011-2014) Annual Means

Monitoring Location	Location Type	Pollutant	UK Objective	Concentration (µg/m^3)			
				2011	2012	2013	2014
Haringey Town Hall	Roadside (AURN)	NO_X	n/a	73	91	98	112.3
		NO_2	40 µg/m^3	38	42	43	48
		PM_{10}	40 µg/m^3	n/a*	23	25	25**
		$PM_{2.5}$	25 µg/m^3	19	18	18	16
HR07	Urban Background	NO_2	40 µg/m^3	33	32	29	25

*lack of data due to Tottenham riots

** low data capture

5.2.7 The monitoring data shown in bold in Table 5.5.3 indicates that roadside concentrations at Haringey Town Hall are above the annual mean UK air quality objective level.

5.2.8 The hourly mean for NO_2 and the daily mean for PM_{10} met their respective short term UK objectives between 2011 and 2013 (11).

5.3 Receptors

5.3.1 The following sensitive receptors have been identified:

- Residential areas close to roads which have the potential to be affected by the traffic created by the proposed development;
- Nearby areas where the public might reasonably be expected to spend extended periods of time, for example residential properties, public open spaces, schools, hospitals, churches and pavement areas; and
- Residential properties within the proposed development including balcony areas.

5.4 Scoping of Impacts

5.4.1 Table 5.5.3 and Table 5.5.4 present a summary of the scoping process, identifying which expected environmental impacts, with respect to air quality, will be assessed in the EIA over both the construction phase and operational phase (i.e. considered to have potentially significant effects and therefore scoped in) and those which will not be assessed further (i.e. scoped out).

Table 5.5.3: Potential Air Quality Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Temporary emissions of dust and particulate matter from demolition, site clearance and construction activities affecting sensitive receptors in the vicinity of the application site.	Yes	Construction techniques have the potential to give rise to dust emissions. There are residential areas within 350m of the proposed construction works.

Potential Impact	To be Assessed in the EIA	Reason
Temporary impact on air quality from exhaust emissions from construction traffic and on site plant.	No	Changes in traffic during construction will be temporary and small compared to existing traffic on the network.

Table 5.5.4: Potential Air Quality Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Impact on air quality from exhaust emissions (NO_2, PM_{10} and $PM_{2.5}$) from operational traffic affecting sensitive receptors in the vicinity of the application site.	Yes	Levels of operational traffic associated with the proposed development have the potential to add to existing traffic on the local road network.
Site suitability for residential use.	Yes	Air quality at the site will be influenced by the A503 (Ferry Lane) being in close proximity.

5.5 Methodology for Impact Assessment

Technical Scope

5.5.1 The anticipated scope of works will include:

- A review of current planning policies and consultation with the Air Quality Officer at LBH;
- Collection of baseline data from London Air (12) and Local Authority Review and Assessment Reports (13);
- A construction dust impact assessment following the Institute of Air Quality Management (IAQM) Guidance (14) and London Councils Best Practice Guidance (15);
- An assessment of NO_2, $PM_{2.5,}$ and PM_{10} levels on existing sensitive receptors by using dispersion modelling following DEFRA's TG(09) guidance (16) utilising baseline and predicted future traffic data;
- An assessment of operational phase impacts in accordance with IAQM EPUK Planning Guidance (17);
- An assessment of site suitability of the proposed location for residential use by comparing the predicted opening year concentrations of NO_2, $PM_{2.5,}$ and PM_{10} to the National Air Quality Objectives and following London Councils Planning Guidance (18); and
- The potential effects of future climate change on air quality will be addressed.

5.5.2 An Air Quality Neutral Assessment will be undertaken in line with the London Mayor's Sustainable Design and Construction Supplementary Planning Guidance (19).

Spatial Scope

5.5.3 Following IAQM Guidance, construction dust impacts are anticipated to extend up to 350m distance from the application site boundary. The operational phase study area will be determined by the scope of the Transport Assessment's trip distribution extent and potential changes to daily traffic flows due to the proposed development.

Temporal Scope

5.5.4 The construction works are scheduled as three separate phases, likely to span over a four year period, starting with phase 1 in quarter one of 2017. Construction of phase 1 is likely to take place over a 24 month period with operation anticipated in quarter one of 2019. Phase 2/3 is also likely to be constructed over a 24 month period starting in quarter one of 2019 following conclusion of phase 1. Completion of the overall site is anticipated in quarter one of 2021.

5.6 Climate Change

5.6.1 Changes in air quality include possible increases in ground level ozone and UV radiation. Secondary NO_2 can be formed from nitrogen oxide, ozone and sunlight. Therefore increases in ozone and sunlight may generate additional NO_2 to add to existing background NO_2 levels.

5.6.2 Climate change may also bring wetter, cooler conditions which would benefit air quality by clearing the air of dust and particles.

5.6.3 The NO_X to NO_2 Conversion Spreadsheet has been used to convert emissions of NO_X to NO_2 which takes into account increasing ozone levels for each local authority as each year passes. The meteorological data used in the assessment was for the year 2013 which had a number of heat wave episodes and stormy wet weather.

6 NOISE AND VIBRATION

6.1 Introduction

6.1.1 This chapter of the EIA Scoping Report identifies potential effects with regard to noise and vibration that may occur during the construction and operation of the proposed development, and outlines how these will be addressed in the ES.

6.1.2 The Environmental Health Officer for LBH was consulted on 3 December 2014 via email regarding the assessment approach as outlined below and the approach was found agreeable.

6.2 Baseline

6.2.1 A baseline noise survey has been carried out at locations representative of the nearest existing noise sensitive receptors and at locations of the proposed new buildings as indicated on Figure 6.1 below. It has been found that the application site and surrounding area is affected by road traffic noise from Ferry Lane, by construction activities on the residential development at Mill Mead Road and by the activities at the existing industrial premises within the application site. The attended short term monitoring, denoted as ST, was undertaken during daytime periods. The unattended long-term baseline monitoring was undertaken at the balcony of Heron House, denoted as LT1 on Figure 6.1.



Figure 6.1 Baseline Noise Monitoring Locations

6.3 Receptors

6.3.1 The nearest identified noise sensitive receptors include:

- Dwellings of the recently developed and under construction residential blocks at Mill Mead Road;
- Lock Keepers Cottages;

- Dwellings south of Ferry Lane, on both sides of the River Lee;
- Boats moored to jetties or river bank at the Hale Wharf;
- Paddock Community Nature Park, Walthamstow Marshes and Reservoirs forming part of Lee Valley Special Protection Area (SPA), Important Bird Area and Walthamstow Reservoirs SSSI.
- Future dwellings east of the application site on the adjacent Garage Site development.

6.4 Scoping of Impacts

The identified potential impacts resulting from construction and operation of the proposed development are summarised in Table 4.2 and

6.4.1 Table 6.2, respectively.

Table 6.6.1: Potential Noise and Vibration Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Noise from demolition and construction activities	Yes	Construction and demolition activities and associated plant have the potential to generate high noise levels. These works would potentially cause noise disturbance given the close proximity to noise sensitive receptors.
Vibration from piling	Yes	Certain construction activities have the potential to generate vibration levels that could result in a disturbance at surrounding receptors.
Construction road traffic	Yes	Increased construction traffic noise as a result of HGVs has potential to affect receptors near the existing road links and site access routes.

Table 6.2: Potential Noise and Vibration Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Increase in road traffic noise on local road links	No	The likely vehicle movements generated by the proposed development have minimal potential to contribute significantly to the existing road traffic on local road links. The proposed development is not expected to generate more than 20% of the current traffic flow on Ferry Lane. Such low additional traffic flows would not result in any significant noise effects.
Noise disturbance from fixed plant installations associated with the proposed development	Yes	Given the proximity of the nearest noise sensitive receptors, fixed plant installations serving the proposed development have potential to result in significant noise effects.

Potential Impact	To be Assessed in the EIA	Reason
Vibration affecting proposed development properties	No	Operational vibration levels are not expected to be sufficient to give rise to a significant effect.
Noise climate affecting the application site suitability for residential use	Yes	Dominant noise sources in the area have the potential to give rise to elevated noise levels across the application site. This could result in unacceptable levels of noise within the proposed dwellings and also within external amenity areas.

6.5 Methodology for Impact Assessment

6.5.1 The baseline survey has already been undertaken and comprised attended short term and unattended long term noise monitoring at locations agreed with the Environmental Health Officer at LBH.

6.5.2 Assessments of construction noise and vibration will be carried out in accordance with current versions of BS 5228-1 (20) and BS 5228-2 (21): 'Code of practice for noise and vibration control on construction and open sites – Parts 1 & 2'.

6.5.3 Assessment of fixed plant installations will be carried out in accordance with BS 4142 'Methods for rating and assessing industrial and commercial sound' (22).

6.5.4 Baseline noise levels and/or predicted future noise levels will be used to determine the noise levels experienced by the proposed development buildings. This will enable the internal ambient noise levels to be calculated, which will be assessed against the criteria contained within BS8233: Guidance on sound insulation and noise reduction for buildings (23). The predicted noise levels within external amenity areas of the proposed development will also be assessed against the criteria contained within BS8233.

6.5.5 The assessment of noise levels associated with increased road traffic flows will be made in accordance with the methodology contained within Department of the Environment's guidance entitled 'Calculation of Road Traffic Noise' (24).

6.6 Climate Change

6.6.1 It is recognised that EIA has a key role to play in assisting in the UK's efforts to minimise greenhouse gas emissions and adapt to our changing climate. In response to the 2014 amendment to the EIA Directive, we are addressing climate change impacts wherever feasible. It is not anticipated that there will be any direct measurable changes or impacts in terms of noise and vibration as a result of the changing climate, however, and as such reference to climate change has been scoped out of this assessment.

7 ECOLOGY

7.1 Introduction

7.1.1 This chapter of the EIA Scoping Report identifies potential effects with regard to ecology that may occur during the construction and operation of the proposed development, and outlines how these will be addressed in the ES.

7.1.2 In addition to the ES, information will also be presented in a separate report to support Habitats Regulations Assessment (HRA) screening. That information will consider likely significant effects to Natura 2000 and Ramsar Sites in more detail to conclude whether the proposed development may cause likely significant effects to the sites or their features.

7.2 Baseline

7.2.1 This section outlines the ecological baseline information relevant to the application site. This information considers all flora and fauna that may be affected by the proposed development.

Designated Sites

7.2.2 There are a number of statutory and non-statutory designated sites within 2km of the application site. The statutory sites have National, European and International designations with the International designation treated in the same way as a European Site in UK policy terms[1].

7.2.3 Table 7.1 summarises the statutory designated sites within 2 km of the application site. These are shown on the Environmental Constraints Plan provided as Appendix 2.

Table 7.1: Statutory Designated Sites

Site Name and Designation	Reason for Designation	Distance from application site (approx. at closest point)
Lee Valley SPA and Important Bird Area (International)	The SPA comprises embanked water supply reservoirs, sewage treatment lagoons and former gravel pits that support a range of man-made, semi-natural and valley bottom habitats. These wetland habitats support wintering wildfowl. The qualifying features are: Gadwall (Anas strepera); Shoveler (Anas clypeata); Bittern (Botaurus stellaris).	30 m north
Lee Valley Ramsar Wetland of International Importance (International)	The habitat description is as above. The qualifying criteria is the presence of the following: Whorled water milfoil (*Myrophyllum verticullatum*); Water boatman (Micronecta minutissima); Gadwall; and Shoveler.	30 m north

[1] In England and Wales, Planning Policy 118 of the National Planning Policy Framework (2012) requires Ramsar Sites to be given the same protection as European Sites – meaning that they must be considered during the HRA process.

Site Name and Designation	Reason for Designation	Distance from application site (approx. at closest point)
Walthamstow Reservoirs SSSI (National)	This SSSI is within the Lee Valley SPA. This forms one of the country's major heronries and is a breeding site for wildfowl such great crested grebe, pochard, tufted duck, coot, yellow wagtail, and sedge and reed warblers.	30 m north
Walthamstow Marshes SSSI (National)	This SSSI comprises marshland but is not part of the SPA and Ramsar designations as discussed above.	1.5 km south
Springfield Park Local Nature Reserve (LNR) (National) and Park Site of Importance for Nature Conservation (SINC - Borough Grade I*.	This site comprises a landscaped park with a good diversity of habitats. It is designated as an LNR and a SINC at Borough Grade I value.	1.9 km south

* Also listed under Table 7.2

7.2.4 The GLA and London Borough Councils have also identified important wildlife sites for consideration within their local development plans but which do not necessarily benefit from statutory designations. Such sites, termed SINCs, have three tiers of importance:

- Sites of Metropolitan Importance;
- Sites of Borough Importance (Borough Grade I and Borough Grade II); and
- Sites of Local Importance.

7.2.5 Table 7.2 summarises the non-statutory designated sites within 2 km of the application site, which are also shown on the Environmental Constraints Plan provided as Appendix 2.

Table 7.2: Non-Statutory Designated Sites

Site Name and Designation	Reason for Designation	Distance from application site (at closest point)
Lee Valley near Walthamstow SINC – Metropolitan	Formed of the River Lee and its tributaries and including Walthamstow Reservoirs and Marshes. The Paddock Community Nature Park which is located to the east of the application site is part of this designation.	0 m Directly adjacent to the application site on all applicable boundaries.
Tottenham Marshes SINC - Borough Grade I	A large expanse of rough grassland.	350 m north
Banbury Reservoir SINC - Borough Grade I	A large reservoir, important for water birds and an adjacent area of community woodland.	1.9 km north
Springfield Park Local Nature Reserve (LNR) (National) and Park SINC - Borough Grade I*	This site comprises a landscaped park with a good diversity of habitats. It is designated as an LNR and a SINC at Borough Grade I value.	1.9 km south
Tottenham Marshes East	This SINC is a large expanse of rough grassland,	1.2 km

Site Name and Designation	Reason for Designation	Distance from application site (at closest point)
SINC - Borough Grade I	scrub and scattered trees.	northwest
Tottenham Cemetery, All Hallows Churchyard and Bruce Castle Park SINC – Borough Grade II	Comprises large open parkland, cemetery and churchyard with mature trees.	1.8 km northwest
Tottenham Railsides SINC – Borough Grade II	Triangles of railway land forming an important wildlife corridor.	1 km southwest
Markfield Park SINC – Borough Grade II	A recreation ground next to the River Lee.	750 m southwest
Tottenham Hale to Northumberland Park Railside SINC – Borough Grade II	A long stretch of vegetated railway sides containing a good range of habitats. No public access.	250 m south and 250 m west
Spring Hill Playing Fields - SINC - Local	Disused playing fields with flowery grassland.	1.8 km southwest
Down Lane Recreation Ground SINC - Local	Parkland with substantial native woodland and scrub and areas of managed meadow.	500 west
Marsh Lane Allotments SINC - Local	Allotment gardens with scattered trees.	1.6 km north
East hale Allotments SINC - Local	Allotment garden with thick hedgerows.	50 m west
Bruce Grove Wood SINC - Local	A small site comprising secondary woodland and grassland behind Bruce Grove School.	1.3 km west
Low Hall Wood SINC - Local	A small wood beside Dagenham brook.	1.8km southeast

* Also listed under Table 7.1

7.2.6 The Paddock Community Nature Park (CNP) is approximately 20m to the east of the application site, to the east of the flood relief channel. The Paddock CNP is owned and managed by LBH, and the Friends of the Paddock, to provide wildlife habitat and recreational/educational space. The CNP is part of the Lee Valley SINC and has been identified in LB Haringey's Biodiversity Action Plan as a possible new site for Local Nature Reserve designation.

Habitats and Protected Species

7.2.7 A number of ecological surveys have been carried out to establish the baseline conditions at the application site. The surveys have included an Extended Phase 1 Habitat Survey, building and tree assessments to establish their bat roosting potential and a water vole (*Arvicola amphibious*) and otter *(Lutra lutra)* presence/likely absence survey. The findings of these surveys are summarised below.

Habitats

7.2.8 The application site is dominated by hardstanding (for car parking/access) and light industrial warehouse buildings. Small numbers of ephemeral plant species were identified as having colonised cracks and fissures within the hardstanding. Four small areas of relatively diverse 'amenity' grassland were also present.

7.2.9 Mature trees, dominated by crack willow (*Salix fragilis*); border the application site on the northern and eastern boundary. Naturally colonised sycamore (*Acer pseudoplatanus*) saplings were occasionally identified and a fruit tree is present on the very southern extent. Scrub and tall ruderal vegetation form the understorey of the tree lines associated with the eastern boundary of the application site. This ruderal vegetation was observed to have encroached on the eastern site boundary.

7.2.10 The application site is bounded by the River Lee Navigation Channel on the western boundary and the River Lee Flood Relief Channel to the east.

7.2.11 Himalayan balsam (*Impatiens glandulifera*) and floating water pennywort (*Hydrocotle ranunculoides*) are present within the River Lee Flood Relief Channel to the east of the application site. These species are listed on Schedule 9 of the Wildlife and Countryside Act 1981. Japanese Knotweed (*Fallopia japonica*) was observed within the scrub vegetation on the eastern boundary of the application site, in the Paddock Community Nature Park. Although located outside of the application site boundary, it has the potential to spread without management and potentially be affected by works associated with construction work of footbridges over the River Lee Diversion Channel.

7.2.12 Buddleia (*Buddleja davidii*), which is on the London Invasive Species Initiative (LISI) species of concern list, is also noted to be present in some locations within the application site.

Species

7.2.13 The buildings within the application site were inspected externally and determined to have negligible potential to support roosting bats. This was primarily due to their construction type (a mixture of entirely metal structures, many with corrugated asbestos and no roof voids) and the well-lit nature of the application site within its boundaries, which is in constant use throughout the night.

7.2.14 Trees present within the application site boundary were also inspected and found to provide negligible potential to support a bat roost, due to the lack of suitable features.

7.2.15 Potentially suitable bat foraging habitat was identified to the east and west of the application site.

7.2.16 Some nesting bird potential was identified on-site in the buildings and over-hanging trees present on the northeast and east boundaries. Feral pigeons were observed roosting in the warehouse buildings; however, no nesting activity was observed.

7.2.17 The Paddock Community Nature Park, to the east of the application site, across the River Lee Diversion Channel, is covered by dense vegetation and scrub woodland habitat, offering further nesting bird potential outside the application site.

7.2.18 The Phase 1 Habitat Survey indicated that the habitat along the River Lee Diversion Channel adjacent to the application site could provide habitats suitable to support otter presence. A search of National Biodiversity Network records identified otter presence along the River Lee, within 1 km of the application site. An otter presence/likely absence survey was undertaken along the River Lee channel that falls within the application site footprint. Vegetation suitable to support otter couching was identified, however, no evidence of otter presence was observed during the survey. Due the lack of evidence to suggest presence, impacts to this species will not be assessed in the ES. However, precautionary mitigation measures will be described in acknowledgement that future presence of otters cannot be discounted.

7.2.19 A water vole presence/likely absence survey was also undertaken along the River Lee Diversion Channel that falls within the application site footprint. Whilst some habitat

suitability was identified, no evidence of water vole presence was observed at the time of the survey. An update survey will be undertaken in spring 2016 to validate the findings of the October 2014 survey. If evidence of water vole presence is discovered during preparation of the application, impacts to this species shall be assessed accordingly. Otherwise, water vole are not considered to be present and will not be assessed in the ES. The conditions of the main River Lee channel upstream and downstream of the application site were considered to provide more suitable water vole habitat.

7.2.20 A search of readily available data from the National Biodiversity Network suggests that protected/notable species of fish are unlikely to be present within the footprint of the proposed works.

7.3 Receptors

7.3.1 The following sensitive receptors have been identified:

- International, European, Statutory and non-statutory designated sites of conservation importance;
- Bats (foraging bats only: no habitat suitable to support bat roosts has been recorded within the application site);
- Birds (terrestrial species);
- Terrestrial habitats; and
- Aquatic habitats.

7.4 Scoping of Impacts

7.4.1 Table 7.3 and Table 7.4 present a summary of the scoping process, identifying which potential environmental impacts, with respect to ecology, would be assessed in the EIA (i.e. considered to have the potential for significant effects and therefore scoped in) and those which would not be assessed further (i.e. scoped out).

7.4.2 The tables below do not include the assessment of effects to internationally designated sites (Lea Valley SPA and Ramsar Site). The proximity of the SPA and Ramsar Site means that a Habitat Regulation Assessment (HRA) screening would be required. Therefore, the assessment of impacts on these sites will be carried out within the HRA report, which will be appended to the ES. Effects on nationally designated sites and non-statutory sites within 500 m of the application site will be assessed; further detail is presented in the tables below.

Table 7.3: Potential Ecological Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Loss of connectivity/displacement caused by site works	Yes	Protected or notable species are likely to be present within the areas adjacent to the application site. There is potential for these species to be sensitive to the presence of large structures. The effects to these species will be assessed accordingly. Where these comprise a feature of nationally designated and non-statutory sites within 500m of the application site, i.e. Walthamstow Reservoirs SSSI and SINCs, the implications on the statuses of the sites will be assessed.

Potential Impact	To be Assessed in the EIA	Reason
Lighting disturbance caused by presence of site plant and activity	Yes	Protected and notable species are likely to be present within areas that may be influenced by changes lighting during construction. The potential effects on disturbance will be assessed. Where the disturbance may affect nationally designated and non-statutory sites within 500m of the application site, the implications on the statuses of the sites will be assessed.
Changes to air quality	Yes	The effect of changes in air quality as a result of construction traffic, including deposition, on protected and notable species or habitats will be assessed. This assessment will include an assessment on the status of nationally designated and non-statutory sites within 500m of the application site where these designations include features that may be sensitive to air quality.
Habitat loss and damage as a result of site clearance during enabling works and construction (terrestrial habitats).	Yes	The application site clearance will include clearance of buildings, trees and several small areas of grassland and scrub habitats. The value of the habitats within the zone of influence will be considered and effects to terrestrial habitats and species will be assessed.
Habitat loss and damage during enabling works and construction (aquatic habitats).	No	Although the construction of the bridge may cause temporary physical disturbance to aquatic habitats and species during installation, these effects are considered to be pursuant to the baseline conditions of vessel activity caused by existing moorings and passing vessel traffic. The potential physical disturbance caused by water wakes/wash is not considered an issue due to the engineered canal banks having limited marginal vegetation vulnerable to erosion. The construction methodology for the bridge is currently unknown however were for example it to include installation of heavy piles which is considered a disruptive and intrusive activity, this is possible in the order of hours. An activity such as piling would likely result in negligible amounts of riverbed habitat loss, and the bridge will cause shadowing; however, the riverbed and aquatic species are unlikely to be unique or valuable, but likely to be representative of all the other river habitat up and downstream. Therefore, the impact will not be considered in the ES.

Potential Impact	To be Assessed in the EIA	Reason
Noise and visual disturbance (terrestrial habitats).	Yes	There is a potential for the disturbance of protected species in the vicinity of the application site during demolition and construction. The effects to terrestrial receptors will be assessed, including disruption to nesting birds and foraging bats. The features of nationally designated and non-statutory sites of nature conservation importance (within 500 m of the application site), i.e. Walthamstow Reservoirs SSSI and nearby SINCs, will also be considered and the implication for the status of the designation will be assessed.
Noise and visual disturbance (aquatic habitats)	No	Piling will cause noise in the aquatic environment. The potential effects are unlikely to affect conservation status of any species because they are temporary and the presence of notable or protected species is limited, but measures to address fish welfare/health will be considered in the EIA.
Accidental spills or surface run-off causing changes to water quality	Yes	The site is adjacent to aquatic habitats. The potential risk of accidental spillages during construction or changes as a result of surface run-off (e.g. increases suspended sediment concentration, toxicity of pollutants) will be assessed as part of the assessment of water quality, the implications to protected and notable species will be assessed.
Impact on nationally designated sites of nature conservation importance (located **more than 500 m** from the application site)	No	As can be seen from Table 7.1, there are two nationally designated sites which are more than 500 m from the application site but within the 2km study area: - Walthamstow Marshes SSSI (1.5 km); and - Springfield Park LNR (1.9 km). Beyond 500 m from the application site the area becomes increasingly urban and their connectivity and association to the larger international and nationally designated sites is rapidly reduced. It is acknowledged that effects such as accidental spills to watercourses may extend beyond 500 m from the application site; however there are no additional nationally designated sites likely to be affected downstream of the proposed development. In combination with the likely localised nature of construction impacts, it is considered that there would be negligible or no impact upon these sites.

Potential Impact	To be Assessed in the EIA	Reason
Impact on non-statutory sites of nature conservation importance (**more than 500 m** from site)	No	There are a number of SINCs more than 500 m from the application site. However these generally have lower grade value than those within 500 m. Beyond 500 m from the application site the area becomes increasingly urban and their connectivity and association to the larger international and nationally designated sites is rapidly reduced. It is acknowledged that effects such as accidental spills to watercourses may extend beyond 500 m from the application site; however there are no additional non-statutory sites likely to be affected downstream of the development. In combination with the likely localised nature of construction impacts, it is considered that there would be negligible or no impact upon these sites.

Table 7.4: Potential Ecological Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Bird collision risk /severance caused by buildings	Yes	There is potential for bird species to be affected by the presence of buildings. The effect on notable and protected bird species will be assessed. The bird species listed as features of the Walthamstow Reservoirs SSSI will be considered and the implications to the SSSI will be assessed.
Changes to air quality	Yes	The effect of changes in air quality from residential traffic, including deposition, on protected and notable species or habitats will be assessed. This assessment will include an assessment on the status of nationally designated and non-statutory sites within 500m of the application site where these designations include features that may be sensitive to air quality.
Increased visitor pressure.	Yes	There is potential for the development to cause changes to the designated sites within 500 m of the development due to the increased residential population. The effects on the features of the sites will be assessed.
Over-shadowing on aquatic habitats caused by building presence.	Yes	The proposed buildings and moorings have potential to provide localised overshadowing effect during the day. Therefore, there is potential to affect the vegetative species noted within the citation of the Walthamstow Reservoirs SSSI. The likely effects to vegetation will be assessed.

Potential Impact	To be Assessed in the EIA	Reason
Noise and visual disturbance (aquatic habitats).	No	The operational phase of the development is unlikely to present significant changes to noise or movements existing as the baseline environment and connectivity to the aquatic environment will be limited. Protected, BAP or declining fish or invertebrate species are unlikely to be present within the River Lee Diversion Channel and therefore will not be affected.
Noise and visual/lighting disturbance (terrestrial habitats).	Yes	Mobile species such as bats and birds using habitats within the vicinity of the application site could be disturbed, e.g. during their nightly routine by increased lighting effects or noise. These effects will be assessed accordingly. Where the disturbance may affect nationally designated and non-statutory sites within 500m of the application site, the implications on the statuses of the sites will be assessed.
Impact on nationally designated sites of nature conservation importance (more than 500 m of the application site) as a result of the operation and management of the proposed development, e.g. due to disturbance from noise and lighting.	No	Beyond 500 m from the application site the area becomes increasingly urban and their connectivity and association to the larger international and nationally designated sites is rapidly reduced. In combination with the likely localised nature of operational impacts as a result of the operation and management of the proposed development, e.g. due to disturbance from noise and lighting, there is considered to be negligible or no impacts at these sites.
Impact on non-statutory sites of nature conservation importance (**more than 500 m** from site)	No	There are a number of SINCs more than 500 m from the application site but within the 2km study area. However these generally have lower grade value than those within 500 m. Beyond 500 m from the application site the area becomes increasingly urban and their connectivity and association to the larger international and nationally designated sites is rapidly reduced.

7.5 Methodology for Impact Assessment

Environmental Impact Assessment

7.5.1 An Ecological Impact Assessment (EcIA) for the proposed development will be undertaken using baseline information derived from desk-based searches and surveys where necessary. The EcIA will not consider impacts on the international and European sites (these will be included in the parallel HRA screening study and any reports required as a result of consultation on that, as discussed in the following section).

7.5.2 The assessment will include:

- A desk study: A study area will be defined that encompasses all areas affected by the proposed development within 2 km of the perimeter of the application site. Data will be obtained through the following methods:
  - Nature conservation organisations are being consulted with for ecological information within the study area, publically available information such as designated site citations and conservation objectives have been obtained.
  - Ecological record data purchased from Greenspace Information for Greater London (GiGL).
  - The British Trust for Ornithology (BTO) was contacted to obtain the records of birds recorded on the adjacent Walthamstow Reservoirs for 2009 to 2013.
- An assessment of the ecological impacts of the proposed development will be undertaken in the form of an EcIA in line with the Chartered Institute of Ecology and Environmental Management (CIEEM) 2006 guidance (25);
- Consultation with statutory bodies: Initial consultations have been undertaken with the EA and LBH to discuss key ecological considerations. Natural England and the Lee Valley Park Authority are being consulted on the application and the HRA screening report;
- Evaluation of the receptors;
- Characterisation of the impacts involving liaison with the design team to understand the proposed design and construction methods and the relevant members of the EIA team in consideration of potential impacts;
- Determination of whether effects are ecologically significant using industry best practice methodologies, such as CIEEM's methods for EcIA;
- Consideration of the future baseline with regard to climate change;
- Recommendation of mitigation measures and measures for enhancement of biodiversity;
- Assessment of residual significance; and
- A clear statement of the limitations of the baseline studies.

7.5.3 The output of the assessment would be an ES chapter presenting the baseline conditions and potential ecological impact assessment as described above.

7.5.4 The following organisations have been, and will continue to be, consulted with during the EIA process:

- Natural England;
- Environment Agency;
- LBH;
- LBWF (through LBH);
- Lee Valley Park Authority;
- Greenspace Information for Greater London (GiGL);
- British Trust for Ornithology (BTO) - for WeBS count data;
- Local Bird Recorder (via BTO); and
- Local Mammal Recorder (via GIGL).

Habitat Regulations Assessment

7.5.5 Due to the proximity of the Lee Valley SPA and Ramsar Site to the application site, HRA screening for likely significant effects to European Sites will be required.

7.5.6 Impacts on the European Sites will not be included within the EIA, but information for HRA will be collated to accompany the EIA. The document will consider the likely significance and if necessary the implications of the project on the conservation objectives on the SPA/Ramsar Sites and their qualifying features. Information for HRA screening will be presented and submitted for consultation.

7.5.7 The information provided to inform the HRA will present details on the designated/classified sites and their qualifying features. The report will draw on the information collated for the Phase 1 Habitat Survey Report and EcIA, including specific species surveys, notably the baseline information.

7.5.8 The Screening for likely significant effects will consider the potential effects of the proposed development alone and in combination with other relevant schemes identified by LBH.

7.6 Climate Change

7.6.1 Climate change may affect biodiversity through changes to the timing of biological events (i.e. change in seasonality) (26), and through a shift in species range as a response to changes in precipitation or temperature (27) (28). The latter will have an influence on the future baseline environment of the application site in a 'do nothing' scenario. This will be considered within the EIA by providing a description of the likely changes (such as those caused by possible changes to growing season, water flows, favourable weather) and how these affect the certainty of the impact assessments. Given the urban character of the application site, it is likely that human influences and decisions regarding biodiversity are likely to mask the effects of climate change. The mitigation recommendations will acknowledge the need for enhancements to be appropriate to future climates.

8 TOWNSCAPE, HERITAGE AND VISUAL IMPACT

8.1 Introduction

8.1.1 This chapter provides a summary of the proposed scope of the townscape, heritage and visual impact assessment, which will be undertaken as a separate volume of the ES. Following a development assessment and initial site visits the following key considerations have been identified:

- The performance of the proposed development when experienced from within the existing townscape context, particularly in terms of its height, scale, massing, external materials and how it meets the skyline and the ground;
- The potential effects of the proposed development on visual amenity, when experienced in a wide range of views, including short, medium and long distance views, and by different people;
- The potential effects of the proposed development on a limited number of built heritage assets, including the setting of listed buildings, conservation areas and non-designated heritage assets;
- The potential cumulative townscape, heritage and visual effects of the proposed development when assessed in combination with other major developments either consented or submitted but not yet determined. A definitive list of cumulative developments will be agreed with LBH, please refer to Chapter 17 for further details.

8.2 Baseline

8.2.1 An initial review of the application site's planning policy designations has been carried out in order to establish the baseline context and inform the selection of potential townscape, built heritage and visual receptors. The following designations were recorded within the vicinity of the application site:

- Metropolitan Open Land;
- Lea Valley Regional Park;
- Listed buildings and conservation areas;
- Archaeological Priority Area;
- SINC Metropolitan Importance;
- Green Chain;
- Blue Ribbon Network;
- RAMSAR Site/Important Bird Area; and
- Walthamstow Reservoirs SSSI/SSSI Impact Risk Zone.

8.2.2 Many of these designations are also shown on the environmental constraints map (Appendix 2).

8.2.3 No potential long-range designations have been identified as relevant to the proposed development.

8.2.4 The above designations and their level of significance in relation to townscape, heritage and visual receptors will be reviewed in detail within the baseline assessment for the townscape, heritage and visual impact assessment (THVIA).

8.3 Receptors

8.3.1 Site visits and desktop study have been undertaken in order to understand the application site and the local area and to inform the initial identification of townscape, built heritage and visual receptors in the vicinity.

8.3.2 As stated above, there are a number of designations close to the application site. These will need to be acknowledged and reviewed with further site visits in order to establish the visual baseline, identify the area in which the proposed development may be visible and to select townscape, built and visual receptors within the area that are significant.

8.3.3 Individual townscape character areas will also be defined and assessed under existing and proposed conditions.

8.3.4 Visual receptors that have been considered to date include various potential viewpoints which have already been discussed with LBH. The set of viewpoints to be agreed will cover a range of points of the compass from which the proposed development will be visible, a range of distances from the site and different types of townscape areas. There is likely to be the necessity to visit land that is currently not publically accessible to consider viewpoints suggested by LBH officers (i.e. the reservoir land controlled by Thames Water).

8.3.5 Table 8.1 below indicates which viewpoints would be surveyed in order to create Accurate Visual Representations (AVRs) of the proposed development, as well as which, provisionally, would be photorealitically 'rendered' and which would be 'wireline' views. The creation of AVRs by a visualisations specialist will allow assessment of the townscape effects and effects on visual amenity in accordance with best practice set out in the *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (2013)* (29).

Table 8.1: Viewpoint Locations

Provisional Numbering	Viewpoint	Wireline or Rendered Avr (Provisional)
1	Chalk Bridge, looking south	WL
2	Stonebridge Lock, looking south	WL
3	Lee Navigation, Towpath north, looking south	R
4	Tottenham Marshes, looking south	WL
5	Chestnut Road, looking east	WL
6	Tottenham High Road/Monument Way, looking east	WL
7	Green Link, looking east	R
8	Tottenham Hale Station at Ferry Lane, looking east	R
9	Lee Navigation, Tow Path South, looking north	R
10	Blackhorse Road Railway Bridge, looking west	WL
11	Forest Road at Dagenham Brook	WL

Provisional Numbering	Viewpoint	Wireline or Rendered Avr (Provisional)
12	Forest Road/Ferry Lane, close to Ferryboat Inn, looking north west	R
13	The Paddock, looking north west	R
14	Springfield Park, looking north	WL
15	Walthamstow Wetlands, looking north	WL
16	Lockwood Reservoir, looking south west	WL

8.3.6 The location of each viewpoint in relation to the site, topographical features and designated heritage assets is shown in Appendix 4. There is a large visual envelope for the application site due to the topographical nature of this part of London, with a variety of viewing points in urban areas and from open land, including reservoirs.

8.3.7 The viewpoints are chosen to illustrate the maximum visual conjunction between the proposed development and the townscape/landscape, including heritage assets. They do not include every position from which the proposed development will be visible, but are representative views showing the most likely significant effects. The exact locations have yet to be determined.

8.3.8 The precise balance of wireline and rendered AVRs to be assessed in the THVIA (as shown in column 3 of Table 8.1) will be finalised in discussion with the LPA, once each view has been fully surveyed and the visibility of the proposed development is confirmed in each case. Column 3 is therefore provisional and is based on our current understanding of the likely visibility of the proposed development and the sensitivity of each view.

8.4 Scoping of Impacts

8.4.1 The proposed development will result in significant changes to the height and massing of buildings on site as well as new public spaces and architecture. This has the potential to alter the character and quality of the local townscape as well as local and long range views which encompass the application site. The potential impacts of the proposed development during its construction and operational phases which will be assessed by the THVIA are presented in Table 8.2 and Table 8.3.

Table 8.2: Potential Townscape, Heritage and Visual Impacts – During Construction

Potential Impact	To be Assessed in the EIA	Reason
Temporary visual intrusion during demolition and construction works	Yes, in brief	To assess the impact of temporary cranes, lights, site hoardings, dust disturbance and other construction activities, as far as possible.

Table 8.3: Potential Townscape and Visual Impacts – During Operation

Potential Impact	To be Assessed in the EIA	Reason
Changes to the character, appearance and quality of the application site and the local townscape resulting from the design of the proposed development	Yes	The proposed development will significantly alter the site in terms of mass, height, architectural quality and character and these alterations may have an impact on the local townscape as a result.
Impacts on long range views and the visual amenity from the perspective of the viewer.	Yes	Important long range views have been identified in relation to the application site.
Impacts on local views and the visual amenity of the viewer.	Yes	Important local views have been identified in the vicinity of the application site.
Impacts to the setting of listed buildings in the vicinity of the application site and views from conservation areas.	Yes	No direct impacts on heritage assets would occur as a result of the proposed development. Potential built heritage impacts are therefore limited to the setting of listed buildings in the vicinity of the application site and views from conservation areas some distance away to the west.

8.5 Methodology for Impact Assessment

8.5.1 The methodology Citydesigner will use for the THVIA is based on the principles set out in the third (2013) edition of 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA) (29), produced by the Landscape Institute with the Institute of Environmental Management and Assessment. It takes into account other guidance where appropriate, such as Historic England's 'Historic Environment Good Practice Advice in Planning, Note 3: The Setting of Heritage Assets' (30).

8.5.2 This section provides a brief overview of the methodology to be used in the THVIA. A more detailed explanation will be provided as within the THVIA itself, when submitted, but can be provided in advance if required.

8.5.3 An assessment of the effect of the proposed development on a receptor (an area of townscape, a heritage asset or view) is made on the basis of quantitative and qualitative information collated as part of the EIA, taking into account relevant planning policies and guidance. The assessment includes professional judgement and is based on the following method:

- A full analysis of the baseline characteristics of the site and wider area, including its historic development, topography, landscaping and public realm, open space, urban grain, permeability, legibility, the location and character of key elements of the built environment and important elements of existing visual amenity. Ordnance Survey (OS) maps and digital data will be utilised to identify relevant local features relating to topography, urban grain, and historic features;
- Identification and description of designated and non-designated heritage assets and townscape character areas, including consideration of their sensitivity. Reference will be made to any assessments carried out by LBH, including appraisals and management guidelines for conservation areas, etc.;
- Consideration of the design of the proposal in detail, including its performance in terms of mitigation and enhancement;
- Assessment of the effects of proposed development during its construction and operation phases, by way of considering:

- The sensitivity of the receptor, which will be assessed as high, medium or low, depending on the importance, value and quality of the receptor, and the visual amenity from the perspective of the viewer;
- The magnitude of the change resulting from the proposed development will also be assessed as high, medium or low depending on the change to the townscape, view or heritage asset's setting;

- These two measures are combined to provide a measure of the significance of the effect on a receptor, whether major, moderate, minor or negligible.
- The direction of the effect, on balance, is then assessed. The direction of the effect may be considered as beneficial, adverse, or neutral.

8.5.4 For each of the identified views, a description of the view as existing will be provided and its sensitivity to change will be identified. A description of the quantitative change to the view will also be provided and the magnitude of change will be identified. A description of the qualitative change to the view will be provided and an assessment of the overall effect and its significance, based on the method set out above, will be undertaken. Where other developments in the wider area that have been granted consent or submitted to LBH but not yet determined, would be visible in combination with the proposed development to a significant extent, a further image showing these schemes together with the proposed development will be produced and a cumulative assessment undertaken.

8.5.5 Consultation with stakeholders will occur as part of the normal planning and design development process.

8.6 Climate Change

8.6.1 It is recognised that EIA has a key role to play in assisting in the UK's efforts to minimise greenhouse gas emissions and adapt to our changing climate. In response to the 2014 amendment to the EIA Directive, we are addressing climate change impacts wherever feasible. It is not anticipated that there will be any direct measurable changes or impacts in terms of townscape, heritage and visual impact as a result of the changing climate, however, and as such reference to climate change has been scoped out of this assessment.

9 EXTERNAL LIGHTING

9.1 Introduction

9.1.1 This chapter provides a summary of the proposed scope of the night lighting assessment, which will be undertaken to inform the masterplan of the development and relevant chapter within the ES.

9.2 Baseline

9.2.1 A baseline condition survey has been undertaken in order to establish existing lighting conditions on and adjacent to the application site. The baseline survey provides observations on the existing external lighting conditions so that the effects of a new lighting installation can be quantified and managed. Specific focus was made to observe existing lighting with respect to local ecology, especially that in relation to the Lee Valley Ramsar and SPA.

9.2.2 The majority of the application site contains industrial/warehouse buildings which do not have significant levels of external lighting beyond occasional areas of floodlighting and low levels of perimeter lighting along the western side of the application site. In most cases, clear views of existing lighting from off-site, are blocked by existing mature landscape; however the south-west corner of the application site serving as a car park for the industrial/warehouse buildings does maintain relatively clear views across the River Lee Navigation.

9.2.3 The riverbanks and Paddock, identified as green space across the River Lee Flood Relief Channel to the east, provide suitable habitat locations for breeding birds and bats, respectively, while the area overall is expected to be in use for foraging or commuting.

9.2.4 Residential development can be found to the south across Ferry Lane and to the west across the River Lee Navigation. The remaining buildings in the local area are either industrial or commercial.

9.2.5 Light level measurements were taken at all accessible areas around the application site using a digital illuminance meter placed at approximately ground level around the existing application site boundary. The north and north-east application site boundaries contained access restriction due to fencing or changes in Landscape. Measurements were taken at 10.0 m intervals.

9.2.6 Record photographs were taken for views from and to the application site. Where boundary access was limited, views of the site were taken from the Paddock or across the River Lee Navigation. Some internal glow from the existing buildings is visible from locations off-site, however, these are limited due to existing landscape, orientation of buildings on-site and location of existing windows through which light is occasionally visible.

9.2.7 The application site appears as a 'low district brightness' lighting environment. The existing external lighting installation has little impact on the River Lee Navigation, The Paddock and River Lee Flood Relief Channel. This is classified as lighting environmental zone E2, which recommends benchmark targets for future design with respect to glare potential, sky glow and light spill.

9.3 Receptors

9.3.1 Potential sensitive receptors which may be affected by lighting from installations associated with the construction and operational phases of the proposed development include existing residential properties, consented residential development (where

applicable) and ecological receptors such as bats, birds, owls or other species that are noted as having a sensitivity to light or a change in the static lighting condition.

9.3.2 Receptors that are likely to experience a noticeable change in their lighting condition are expected to be those within 500m of the application site. All others will be obstructed by existing landform / built structures, or be subject to different and more immediate sources of lighting local to them.

9.3.3 Residential receptors are not immediately adjacent to the application site, but are found to the south and west across Ferry Lane and the River Lee Navigation, respectively. Not all of these properties have direct views of the application site.

9.3.4 The application site is not considered to be species rich; however, there are a number of statutory and non-statutory designated sites within 2km of the application site. The following ecological sensitive receptors have been identified:

- International, European, Statutory and non-statutory designated sites of conservation importance;
- Bats (foraging bats only: no habitat suitable to support bat roosts has been recorded within the application site);
- Birds (terrestrial species);
- Terrestrial habitats; and
- Aquatic habitats.

9.4 Scoping of Impacts

9.4.1 Lighting from the proposed development has the potential to cause noticeable change within the night-time visual envelope. While the effect of a new lighting condition will promote a more subjective response on the part of those experiencing it, the analysis will address only technical parameters that have been developed. This allows us to quantify the level of change for directly measurable effects and rate their performance according to good practice criteria. The three types of lighting effects that are directly assessed include:

- Light Spill;
- Sky Glow; and
- Glare Potential.

9.4.2 This scoping document considers the effects of existing, construction and operational lighting. The period of time scheduled for site demolition is not included for analysis as it is assumed that these works will adopt a primarily daytime schedule to reduce combined nuisance effects such as noise, light and air quality.

9.4.3 Construction phase activity has the potential to create disruptive effects during both day and night-time hours. Construction effects are temporary, lasting until the development has been completed and the cause of noted effects are removed.

9.4.4 Operation phase effects are permanent, and only able to be changed through redesign or removal of lighting.

Light Spill

9.4.5 Light spill, according to GN01 (the ILP document Guidance Notes for the Reduction of Obtrusive Light) (31), is considered to be 'the spilling of light beyond the boundary of the site on which a light source is located', to a degree which causes a visual nuisance. Light spill is often considered to be the intrusion of light into homes,

however it may occur when a light source is directly visible. Light spill can have a negative adverse effect on wildlife and ecological systems local to an installation.

Sky Glow

9.4.6 Sky glow, with reference to GN01 (31), is considered to be 'the brightening of the night sky' above illuminated areas. This brightness created is constantly varying as a function of many parameters such as direct upward-lighting, ground surface reflectance, overhead cloud cover, and the degree of water droplets in the atmosphere - rain, fog/mist, and snow, for example, exacerbate the effect. An acceptable Upward Light Ratio (ULR) for an installation can be formulated dependant on its environmental context.

Glare Potential

9.4.7 The placement of luminaires, their optical and photometric characteristics, and the viewing context contribute to how conspicuous and glaring luminaires appear.

9.4.8 Table 4.2 and Table 9.2 summarise the potential impacts associated with the Construction and Operational phases.

Table 9.1: Potential Night Lighting Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Light Spill	Yes	Whilst construction at night is not recommended, the construction schedule and approach should be reviewed in line with a Construction Management Plan, Local Authority requirements and Environmental recommendations. This is necessary to inform the extent of control needed to minimise light spilling beyond the application site boundary.
Sky Glow	Yes	Sky Glow is often a combination of overlighting, creating areas where bright light is reflected back into the sky, or the use of lighting which has limited, no, or badly applied directional control. Review of construction methodology is beneficial to reduce the potential disruption to the local environment and ecology during this phase.
Glare potential	Yes	Similar to sky glow, glare is caused by direct views of a lamp source or overbright lighting viewed against a darker background. While glare is more difficult to manage, recommendations for using light during night time hours may be made which limit the potential for direct views of a lamp source as well as contrast.

Table 9.2: Potential Night Lighting Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Light Spill	Yes	A new lighting installation is expected as part of a residential-led development, which can create noticeable change to local wildlife and residents. With respect to plans that have been circulated for site arrangements, most new external lighting is expected to be used toward the centre of the application site, covering accommodation entrances, parking and occasional landscape lighting. Lighting at the perimeter is assumed to be limited. Anticipated lighting within the application site is expected to consist of low light levels and be mounted at low level (3m or under) with the exception of columns that might be required for car park spaces and access routes, although this is subject to review and the setting of parameters within a Lighting Management Plan. This type of arrangement is not expected to contribute sufficient light to reach local residential properties. There is limited potential for light to spill beyond the application site boundary and onto the river bank. Review of a proposed lighting design will help to identify where potential light spill may occur as well as investigate ways to mitigate the effect.
Sky Glow	Yes	As part of the proposed development, new lighting installations introduce new light and ground materials which may permanently alter how light behaves in the local area. Careful selection of equipment which reduces or removes upward light contribution will help limit potential increases to local area sky glow. This type of mitigation is considered to be in-built, and will also relate to how new lighting is selected to provide sufficient light without overlighting.
Glare Potential	Yes	Glare can be managed as part of a new lighting installation through the careful selection of new lighting equipment and consideration of how it is placed as part of a new development. Glare can be caused by direct views of light sources, or the appearance of a high contrast installation which places a bright spot or surface against a much darker background. Review of the brightness of a light source, as well as how it reflects off façades or other materials in the public realm, can help to confirm placement of new lighting as well as specification of additional shielding or baffling, if needed, to further limit light onto vertical surfaces.

9.5 Methodology for Impact Assessment

9.5.1 Lighting analysis methodology references the CIE 115:2003 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations (32) and the GN01 ILP Guidance Notes for the Reduction of Obtrusive Light (31).

9.5.2 In the absence of an established lighting proposal, certain technical design parameters are assumed for the purpose of analysis, including design light levels for exterior areas of the development. Where technical gaps may occur with reference to the proposed lighting requirements, such as for car parks, relevant British Standards will be referenced, i.e. BS 5489:2013.

9.5.3 Lighting analysis will review the existing lighting condition on site and in the local surrounding area, assessing potential lighting effects during the construction and operational phases of the proposed development. In particular, an assessment of the impact of existing and proposed lighting on surrounding sensitive residential and ecological receptors will be undertaken. The technical input will comprise the following tasks:

- Identification and analysis of the baseline lighting condition:
  - Establish baseline conditions and context for existing land use;
  - Baseline conditions were confirmed through site and context review, including a lighting survey, undertaken 28 January, 2015;
  - Survey data includes light level readings taken at the application site boundary and photographs both on- and off-site showing lighting conditions and views;
  - Establish residential and ecological receptors, including existing/consented development, if applicable;
- Identify the sensitivity of Receptors (forms part of Baseline Condition):
  - Review existing lighting and conditions on and adjacent to the site and assess their environmental effects to identified receptors;
  - Assessment of existing context effects to relevant existing developments/habitat;
  - Analyse factors for the base lighting condition; establish likely levels of: light spill, sky glow and glare potential;
- Identification and analysis of required lighting provisions
  - Establish proposed, or post-construction, conditions relating to the proposed development;
  - Develop an outline lighting condition for analysis. Details for site lighting are not currently available and the proposed lighting condition is considered to follow recommended lighting performance criteria;
  - Review proposed, outline lighting criteria and conditions, relating to new development and assess their environmental impact;
- Assess how much change to the local area and identified receptors is likely to occur between baseline and proposed development lighting conditions:
  - Assessment of context effects to relevant adjacent developments and identified locations for wildlife / habitat;

  - Analyse the level of change created by the proposed development new lighting condition with reference to: light spill, sky glow and glare potential;
- Benchmark the amount of change between the baseline and proposed development conditions, with reference to good practice guidance criteria:
  - Environmental effects that will likely result from the outline lighting performance criteria will be compared against good practice guidelines;
- Assessment of how significant the new effect is likely to be and recommend control measures, where applicable:
  - The scale of change due to new lighting effects will be determined and rated based on the sensitivity of identified receptors to a change in their local lighting condition.;
  - Mitigation or management strategies will be suggested where impact levels to sensitive receptors are in excess of good practice guidance benchmarks and considered significant;
  - Commentary will be made of the combined effect of the proposed lighting condition and management/mitigation strategies, if required; and
- Conclusions:
  - Conclusions regarding the potential for a significant residential effect in terms of lighting effects of the new lighting condition will be both quantitatively and qualitatively drawn.

9.6 Climate Change

9.6.1 New lighting is not expected to be affected by climate change as its use is determined by periods of light and dark, rather than ground, climate or weather conditions. Any change resulting from climate change that may have some effect on how lighting is incorporated into the development would be as part of baseline or proposed conditions stemming from change to local biodiversity, sea levels or intended space use.

10 DAYLIGHT, SUNLIGHT AND OVERSHADOWING

10.1 Introduction

10.1.1 The impact of the application site on the daylight, sunlight and overshadowing of the existing and potential receptors will be assessed. This section does not cover the future residential receptors of the proposed development which will be addressed within the Design and Access Statement.

10.2 Baseline

10.2.1 The application site currently consists of warehouses. At the Ferry Lane end of the site there is also a modern office building called Heron House.

10.2.2 The existing buildings within the application site range from one to four storeys. The tallest building within the site is Heron House with a height of approximately 15 m.

10.2.3 To the southeast are residential buildings in Bream Close with the nearest building being approximately 50 m away from Heron House.

10.2.4 To the southwest are residential buildings in Reedham Close with the nearest building being approximately 70 m away from Heron House.

10.2.5 The Hale Village development to the west of the application site comprises a number of residential blocks. These are approximately 80 to 100 m away from the application site. The Hale Village development is being constructed in a number of phases. The buildings closest to the application site are residential blocks. It is understood that Coppermill Heights, Crane Heights, Merlin Heights and two further blocks have been built out. One further block is currently under construction.

10.2.6 To the east of the application site is The Paddock Community Nature Park.

10.3 Receptors

Daylight/Sunlight Receptors

10.3.1 The potential sensitive receptors identified for the daylight/sunlight EIA are as follows (see Appendix 5 for block references):

- Hale Village Residential Blocks:
  - Coppermill Heights – Residential on first floor – Block 1;
  - Crane Height – Residential on Ground Floor – Block 2;
  - Merlin Heights - Residential on Ground Floor – Block 3;
  - Future Heights block – Residential on Ground Floor – Block 4;
- Bream Close dwellings – Block 7;
- Bream Close dwellings – Block 8;
- 1 – 35 Reedham Close – Block 9;
- Carwash / Garage – Block 10;
- Lock Keepers Cottage and garden – Block 11; and
- Commercial warehouses – Block C (these uses may still be operational during construction of phase 1).

10.3.2 The scope of this chapter follows the guidance contained in the BRE's 'Site Layout Planning for Daylight and Sunlight' (BRE 209) (33). Further details of the guidance and subsequent are provided in the sections below.

Receptors for Daylight and their Sensitivity – BRE 209 Guidance (33)

10.3.3 Paragraph 2.2.2 of the BRE 209 states that the guidelines for daylight impacts are primarily for residential properties, where daylight is deemed to be required, including:

- Living rooms;
- Kitchens; and
- Bedrooms.

10.3.4 Windows to such spaces are classified as having a high sensitivity to daylight.

10.3.5 Paragraph 2.2.2 goes on to say that the guidelines can also be applied to non-domestic buildings which have a reasonable expectation of daylight such as:

- Schools;
- Hospitals;
- Hotels/Hostels;
- Small workshops; and
- Some offices.

10.3.6 Windows to such spaces are classified as having a medium sensitivity to daylight.

Receptors for Sunlight and their Sensitivity – BRE 209 Guidance (33)

10.3.7 Paragraph 3.1.2 of the BRE 209 states that the main requirement for sunlight is in housing, particularly living rooms and conservatories. It is viewed as less important in bedrooms and kitchens, where people prefer it in the morning rather than the afternoon.

10.3.8 In the absence of detailed internal layout information for the surrounding developments, all windows of residential properties facing within 90° of due south will be classified as having a high sensitivity to sunlight.

10.3.9 Paragraph 3.1.3 further states that sunlight is also valued in non-domestic buildings. However, this requirement will vary according to the type of non-domestic building, the aims of the occupants and the extent to which the occupants can control their environment.

10.3.10 In the context of the application site, the windows of the surrounding non-domestic buildings have been classed as having a low sensitivity to sunlight.

Receptors for Overshadowing and their Sensitivity – BRE 209 Guidance (33)

10.3.11 The BRE 209 guidance (paragraph 3.3.3) is also concerned with the availability of sunlight in open spaces such as:

- Gardens (usually the back garden);
- Parks/playing fields;
- Children playgrounds;
- Outdoor swimming pools;
- Sitting out areas such as public squares; and
- Focal points for views.

10.3.12 Any residential back gardens and/or parks adjacent to the application site will be classed as having a high sensitivity to sunlight availability.

10.4 Scoping of Impacts

Daylight/Sunlight Impacts

10.4.1 A desktop scoping study has been carried out using mapping data and other web-based resources.

10.4.2 It is anticipated that the completed proposed development may affect the daylight/sunlight of the surrounding developments (both existing and those under construction). However, as the application site is reasonably distant from the neighbouring buildings, the anticipated magnitude of impact is considered to be low and/or negligible.

10.4.3 The scoping of impacts has considered the guidance contained in the BRE 209 (33). BRE 209 provides the following guidance in paragraphs 2.2.4 – 2.2.5 on the existing neighbouring building that can be excluded from the scope of assessment of daylight impacts. These are summarised below:

- 'Existing buildings which are located at a horizontal distance greater than 3x the height of the proposed buildings are outside of the scope
- Where the angle between the existing building window and the top of the proposed building is <25°, the window is outside of the scope'.

10.4.4 Paragraphs 3.3.2 provides the following further guidance regarding existing neighbouring building that can be excluded from the scope of assessment of sunlight impacts:

- 'Existing buildings with windows not located within 90° of due south
- Where the angle between the existing building window and the top of the proposed building is <25°, the window is outside of the scope (for living rooms and conservatories)'.

10.4.5 Potential impacts during the demolition, construction and operational phases of the proposed development are set out in Table 10.1 and Table 10.2, respectively.

Table 10.1: Potential Sunlight/Daylight Impacts – Demolition and Construction

Potential Impact	To be Assessed in the EIA	Reason
Demolition of existing buildings	No	Demolition activities will be temporary in nature and will have a negligible impact on daylight and sunlight of existing properties
Loss of daylight / sunlight due to site cabins	No	Site cabins to be located within the constraints of the building envelope of the existing warehouse buildings or the constraints of the proposed buildings
Loss of daylight / sunlight due to tower cranes	No	Tower cranes will have negligible impact on daylight and sunlight of existing properties.
Loss of daylight / sunlight due to other construction activities	No	Construction activities will be temporary in nature and will have a negligible impact on daylight and sunlight of existing properties

Impact of Demolition and Construction Works on Daylight and Sunlight

10.4.6 The impact of any construction activities will vary throughout the demolition and construction programme and will be temporary in nature.

10.4.7 As the works progress there will be a gradually increasing impact as a result of levels of daylight/sunlight and overshadowing.

10.4.8 The impact of the construction works on the daylight / sunlight will be no greater than those of the completed development which presents the worst case scenario for the assessment of effects.

10.4.9 It is therefore not proposed to carry out a technical assessment of the construction stage impacts as part of the daylight/sunlight assessment.

Table 10.2: Potential Sunlight / Daylight Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Loss of daylight to existing dwellings	Yes	Only existing dwellings within scope
Loss of sunlight to existing dwellings	Yes	Only existing dwellings within scope
Change in 'no sky lines' (33) for existing dwellings	No	Not possible to undertake as details of internal rooms on existing dwellings is not known.
Overshadowing of gardens	Yes	Only existing gardens within scope
Lack of daylight/sunlight to future receptors within the application site	No	This will be covered by a stand-alone assessment report.
Lack of daylight/sunlight to ecological receptors	Yes	This will be assessed within the Ecology chapter of the ES.

10.5 Methodology for Impact Assessment

Daylight/Sunlight Methodology

10.5.1 The following sections outline the methodology proposed for the daylight/sunlight impact assessment.

Parameters to Quantify Daylight and Sunlight Impacts

10.5.2 The potential impacts of the proposed development on the surrounding buildings and open spaces can be measured using the following set of parameters:

- Vertical Sky Component [VSC];
- Annual Probability of Sunlight Hours [APSH]; and
- Hours of Sunlight Availability for Open Spaces [HSA].

Proposed Methodology

10.5.3 The receptors, as identified above, will be tested for daylight/sunlight following the methodology set out in BRE 209. The particular tests proposed are set out below:

- The vertical sky component (VSC) and Annual Probability of Sunlight Hours (APSH) will be assessed for all identified sensitive receptors using computer simulations for the following scenarios:
  - Baseline conditions;

- Phase 1 and outline phases 2/3 of the proposed development; and
- Cumulative inter-project effects including the Garage Site.

10.5.4 The effect of any cumulative impacts will be included within the three scenarios described above and all buildings which are existing, under construction and/or have received planning permission will be modelled as part of the surroundings.

10.5.5 The effect of existing nearby trees/hedges on the existing buildings will not be assessed.

10.5.6 The number of hours of sunlight will be assessed for the gardens on 21st March using computer simulation.

10.5.7 It is proposed that MBS Waldram analysis software or similar will be used for the purposes of the impact assessment.

10.6 Climate Change

10.6.1 It is recognised that EIA has a key role to play in assisting in the UK's efforts to minimise greenhouse gas emissions and adapt to our changing climate. In response to the 2014 amendment to the EIA Directive, we are addressing climate change impacts wherever feasible. It is not anticipated that there will be any direct measurable changes or impacts in terms of daylight, sunlight and overshadowing as a result of the changing climate, however, and as such reference to climate change has been scoped out of this assessment.

11 WIND MICROCLIMATE

11.1 Introduction

11.1.1 This chapter provides a summary of the proposed scope of the wind impact assessment which will be undertaken to inform the masterplan of the development and provide a wind microclimate chapter within the ES.

11.2 Baseline

11.2.1 The application site is relatively open to the northeast, over the reservoirs, with low-medium rise buildings to the south, and some taller buildings of 9-10 storeys to the west. It is expected that the taller buildings to the west would provide a degree of protection from westerly winds, particularly for buildings towards the north of the proposed development.

11.2.2 The buildings currently on site are predominantly low rise. The multi-storey building adjacent to Ferry Lane is relatively small in size and the articulation of its facades means it will have limited impact on its wind microclimate. No significant acceleration of wind is expected from the application site as it is configured currently.

11.3 Receptors

11.3.1 The wind microclimate assessment will use a comprehensive set of appropriate receptors. Primarily receptors will be in areas where pedestrians and building occupants use the site, buildings and facilities on site post construction, including the proposed moorings. In line with the proposed Lawson methodology, the maximum allowable windspeed will depend on how each space is to be utilised e.g. seated areas require lower windspeeds than ones where persons are in transit.

11.3.2 Most of the application site and its surroundings would be used by pedestrians in transit and for access. Plans currently provide for an outdoor seating area which would be more sensitive to high speed wind events.

11.3.3 Identified sensitive receptors include:

- Pedestrians in and immediately adjacent to the application site;
- Users of balconies; and
- Users of accessible roof areas.

11.4 Scoping of Impacts

Impacts during Construction

11.4.1 As the construction impacts will be temporary, and consequently it is not proposed to assess wind effects in this regard.

Impacts during Operation

11.4.2 Table 11.1 sets out the potential wind impacts that will be assessed in the EIA.

Table 11.1: Potential Wind Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Pedestrians in transit	Yes	Safety and comfort of pedestrians using the proposed development.
Pedestrians using the public recreational areas	Yes	Safety and comfort of pedestrians using the landscaped areas intended for recreational activities including child play areas.
Users of roof and balcony space	Yes	Safety and comfort associated with the users of outdoor residential spaces at height.
Users of business moorings	Yes	Safety and comfort of pedestrians accessing the business moorings on the pontoon within the River Lee Navigation Channel.

11.5 Methodology for Impact Assessment

11.5.1 There are no national planning policy guidelines directly related to wind microclimate around buildings. The Lawson Comfort criteria (Bristol University) is widely used in the industry as an objective methodology for determining microclimate impacts and are recognised by Local Authorities as an acceptable benchmark for wind assessments, and is therefore proposed for this assessment.

Table 11.2: The Lawson Comfort Criteria

Rating	Interpretation	Max allowable speed m/s (5% occurrence)
C1+	Uncomfortable for all users	>10
C1	Fast or business walking	10
C2	Strolling or window shopping	8
C3	Short periods standing or sitting	6
C4	Long periods of standing or sitting	4

Wind Data

11.5.2 Wind data from the nearest suitable meteorological station will be used, with information on wind strength, direction and duration/frequency.

11.5.3 Wind rose diagrams representative of the site are shown in Figure 11.1 below. The left-hand diagram indicates that westerly winds are the strongest with an average speed from these directions of over 5m/s (at 10m elevation). For this assessment, the frequency of winds is also critical and the image on the right shows the frequency weighted wind rose, that is accounting for the probability that winds originate from particular directions. This shows a predominance of SW winds in the wind rose.

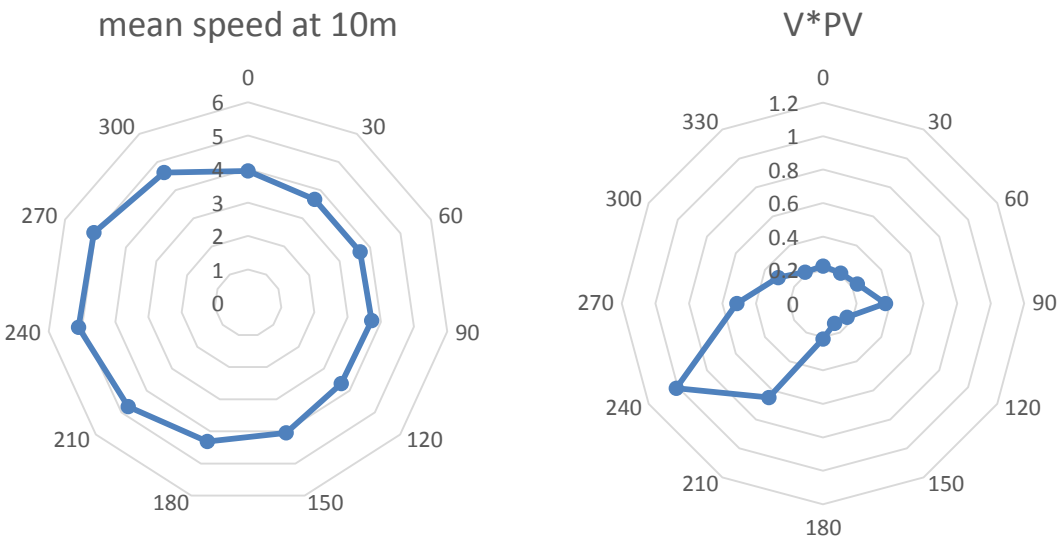

Figure 11.1: Wind Rose Diagrams Representative of the Application Site

11.5.4 The criteria used for assessment relate to the wind speed with a 5% occurrence probability. The cumulative wind speed distribution (see Figure 11.2) indicates that a speed above 7.5m/s occurs 5% of the time. This is the speed that will be used for the assessments.

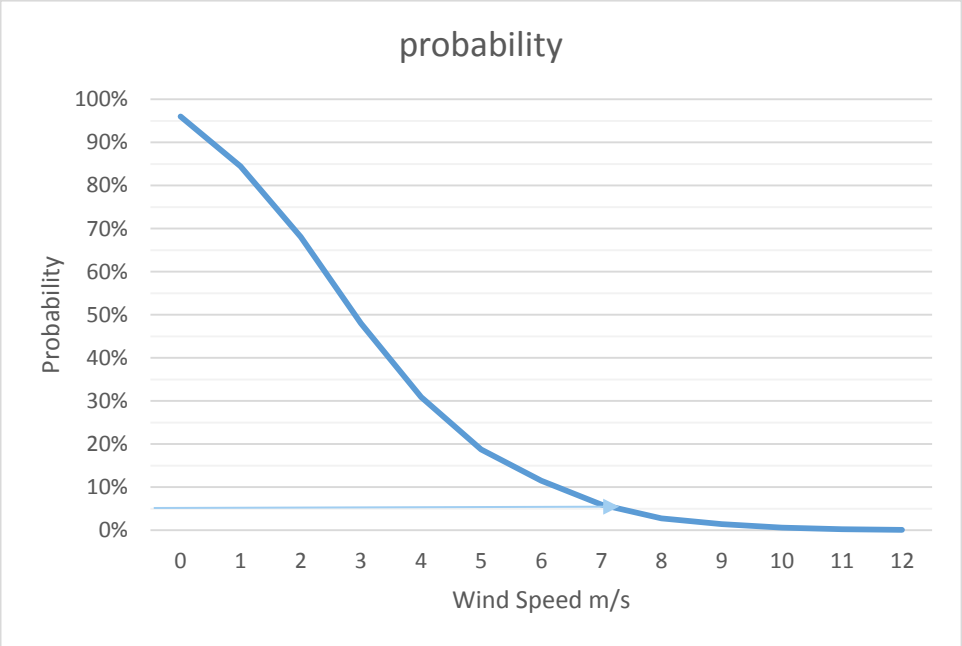

Figure 11.2: Cumulative Wind Speed Distribution

11.5.5 A Computational Fluid Dynamic (CFD) tool will be used to simulate wind microclimate conditions in and around the site. Simulations will be conducted for

- Pre-development, to establish baseline conditions; and
- A set of wind directions, sufficient to establish the frequency of averaged wind speeds.

11.5.6 The CFD software will have sufficient physical fidelity to represent the physics of airflow. In particular an appropriate turbulence model (such as Large Eddy Simulation) will be used.

11.5.7 The wind microclimate assessment will comprise the following elements:

- The use of environmental (wind speed) data appropriate to the application site;
- The identification of impact areas/receptors and their sensitivity to changes in the wind microclimate;
- The adoption of an appropriate performance standard /acceptance criteria; and
- The use of an appropriate analysis technique to evaluate impacts.

11.6 Cumulative Effects

11.6.1 Cumulative effects are those that arise as a result of a build-up of effects due to other committed developments in the area. A list of schemes (consented and proposed) for consideration in the cumulative impact assessment is set out in Chapter 17 of this Scoping Report.

11.6.2 If there is more than one agreed development scenario then the impacts of each of these upon the proposed development will be considered separately. The assessment will consider the following scenarios:

- Baseline conditions;
- Phase 1 and outline phase 2/3 of the proposed development; and
- Cumulative inter-project effects including the Garage Site.

11.7 Climate Change

11.7.1 While climate change will certainly have an impact in terms of increased summer time temperatures, for the wind microclimate assessment the metric of concern is a change in the frequency of high wind events.

11.7.2 Data produced by the UK Met office shows that the *uncertainty* in future predictions of high wind events is far greater than any projected *increase* in wind speeds. Therefore, the assessment will not include an assessment of the potential for wind microclimate change arising from climate change.

12 GROUND CONDITIONS AND CONTAMINATED LAND

12.1 Introduction

12.1.1 This chapter identifies the potential construction and operational effects of the proposed development on both human health and environmental sensitive receptors from the presence of contaminated land and ground gas.

12.1.2 Effects considered within this chapter comprise ground-based risks that are posed to construction workers, adjacent and future site users, ground and surface water (controlled waters), flora and fauna, and building and construction materials.

12.2 Baseline

Site Setting

12.2.1 At present the application site predominantly comprises multiple light industrial units which are currently used as workshops, a waste transfer site, a pallet company and a joinery facility which all bound the eastern section of the site. The western portion of the application site, along the western boundary is largely hardstanding occupied by both parked and disused vehicles and a number of metal ISO containers which are currently used by the waste transfer site.

12.2.2 Site infrastructure includes electrical substations, surface water interceptors and underground septic storage tanks. Details of the operational status, condition and integrity remain unknown at present. These features were identified during the site reconnaissance and are demarcated on the topographical survey undertaken for the site.

12.2.3 Current potentially contaminative land uses include timber processing and preservation, scrap waste storage and processing, vehicle maintenance and repair which include storage of uncontained fuel, oil and lubricants, solvents, paints and other chemicals.

12.2.4 Potential contaminants of concern include: heavy metals, petroleum hydrocarbons, poly aromatic hydrocarbons, poly chlorinated bi-phenols, volatile and semi-volatile organic compounds. Potential asbestos-containing material was noted on the external facia of the existing industrial units.

Site History

12.2.5 Map information shows the application site was largely undeveloped until 1894 when the introduction of 'Tottenham Wharf' occurred. The application site was later demarcated as ‘Hale Wharf’ in 1954. Prior to 1894, the application site was occupied by Tottenham Lock in the south and potential stables near the centre of the application site highlighting the likelihood of agricultural land uses. Archaeological evidence shows some earlier medieval use of the application site and area, but this was not industrial in nature. Between 1916 and 1976 the site underwent significant development for light industrial use including a scrap metal yard and timber works. An above ground storage tank (later removed) and electrical substation form part of the historical infrastructure of this period. Post 1976 the site continued to develop with the construction of further units to the north. Much of the infrastructure and buildings built during this period appear to remain today.

Previous Ground Investigations

12.2.6 In September 2006, Card Geotechnics Ltd (CGL) undertook a Desk Based Study and limited ground investigation comprising a single borehole at Hale Wharf, Tottenham. The report provided a summary of the site history and geo-environmental setting prior to a preliminary risk assessment. The risks to human health, controlled waters and flora and fauna were considered by CGL to range between low and high. It was recommended by CGL that a more extensive and comprehensive ground investigation was required to enable conditions on the remainder of the site to be defined.

12.2.7 In October 2014, Ramboll UK (Ramboll) completed a Geo-Environmental and Geotechnical Desk Study comprising a technical appraisal of existing third party date for the site . From this desk-based assessment, a site-specific conceptual site model was developed, highlighting potentially pollutant linkages and their associated risks.

12.2.8 In November 2014, Ramboll completed a Geo-Environmental and Geotechnical Interpretive Report comprising a preliminary intrusive ground investigation in order to refine the site conceptual site model.

12.2.9 The ground investigation comprised five dynamic sampled and rotary cored boreholes to a maximum depth of 35.5m below ground level (mbgl) and eight window samples generally advanced to depths of between 4.00m and 5.50mbgl. Following the completion of all exploratory works, a subsequent groundwater and ground gas monitoring program was initiated.

12.2.10 The rationale for each exploratory location was to provide general site coverage rather than a representative of a more targeting investigation. Given the operational status of the application site, the final positioning of many exploratory locations was dictated by the need to maintain current access arrangements.

12.2.11 The monitoring programme undertaken comprised six ground gas monitoring rounds undertaken in general accordance with CIRIA C665 (2007) and BS 8576:2013, and two groundwater sampling rounds undertaken in general accordance with BS ISO 5567-11 and BS ISO 6068-6.11 (2009).

12.2.12 The findings of the preliminary ground investigation have been used to develop an understanding of environmental setting and development a preliminary conceptual site model.

Environmental Setting

Geology

12.2.13 Ground conditions typically comprise Concrete (thickness 0.15m-0.30m)) overlying (in sequence) Made Ground (0.25m – 3.70m), Alluvium (0.65m-2.95mbgl), River Terrace Deposits (1.55m-3.70mbgl), London Clay (20.00m-26.45m) and the Lambeth Group proven to 35.50mbgl. The underlying Thanet Sands and Upper Chalk (at depth) were not encountered during the Ramboll 2014 ground investigation works.

12.2.14 The application site is not recorded as being of geological importance or as a safeguard mineral site as defined by the London Borough of Haringey.

Contamination

12.2.15 Visual evidence of contamination was noted throughout the ground investigation by the presence of various anthropogenic inclusions within the Made Ground. Hydrocarbon odours were identified to varying degrees however in-situ Photo-Ionisation Detection (PID) test results remained at concentrations below significant concern (<5ppm). Odorous soils were limited to the shallow Made Ground with the exception of a single occurrence within the Alluvium.

12.2.16 Soil laboratory analysis undertaken indicates the presence of elevated concentrations of contaminants above the adopted generic assessment criteria within the shallow Made Ground. Exceedences include site-wide Lead and Benzo(a)Pyrene (BaP), as the surrogate marker (benchmark contaminant for Poly Aromatic Hydrocarbons (PAH)), and an isolated incidence of elevated Petroleum Hydrocarbons. Asbestos containing materials in the form of Amosite and Chysotile cement, loose insulation and rope were encountered within half of exploratory locations completed.

12.2.17 Several leachable contaminants including site-wide Copper and Lead have been identified in addition to isolated incidences of Zinc, Cadmium , Ammonium and individual PAHs speciates within the underlying shallow Made Ground. Leachable contaminants were also identified as isolated incidences within the natural Alluvial deposits comprising elevated Lead, Ammonium and TPH.

12.2.18 Due to the occupied and operational status of the site there remain areas that are as yet unexplored.

Hydrogeology

12.2.19 The Alluvium and River Terrace Deposits are classified as Secondary Aquifer - Undifferentiated Layers and Secondary A Aquifer, respectively. The London Clay is Unproductive, the Lambeth Group is a Secondary A Aquifer and the Thanet Sands and Chalk both form a Principal Aquifer and are considered to be in hydraulic continuity.

12.2.20 The nearest potable groundwater abstraction licences lies circa 0.5km to the south-east which is sourced from the Principal Aquifer of the Upper Chalk at significant depth, beneath the impermeable London Clay. The site is located within a Zone 2 - Outer Catchment.

12.2.21 Groundwater strikes were encountered during the ground investigation within all underlying superficial deposits, either as perched water within the Made Ground or Alluvium or as part of a larger groundwater body within the River Terrace Deposits.

12.2.22 The groundwater monitoring program identified perched water within the Made Ground and Alluvium to occur at depths ranging between 0.84 to 3.08mbgl and within the River Terrace Deposits occurring at +5.96 and +6.72 mOD (2.34 to 3.8mbgl). Based on this preliminary data the underlying groundwater regime appears to flow south on a relatively shallow gradient.

12.2.23 Laboratory analysis of the perched water indicates the presence of elevated concentrations of ammonium and manganese as well as isolated incidences of nickel and TPH.

12.2.24 Laboratory analysis of the groundwater indicates the presence of elevated ammonium and manganese across the application site.

Hydrology

12.2.25 Along the eastern site boundary the River Lee splits into two separate channels navigating south (adjacent the eastern site boundary) and southeast following the line of the adjacent reservoirs. It is understood that the eastern bounding River Lee channel is a concrete lined watercourse. Similarly, the Lee Navigation (west) is a concrete lined channel partially sheet piled along its banks. Pymmes Brook runs adjacent to the Lee Navigation west, the two water courses being separated by a thin strip of land used for a footpath.

12.2.26 The presence of both aforementioned watercourses introduces a complex hydrological and hydrogeological site setting. In the absence of any detailed 'as built' plans, it is assumed that the River Lee Navigation is of 'typical' canal construct and is therefore hydraulically isolated from the underlying groundwater body on-site. Conversely, in

the absence of any further information pertaining to the rationale and construction of the River Lee east, a worse-case situation, i.e. hydraulic connectively, is assumed at this preliminary stage.

12.2.27 In addition to the above, the site is also situated within the vicinity of a series of Thames Water potable water reservoirs collectively known as the Walthamstow Reservoirs which occupy much of the land from the south-east to north. However, on the basis that the River Lee and Lee Navigation border the site to the east and west respectively, the potential for the migration of groundwater impacts is considered to be limited. Therefore the reservoirs are not considered to be a sensitive receptor.

Ground Gas

12.2.28 The presence of both Made Ground and Alluvial deposits beneath the site offers the potential for ground gas generation.

12.2.29 A ground gas monitoring program comprising six separate monitoring visits was conducted during periods of high, medium and low atmospheric pressure.

12.2.30 Elevated concentrations of Carbon Dioxide (> 5.0%v/v) were detected in five exploratory positions within both the Made Ground and Alluvium deposits. The maximum flow rate recorded over the course of the monitoring program was 0.3l/hr. Methane was largely recorded at the instrument level of detection (0.1%v/v).

12.2.31 No elevated concentrations of ground gas were encountered within the underlying River Terrace Deposits.

12.2.32 The calculated Gas Screening Value (GSV) indicates the site to be classified as having a Characteristic Situation of 1 (very low risk). However, concentrations of carbon dioxide in excess of the 5%v/v guidance threshold for CS2 (Wilson et al., 2007) were recorded on numerous occasions.

Baseline Remarks

12.2.33 Ramboll are of the opinion that sufficient geo-environmental data has been collected as part of these preliminary investigative works and, therefore, do not propose to undertake any further baseline assessment prior to the completion of the ES.

12.2.34 Any subsequent intrusive works will be conducted as part of a detailed site investigation in order to refine the conceptual site model on a plot-by-plot basis following receipt of a planning application.

12.3 Receptors

12.3.1 The key potential receptors have been identified as follows:

- Human health:
  - Future site users;
  - Construction workers;
  - Adjacent site users;
  - Current site users (during demolition/construction and operational phases of development);
- Environmental:
  - Secondary Aquifers (Alluvium and River Terrace Deposits);
  - Principal Aquifers (Lambeth Group, Thanet Sands and Upper Chalk);
  - Lee Navigation Channel (Surface Water body- west);
  - River Lee (Surface water body – east);

- Flora and fauna; and
- Building and construction materials.

12.4 Scoping of Impacts

12.4.1 Future demolition and construction activities including piling, earthworks, installation of services, and landscaping have the potential to disturb contamination with the following potential effects to human health and environmental receptors summarised in Table 12.1 and Table 12.2 below.

Table 12.1: Potential Ground Conditions and Contaminated Land Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Presence and disturbance of contaminated ground and associated effects as a result of construction	Yes	Results of the preliminary ground investigation indicate shallow Made Ground exceedances of site-wide Lead, BaP (as surrogate) and asbestos containing material and isolated TPH. Potential for encountering previously unidentified areas of contamination due to access restrictions imposed by the occupied and operational status of the site during the preliminary site investigation.
Potential for ground gas and vapour migration and accumulation	Yes	Taking into account the application site's industrial past (and present), the occurrence of Made Ground (up to 3.7m) and the natural alluvial deposits any potential effects from the underlying ground gas regime need to be fully defined in order to determine associated risks in the context of current legislative and contaminated land regime. Results of the preliminary ground investigation indicate the presence of elevated Carbon Dioxide. Whilst existing flow data suggests a CS1 Type scenario, the potential for encountering elevated hazardous ground gases cannot be ruled out entirely given that previously unexplored areas remain.

Potential Impact	To be Assessed in the EIA	Reason
Potential effect of contaminated land run-off, leaching or groundwater on adjacent surface water features and underlying groundwater body within the Kempton Park Gravels.	Yes	The applicant site is situated within a hydraulically and hydrogeologically sensitive area and any effects to controlled waters need to be fully defined in order to determine associated risks in the context of current legislative and contaminated land regime. Results of the preliminary ground investigation indicate the presence of elevated ammonium and manganese as well as isolated nickel and TPH within perched water and elevated ammonium and manganese with the underlying groundwater body. Further investigation is required in order to fully assess the underlying groundwater regime and pontifical interactions with the adjacent surface water bodies. Potential for encountering previously unidentified areas of impacted water due to access restrictions imposed by the occupied and operation status of the site during the preliminary site investigation.
Presence of ground conditions that may need significant engineering works in order to support the proposed development	Yes	The preliminary ground investigation was conducted in order to establish preliminary baseline ground conditions on-site. Further detailed investigation will be required following issuance of detailed design proposals. The presence of localised TPH impact could present a risk to future potable water supply lines. Piled foundations may result in preferential pathway to Principle aquifers at depth.

Table 12.2: Potential Ground Conditions and Contaminated Land Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Presence and disturbance of remnant shallow contaminated soils which have the potential to affect human health	Yes	Areas of soft landscaping are proposed as part of the future development. The occurrence of elevated contaminant concentrations within the Shallow Made Ground will require future mitigation measures to be incorporated into the final design scheme.

Potential Impact	To be Assessed in the EIA	Reason
Potential for ground gas and vapour accumulation within confined spaces	Yes	Confinement or areas of reduced ventilation are anticipated within the proposed development footprint. Results of the preliminary ground investigation indicate the presence of elevated Carbon Dioxide. Whilst existing flow data suggests a CS1 Type scenario, the potential for accumulation of elevated hazardous ground gases cannot be ruled out entirely given that previously unexplored areas of the site remain.
Potential effect of contaminated land run-off, leaching or groundwater on adjacent surface water features and underlying groundwater body within the Kempton Park Gravels.	Yes	The proposed development will alter the current hydrological and hydrogeological site setting. For example the removal of existing hardstanding and the introduction of areas of soft-landscaping may increase the site infiltration capacity and in doing so the site leachate potential. The applicant site is situated within a hydraulically and hydro geologically sensitive area. Results of the preliminary ground investigation elevated contaminants of concern. Further investigation is required in order to fully assess the underlying groundwater regime and potential interactions with the adjacent surface water bodies.
Remnant shallow contaminated soils as a growing medium for future flora and fauna	Yes	Areas of soft landscaping are proposed as part of the future development. The occurrence of elevated contaminant concentrations within the Shallow Made Ground will require future mitigation.
Presence of ground conditions that may need significant engineering works in order to support the proposed development	Yes	Proposed foundations and utility corridors including potable water supply lines maybe vulnerable to aggressive ground conditions. The preliminary ground investigation was conducted in order to establish preliminary baseline ground conditions on-site. Further detailed investigation will be required following issuance of detailed design proposals.

12.5 Methodology for Impact Assessment

12.5.1 Current guidance on contaminated land assessment advocates the use of a Conceptual Site Model in order to establish the pollutant linkages between a potentially hazardous source and a sensitive receptor via an exposure pathway (DEFRA and Environment Agency, 2004). This approach results in a risk only in the event that a source-pathway-receptor linkages is present.

12.5.2 The proposed EIA methodology comprises:

- Revision and updating of the current desk-based risk assessment in accordance with the provisions of CLR 11 - Model procedures for the management of land contamination. This will comprise revision of existing desk based information using historical sources, maps and aerial photographs, along with geological

maps and memoirs. This will be re-enforced with a site walkover to document the changes that have occurred since the last site investigation;

- Revision of the existing Conceptual Site Model utilising any new data identified above;
- Define potentially significant effects. The mechanism for identifying the magnitude and significance of effects will be identified;
- Development of outline mitigation measures to minimise any significant effects; This will include an assessment of risks to human health, the environment (controlled waters) and property. The mitigation identified will include both design based mitigation (i.e. development of the proposed design to avoid or minimise risks, along with mitigation by management (e.g. use of a CEMP during construction); and
- Reporting of residual effects post implementation of mitigation measures.

12.6 Climate Change

12.6.1 It is recognised that EIA has a key role to play in assisting in the UK's efforts to minimise greenhouse gas emissions and adapt to our changing climate. In response to the 2014 amendment to the EIA Directive, we are addressing climate change impacts wherever feasible. It is not anticipated that there will be any direct measurable changes or impacts in terms of ground conditions and contaminated land as a result of the changing climate, however, and as such reference to climate change has been scoped out of this assessment.

13 ARCHAEOLOGY

13.1 Introduction

13.1.1 This section of the scoping report identifies potential impacts of the proposed development on archaeology and outlines how these will be addressed in the ES.

13.2 Baseline

13.2.1 In order to assess the archaeological potential within the application site, an examination of all archaeological entries in the Greater London Historic Environment Record (GLHER) has been made within the study area, i.e. within a 1 km radius of the application site. This information has been supplemented by other archaeological, documentary and cartographic sources.

13.2.2 A site walkover survey was undertaken on 3 June 2014, with a further site visit taking place on 28 August 2014.

13.2.3 An archaeological desk-based assessment (DBA) has been produced which comprises a review of data drawn from the following main sources:

- The Greater London Historic Environment Record (GLHER);
- British Geological Survey Mapping;
- Cartographic sources held by Bruce Castle Museum, Haringey;
- Secondary sources;
- Site visits;
- Archaeological monitoring of geo-environmental site investigations; and,
- Consultation with Greater London Archaeology Advisory Service, which provides archaeological advice to the London Borough of Haringey.

13.2.4 The application site lies within the Lee Valley Archaeological Priority Area (APA) where alluvial floodplains and resources have been exploited since the earliest times. Few archaeological investigations have been undertaken within the immediate area of the site and none within the application site itself. An archaeological evaluation undertaken at Broad Lane c. 530 m west of the application site did not identify any significant archaeological features or horizons. The evaluation comprised three trenches and encountered only natural brickearth overlain by modern overburden.

13.2.5 The GLHER records evidence for prehistoric activity in the application site environs, mainly in the form of artefacts found during construction works since the later 19th century. Some evidence for prehistoric occupation was also found during reservoir construction in the 1860s. This comprised a series of timber piles found preserved in silts and interpreted as a crannog (dwelling constructed on an artificial island made of timber and/or stone) of Bronze Age or Iron Age date.

13.2.6 There is also evidence for human use of the landscape during the Roman period. The Lee is thought to have been used as navigation route during this period, and perhaps earlier. In addition, Tottenham High Road is thought to follow the course of the Ermine Street Rioman road. The GLHER also records the recovery of some Roman pottery during reservoir construction in the 1860s.

13.2.7 A small number of entries dating to the Early Medieval to late medieval periods are highlighted on the GLHER. These indicate occupation in the application site environs from the earlier medieval period onwards, with a mill being present to the east from at least 1254 and the settlement of *Hale*, later Tottenham Hale, lying c.500 m to the west.

13.2.8 From the earlier post-medieval period, the application site environs began to feel the influence of London's growth. For example, by the end of the 16th century a number of large houses in the area were leased to Londoners as country retreats, and Tottenham Hale began to grow into a village. During this time, the site and its immediate environs, due to their marshy nature, appear to have lain away from the main areas of settlement development.

13.2.9 Canalisation of the Lee adjacent to the application site in the 18th and 19th century, the coming of the railway in the 1840s and the growth of London hastened development of the area and, by the early 20th century, the application site had become subsumed into the city's built-up area with housing, factories and reservoirs in close proximity. A wharf had been established at the application site by this time and the mill to its immediate east had become disused.

13.2.10 Evidence for activity over the 20th century comes primarily from mapping and documentary sources. The GLHER does, however, record some Second World War activity, in the form of trench shelters which formerly stood by Ferry Lane, c180 m west of the application site. These comprised a complex of tunnels constructed from pre-cast concrete and were for the use of the factory workers, which at this time produced munitions, canoes and aircraft.

13.3 Receptors

13.3.1 Based on the results of initial desk-based research, the following potential archaeological receptors have been identified which may be affected by the proposed development:

- Buried archaeological remains associated with prehistoric occupation;
- Buried archaeological remains associated with prehistoric and later wetland and river exploitation, such as trackways, jetties, fishtraps and boats;
- Structural remains of medieval/post-medieval river management and associated industry, such as waterfronts, watermills and weirs; and
- Late 19th-century/early 20th-century industrial archaeological remains.

13.4 Scoping of Impacts

13.4.1 The potential impacts of the proposed development during its construction and operation are displayed in Table 13.1 and

13.4.2 Table 13.2, respectively.

Table 13.1: Potential Archaeological Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Impacts on any buried archaeological remains within the application site.	Yes	The application site has the potential to contain buried remains of prehistoric to post-medieval date. These are likely to be removed or damaged by groundworks for the construction of foundations and the installation of services, as well as by any intrusive temporary works. If basements are incorporated into the proposed development, the potentially extensive impacts of these will need to be assessed.

Potential Impact	To be Assessed in the EIA	Reason
Impacts associated with change in the setting of designated heritage assets in proximity to the application site.	Yes (assessed in Scoping Report Chapter 8)	This potential impact will be addressed within the Townscape, Heritage and Visual Impact chapter of the ES.

Table 13.2: Potential Archaeological Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Impact on any buried archaeological remains within the application site.	No	Impacts will be confined to the construction period.
Impacts associated with change in the setting of designated and undesignated heritage assets in proximity to the application site.	No	This potential impact will be addressed within the Townscape, Heritage and Visual Impact chapter of the ES.

13.5 Methodology for Impact Assessment

13.5.1 The following tasks have been, or are being, undertaken to assess the presence or absence of heritage assets within the application site and the potential impact of the proposed development upon them:

- Review of heritage data and other relevant information including historic environment databases including the GLHER;
- Analysis of historic maps and aerial photographs;
- Site walkover;
- Review of results from monitoring of geo-environmental site investigations; and
- Consultation with Greater London Archaeology Advisory Service, which provides archaeological advice to the LBH.

13.5.2 The assessment for the proposed development will be undertaken using baseline information derived from the above sources and would be carried out in line with the following guidance:

- Chartered Institute for Archaeologists *Code of Conduct* (34);
- Chartered Institute for Archaeologists *Standard and Guidance for historic environment desk-based assessment* (35);
- Planning Practice Guidance (36); and
- Conservation Principles, Policies and Guidance (37).

13.6 Climate Change

13.6.1 It is not anticipated that there will be any direct measurable changes or impacts in terms of archaeology as a result of the changing climate. Whilst the proposed redevelopment of the site may uncover materials of interest, these will either be preserved in situ or by record. Changes to the hydrology of the application site due

to climate changes are unlikely, post construction, to affect archaeological features. As such, reference to climate change has been scoped out of this assessment.

14 SURFACE WATER AND FLOOD RISK

14.1 Introduction

14.1.1 This chapter considers potential effects on surface waters and flood risk that may arise as a result of the proposed development and outlines how these will be assessed in the ES.

14.1.2 In parallel to the ES, a Flood Risk Assessment (FRA) is being prepared which will assess the flood risk to and from the application site in accordance with the requirements of the NPPF. The ES will refer to the results of the FRA.

14.1.3 Risk of groundwater contamination due to migration and leaching associated with contaminated land is considered in Chapter 12 along with potential effects associated with ground conditions. This chapter, therefore, focuses on those sources of pollution that may arise as a direct result of the construction and operational phases of the proposed development.

14.2 Baseline

Topography and Catchments

14.2.1 The existing application site topography and flood levels are shown at Appendix 6.

14.2.2 The topographical survey shows ground levels on the application site to be relatively flat, varying from between approximately 8.79 m AOD to 10.08 m AOD.

Surface Water Features

14.2.3 There are no watercourses on the application site itself; however there are a number of watercourses in close vicinity to the site.

14.2.4 The application site is bound by the controlled waters of the River Lee Navigation Channel to the west and the historic River Lee Flood Relief Channel to the east, which form part of the Blue Ribbon network under the London Plan. It is understood that the River Lee Navigation is classified as a main river and therefore is managed by the EA. The River Lee Flood Relief Channel merges with the River Lee Navigation below Ferry Lane to the south of the site. Both waterways are canalised in concrete channels as they border the application site. The River Lee flows south from the application site, discharging into the River Thames via the Limehouse cut and Limehouse Basin, approximately 8.5 km from the application site.

14.2.5 To the west of the application site, Pymmes Brook is shown on OS maps as a small watercourse. It is bordered by a road and housing estates in the west and by the River Lee Navigation to the east and discharges into the River Lee Navigation approximately 65 metres south of the application site.

14.2.6 In addition, Coppermill stream is shown on OS maps as located approximately 200 m east of the application site and discharges into the River Lee 1.8 km south of the site. The ecological quality of the River Lee is currently classified as "Moderate Potential" and the chemical quality as "Fail" under the Thames River Basin Management Plan which has been prepared in response to the Water Framework Directive. The Plan doesn't divulge specific reasons for chemical failure.

14.2.7 The Ramsar designated Walthamstow Reservoirs are situated in close proximity to the application site, with the closest, Lockwood Reservoir located approximately 55 m to the northeast.

Flooding

14.2.8 The Environment Agency (EA) indicative flood maps indicate that the application site to be located within the defended Flood Zone 2, defined as having between a 1 in 100 year and 1 in 1000 year annual probability of major fluvial flooding. However, detailed EA flood data for the application site for the adjacent River Lee at various storm return periods show that the 1 in 1000 year maximum flood levels including climate change are lower than the ground levels on site. The application site is therefore considered to be in Flood Zone 1, at low probability of tidal/fluvial flooding.

14.2.9 EA indicative flood maps show that the majority of the application site is at very low risk of surface water flooding; however there are localised areas in the north of the site at medium and low risk of surface water flooding on the hard-landscaped areas of the site. Existing buildings are not shown to be at risk of surface water flooding. Therefore it is considered that the site is a low risk of surface water flooding.

14.2.10 Data on the EA website, show the lower reaches of the River Lee are at risk of fluvial flooding (Flood Zone 2 and 3), however this is downstream of the development, and is not expected to affect the application site.

14.2.11 The application site is located downstream of the Walthamstow reservoirs, and is therefore shown to be at residual risk of reservoir flooding. This is only a residual risk as it is a legislative requirement for reservoirs to be actively monitored. Therefore a chance of failure of the reservoir is considered to be low.

Geology and Hydrogeology

14.2.12 On the basis of the British Geological Survey (BGS) map (Sheet 256), historical BGS, and ground investigation works by Ramboll (2014), the expected geological sequence across the application site is Concrete overlying Made Ground, Alluvium, River Terrace Deposits, London Clay and the Lambeth Group proven to 35.50mbgl.

14.2.13 The superficial deposits of the Alluvium and River Terrace Deposits are classified as Secondary A Aquifers (i.e. capable of supplying local water needs and supplying base flow to rivers). While the London Clay is classified as Unproductive Strata (i.e. of negligible significance to water supply due to low permeability), the Lambeth Group is also a Secondary Aquifer and Thanet Sands and Upper Chalk are both Principal Aquifers (i.e. of high permeability).

14.2.14 The application site also lies within a Groundwater Source Protection Zone (outer Zone 2) and is designated as a Nitrate Vulnerable Zone. The nearest potable groundwater abstraction licence lies over 600 m to the southeast of the application site.

14.2.15 Given that the application site is bound by the River Lee Navigation Channel and Flood Relief Channel to the west and east respectively, it is assumed the groundwater level will be in hydraulic continuity with the channels and therefore, is anticipated to be high across the site.

14.2.16 A summary of the anticipated ground conditions based on the findings of a site investigation can be viewed in Table 14.1, below. The succession of strata across the site identified as part of the ground investigation typically comprised Made Ground, Alluvium, River Terrace Deposits, London Clay and at a depth the Lambeth Group.

Table 14.1: Summary of Ground Conditions

Stratum	Top Range Depth (mOD)	Thickness Range	Description of Stratum
Concrete	8.79 to 10.06	0.15 to 0.3	Flint gravel based concrete.
Made Ground	8.82 – 9.94	0.25 to 3.7	Large variations in material content were encountered site wide however the Made Ground typically contained gravelly clays, and clayey sandy gravels. Gravel consisting of fine to coarse, rounded to angular concrete, brick, flint, clinker, limestone, ceramics, with inclusions of ash, glass, metal, tile and woody fragments. Brick and concrete cobbles were also encountered.
Alluvium	6.22 to 8.6	0.65 to 2.95	Soft dark greenish grey mottled black clay, with dark brown fibrous material in areas.
River Terrace Deposits	5.56 to 6.68	1.55 to 3.70	Grey to orangish brown sandy gravels and gravelly sands. Gravel comprising fine to coarse sub-angular to sub-rounded flint.
London Clay	2.53 to 4.26	20.0 to 26.45	Stiff to firm brownish grey CLAY with lenses of grey fine sand and rare traces of white foraminifera.
Lambeth Group	-17.11 to 22.73	Proven to 35.50mbgl	Dense mottled bluish grey silty fine SAND with areas of black decomposed organic material.

Sewerage Infrastructure

14.2.17 It is understood that the existing drainage system on site consists a series of septic tanks and surface water is discharged into the River Lee, which lies adjacent to the application site. It is understood that there are no existing combined or foul water adopted sewers in the vicinity of the development.

14.2.18 Consultation with Thames Water is ongoing to ascertain the available capabilities in foul water sewers to the west of the site along Mill Mead Road and the potential locations for the discharge of surface water into the River, along with agreed discharge rates.

14.3 Receptors

14.3.1 Potential receptors have been identified as follows:

- The River Lee (including the River Lee Navigation (Lower) and the River Lee New Cut);
- Pymme's Brook;
- Walthamstow Reservoirs;
- Coppermill Stream;
- The Paddock Nature Reserve;
- Construction Workers during earthworks/remediation of the site;

- Future occupants of the application site;
- Existing water supply; and
- Public Sewers.

14.4 Scoping of Impacts

14.4.1 The scoping of impacts is based on existing data, site investigations and consultations carried out with the EA and LBH in 2014, the EA website and the current concept proposals for the application site.

14.4.2 The proposed development will reduce the impermeable area within the site, however the NPPF identifies that rainfall intensities will increase in the future as a result of the predicted effects of climate change, resulting in an increase in surface water runoff. Therefore, this will need to be taken into consideration when designing the drainage system for the site.

14.4.3 It is anticipated that surface water runoff will continue to be discharged to the River Lee, following consultation with EA and LBH.

14.4.4 Furthermore, water quality will be taken into account in the drainage design, including appropriate pollution control measures for both on-site and off-site discharge. Attenuation requirements and pre-treatment of surface water will be considered prior to discharge to ensure that the runoff from the site does not have detrimental impacts on the River Lee.

14.4.5 Overall, off-site flows are expected to reduce compared to the existing situation and it is expected that there will be betterment in water quality compared to the existing situation.

14.4.6 Following consultation with the EA, it has been agreed that a Water Framework Directive Assessment will be undertaken for the site to ascertain if the proposed development will have any detrimental effects on the status of the adjacent water bodies. This assessment falls outside of the EIA and will be carried out under the The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003.

14.4.7 Potential impacts during the construction phase of the works are included in Table 14.2 below. These are mainly associated with impacts to water quality at receptors adjacent to the site (River Lee Navigation Channel and River Lee Flood Relief Channel) and changes to the hydrological regime at the local level.

Table 14.2: Potential Water Environment Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Water quality impacts on River Lee catchment as a result of construction activities	Yes	There is a risk of water quality impacts from silt run off and pollution as a result of construction activities including excavations, silt runoff, spill and leaks. This will need to be assessed within the EIA.
Water quality impacts downstream on Coppermill stream and the Walthamstow Reservoirs as a result of construction activities	No	There is a risk of water quality impacts from silt run off and pollution as a result of construction activities including excavations, silt runoff, spill and leaks. However, there is no hydrological connection between the site and the reservoirs; therefore this will not be considered in the EIA.
Water quality impacts on Pymmes Brook as a result of construction activities	No	There is a risk of water quality impacts from silt run off and pollution as a result of construction activities including excavations, silt runoff, spill and leaks. However, there is no hydrological connection between the site and the reservoirs; therefore this will not be considered in the EIA.
Water quality impacts on The Paddock Nature Reserve	No	There is a risk of water quality impacts from silt runoff and pollution as a result of construction activities. However, there is no hydrological connection between the site and the reservoirs, therefore this will not be considered in the EIA.
Changes to the hydrological regime at local level – potential impact to River Lee water quality and quantity	Yes	The proposed development will result in reduction in the surface area draining to the River Lee following completion of earthworks during construction. However, temporary measures may be required to restrict peak flows to current rates throughout the construction period. This has the potential to alter the quantity and quality of water in the River Lee including base flows, sediment loading, aquatic ecology, chemistry and hydromorphological processes. This will need to be assessed in the EIA.
Changes to the hydrological regime at a local level – impact on flood risk to The Paddock Nature Reserve	No	The proposed development will result in an overall decrease in surface area draining to the River Lee catchment following the completion of earthworks during construction which could impact upon flood risk at The Paddock Nature Reserve. However, there is no hydrological connection between the site and the reservoirs, therefore this will not be considered in the EIA.

Potential Impact	To be Assessed in the EIA	Reason
Changes to the hydrological regime at a local level – impact on flood risk to the Walthamstow Reservoirs	No	The proposed development will result in an overall decrease in surface area draining to the River Lee catchment following the completion of earthworks during construction which could impact upon downstream receptors. However, there is no hydrological connection between the site and the reservoirs; therefore this will not be considered in the EIA.
Existing flood risk on site	No (reported only)	The application is at low risk of fluvial flooding and the surface water flood risk at the application site is limited to a localised area to the north of the site. Hence, it is considered that flooding at the application site during the construction period is unlikely to occur. However, flood risk will be assessed in detail as part of the FRA for the proposed development and dealt with accordingly in the drainage design. A summary of the findings of the FRA will be included in the Water Environment Chapter.
Earthworks on site – potential impact on the health of the construction workers	Yes (assessed in Scoping Report Chapter 12)	There is a risk of human health impacts from pollution as a result of construction activities including excavations, spills and leaks. This will be assessed in more detail as part of Chapter 12, Ground Conditions and Contamination.
Changes to existing drainage on site – potential impacts on the public sewer capacity	Yes	The proposed development includes the installation of a foul water connection to public sewers adjacent to the site. There is a risk of blockage or surcharge in site drainage during the construction phase. This will need to be assessed in the EIA.

14.4.8 Potential impacts during the operational phase of the proposed development (refer to Table 14.3) are mainly associated with permanent changes to the hydrological regime at the application site and downstream, and the changes in impermeable area at the application site as a result of the proposed development.

14.4.9 There is also the potential for water quality impacts to downstream receptors but these are likely to be less significant due to standard pollution control measures (e.g. petrol interceptors and the treatment train approach) used in modern surface water drainage design.

14.4.10 The NPPF identifies that rainfall intensities will increase in the future as a result of the predicted effects of climate change, resulting in an increase in surface water runoff. Therefore, this will be accounted for when designing the new drainage system taking into account the lifetime of the proposed development.

Table 14.3: Potential Water Environment Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Water quality impacts on River Lee catchment	Yes	The proposed development will result in a reduction in the surface area draining into the River Lee catchment. It is anticipated that the quality of the water draining into the River Lee catchment will be a betterment compared to the existing situation. However, there is a risk of water quality impacts from diffuse pollution (e.g. from car parks) entering the surface water drainage. The project will include SuDs to reduce this impact but this will need to be assessed within the EIA to ensure that a sufficient level of water treatment can be provided.
Water quality impacts downstream on Coppermill stream and the Walthamstow Reservoirs	No	The proposed development will result in an overall decrease in surface area draining to the River Lee catchment. In addition, site surface water drainage is to be directed to the west of the proposed development, into the River Lee Navigation. As there is no downstream hydrological connection between the site and the reservoirs, this will not be considered in the EIA.
Water quality impacts on Pymmes Brook	No	Site surface water drainage is to be directed to the west of the proposed development, into the River Lee Navigation. As there is no downstream hydrological connection between the site and Pymmes Brook, this will not be considered in the EIA.
Changes to the hydrological regime at local level – potential impact to River Lee water quality and quantity	Yes	It is anticipated that the proposed development will result in an overall decrease in surface area draining to the River Lee catchment. This has potential to alter the quantity and quality of the water in the River Lee including base flows, sediment loading, aquatic ecology, chemistry and hydromorphological processes. This will therefore need be assessed in the EIA.
Changes to the hydrological regime at a local level – potential impacts to The Paddock Nature Reserve	No	Site surface water drainage is to be directed to the west of the proposed development, into the River Lee Navigation. As there is no hydrological connection between the site and The Paddock Nature Reserve, this will not be considered in the EIA.
Changes to the hydrological regime at a local level – potential impacts to the Walthamstow Reservoirs	No	Site surface water drainage is to be directed to the west of the proposed development, into the River Lee Navigation. As there is no downstream hydrological connection between the site and the reservoirs, this will not be considered in the EIA.
Existing flood risk on site	No	The surface water flood risk at the application site is limited to a localised area to the north of the site. Hence, it is considered that flooding at the application site during the operation period, is unlikely to occur.

		Furthermore, all impacts relating to flood risk will be assessed as part of the FRA for the proposed development.
Changes to existing drainage on site – potential impacts on the public sewer capacity	Yes	It is anticipated that the proposed development will require connection to the public sewers to west of the site. This will be dealt with accordingly in the detailed drainage design and will need to be assessed in the EIA.
Water quality impacts on the River Lee - Future Occupants of the application site	Yes	There is a risk of water quality impacts from diffuse pollution entering surface water drainage. This could pose a risk to human receptors. This will need to be considered in the EIA.
Changes to portable water supply in the local area	Yes	The proposed development will require connection to Thames Water portable supply and may impact upon the water availability in the local area. This will need to be considered in the EIA.
Effects due to climate change	Yes	The potential for climate change to affect surface water features adjacent to the site, and to affect flooding will be taken into account in the design of the proposed development. The ES will note these features.

14.5 Methodology for Impact Assessment

14.5.1 A FRA is to be undertaken in accordance with the requirements of the NPPF in order to assess the risk of flooding to and as a result of the proposed development. The results of the FRA will be used to refine the design of the proposed development, in particular the drainage design. Therefore, it is considered that the assessment of flood risk does not need to be duplicated within the EIA. However, a summary of the key conclusions from the FRA will be provided and the FRA will be used to inform the impact assessment for the water environment.

14.5.2 An analysis of the impacts on the hydrological regime at the application site will be undertaken, including an assessment of the potential for the proposed development to impact upon the watershed and catchments at the application site. This will include a calculation of the anticipated impacts on surface and groundwater flows for each catchment to determine whether water volumes reaching a receptor would reduce or increase. Surface water runoff analysis will be undertaken using the Wallingford Procedure and Modified Rational Method within Microdrainage WinDes software.

14.5.3 The potential impacts to water quality as a result of the proposed development will be assessed using a source-pathway-receptor approach. It is anticipated that the design for the proposed development will incorporate SuDS to provide treatment to prevent pollution of downstream receptors, and that the proposed petrol station will incorporate standard emergency features and procedures (e.g. in the event of a spillage) to prevent serious pollution events. The EIA will identify where further mitigation is required to reduce the potential impacts to water quality.

14.5.4 Ecological receptors will be identified with regard to hydrological effects and the assessment of impacts on water environment will also be carried out in close collaboration with the assessment of ecological impacts, so that all impacts can be fully assessed and opportunities for combined mitigation identified (i.e. mitigation that benefits both the ecological and hydrological environment).

14.5.5 The potential for climate change to affect operations on the site from surface water will be identified, and suitable design mitigation will be incorporated. This will be identified and assessed in the chapter.

14.5.6 If required, a further site visit will be scheduled in order to provide more detailed baseline information on the watercourses on and adjacent to the application site.

14.5.7 At present, discussions are ongoing with EA and LBH regarding the layout and drainage design for the proposed development. Additional stakeholders including, but not limited to, the EA and LBH, will be consulted if required.

14.6 Climate Change

14.6.1 The NPPF identifies that rainfall intensities will increase in the future as a result of the predicted effects of climate change, resulting in an increase in surface water runoff. Therefore, this will be accounted for when designing the new drainage system taking into account the lifetime of the proposed development. The potential for climate change to affect surface water features adjacent to the site, and affect flooding will be taken into account in the design. The ES will note these features.

15 SOCIO-ECONOMICS

15.1 Introduction

15.1.1 The ES will consider the potential effects on socio-economics that may arise as a result of the proposed development and this chapter outlines how these will be assessed in the ES.

15.1.2 The likely effects generated from the proposed development will be examined, accompanied by an assessment of their relative significance. The socio-economic assessment will examine characteristics of the existing population and the provision and capacity of existing services and facilities. The assessment will also address the direct and indirect employment opportunities, generated as a result of the proposed development during its construction and operational phases.

15.2 Baseline

15.2.1 The following section provides an overview of the demography, economy, employment, local service provision, crime and open space provision within the study area. For the purposes of the baseline, the study area will cover information at a local level and also at a Borough level. The application site is located within the Lower Super Output Area (LSOA) Haringey 015C (the local area), which itself is located within the London Borough of Haringey (the Borough). Both are located within the London region.

Population

15.2.2 The LSOA has a population of 2,194 and the Borough has a population of 254,926, both with an above average population density. Of the LSOA and Borough populations, they are 20.1% and 34.7% White British/ English/ Welsh/ Scottish/ Northern Irish respectively with regard to ethnicity (38).

Employment and Economy

15.2.3 Within the LSOA, the economically active population (16-74 years) comprises 1,657 persons, of which 55.1% are in employment within the LSOA, compared to a higher proportion of 61.6% in employment within the Borough. Both the LSOA's and Borough's employment rates are below the national average (39).

Housing

15.2.4 House prices in the Borough are nearly three times higher than the average for England and Wales at £525,618, compared to £186,350 (40). Within the LSOA, there are a higher proportion of rented properties at 69% than the national average of 35% (41), which suggests lower owner occupation rates. Given that the house prices in the Borough are considerably higher than the average for England, the lack of owner occupation suggests that there are further barriers such as low incomes and a lack of available housing stock that are preventing home ownership.

15.2.5 The Haringey Council Borough Investment Plan (42) identifies that housing investment is critical to tacking Haringey's problems of deprivation in certain areas of the Borough. It confirms that affordability is an issue across the Borough, especially in the east, as the gap between average incomes and average house prices widens. It identifies that the growing population presents a continued requirement for growth in accessible and affordable housing. It states that improving the quality and quantum of housing available in all tenures, especially affordable housing, is central to the transformation of the Borough's neighbourhoods.

Health

15.2.6 The LSOA has a lower than average proportion of the population who consider themselves to have 'very good health', although a higher average of those who consider to have 'good health'. At the Borough level, there is a higher than average proportion of the population who consider themselves to have 'very good health', however it has a slightly lower proportion than average of those who consider themselves to have 'good health' (43).

Education

15.2.7 The proportion of the population with no qualifications within the LSOA is above the national average at 23.1% and the Borough is below the national average at 17.8%, compared to an average of 22.5%. Within both the LSOA and the Borough a higher proportion of the population have obtained a Level 4 qualification (degree level or equivalent) at 28% and 40.8% respectively, compared to the national average of 27.4% (44).

Crime

15.2.8 In the year 2014/2015, the Borough has a higher than average crime rate compared to other areas within the Metropolitan Police Service. The number of police recorded crimes in 2014/2015 amounted to approximately 9 per 1,000 population. In comparison, the average for the Metropolitan Police Service amounted to approximately 8 per 1,000 population. Since 2012/2013, the crime rate has decreased overall; however the crime count for 2014/2015 is higher than for 2013/2014 (45).

Open Spaces

15.2.9 The application site is within the Lee Valley Regional Park area. This area also contains the Paddock Community Nature Park which is to the east of the application site. In addition, as the application site is surrounded by the controlled waters of the River Lee Navigation to the west and the River Lee Flood Relief Channel to the east, it creates blue space which increases the leisure space in the area (46).

Local Facilities Provision

GPs

15.2.10 There are 11 GP surgeries within a one mile radius of the application site, and a further 47 GP surgeries within a two mile radius of the application site. These are all currently accepting new patients (47).

Schools

15.2.11 There are 17 primary schools located within a one mile radius of the application site. In addition, there are 22 secondary schools within a two mile radius of the application site (48).

15.3 Receptors

15.3.1 The following sensitive receptors have been identified:

- The existing local community (including residents of mooring boats);
- The future population of the proposed development; and
- Local facilities including GP surgeries and schools.

15.4 Scoping of Impacts

15.4.1 Table 15.1 and Table 15.2 present a summary of the scoping process. They identify which likely environmental effects, with respect to socio-economics, will be assessed in the EIA (i.e. considered potentially significant and therefore scoped in) and those which will not be assessed further (i.e. scoped out).

Table 15.1: Potential Socio-economics Impacts – Construction

Potential Impact	To be Assessed in the EIA	Reason
Generation of employment opportunities on the application site	Yes	There will be an increase in temporary construction employment, which may include employment opportunities for the local spend.
Increased risk of crime and fear of crime	Yes	The introduction of a construction site may temporarily create the potential for the incidence of crime and fear of crime.
Disruption to residents of mooring boats	Yes	The introduction of a construction site may temporarily disrupt the residents of the mooring boats.

Table 15.2: Potential Socio-economics Impacts – Operation

Potential Impact	To be Assessed in the EIA	Reason
Loss of employment opportunities on the application site	Yes	There will be the generation of operational employment from the ancillary retail which will serve the proposed development and may include employment opportunities for the local community, however there will be a significant reduction in employment due to the replacement of the commercial premises for residential properties.
Increased local spend	Yes	Even though there will be a decrease in the number of workers in the area, the introduction of a new residential community may result in an uplift in terms of spend in the local area.
Increase in housing units	Yes	There will be an increase in housing provision, comprising a mix of tenures some of which will be affordable, including discounted open market housing and rented units.
Pressure on healthcare facilities	Yes	There will be an increase in the local population as a result of the proposed development. Dependent on the capacity of existing local primary healthcare facilities this could result in an adverse effect on the level of service provision both to the existing local community and the proposed development's population.

Potential Impact	To be Assessed in the EIA	Reason
Pressure on education facilities	Yes	Child yield will be generated as a result of the proposed development, which will increase demand on local education facilities. There is the potential that there may not be sufficient existing capacity to accommodate this increased demand.
Increased risk of crime and fear of crime	Yes	The introduction of a residential community in an area as potential targets may create the potential for the incidence of crime, however the proposed development also offers opportunities to improve the existing environment with regard to its potential for fear of crime.
Increased demand for open space and play space	Yes	The introduction of a residential community in an area may create a greater need for open space and play space.

15.5 Methodology for Impact Assessment

15.5.1 The baseline conditions for the application site will be established with reference to the following sources:

- A policy review to provide an outline of the relevant local and regional, social and economic policies and objectives for the area;
- A desk-top review of current social and economic conditions prevalent in the local area in comparison with regional and national trends, using Geographic Information Systems (GIS) and information available from the project team, the local authority, and published database records, such as the Office of National Statistics and NOMIS. This information will be used to establish the base case, including the:
  - Economic baseline: A review of workforce, economic activity, earnings, industries of occupation and occupational classification; and
  - Social baseline: A review of the demographic in the area, indices of deprivation, housing demand and supply, capacity of local facilities including GP surgeries and schools, crime rates and fear of crime, and open space provision.
- Liaison and dialogue with the local authority and other stakeholders for information regarding the economic, employment, and local facility aspirations for the local area, as appropriate.

15.5.2 The likely effects generated from the proposed development will be examined, accompanied by an assessment of their relative significance. In particular, the assessment will address the demand and supply of housing, the direct and indirect employment opportunities generated during the construction and operational phases, the capacity of local facilities, and the likely impacts upon the potential for crime and fear of crime within the local area.

15.5.3 The socio-economic analysis will include assessment of how the proposed development will impact in particular on:

- The demand for and supply of housing including the required types and tenures;

- The quantum of construction work and its anticipated direct and indirect employment generation;
- The quantum of operational direct and an indirect employment opportunities generated;
- The capacity of local GP surgeries to serve the proposed development's forecast population;
- The capacity of local schools to accommodate the anticipated child yield;
- The capacity of open space and play space to serve the proposed development's forecast population; and
- Potential effects on crime and fear of crime.

Construction Phase

15.5.4 The assessment of the construction phase will calculate the quantum of construction employment generated and assess the propensity for the current local and Borough construction work-force to meet the demand.

15.5.5 No specific comprehensive, quantitative socio-economic assessment methodology exists, and as such a quantitative analysis of employment effects will be undertaken using established methodologies, including the Additionality Guide by English Partnerships (49).

15.5.6 The Additionality Guide sets out an approach to measuring the extent to which a proposed development (and associated outputs, outcomes and impacts) is larger in scale, at a higher quality, takes place quicker, takes place at a different location, or takes place at all as a result of intervention. Additionality measures the net result, taking account of deadweight, leakage, displacement, substitution and economic multipliers.

Operational Phase

15.5.7 For the operational phase, the following assessments will be undertaken:

- Operational employment loss calculation and the operational employment generation calculation informed by the project team, the best practice methodologies set out in the OffPAT & HCA document Employment Densities Guide (50), and the composite multipliers (supply linkage and income) described in the Additionality Guide;
- A review of how the proposed new resident population will affect the local economy in terms of their likely expenditure;
- A review of the existing housing need, affordability and housing type requirements and the effect the proposed developments housing may have on the supply of housing and access to home ownership;
- Assessment of demography of the proposed new resident population and the potential effects on demand for primary healthcare facilities local primary and secondary schools as a result of the introduction of the potential residents of the proposed residential units, the assessment will also consider the accessibility of the local facilities; and
- A review of the potential crime and fear of crime reduction effects in accordance with best practice guidance.

15.5.8 The results of the socio-economic assessment will benchmark the overall project aims against a variety of additional socio-economic components, and how these meet established social and economic policy objectives at the national level.

15.5.9 A cumulative assessment will also be undertaken to understand the wider effects that may be brought forward in combination with other development schemes in the local area, with similar construction and operational timescales.

15.6 Climate Change

15.6.1 It is recognised that EIA has a key role to play in assisting in the UK's efforts to minimise greenhouse gas emissions and adapt to our changing climate. In response to the 2014 amendment to the EIA Directive, we are addressing climate change impacts wherever feasible. It is not anticipated that there will be any direct measurable changes or impacts in terms of socio-economics as a result of the changing climate, however, and as such reference to climate change has been scoped out of this assessment.

16 ENVIRONMENTAL TOPICS SCOPED OUT

16.1 Introduction

16.1.1 This chapter discusses topics, or specific elements of topics, that are not considered to have significant environmental effects and have been scoped out of further assessment as part of the EIA process. Justification for omission from the scope of the ES is given in each case.

16.1.2 The following topics have been scoped out:

- Waste management;
- Sustainability;
- Electronic interference; and
- River Navigation.

16.1.3 Justifications are provided in the sections below.

16.2 Waste Management

16.2.1 Waste management issues at the application site are mainly concerned with two issues:

- Enabling, demolition and construction works – materials management, especially for contaminated materials; and
- Operational – generation of municipal waste by future residents of the proposed development.

16.2.2 Issues concerned with waste management during demolition and construction will be largely covered within the Site Waste Management Plan (SWMP) for the proposed development. This will form part of the construction management for the site, and will be developed in association with the LBH.

16.2.3 In addition, the majority of materials on site, which have the potential to become waste during construction could be contaminated and will need appropriate handling. This will be considered within a Materials Management Plan which is to be produced by the contractor. A sustainable approach to waste management, using the waste hierarchy, will be adopted and the contractor will consider and use options for on-site re-use of materials.

16.2.4 The generation of municipal waste as part of the operation of the site will be managed by appropriate contracts with licensed waste management companies, who will collect and dispose of the waste according to LBH policies.

16.2.5 As set out above, all potential significant impacts associated with waste management are considered by other assessments which will support the planning application and therefore a specific waste management section within the ES is scoped out.

16.3 Sustainability

16.3.1 The promotion of the objectives of sustainable development is an integral part of the design development process and hence, of the proposed development. The principles of sustainable development are as follows:

- Conserve energy, materials, water and other resources;
- Ensure designs make the most of natural systems;
- Reduce the impacts of noise, pollution, and flooding;

- Ensure developments are comfortable and secure for users;
- Conserve and enhance the natural and human environment, particularly in relation to biodiversity and heritage;
- Promote sustainable waste behaviour in the proposed development; and
- Take into account possible mitigation and adaptation measures to climate change.

16.3.2 Sustainability is affected by many of the environmental issues. A stand-alone Sustainability Statement will be prepared and will accompany the planning application and the findings of how this has been taken into account during design development will be reported in the Consideration of Alternatives chapter of the ES.

16.4 Electronic Interference

16.4.1 It is considered that the assessment of effects on telecommunications can be scoped out of the EIA as the proposed development is considered unlikely to cause electronic interference. TV signals switched over to digital in 2012. Digital signals are less susceptible to interference so significant effects are not likely.

16.5 River Navigation

16.5.1 On the basis of the assessment boundary for the EIA which considers the location of the proposed Green Link Bridge, as part of the enabling works associated with the development, it is considered that a navigational assessment will be scoped out of the EIA. The soffit level of the bridge will be designed to enable the continued and safe navigable nature of narrow boats and barges, as per the existing use along the River Lee Navigation Channel.

17 CUMULATIVE SCHEMES

17.1 Introduction

17.1.1 Part I of Schedule 4 of the in EIA Regulations stipulates that an ES should consider the cumulative effects of a proposed development.

17.1.2 The ES will consider the potential for cumulative effects in two ways: inter-project effects (cumulative schemes) and intra-project effects.

17.2 Inter-Project Effects

17.2.1 Cumulative inter-project effects are those which arise as a result of a build-up of effects due to other committed developments in the area.

Consideration of Cumulative Schemes

17.2.2 Circular 02/99 (51) guidance states that when 'judging whether the effects of a development are likely to be significant, local planning authorities should always have regard to the possible cumulative effects within any existing or approved development.'

Green Link Bridge

17.2.3 Aimed at providing better connectivity for pedestrians to access the recreational areas to the east of the application site, a green link bridge is being proposed as part of a separate application, which will link Hale Village to the west with the eastern edge of the application site. The bridge also provides the connection to the Lee Valley Estate district heating system to the east which will provide the development with both heat and power. As such, the bridge is considered to be enabling development which the proposed development could not be operational without and so the bridge, whilst not forming part of this application, has been considered in terms of its effects in association with the proposed development and will be considered by each discipline as part of the cumulative inter-project effects and sits within the assessment boundary shown on Appendix 1.

TH9 Hale Wharf – Garage Site

17.2.4 The Draft Tottenham APP (4) defines the application site as part of three parcels of land within the TH9 Hale Wharf Designated Employment Area with Regeneration Area status. This allocation requires a co-ordinated approach to the redevelopment of the application site, the Garage Site to the east and the Lock Keepers Cottage to the west, at this stage two of the three land parcels are not currently being progressed for development. However, the Garage Site is owned by Newlon Housing Trust and discussions and initial design development has been undertaken between the applicant and Newlon Housing Trust such that sufficient information regarding a potential indicative scheme is understood.

17.2.5 For the Lock Keepers Cottage, whilst preliminary discussions have been undertaken with the site owners and dialogue will continue, no design is currently available for consideration beyond the parameters set out in the draft Tottenham AAP designation.

17.2.6 Consequently, within the EIA we will consider the proposed redevelopment of the Garage Site within the cumulative assessment of each chapter of the ES in greater detail including the use of a 3D model to inform microclimate assessments and townscape, heritage and visual assessment. However, the Lock Keepers Cottage site will be considered alongside the wider allocated identified under the draft Tottenham AAP.

Wider Cumulative Schemes

17.2.7 The following developments have been identified as potentially significant cumulative schemes which will be considered within the ES, please also refer to the locations set out at Appendix 7:

- TH2 Tottenham Hale Station;
- TH3 Tottenham Retail Park;
- TH4 Station Square West;
- TH5 Station Square North;
- TH6 Ashley Road South Employment Area;
- TH7 Ashley Road North;
- TH8 Hale Village Tower;
- TH9 Hale Wharf - Lock Keepers Cottage;
- TH10 Welbourne Centre;
- TH11 Fountayne Road
- TH12 Herbert Road
- TH13 Constable Crescent
- TG3 Tottenham Police Station
- 2014/0716/LA: Walthamstow Wetlands
- 2013/1004/OUT: Ferry Lane
- 2013/0554: Mandora Site

17.2.8 These reasonably foreseeable developments have been identified as being within a 1km radius of the application site using the following criteria:

- All relevant major developments (100 residential units or more and schemes proposing 10,000 sqm floorspace or more) identified by LBH that have been submitted as of 26th November 2015 or given planning permission but have not yet started construction within the last three years, and all those that are in the process of being built;
- Applications that do not fall under the definition of major developments (based on unit numbers or floor space) but are considered to have the potential to give rise to cumulative effects on the ecological designations adjacent to the application site (for example the SSSI) as a result of enabling activity such as improved access and increased visitor numbers; and
- Allocated sites identified under the draft Tottenham AAP (4).

17.3 Intra-Project Effects

17.3.1 Intra-project cumulative effects are those that arise as a result of interaction between the individual effects of the proposed development.

17.3.2 Assessment of intra-project effects will concentrate on circumstances when the interaction of individual effects of the proposed development combines to create an effect greater than the sum of the individual effects. Any significant intra-project effects will be reported in a separate Cumulative Effects chapter in the ES as it is necessary to understand what the residual effects are from each environmental topic prior to considering the impact interaction.

18 THE ENVIRONMENTAL STATEMENT

18.1.1 The ES will address the requirements of Parts I and II of Schedule 4 of the EIA Regulations. A preliminary structure and content of the ES is as follows:

- Non–Technical Summary;
- Volume 1: Main Text;
  - Chapter 1 Introduction – introduction to the proposed development and ES structure and preparation;
  - Chapter 2 Methodology – approach the EIA process and scope of the ES, scoping, details of consultation, overview of impact assessment methodology, outline of technical chapters, assumptions and limitations;
  - Chapter 3 Application Site and Proposed Development – description of the application site, surroundings, the proposed development and construction information;
  - Chapter 4 Alternatives and Design Evolution – a review of alternatives to the proposed development (location and design) and a summary of design interventions to eliminate or minimise potentially significant effects;
  - Chapter 5 Planning Policy Context;
  - Chapter 6 Transport;
  - Chapter 7 Air Quality;
  - Chapter 8 Noise and Vibration;
  - Chapter 9 Ecology;
  - Chapter 10 Townscape, Heritage and Visual;
  - Chapter 11 External Lighting;
  - Chapter 12 Daylight, Sunlight and Overshadowing;
  - Chapter 13 Wind Microclimate;
  - Chapter 14 Ground Conditions and Contamination;
  - Chapter 15 Archaeology;
  - Chapter 16 Surface Water and Flood Risk;
  - Chapter 17 Socio-economics;
  - Chapter 18 Cumulative Effects – an assessment of inter-project and intra-project cumulative effects;
  - Chapter 19 Residual Effects and Conclusion; and
  - Chapter 20 Abbreviations and Glossary;
- Volume 2: Figures;
- Volume 3: Technical Appendices.

18.1.2 In addition to and parallel to the ES, it is intended that a FRA, a Water Framework Directive Assessment, drainage strategy and Arboricultural Survey and Impact Assessment will be submitted within the suite of technical documents supporting the planning application.

18.1.3 Each of the technical chapters (6 to 18 above) will include the following sections:

- Introduction;
- Methodology;
- Baseline Conditions;
- Potential Effects;
- Mitigation and Enhancement Measures;
- Residual Effects;
- Cumulative Effects; and
- Summary and Conclusion.

19 CONCLUSIONS

19.1.1 The following technical disciplines will be assessed in the subsequent EIA and included as specific chapters within the ES:

- Transport;
- Air Quality;
- Noise and Vibration;
- Ecology;
- Townscape, Heritage and Visual Impact;
- External Lighting;
- Daylight, Sunlight and Overshadowing;
- Wind Microclimate;
- Ground Conditions and Contamination
- Archaeology;
- Surface Water and Flood Risk;
- Socio-economics; and
- Cumulative Schemes.

19.1.2 The scope of the above disciplines in terms of impacts to be taken forward into the ES has been described in Chapters 4 to 15 of this report and will be subject to statutory consultation.

19.1.3 The following technical disciplines will be scoped out of the EIA and not reported in the ES:

- Waste Management;
- Sustainability;
- Electronic Interference; and
- River Navigation.

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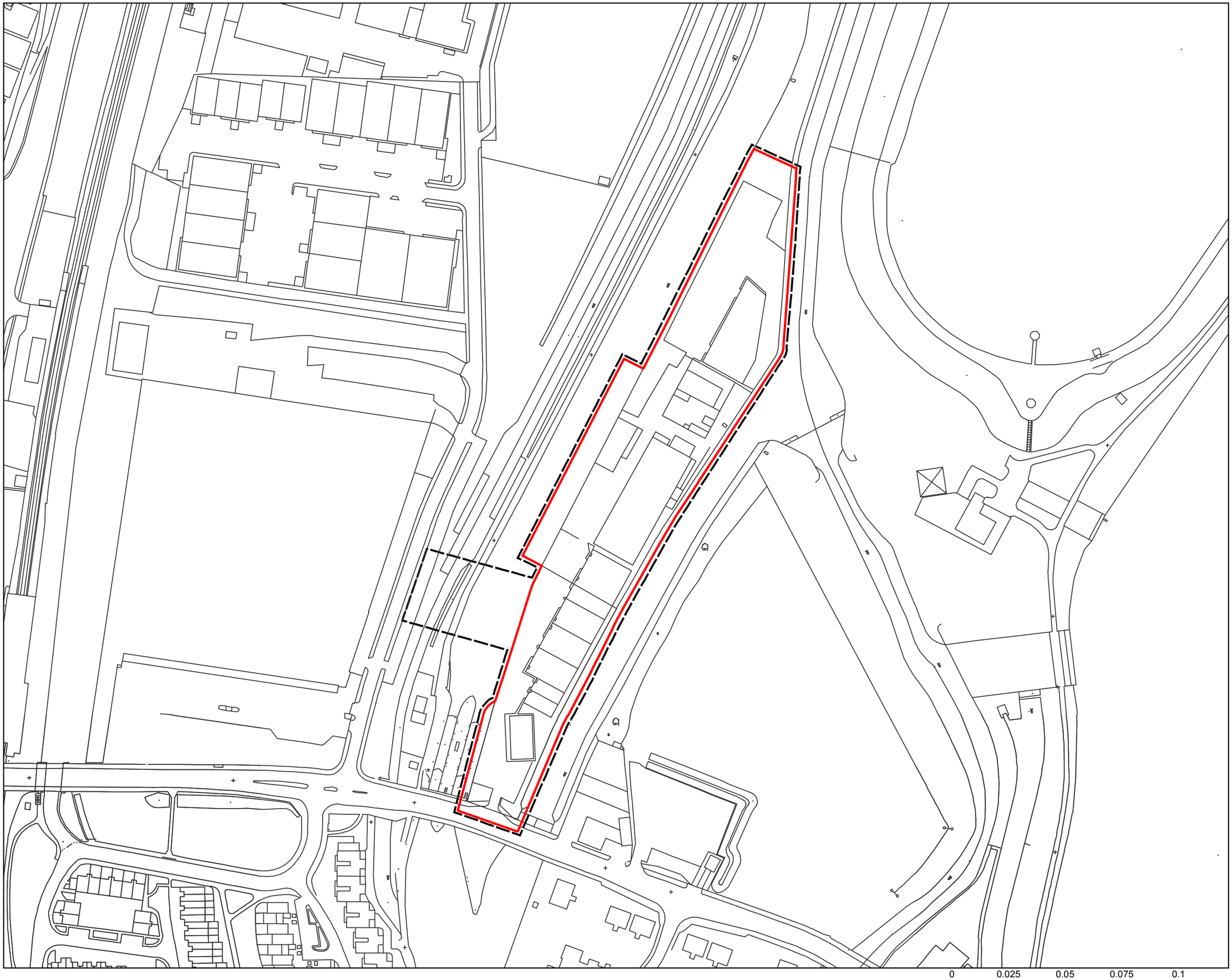
APPENDICES



Legend

- Application Boundary
- Assessment Boundary

1:1,500

N

Client
Muse Developments and the Canal and River Trust

Project Title
Hale Wharf

Project Number
61034303

Figure Title
Application and Assessment Boundary

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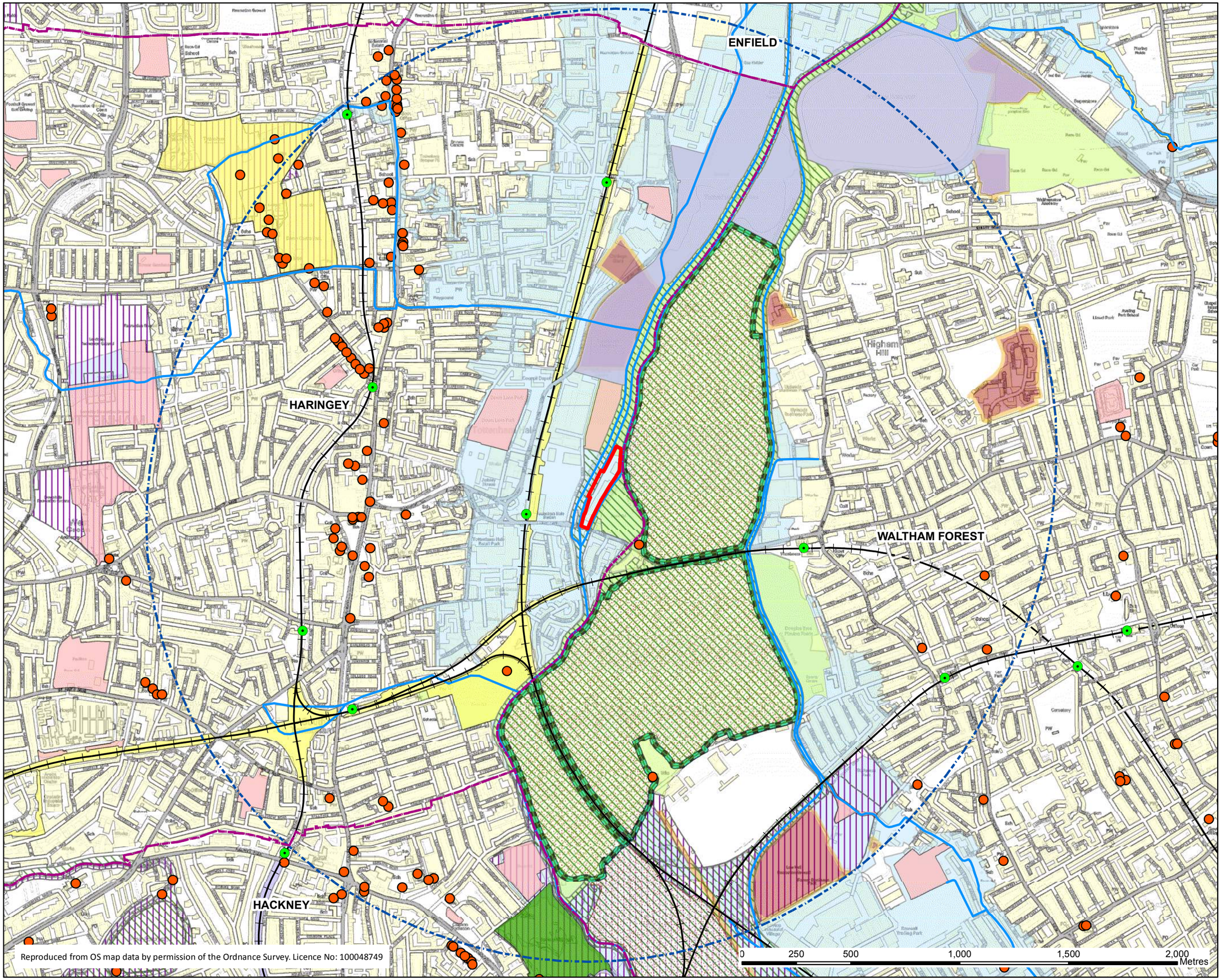
Date	Prepared By
13/01/16	HR
Figure No. Appendix 1	Revision



Legend

- Application site boundary
- Borough boundary
- 2km buffer
- Train Station
- Railway
- Main River
- Listed Buildings
- SPA
- Ramsar
- Local Nature Reserve
- Metropolitan SINC
- SSSI
- Borough Grade 1 SINC
- Borough Grade 2 SINC
- Local SINC
- Historic Landfill Site
- Green Belt
- Metropolitan Open Land
- Flood Alert Area

N

Client
Muse Developments and the Canal and River Trust

Project Title
Hale Wharf

Project Number
61034303

Figure Title
Environmental Constraints Plan

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Date	Prepared By
13/01/2016	RN/AT
Figure No. Appendix 2	Revision 1

Appendix 3: EIA Screening Decision

Astrid Tishler
Ramboll
60 Newman Street
London
W1T 3DA

Our ref: HGY/2014/2689
Contact: Robbie McNaugher
Telephone: 0208 489 8233

Date: 06/11/2014

Dear Sir / Madam

TOWN AND COUNTRY PLANNING ACT 1990 (AS AMENDED)
TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2011

Location: **Land located at Hale Wharf, Tottenham N17 9NF**

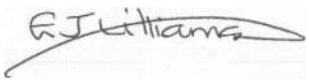
Town & Country Planning (Environmental Impact Assessment) Regulations 2011 for the proposed development on land at Hale Wharf, Tottenham.

Please find a Screening Opinion in relation to the proposed development. The Local Planning Authority is of the opinion that the development proposed falls within the description at Schedule 2 (10(b)– of the 2011 Regulations. Due to the proximity to the Walthamstow Marshes SSSI, Lee Valley Ramsar Site and Special Protection Areas and the European protected species that may be affected by the development it is considered that the development would require a formal Environmental Statement to be submitted with an application.

We confirm that pursuant to Regulation 5 (5) of the Environmental Impact Assessment Regulations 2011, the proposed development is considered EIA development.

For full details of this decision and further requirements relating to this decision please refer to the formal screening assessment attached.

Yours sincerely



Emma Williamson
Head of Development Management
Planning Service

SCHEDULE 2 DEVELOPMENT SCREENING OPINION

TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) (ENGLAND AND WALES) REGULATIONS 2011

Location of Development

Land located at Hale Wharf, Tottenham N17 9NF

Description of Development

Residential led mixed use scheme comprising up to 450 residential units ranging from 3 to 16 storeys, a small commercial unit, access from Ferry Lane, up to 135 parking spaces within a half basement, bridge link for pedestrian and cycle traffic across the River Lee Flood Relief Channel.

The Councils Formal Screening Opinion

This screening opinion has been considered in the context of the EIA Regulations as a whole and having considered the development the Council is of the opinion that the proposal does not constitute Schedule 1 development.

It is the Council's opinion that the above development is a "Schedule 2 development" within the meaning of the Town and Country Planning (Environmental Impact assessment) Regulations 2011, being an Infrastructure project urban development project where the area of development exceeds 0.5 hectares.

The Local Planning Authority has considered the potential environmental impact of the above "Schedule 2 development" as the proposal is an urban development project occupying a site greater than 0.5 hectares in accordance with the above Regulations, having regard to the selection criteria for screening specified in Schedule 3 of the Regulations and the guidance to the these Regulations set out in Circular 02/99.

Schedule 2 Development only requires EIA if it is likely to have significant effects on the environment by virtue of factors such as its size, nature or location.

Schedule 3 to the Regulations sets out the 'selection criteria' which must be taken into account in determining whether a development is likely to have significant effects. It identifies three broad criteria that should be considered:

1) The characteristics of the development (e.g. its size, the accumulation with either development, use of natural recourses, production of waste, pollution and nuisance)
2) The environmental sensitivity of the location and the characteristics of the potential impact (e.g. its magnitude and duration)
3) Characteristics of the potential impact (e.g. the extent of the impact, the trans-frontier nature of the impact, the magnitude and complexity of the impact, the probability of the impact and the duration, frequency and reversibility of the impact.

Due to the proximity to the Walthamstow Marshes SSSI, Lee Valley Ramsar Site and Special Protection Areas and the European protected species that may be affected by the development it is considered that the development would require a formal Environmental Statement to be submitted with an application.

Screening:

It is considered that the proposed development constitutes 'Schedule 2' development falling within the description at section 10(b) "*Infrastructure projects*" of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

The site and surrounding area

The application site is located off the A503 Ferry Road at Tottenham Hale and comprises land bound by the River Lee Navigation Channel to the west and the River Lee Flood Relief Channel to the east. The application site measures approximately 1.80 hectares.

There are currently multiple light industrial units on the eastern part of the application site, including motor vehicle workshops, a waste transfer site, a pallet company and a wood joinery facility. At the southern end of the application site, there is an existing commercial office building, a restaurant and an electricity substation. Mooring of boats takes place along the western boundary, either on the bank or a jetty, which is accessible from the centre of the site. A footpath runs along the western boundary of the application site until it reaches the land occupied by the pallet company to the north. Temporary fencing separates the footpath from a series of car parking spaces used for either vehicles for repair associated with the motor vehicle workshops or porta cabins for the waste transfer site. The surface covering of the application site is predominantly hardstanding.

Road access is from the A503 Ferry Lane at the southern end of the application site. Public transport links include Tottenham Hale Station, approximately 300 m west, and bus stops on Ferry Lane opposite the application site.

The application site is surrounded by the controlled waters of the River Lee Navigation Channel to the west and the River Lee Flood Relief Channel to the east, which form part of the Blue Ribbon network under the London Plan. In addition, the application site and its surrounding areas form part of the Lee Valley Regional Park. The Paddock, a Community Nature Park and area of Green Belt, is located to the east of the application site across the River Lee Flood Relief Channel. The Paddock and the River Lee channels to the east and west of the application site form part of a large composite Metropolitan Site of Importance for Nature Conservation (SINC). The associated areas to the SINC also include Walthamstow Marshes and Reservoirs, located within approximately 15 m to the east of the application site across the flood relief channel from its closest point. These form part of the Lee Valley Special Protection Area (SPA), Ramsar site, Important Bird Area and Walthamstow Reservoirs Site of Special Scientific Interest (SSSI).

The area to the south of the application site is predominantly residential. The area to the west comprises industrial land and a number of recently developed residential blocks and areas under construction

Description of development

Residential led mixed use scheme comprising up to 450 residential units ranging from 3 to 16 storeys, a small commercial unit, access from Ferry Lane, up to 135 parking spaces within a half basement, bridge link for pedestrian and cycle traffic across the River Lee Flood Relief Channel.

Planning History

HGY/1991/0276 GTD 18-07-91 Hale Wharf Ferry Lane London Change of use from open land to storage of plant and machinery (scaffolding yard). Erection of portacabin.

HGY/1992/1003 REF 24-11-92 Hale Wharf Ferry Lane London Change of use of north part of Hale Wharf to waste transfer station.
HGY/1993/0974 GTD 02-11-93 Hale Wharf Ferry Lane London Erection of 8 feet high steel palisade fence.

HGY/1996/0016 GTD 06-02-96 D W Spinks Ltd Unit 3, Hale Wharf Ferry Lane London Change of use of the premises from (B8) storage to B1, B2,and B8 for use as paper embossers with ancillary offices and stores.

HGY/1996/0445 GTD 25-06-96 Hale Wharf Ferry Lane London at second floor and the creation of a residential unit at third floor level. External alterations and extension to existing building. Heritage Brewery Public House at ground floor, restaurant use Change of use of ground and second floors from office use to

HGY/1998/0883 GTD 11-08-98 Hale Wharf Ferry Lane London Erection of 2 storey rear extension.

HGY/2005/1036 GTD 24-04-06 Hale Wharf, Ferry Lane London Provision of 4 x business barges and associated mooring facilities, landscaping and associated parking.

HGY/2006/1741 GTD 30-10-06 Hale Wharf, Ferry Lane Tottenham London Provision of 4 x business barges with associated mooring facilities, landscaping and associated parking.

No screening opinions have previously submitted either any of the above applications or appeal.

Context:

Circular 02/99 – (Environmental Impact Assessment) advises that Schedule 2 developments will require an EIA in 3 main types of case:

a) for major developments of more than local importance;
b) for developments in environmentally sensitive or vulnerable areas; and

c) for developments with unusually complex and potentially hazardous environmental effects.

Annex A (19) of the Circular states that development proposed for sites that have not previously been intensively developed are more likely to require an EIA if the site area of the scheme is more than 5 hectares; or it would provide a total of more than 10,000 m2 of new commercial floor space; or the development would have a significant urbanising effects in a previously non, urbanised area (e.g. a new development of more than 1,000 dwellings).

This site is approximately 1.80 hectares.
The scheme would not propose any large scale commercial floorspace
The scheme would propose approximately 450 residential units.

The scheme for 450 units does not fall into the criteria of Annex A (19) of the Circular.

It is considered that the proposed development constitutes 'Schedule 2' development falling within the description at section 10(b) "*Infrastructure projects*" of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 on a site that is greater than 0.5 hectares.

Therefore proposal has been assessed against *Schedule 3 - Selection criteria for screening Schedule 2 development* and the relevant analysis is set out below:

Assessment

Major developments of more than local importance;

Characteristics of development

The characteristics of the development must be considered having regard, in particular, to—

a) the size of the development;

b) the cumulation with other development;

c) the use of natural resources;

d) the production of waste;

e) pollution and nuisances;

f) the risk of accidents, having regard in particular to substances or technologies used.

Comment:

Circular 2/99 suggests that it is necessary to consider whether the above effects would be or 'localised' or be 'wide–ranging;.

The area of the site is 1.80 ha and would involve the provision of 450 residential which is not a particularly significant development in terms of size and scale and falls short of the threshold as set out in Annex A 19 (1000 dwellings). However the existing uses on the site are relatively low key in terms of scale and the proposed development would significantly increase the scale of development on site which would have an urbanizing effect on the locality. The main risks of environmental impact are considered to occur during any demolition and construction. These include:

- Handling and disposal of demolition/construction waste incl. asbestos
- Carbon emissions from demolition/construction vehicles/machinery
- Release of dust into the air
- Noise and vibration
- Potential of accident during demolition/construction

These potential impacts are not exceptional to a development of this size and nature. They would be comparable to the risks posed by any urban redevelopment scheme. Similarly, the environmental impact of the development during its operation (i.e. when it is occupied) is considered to be relatively low. The density of development is likely to result in higher water and energy use on the site but planning policies would require the development to be built to high environmental standards with, for example, high performance insulation, water saving features, CHP and solar panels.

In terms of traffic and parking, the development would result in an increase in traffic movement, parking and traffic generation. The development is located in an area of high public transport accessibility that would encourage less reliance on the private vehicle. Further, such impacts can be satisfactorily addressed and reduced by requiring transport assessments and travel plans to be submitted for consideration as part of any planning application. Such transport, parking and travel plans and strategies to promote less reliability on the private car, would ensure that there was negligible impact on the local road network and would not be significant in EIA terms.

It is considered that the proposal, is a large scale residential scheme but would not be a significant scale in EIA terms. The scale of the development is considered to be as such to not have a significant impact in terms of the use of natural resources or the production of waste. Waste generated by the proposed development would be dealt with by conventional refuse disposal services. In respect of the above traffic considerations it is considered that the proposal would not have any significant effect in terms of air pollution. The proposal may result in an increase in noise levels due to the introduction of additional residents into the community but it is considered that such levels would not be materially excessive.

The proposed residential development is considered not to give rise to or generate a significant risk of accidents.

Overall, given the above it is considered that on the basis of the scale of the development any impact will be essentially localised rather than wide ranging.

For developments in environmentally sensitive or vulnerable areas

Location of development

The environmental sensitivity of geographical areas likely to be affected by development must be considered, having regard, in particular, to—

a) the existing land use;

b) the relative abundance, quality and regenerative capacity of natural resources in the area;

c) the absorption capacity of the natural environment, paying particular attention to the following areas—

i) wetlands;

ii) coastal zones;

iii) mountain and forest areas;

iv) nature reserves and parks;

v) areas designated by Member States pursuant to Council Directive 2009/147/EC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora);

vi) areas in which the environmental quality standards laid down in EU legislation have already been exceeded;

vii) densely populated areas;

viii) landscapes of historical, cultural or archaeological significance.

Comment:

As noted above the proposal would significantly increase the scale of the development on the site from a low key industrial use to an intensive residential led use. The site itself does not contain any significant natural resources and is not covered by any designations but abuts the Walthamstow Marshes SSSI, Lee Valley Ramsar Site and Special Protection Areas. These designations are in place to safeguard European protected species particularly those protected under the Council Directive 2009/147/EC on the conservation of wild birds. It is therefore considered that the scale of the development in close proximity to these protected sites would require a formal Environmental Statement to be submitted with an application.

The surrounding area is not a particularly densely populated area and it is considered that development could be accommodated within the area where the site is located without any significant detrimental impact upon the existing population. Furthermore the provision

of additional housing accommodation can be considered as providing benefits to the local community.

The proposal will not have an impact on any historical cultural or archaeological significance, the setting of the listed building, the character of the conservation area.

For developments with unusually complex and potentially hazardous environmental effects

Characteristics of the potential impact

The potential significant effects of development must be considered in relation to criteria set out under paragraphs 1 and 2 above, and having regard in particular to—

a) the extent of the impact (geographical area and size of the affected population);

b) the transfrontier nature of the impact;

c) the magnitude and complexity of the impact;

d) the probability of the impact;

e) the duration, frequency and reversibility of the impact.

Comment:

It is considered that the impact of the development would be limited in its extent to the area where the site is located and the benefits of additional housing would extend to the borough level.

There would be no transfrontier impact.

The magnitude and complexity of the effects are not considered to be significant.

The impacts arising from the development would be experienced during the construction phase and would be permanent during the operational life of the development.

Whilst the development would have an impact in terms of an increase in traffic generation, increase in noise and impact and could potentially impact on European protected species it is considered that development will not have any unusually complex and potentially hazardous environmental effects to warrant an EIA .

Conclusion

Due to the proximity to the Walthamstow Marshes SSSI, Lee Valley Ramsar Site and Special Protection Areas and the European protected species that may be affected by the development it is considered that the development would require a formal Environmental Statement to be submitted with an application.

Appendix A – Screening Checklist

Screening Checklist of matters to be considered for inclusion in an environmental statement

The environmental effects of a development during its construction and commissioning phases should be considered separately from the effects arising whilst it is operational. The table below summarises the Characteristics of the Development during 3 stages: demolition, construction and operation (or occupation in this case as it is a residential and commercial development).

1. Characteristics of the Development	Demolition	Construction	Operation
(a) Size of development	Residential led mixed use scheme comprising up to 450 residential units ranging from 3 to 16 storeys, a small commercial unit, access from Ferry Lane, up to 135 parking spaces within a half basement, bridge link for pedestrian and cycle traffic across the River Lee Flood Relief Channel.		
Will the development be out of scale with the existing environment?	-	-	Yes- will significantly increase development on site above surrounding area to the east
Will it lead to further consequential development or works?	-	-	Yes –could lead to link into the Paddock park to the east
(b) Cumulation with other development			
Are there potential cumulative impacts with other existing developments or development not yet begun but for which planning permission exists?	-	-	No - other regeneration developments are approved/under construction but none immediately nearby
Should the application be regarded as an integral part of a more substantial project? If so, can related developments which are subject to separate applications proceed independently?	-	-	No – scheme is a standalone development occupying Hale Wharf
(c) Use of natural resources			
Will construction or operation of the development use natural resources – especially any which are non-renewable or in short supply? Land (especially undeveloped) Water Minerals Aggregates Forest and timber Energy - including energy and fuels other	-		No
(d) Production of waste			
Will the development produce waste during construction or operation or decommissioning? Hazardous or toxic waste Construction, demolition or evacuation Any other solid, liquid or solid waste in suspension waste		Yes – waste will be produced during construction	Yes – waste will be produced during operation

(e) pollution and nuisances			
Will the development release pollutants or any hazardous, toxic or noxious substances to air?		Yes – minimal carbon emissions from construction machinery/ vehicles	Yes – minimal carbon emissions from vehicles travelling to and from the site
Is there a potential risk from leachates or escapes of other wastes or other by-products?	-	No	No
Will the development cause noise and vibration or release of light, heat energy or electromagnetic radiation?	-	Yes – construction could result in noise and vibration	No
Will the development lead to risks of contaminated land or water?	-	Yes- accidents during construction could Pollute the River Lea and Lee Navigation	No
(f) Risk of accidents, with particular regard to substances of technologies used?			
Will there be a risk of accidents during demolition, construction or operation which could have effects on people or the environment?	-	Yes – construction is potentially dangerous	No
Will the development involve the use, storage transport, handling or production of substances or materials which could be harmful to people or the environment (flora, fauna, water supplies?	-	No	No
(g) Other characteristics: such as potential physical changes			
	-	Yes – construction of the existing buildings are proposed and so the shape and form of this location will change.	Yes – a significant change to form after completion
2. Location of the Development			
(a) Existing Land Use			
	-	Yes – the existing land use will be replaced by new development. The site	N/A

		adjoins Walthamstow Marshes SSSI, Lee Valley Ramsar Site and Special Protection Areas and a SINC.	
(b) Relative abundance, quality and regenerative capacity of natural resources in the area			
	There are no areas on or around the location which contain important, high quality or scarce resources which could be affected by the development.		
(c) Absorption capacity of the natural environment			
	The areas around the location which are protected under international, national or local legislation for their ecological, value and there are areas are used by protected, important and sensitive species that could be affect.		

1. Checklist of Criteria for evaluating the significance of environmental effects and Characteristics of the potential impact

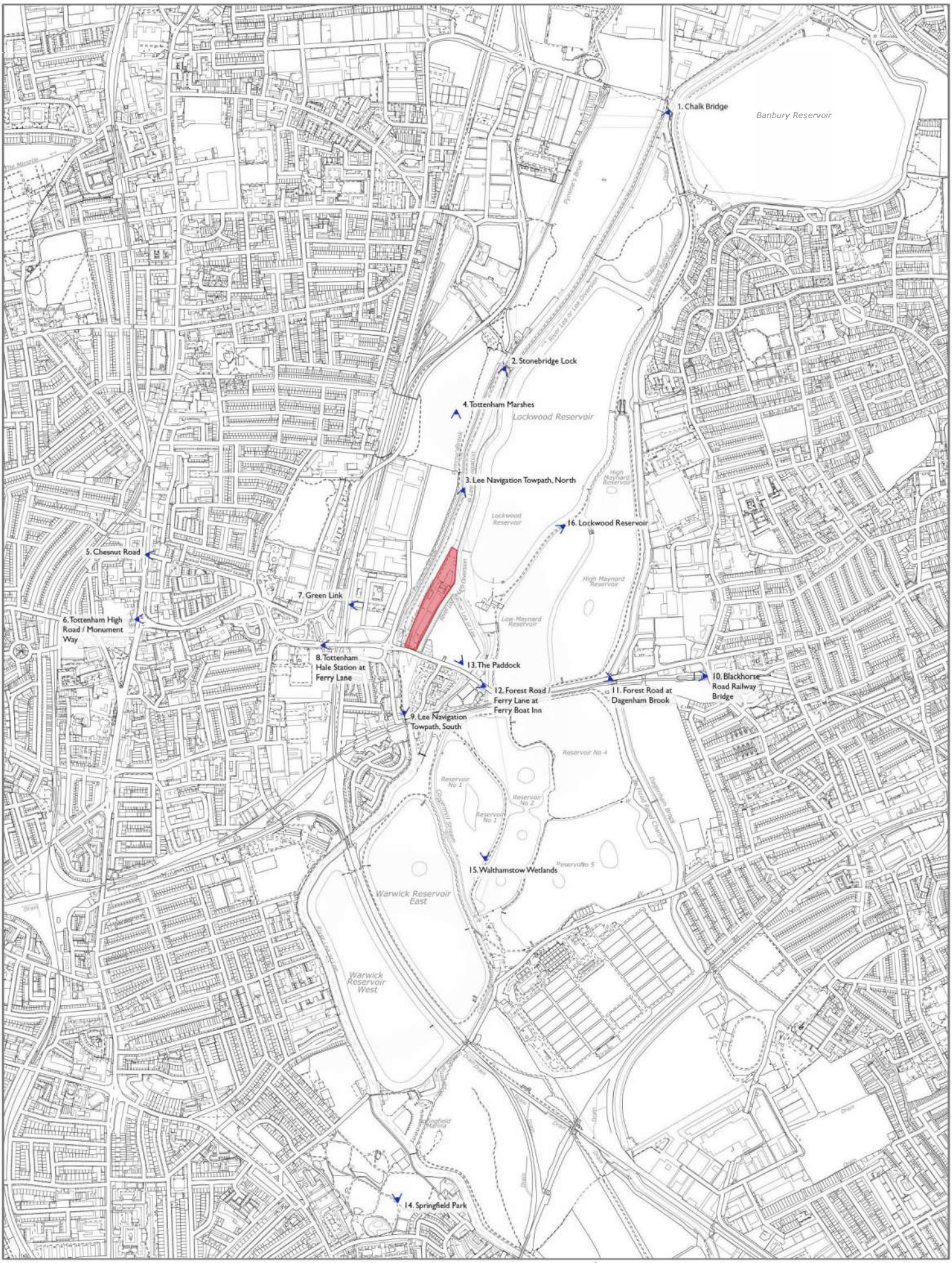
	Demolition	Construction	Operation
(a) Extent of the impact			
		Use of water and materials required for construction may use natural resources Contamination of groundwater and surface water Carbon emissions from construction machinery/vehicles Waste will be produced during construction Construction could result in noise and vibration Potential of accident from construction.	Use of water and energy for operation Waste will be produced during operation Discharge of wastewater Oil contaminated water from parking areas Carbon emissions from vehicles travelling to and from the site Permanent change to

		The shape and form of the location will change.	form and appearance of the location
(b) Transboundary nature of the impact			
	-	Use of water and natural materials is local but consumption has universal impact Contamination of groundwater and surface water will affect surrounding water bodies Carbon emissions will affect atmosphere Construction waste, where not recycled, will consume landfill space Potential for noise and vibration to affect adjacent land Potential of accident from construction – risk restricted to site Appearance of local area beyond the site, will not change	Use of water and energy is local but consumption has universal impact Waste which is not recycled will consume landfill space Wastewater will place demand on sewer system Oil contaminated water from parking areas will affect surrounding water bodies Appearance of local area beyond the site, will not change
(c) Magnitude and complexity of the impact			
		Handling and disposal of construction waste - low magnitude	Use of water and energy - low magnitude

	-	and complexity subject to compliance with relevant legislation and standards Contamination of groundwater and surface water will affect surrounding water bodies - low magnitude and complexity. Construction is a temporary phase Carbon emissions- low magnitude and complexity. Construction is a temporary phase Noise and vibration - low magnitude and complexity subject to compliance with best practice Potential of accident from construction – low magnitude and complexity subject to compliance with relevant Health and Safety legislation and standards Change to appearance of area – low magnitude and complexity. Site occupied by construction works for only temporary period	and complexity. Higher density development but built to high environmental standards exceeding Building Regulations Waste - low magnitude and complexity. Generation of waste would be at comparable levels to surrounding development Wastewater will place demand on sewer system low magnitude and complexity – development will be of high environmental standard Oil contaminated water from parking areas will affect surrounding water bodies - low magnitude and complexity. Can be dealt with by oil separators Change to appearance of area – moderate

			magnitude and low complexity. Development will result in permanent change to local area
(d) Probability of the impact			
		Handling and disposal of construction waste - low probability of harm subject to compliance with relevant legislation and standards Carbon emissions – certain Noise and vibration – low probability subject to compliance with best practice Potential of accident from construction – low probability subject to compliance with relevant Health and Safety legislation and standards Change to appearance of area – certain	Use of water and energy – high probability Wastewater will place demand on sewer system high probability Oil contaminated water from parking areas will affect surrounding water bodies – low probability Waste generation – high probability Change to appearance of area – certain
(e) Duration, frequency and reversibility of the impact	-		
		Handling and disposal of construction waste – temporary period of up to several months. Dumping of waste that is not recycled is irreversible	Use of water and energy – ongoing consumption of water and energy. Wastewater will place demand on

		Carbon emissions – temporary emission. Not locally reversible Noise and vibration - temporary Potential of accident from construction – temporary risk, reversibility dependent on accident Change to appearance of area – presence of construction works will be temporary	sewer system – ongoing Oil contaminated water from parking areas will affect surrounding water bodies – ongoing risk Waste – ongoing generation of waste. Recycling will reduce landfill impact Change to appearance of area – Buildings in place permanently. Irreversible.



Client	Project Title	Project Number	Figure No.	Date:	Prepared by
Muse Developments and the Canal and River Trust	Hale Wharf	61033510	Appendix 4	13/01/16	- -

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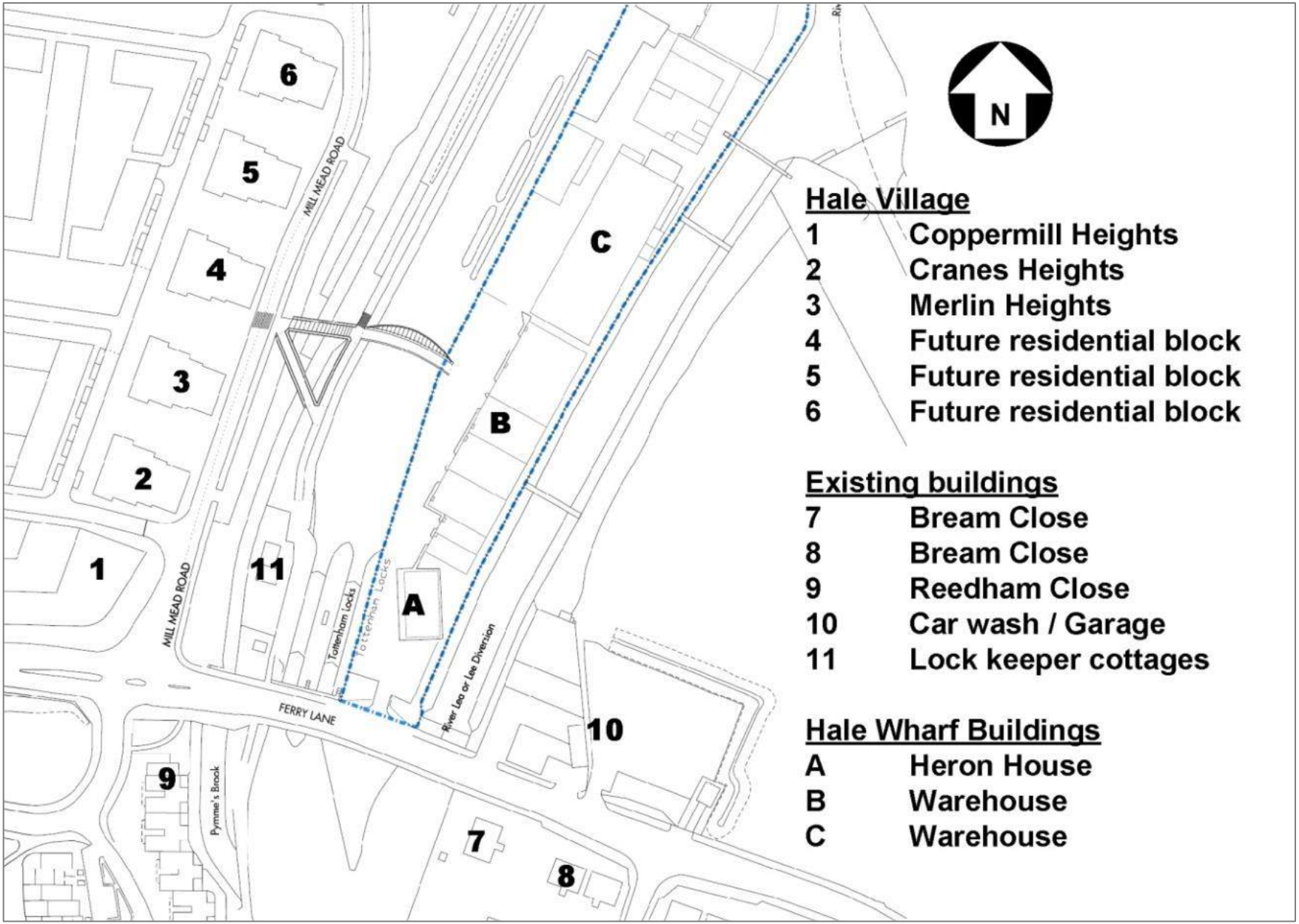
Figure Title	Scale	rev.
Townscape, Heritage and Visual Viewpoints	Not to Scale	



Hale Village

1	Coppermill Heights
2	Cranes Heights
3	Merlin Heights
4	Future residential block
5	Future residential block
6	Future residential block

Existing buildings

7	Bream Close
8	Bream Close
9	Reedham Close
10	Car wash / Garage
11	Lock keeper cottages

Hale Wharf Buildings

A	Heron House
B	Warehouse
C	Warehouse

Client	Project Title	Project Number	Figure No.	Date:	Prepared by
Muse Developments and the Canal and River Trust	Hale Wharf	61033510	Appendix 5	13/01/16	- -

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Figure Title	Scale	rev.
Daylight, Sunlight and Overshadowing Receptors Plan	Not to Scale	

FLOOD LEVELS

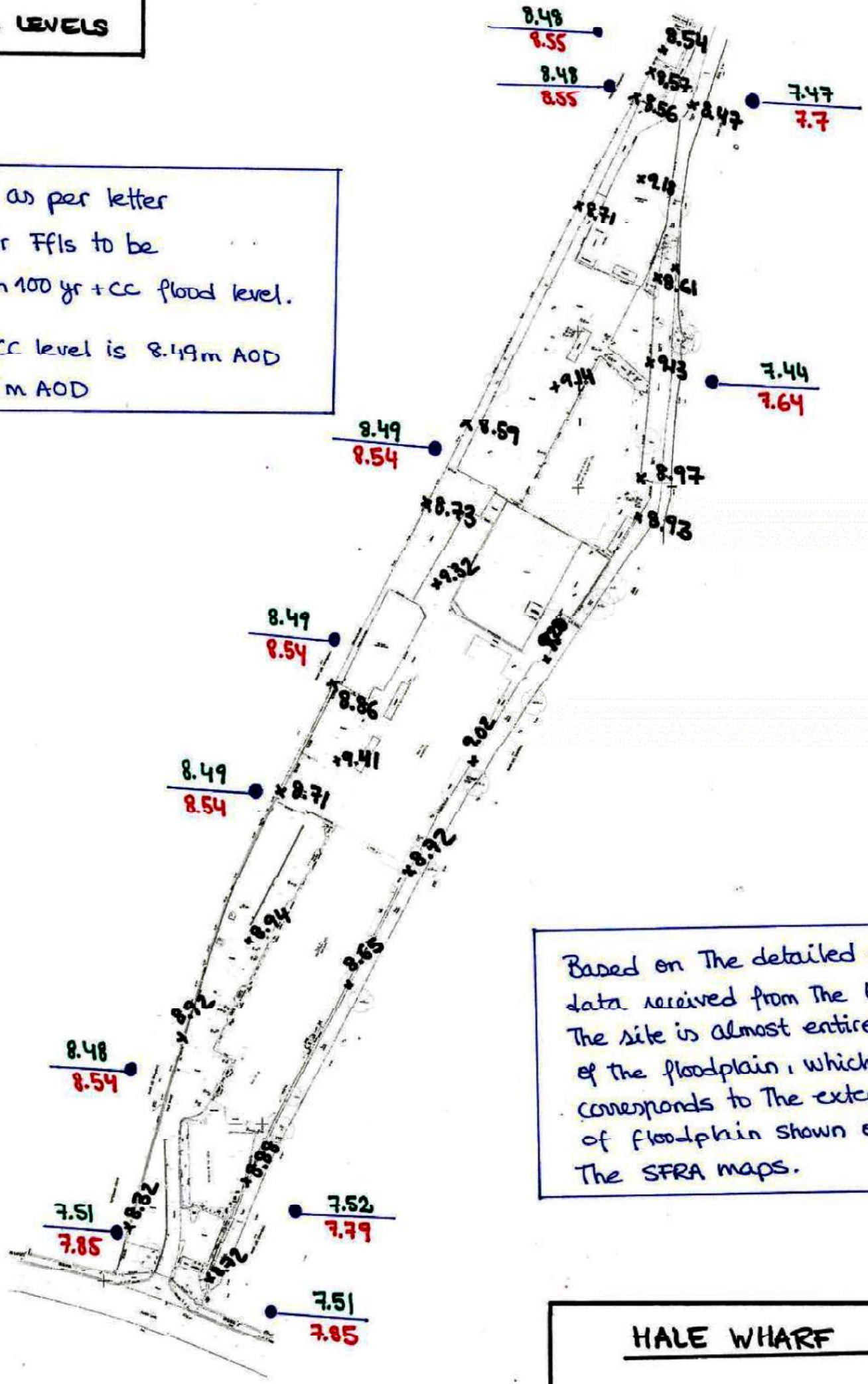
1 in 100 + CC

1 in 1000 yr

x TOPOGRAPHICAL LEVELS

EA requirement as per letter of 09/07/14 is for FFls to be 300 mm above 1in 100 yr + CC flood level.

Max 1 in 100 yr + CC level is 8.49m AOD
Min FFL is 8.79 m AOD



Based on the detailed flood data received from the EA, the site is almost entirely out of the floodplain, which corresponds to the extent of floodplain shown on the SFRA maps.

HALE WHARF

EA flood levels vs Existing site levels

Ramboll 08/08/2014

NTS 61033510-FRA-SK-01

Client	Project Title	Project Number	Figure No.	Date:	Prepared by
Muse Developments and the Canal and River Trust	**Hale Wharf**	**61033510**	**Appendix 6**	01/04/15	LH

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Figure Title

Hale Wharf EIA Scoping Report
Site Topography and Flood Levels

Scale

Not to scale

rev.

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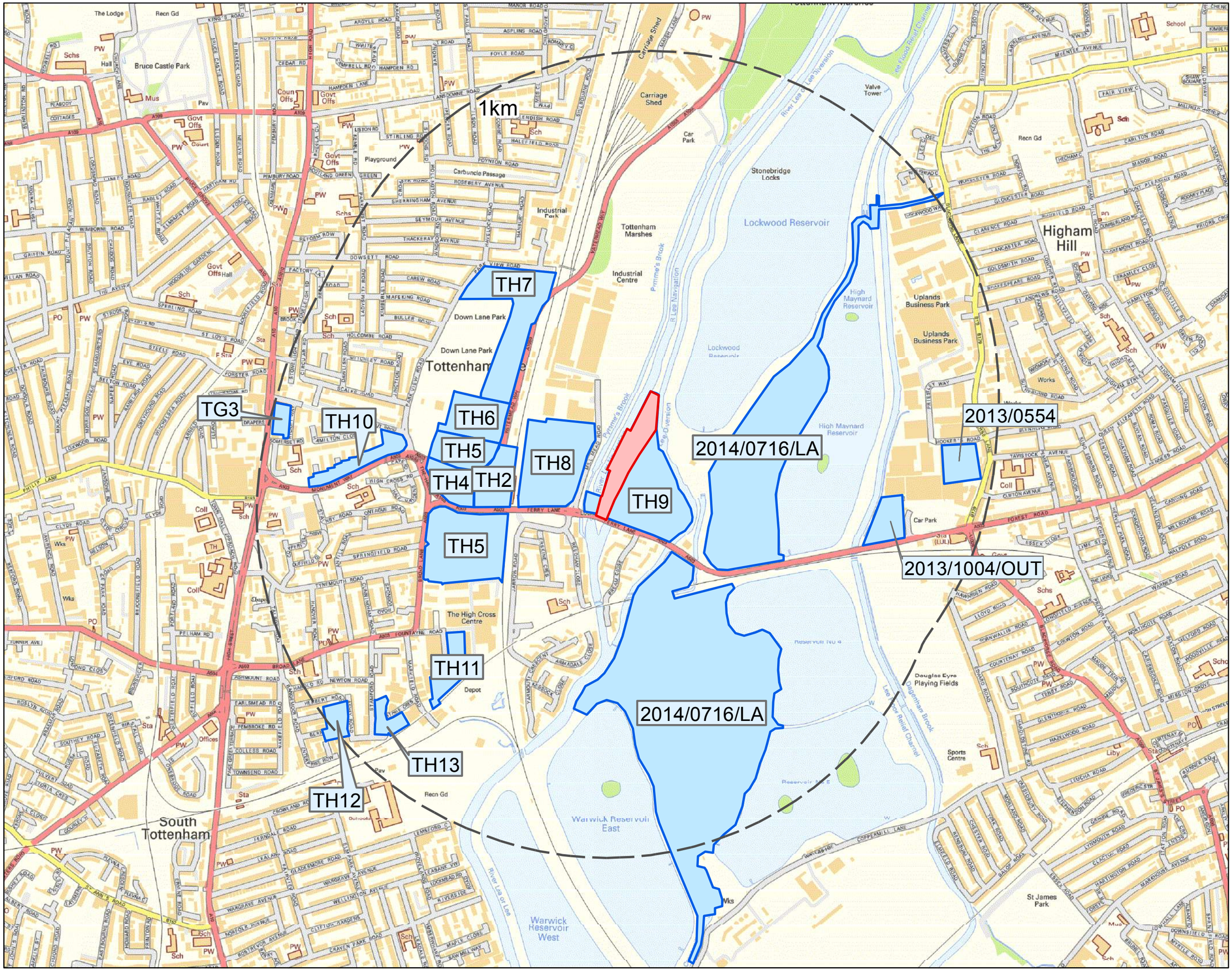

Legend

- Application Site Boundary
- 1km Buffer
- Cumulative Schemes

Identification Table:

TH2: Tottenham Hale Station
TH3: Tottenham Hale Retail Park
TH4: Station Square West
TH5: Station Square North
TH6: Ashley Road South Employment Area
TH7: Ashley Road North
TH8: Hale Village
TH9: Hale Wharf
TH10: Welbourne Centre & Monument Way
TH11: Fountayne Road
TH12: Herbert Road
TH13: Constable Crescent
TG3: Tottenham Police Station and Reynardson Court
2014/0716/LA: Walthamstow Wetlands
2013/1004/OUT: Ferry Lane
2013/0554: Mandora Site

N

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0 0.25 0.5 1 Kilometers

Client
Muse Developments and the Canal and River Trust

Project Title
Hale Wharf

Project Number
61034303

Figure Title
Cumulative Schemes

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Figure No. Appendix 7	Revision 1