ABERFELDY VILLAGE

Approximate Site Boundary
Target Notes
Area not accessed

Habitats

A2.2 - Scrub - scattered
J1.2 - Cultivated/disturbed land - amenity grassland
J1.4 - Introduced shrub
J2.5 - Wall
J3.6 - Buildings
J4 - Bare ground
J3.6.1 - Hardstanding

0 100 200 300 400 500 m

N

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9 Holyrood Street, London SE1 2EL

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Fig 1.0 Site Plan and Habitat Map

Project Number 551566
November 2020
1 to 2,500 at A3
Basemap data: Carto DB

FIGURE 2 POTENTIAL ROOSTING FEATURE PLAN

ABERFELDY VILLAGE

Approximate Site Boundary

Potential Roosting Features

- Gap above garage door leading to cavity
- Gap above soffit and below roofing material
- Gap between balcony slabs on underside
- Gap in brick wall
- Lifted flashing at base of balcony
- Lifted flashing on bin store
- Missing/dislodged roof tiles

Tree with Potential Roosting Feature

- Low

0 100 200 300 400 500 m

N

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Fig 2.0 Potential Roost Feature Plan

Project Number 551566
November 2020
1 to 2,000 at A3
Basemap data: Carto DB

APPENDIX 1 RELEVANT LEGISLATION AND POLICY

LEGISLATION

Current key legislation relating to ecology includes the Wildlife and Countryside Act 1981 (as amended)[8]; The Conservation of Habitats and Species Regulations 2017 ('Habitats & Species Regulations')[9], The Countryside and Rights of Way Act 2000 (CRoW Act)[10], and The Natural Environment and Rural Communities Act, 2006[11].

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats & Species Regulations replace The Conservation (Natural Habitats, etc.) Regulations 1994 (as amended)[12], and transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive')[13], and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive')[14] into UK law (in conjunction with the Wildlife and Countryside Act).

Regulation 43 and 47 respectively of the Conservation of Habitats & Species Regulations makes it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 (European protected species of animals), or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5 (European protected species of plant). Development that would contravene the protection afforded to European protected species requires a derogation (in the form of a licence) from the provisions of the Habitats Directive.

Regulation 63 (1) states: 'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which —

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and

(b) is not directly connected with or necessary to the management of that site;

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.'

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats[15] (the 'Bern Convention') and the Birds Directive and EU Habitats Directive are implemented in Great Britain.

The Countryside and Rights of Way Act 2000

The Wildlife and Countryside Act has been updated by the CRoW Act. The CRoW Act amends the law relating to nature conservation and protection of wildlife. In relation to threatened species it strengthens the legal protection and adds the word 'reckless' to the offences of damaging, disturbing, or obstructing access to any structure or place a protected species uses for shelter or protection, and disturbing any protected species whilst it is occupying a structure or place it uses for shelter or protection.

The Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 states that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Biodiversity Action Plans provide a framework for prioritising conservation actions for biodiversity.

Section 41 of the Natural Environment and Rural Communities Act requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity. The list, a result of the most comprehensive analysis ever undertaken in the UK, currently contains 1,149 species, including for example, hedgehog (*Erinaceus europaeus*), and 65 habitats that were listed as priorities for conservation action under the now defunct UK Biodiversity Action Plan[16] (UK BAP). Despite the devolution of the UK BAP and succession of the UK Post-2010 Biodiversity Framework[17] (and Biodiversity 2020 strategy[18] in England), as a response to the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020[19] and EU Biodiversity Strategy (EUBS)[20], this list (now referred to as the list of Species and Habitats of Principal Importance in England) will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 41 of the Natural Environment and Rural Communities Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions.

Biodiversity Action Plans

Non-statutory Biodiversity Action Plans (BAPs) have been prepared on a local and regional scale throughout the UK over the past 15 years. Such plans provide a mechanism for implementing the government's broad strategy for conserving and enhancing the most endangered ('priority') habitats and species in the UK for the next 20 years. As described above the UK BAP was succeeded in England by Biodiversity 2020 although the list of priority habitats and species remains valid as the list of *Species of Principal Importance for Nature Conservation*.

Regional and local BAPs are still valid however and continue to be updated and produced.

Detail on the relevant BAPs for this site are provided in the main text of this report.

Legislation Relating to Nesting Birds

Nesting birds, with certain exceptions, are protected from intentional killing, destruction of nests and destruction/taking of eggs under the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act. Any clearance of dense vegetation should therefore be undertaken outside of the nesting bird season, taken to run conservatively from March

to August (inclusive), unless an ecologist confirms the absence of active nests prior to clearance.

Legislation Relating to Bats

All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

Six of the 18 British species of bat have Biodiversity Action Plans (BAPs) assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

Although habitats that are important for bats are not legally protected, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

The Wildlife & Countryside Act 1981 (WCA) was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 and under Annexe IV of the Habitats Directive, 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 43 of the Conservation of Habitats and Species Regulations 2017, which transposes the Habitats Directive into UK law. Consequently, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

The implications of the above in relation to the proposals are that where it is necessary during construction to remove trees, buildings or structures in which bats roost, it must first be determined that work is compulsory and if so, appropriate licenses must be obtained from Natural England.

Legislation Relating to Natura 2000 Sites and Habitats Directive Annex I/II Species

European Commission Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive'), and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive') form the cornerstones

of nature conservation legislation across EU member states. Priority species requiring protection across Europe are listed in the Annexes of these Directives. Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 and Offshore Marine Conservation Regulations, 2007 (as amended) transpose these directives into UK law and set the basis for the designations of protected sites (known as Natura 2000 sites; Special Areas of Conservation under the Habitat Directive and Special Areas of Protection under the Birds Directive) that are of importance for habitats, species or assemblages listed on the directive Annexes. In the UK Ramsar sites are also offered the same level of protection as SPAs and SACs however the qualifying species for the designation may differ; Ramsar sites being designated specifically as important wetland habitats.

Under article 6(3) of the Habitats Directive, where projects stand to have likely significant effect (in accordance with the European Court of Justice ruling of C-127/02 Waddenzee cockle fishing) upon the integrity of conservation objectives (i.e. conservation status of the qualifying species or habitats) within the designated sites then the Competent Authority must undertake an Appropriate Assessment.

PLANNING POLICY

National

National Planning Policy Framework

The National Planning Policy Framework (NPPF) 2019[21] sets out the Government's planning policies for England, including how plans and decisions are expected to apply a presumption in favour of sustainable development. Chapter 15 of the NPPF focuses on conservation and enhancement of the natural environment, stating plans should 'identify and pursue opportunities for securing measurable net gains for biodiversity'.

It goes on to state: 'if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused'. Alongside this, it acknowledges that planning should be refused where irreplaceable habitats such as ancient woodland are lost.

Regional

The London Plan: Spatial Development Strategy for Greater London[22]

The London Plan is comprised of separate chapters relating to a number of areas, including London's Places, People, Economy and Transport. The following policies have been identified within the London Plan, which relate specifically to ecology and this development.

Policy 2.18 Green Infrastructure

Policy 2.18 aims to protect, promote, expand and manage the extent and quality of, and access to, London's network of open and green spaces.

Policy 5.10 Urban Greening

This policy encourages the 'greening of London's buildings and spaces and specifically those in central London by including a target for increasing the area of green space (including green roofs etc) within the Central Activities Zone'.

Policy 5.11 Green Roofs and Development Site Environs

Policy 5.11 specifically supports the inclusion of planting within developments and encourages boroughs to support the inclusion of green roofs.

Policy 5.13 Sustainable Drainage

Policy 5.13 promotes the inclusion of sustainable urban drainage systems in developments and sets out a drainage hierarchy that developers should follow when designing their schemes.

Policy 7.19 Biodiversity and Access to Nature

'The Mayor will work with all the relevant partners to ensure a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity in support of the Mayors Biodiversity Strategy.'

The Draft New London Plan (emerging)

Policy G1 Green infrastructure

A. London's network of green and open spaces, and green features in the built environment such as green roofs and street trees, should be protected, planned, designed and managed as integrated features of green infrastructure.

B. Boroughs should prepare green infrastructure strategies that integrate objectives relating to open space provision, biodiversity conservation, flood management, health and wellbeing, sport and recreation.

C. Development Plans and Opportunity Area Planning Frameworks should:

    1. identify key green infrastructure assets, their function and their potential function

    2. identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions.

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Policy G2 London's Green Belt

A. The Green Belt should be protected from inappropriate development:

    1. development proposals that would harm the Green Belt should be refused

    2. the enhancement of the Green Belt to provide appropriate multi-functional uses for Londoners should be supported.

Policy G5 Urban greening

A. Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.

B. Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development.

Policy G6 Biodiversity and access to nature

C. Where harm to a SINC (other than a European (International) designated site) is unavoidable, the following approach should be applied to minimise development impacts:

    1. avoid adverse impact to the special biodiversity interest of the site

    2. minimise the spatial impact and mitigate it by improving the quality or management of the rest of the site

    3. seek appropriate off-site compensation only in exceptional cases where the benefits of the development proposal clearly outweigh the biodiversity impacts.

D. Biodiversity enhancement should be considered from the start of the development process.

E. Proposals which create new or improved habitats that result in positive gains for biodiversity should be considered positively, as should measures to reduce deficiencies in access to wildlife sites.

Policy G7 Trees and woodlands

C. Development proposals should ensure that, wherever possible, existing trees of quality are retained [Category A and B]. If it is imperative that trees have to be

Preliminary Ecological Appraisal

removed, there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

Supplementary Planning Guidance (SPG): Sustainable Design and Construction 2014

As part of the London Plan 2011 implementation framework, the SPG, relating to sustainable design and construction, was adopted in April 2014 and includes the following sections detailing Mayoral priorities in relation to biodiversity of relevance to The Site.

Nature conservation and biodiversity

The Mayor's priorities include ensuring 'developers make a contribution to biodiversity on their development Site'.

Overheating

Where priorities include the inclusions of 'measures, in the design of schemes, in line with the cooling hierarchy set out in London Plan policy 5.9 to prevent overheating over the scheme's lifetime'

Urban greening

A Priority is for developers to 'integrate green infrastructure into development schemes, including by creating links with wider green infrastructure network'.

Use less energy

'The design of developments should prioritise passive measures' which can include 'green roofs, green walls and other green infrastructure which can keep buildings warm or cool and improve biodiversity and contribute to sustainable urban drainage'.

London Environment Strategy 2018[23]

The Mayor's Environment Strategy was published in May 2018. This document sets out the strategic vision for the environment throughout London. Although not primarily a planning guidance document, it does set strategic objectives, policies and proposals that are of relevance to the delivery of new development in a planning context, including:

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Objective 5.1 Make more than half of London green by 2050

Policy 5.1.1 Protect, enhance and increase green areas in the city, to provide green infrastructure services and benefits that London needs now.

This policy states:

"New development proposals should avoid reducing the overall amount of green cover and, where possible, seek to enhance the wider green infrastructure network to increase the benefits this provides. […] New developments should aim to avoid fragmentation of existing green space, reduce storm water run-off rates by using sustainable drainage, and include new tree planting, wildlife-friendly landscaping, or features such as green roofs to mitigate any unavoidable loss".

This supports the 'environmental net gain' approach promoted by government in the 25 Year Environment Plan.

Proposal 5.1.1.d The London Plan includes policies to green streets and buildings, including increasing the extent of green roofs, green walls and sustainable drainage.

Objective 5.2 conserving and enhancement wildlife and natural habitats

Policy 5.2.1 Protect a core network of nature conservation sites and ensure a net gain in biodiversity

This policy requires new development to include new wildlife habitat, nesting and roosting sites, and ecologically appropriate landscaping will provide more resources for wildlife and help to strengthen ecological corridors. It states:

"*Opportunities should be sought to create or restore priority habitats (previously known as UK Biodiversity Action Plan habitats) that have been identified as conservation priorities in London [and] all land managers and landowners should take BAP priority species into account*".

Tower Hamlets Local Plan 2031 (adopted Jan 2020)

The Tower Hamlets Local Plan sets out how the LPA will manage growth in Tower Hamlets and ensure the benefits are shared with all the residents over the next 15 years.

Policy S.ES1 Protecting and enhancing our environment

This policy states:

1. Proposals will be supported which minimise the use of natural resources and work proactively to protect and enhance the quality of the natural environment, through:

A. reducing the areas of sub-standard air quality in the borough and,contributing towards delivering the objectives of the latest Tower Hamlets,Air Quality Action Plan

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B. protecting and enhancing biodiversity, with the aim of meeting the,objectives of the latest Tower Hamlets Local Biodiversity Action Plan and Thames River Basin Management Plan and improving opportunities to experience nature, in particular in deficient areas

C. using the sequential and exceptions tests to direct development away from high flood risk areas and reduce flood risk in the borough

D. reducing water use

E. following the energy hierarchy: be lean, be clean and be green

F. maximising climate change adaptation measures, and

G. improving water and land quality and mitigating the adverse effects of contaminated land on human health.

Policy D.ES3 Urban greening and biodiversity

1. Development is required to protect and enhance biodiversity, through:

A. maximising the provision of 'living building' elements

B. retaining existing habitats and features of biodiversity value or, if this is not possible, replacing them within the development, as well as incorporating additional measures to enhance biodiversity, proportionate to the development proposed, and

C. protecting and increasing the provision of trees, through:

i. protecting all trees, including street trees

ii. incorporating native trees, wherever possible

iii. providing replacement trees, including street trees, where the loss of or impact on trees in a development is considered acceptable.

2. Major development is required to submit an ecology assessment demonstrating biodiversity enhancements that contribute to the objectives of the latest Tower Hamlets Local Biodiversity Action Plan and the Thames River Basin Management Plan.

3. Planting and landscaping around developments must not include 'potentially invasive non-native species'. Invasive non-native species listed in Schedule 9 of the Wildlife and Countryside Act must be controlled, and eradicated where possible, as part of redevelopment.

4. Development must not negatively impact on any designated European site such as Special Protection Areas, Special Areas of Conservation or Ramsar sites. Developments which might have the potential to adversely impact a Special Protection Area or Special Area of Conservation outside the borough will be required to submit a Habitat Regulations Assessment.

5. Developments which affect a Site of Importance for Nature Conservation, or significantly harm the population or conservation status of a protected or priority species, are required to be managed in accordance with the following hierarchy:

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A. Adverse impacts to the biodiversity interest should be avoided.

B. Where avoidance is not possible, proposals must minimise and mitigate the impact to the biodiversity interest.

C. As a last resort for exceptional cases where the benefits of the proposal clearly outweigh the biodiversity impacts, appropriate compensation will be sought.

D. Where appropriate compensation is not possible, planning permission will be refused.

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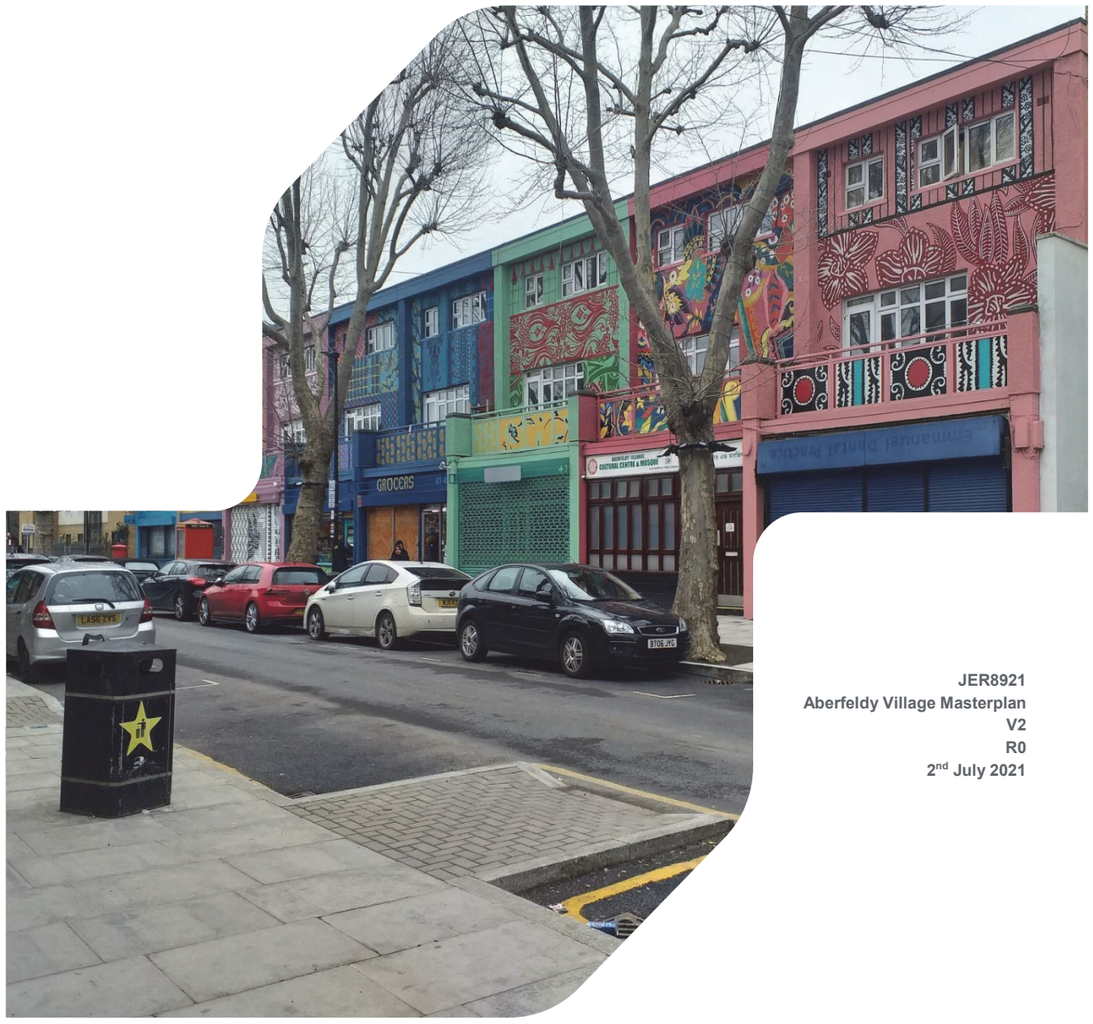
Preliminary Ecological Appraisal

PHASE 1 PRELIMINARY GEO-ENVIRONMENTAL AND GEOTECHNICAL RISK ASSESSMENT

Aberfeldy Village Masterplan, Aberfeldy Street, London E14 0NU



JER8921
Aberfeldy Village Masterplan
V2
R0
2nd July 2021

Quality Management					
Version	**Revision**	**Authored by**	**Reviewed by**	**Approved by**	**Date**
V1	R0	Jonathan Griffiths	n/a	n/a	9 April 2021
V1	R1	Jonathan Griffiths	Jim Lightbown	n/a	20 April 2021
V1	R2	Jonathan Griffiths	Jim Lightbown	Jim Lightbown	21 April 2021
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Approval for issue		
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Contents

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Appendices

1 INTRODUCTION

1.1 Preamble

1.1.1 RPS Consulting Services Ltd (RPS) was commissioned by Aberfeldy New Village LLP to undertake a Phase 1 Preliminary Geo-environmental and Geotechnical Risk Assessment for the scheme known as the Aberfeldy Village Masterplan, Aberfeldy Street, London E14 0NU, prior to the proposed redevelopment of the site. A site location plan is provided as Figure 1.

1.1.2 The site covers approximately 6.05 hectares and currently predominantly comprises low rise residential buildings, up to four storeys in height. The Aberfeldy Practice is located in the east of the site and Blairgowrie Court in the far east. A number of retail premises are located along the southern end of Aberfeldy Street. A site boundary plan is provided as Figure 2.

1.1.3 It is understood that the report has been produced to support the planning application for the proposed development as described below.

1.2 Proposed Development

1.2.1 The proposed development comprises detailed and outline parts, which will include the phased demolition of non-retained structures and clearance of the site. The proposed development is anticipated to provide:

Outline

1.2.2 Demolition of existing buildings and the provision of:

- Comprising approximately 1,330 units – Class C3.
- Approximately 5,000 m^2 GIA of Restaurant / Retail / Office – Class E(a),(b) and (g);
- Construction of new buildings up to 96m in height;
- Cycle and pedestrian routes through the site; and
- Provision of internal vehicle access routes.

Detailed

1.2.3 Demolition of existing buildings and the provision of 4 residential areas comprising:

- Comprising approximately 270 units – Class C3
- Approximately 2,500 m2 GIA of Restaurant / Retail / Office – Class E(a)(b); and
- Building heights ranging between approximately 7m to 42m in height.

1.2.4 A new access point is proposed to facilitate access to the proposed development from the A12 onto Abbott Road. In addition, the development seeks to pedestrianise the Abbott Road vehicular underpass at the existing Abbott Road junction to create a new walking and cycling route under the A12 and new public open space.

1.2.5 The Proposed Development intends to re-provide car parking provision onsite. It is envisaged this will be provided on street and within three podium car parks.

1.2.6 The landscape design intends to create a significant new public open space at the centre of the site.

1.3 Objectives

1.3.1 The principal objectives of this assessment were as follows:

- To assess potential sources of contamination at the site, associated with historical and current land uses both on site and in the surrounding area;
- To review the environmental setting to assess the sensitivity of the surrounding area to contamination/pollution;
- To produce an outline Conceptual Site Model (CSM) detailing how any contamination may impact the identified receptors via pollutant linkages;
- To review the ground conditions to determine potential engineering properties of the underlying soils to make provisional recommendations for the design and construction of foundations, floor slabs, road pavements, excavations and earthworks; and
- To conclude on the likely requirement for further geo-environmental and geotechnical assessment and investigation to support the detailed design for the scheme.

1.3.2 The Desk Study assessment is based upon a review of published information available from local, regional, and national agencies. The desk study information is derived from Envirocheck Reports provided by Landmark Information Group, Ref. 244333340_1_1 which is presented as Appendix C. Please note the terms and conditions attached to the supply of data from Landmark.

1.4 Legislation and Guidance

1.4.1 The assessment has been undertaken in general accordance with British Standard BS EN ISO 21365:2020 and is considered suitable to meet the initial requirements of planning as outlined within the National Planning Policy Framework (NPPF). The assessment also reflects the recommendations of Environmental Agency guidance, Land Contamination: Risk management, (LCRM 2020).

1.4.2 This report has been produced in general accordance with:

- Contaminated Land (England) Regulations 2006 (as amended);
- DEFRA Environmental Protection Act 1990: Part 2A - *Contaminated Land Statutory Guidance* (2012);
- Environment Agency (2020) Land Contaminated: Risk Management (LCRM 2020);
- National Planning Policy Framework (2019);
- CIRIA Document C665: *Assessing Risks Posed by Hazardous Ground Gases to Buildings*;
- British Standard requirements for the '*Investigation of potentially contaminated sites - Code of practice*' (ref. BS10175:2011+A1:2017);
- British Standard requirements for the '*Code of practice for ground investigations*' (ref. BS5930:2015+A1:2020); and,
- British Standard requirements for the '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*' (ref BS8485:2015+A1:2019).

1.4.3 Details of the limitations of this type of assessment are described in Appendix E.

2 SITE RECONNAISSANCE AND DESK STUDY

2.1 Site Reconnaissance

2.1.1 This section of the report is based upon observations made during a site visit carried out on 17th March 2021. A site boundary plan is provided as Figure 2. Selected photographs are shown in Appendix B.

The Site

Table 2-1 – Summary of on-site activities

Section	Description
Background:	The site is located in the London Borough of Tower Hamlets and is bound in general terms by Leven Road to the North, the A12 to the west, Abbot Road to the east and Blair Street to the south. It also includes an area to the north of the main site area, south of Lochnager Street. The site is centred at approximate coordinates 538463, 181382. The site is irregular in shape and occupies an area of approximately 9ha.
Site Layout	For description purposes the site has been split into a number of areas which are detailed below and shown on Figure 2. **Blairgowrie Court** – Located in the far east of the site, to the south of Blair Street. **25-55 Aberfeldy Street –** Located in the south of the site, incorporating the retail premises and residential properties located along Aberfeldy Street. **The Aberfeldy Practice –** Located in the east of the site bound by Ettrick Street to the north and Dee Street to the south. **Aberfeldy Neighbourhood Centre –** Located in the approximate centre of the site with Aberfeldy Street to the east and Dee Street to the South. **Dee Street to Ettrick Street –** Four storey developments located in the west of the site bounded by Ettrick Street to the north and Dee Street to the South. **Ettrick Street to Abbot Road –** Includes flats and residential houses on Findhorn Street, Balmore Close and 57 to 67 Aberfeldy Street. **Between Abbot Road and Nairn Street –** The residential development located in the north of the site bounded by Leven Rd to the north, Abbot Road to the south and west and Nairn Street to the east. **Poplar Works –** New development located in the north west of the site running down the western boundary between Abbot Road and the A12. **Lochnager Street –** Located to the south of Lochnager Street and to the north of the former Bromley Hill School, this is a separate area to the main site.
Drainage:	Numerous surface water drainage features (manholes and drains) were observed across the site. Thames Water asset location plans indicate this drainage to discharge to local Thames Water sewers, which eventually join the main Thames Water sewer running under Abbot Road. A secondary Thames Water sewer runs along the western boundary of the site (beside the A12), encroaching the site and running under the Poplar Works area. No areas of flooding or standing water were observed during the walkover which may indicate poor drainage.
Bulk Storage / Tanks:	No evidence of bulk storage tanks was observed during the walkover. However, several warning signs for storage of petrol were noted on doors within the development between Abbot Road and Nain Street in the north of the site (example on Photo 01). Access into these areas was not possible at the time of the walkover to verify if/how the petrol was stored. It is suspected that these may make misrepresentative reference to the storage of diesel to fuel back-up generators in these areas.
Electricity Substations /Transformers:	One electricity substation was readily observed during the walkover. This was located in the far east of the site, in the south of the Blairgowrie Court area (Photo 02).
Visual Evidence of Contamination:	No visual evidence of contamination was noted at the time of the site walkover.

Section	Description
Other Geo-Environmental Issues:	Whilst no asbestos containing material was noted during the walkover, given the age of the buildings across the development it is highly likely that asbestos containing material may be present. In addition, the large amount of fly tipping around Lochnager Street may be a potential source of asbestos. (Photo 03)

2.1.2 Due to the size of the site it has been split into different sections to enable more detailed description of each part to be undertaken. The location of each area is presented on Figure 2. Summaries for each section on the activities/operations, building structures, surface coverage and waste are described below.

Blairgowrie Court

2.1.3 Located in the far east of the site, Blairgowrie Court comprises a five storey apartment complex to the south of Blair Street (Photo 04). The complex included an underground general and recycling refuse storage systems (Photo 05).

25 to 55 Aberfeldy Street

2.1.4 Located in the south of the site, this is formed of three storey brick built buildings on either side of Aberfeldy Street with retail premises at ground level and residential above (Photo 06). The retail premises were various and contained a number of takeaways, a pharmacy, general stores and an Islamic Cultural Centre. To the rear of these premises to the east, on Lansbury Gardens, is an area of hardstanding, which was being used for parking (Photo 07). To the rear of the shops to the west, on Kirkmichael Road, was a number of aircon units associated with the shops along with some cardboard recycling waste cages (Photo 08). A number of 1,000 litre wheeled recycling waste bins were located at the junction with Dee Street (Photo 09).

The Aberfeldy Practice

2.1.5 Located in the east of the site bound by Ettrick Street to the north and Dee Street to the South. The Aberfeldy Practice was a brick and steel built two storey structure. 1,000 litre wheeled general waste bins associated with the practice were located off Ettrick Street.

Aberfeldy Neighbourhood Centre

2.1.6 Located in the approximate centre of the site with Aberfeldy Street to the east and Dee Street to the south, this area of the site is occupied by the Aberfeldy Neighbourhood Centre (Photo 10). This includes a single storey brick built building, an area of hardstanding for ball games and a park/play area with soft landscaping (Photo 11). At the time of the walkover the park was closed due to Covid restrictions.

Dee Street to Ettrick Street

2.1.7 Located in the west of the site and bound by Ettrick Street to the north and Dee Street to the south, this area is formed of four storey residential flats with allotments/gardens in between (Photo 12). 1,000 litre wheeled general waste bins were located along Cullen Street (Photo 13).

Ettrick Street to Abbot Road

2.1.8 Located in the west of the site, this area is formed of four storey brick built flats along Findhorn Street (Photo 14), Two storey residential properties with gardens are present along Balmore Close (Photo 15) with recreation areas and soft landscaping (Photo 16) around the western end of Balmore Close and along Findhorn Street. Within the eastern part of this area are 57 to 67 Aberfeldy Street which are four storey structures containing flats. A large area of open green space is present to the rear of these properties along with a row of 10 domestic garages (Photo 17). A single storey brick rectangular building of unspecified use was also noted in the south east of this area *(identified within a previous assessment completed by Campbell Reith in 2011 as a flammable liquid store see Section 2.4 below)*.

Between Abbot Road and Nairn Street

2.1.9 Comprising residential development located in the north of the site bound by Leven Rd to the north, Abbot Road to the south and west and Nairn Street to the east. This is formed of four storey brick built structures (Photo 18) divided into flats with areas of soft landscaping and hardstanding for parking within the central courtyards (Photo 19).

Poplar Works

2.1.10 This is a new development located in the north west of the site running down the western boundary between Abbot Road and the A12. It comprises two storey brick built structures housing small commercial units (Photo 20).

Lochnager Street

2.1.11 Located to the south of Lochnager Street and to the north of the former Bromley Hill School, this is a separate area to the main site. The site is generally derelict land with fly tipping (Photo 21). A scaffolding company has set up a temporary storage area covering the majority of the site area.

The Surrounding Area

2.1.12 The site is located in an area of mixed commercial and residential land uses. At the time of the site inspection, neighbouring land generally consisted of the following:

Table 2-2 – Neighbouring Land Uses

Direction	Description
North:	Derelict land (partially associated with the former Bromley Hall School) labelled as a scrap yard and Tire Change on aerial mapping.
East:	Millenium Green, Leven Road Open Space with residential dwellings, a construction site (understood to comprise redevelopment of the former Poplar Gas Works) and the River Lea beyond.
South:	Residential dwellings and a construction site in relation to the earlier phase of the Aberfeldy Village Masterplan (Phases 1 to 3) with the East India Dock Road beyond. Braithwaite Park is located in to the immediate south east.
West:	A12 Blackwall Tunnel Northern approach with residential dwellings beyond.

2.2 Site History

Historical Map Review

2.2.1 The following review is based on past editions of readily available Ordnance Survey (OS) maps. These include scales of 1:1,250, 1:2,500 and 1:10,000 dated 1869 to 2021. Selected historical maps are provided in Appendix C.

Table 2-3 – Historical Site Uses

On-site Land Use and Features	Dates
Mostly comprised open land labelled Bromley Marsh.. Eight small rectangular buildings of unspecified use were present in the centre of the site **(in the current location of the Aberfeldy Neighbourhood Centre).**	1869 to c.1896
The site has been developed and now comprises mostly residential terraced housing. The area was labelled South Bromley as of c.1898 **(encompassing all site areas)**.	1896 to c.1916
The land portion in the far north **(Lochnager Street)** is indicated to partially comprise part of the adjacent school buildings labelled Bromley Hall School (c.1916 to c. 2006).	1916 to c.1946
The south west, central and south east of the site is indicated to be in ruin/ undeveloped **(25 to 55 Aberfeldy Street and Aberfeldy Neighbourhood Centre)**.	1946 to c.1954

On-site Land Use and Features	Dates
The northern and eastern portions of the site are now indicated to be vacant **(Between Abbot Road and Nairn Street and northern portion of Ettrick Street to Abbot Road)**.	1975 to c.1990
The central and eastern portion of the site now comprises vacant land. The north **(between Abbot Road and Nairn Street)** and far east **(Blairgowrie Court)** of the site has now been redeveloped with residential housing. The area of land in the far north of the site remains undeveloped (**Lochnager Street)**.	1990 to Present
The central portion of the site has now been developed to resemble the present day layout **(Ettrick Street to Abbot Road)**.	2006 to. Present

Table 2-4 – Historical Neighbouring Site Uses

Surrounding Land Uses (250m radius)	Orientation	Approximate Distance	Dates	
			From	To
Residential dwellings	West /South west	Adjacent	c.1869	Present
Macintosh's Farm	East	Adjacent	c.1869	c.1896
Clothing Works *Then* Factory	East	Adjacent	c.1947 c.1954	c.1954 c.1998
Islay Wharf *Then* potentially infilled	North east	Adjacent	c.1896	c.1982
Culloden Primary School (including electricity substation indicated to be present from c.1954)	South west	Adjacent	c.1916	Present
St. Nicholas Church	East	Adjacent	c.1954	Present
Braithwaite House *Then* Braithwaite Park	East	Adjacent	c.1949 c.2006	c.2006 Present
Garage	South	40m	c.1916	c. 1938
Car Shed *Then* Trolley Bus Depot *Then* Depot	East	40m	c.1916 c.1947 c.1965	c.1947 c.1965 Present
Ailsa Wharf With associated tanks	North east	50m	c.1896 c.1948	c.1948 c.1975
Electricity substation	South	50m	c.1947	c.2003
Devon Wharf	East	50m	c.1916	c.1955
Glaucus Works	East	50m	c.1947	c.1999
Timber Yard *Then* Timber Depot *Then* Depot	East	80m	c.1916 c.1955 c.1964	c.1954
Phoenix Sawmill	North west	90m	c.1896	c.1949
Rifle Range	East	90m	c.1954	c.1961
Open land labelled 'Bromley Marsh' *Then* Poplar Gas Works (including associated gasometers, tanks and infrastructure)	East/South east	95m	c.1869 c.1896	c.1896 c.2006
Poplar Hospital	South	100m	c.1920	c.1982
St Leonard's Warf comprising multiple tanks	North	100m	c.1896	c.1995
Bus Depot	South	100m	c.1947	c.1975
East India Dock with associated warehouses and infrastructure	South	120m	c.1869	c.1985
Warehouses *Then* Goods shed	South east	120m	c.1869 c.1947	c.1947 c.1948
Tramway	South	120m	c.1916	c.1947

Surrounding Land Uses (250m radius)	Orientation	Approximate Distance	Dates	
			From	To
G.E.R Wharf (with associated goods sheds, warehouses and infrastructure) *Then* Blackwall Goods Depot *Then* Salt depot *Then Depot* *Then* Tower Hamlets Vehicle Testing Station	South east	125m	c.1916 c.1947 c.1954 c.1969 Present	c.1947 c.1954 c.1969 c.1991
East India Dock North Quay *Then* potentially infilled	South	190m	c.1869	c.1985
Car Storage Yard	East	200m	c.1995	c.2006
Iron Bridge Wharf *Then* Waste Transfer Station labelled *Then* scaffolder's/pallet storage yard	East	230m	c.1896 c.1992 Present	c.1974 c.2020

Site Planning History

2.2.2 Relevant and readily available planning records for the site, as obtained from the planning portal on the London Borough of Tower Hamlets website are summarised as follows:

- Bromley Hall Road and Lochnagar Street: PA/00/00449- Temporary change of use (5 years) from vacant industrial use to open storage B8 use with ancillary carpark for use of Poplar Library Business Centre. Permit: 29th September 2000 **(Lochnagar Street)**.
- Bromley Hall Special School, Bromley Hall Road, London, E14 0LF: PA/02/00808- Change of use from school to office accommodation (B1) and storage (B8). Permit: 7th August 2002 **(Lochnagar Street)**.
- 229 Abbots Road: PA/00/01516- External refurbishment including communal areas and stairs, revised entrance, canopies, refuse arrangements, external works and parking arrangements. Permit: 21st December 2000 **(Between Abbot Road and Nairn Street)**.
- Former Site F Abbott Road, Aberfeldy Street, Findhorn Street, Aberfeldy Estate, E14 (East India Ward): PA/98/01436- Erection of two and three storey residential development comprising 41 houses and 2 flats with landscaping and car parking. Permit: 25th November 1999 **(Ettrick Street to Abbot Road)**.
  - PA/00/00886- Submission of details on: Elevational design and external appearance (condition 2a); Walls fencing and railings (condition 2b); Landscaping (condition 2c); Means of rubbish disposal (condition 2e); Means of sound insulation (condition 4); and Contamination survey and remedial works (condition 7). Permit: 6th March 2001. Reports relating to contamination surveys and remedial works were not available for review upon the Local Authority website.
- Aberfeldy Estate, Abbott Road, London, E14: PA/11/03548/P1- Erection of three blocks between 4 and 10 storeys on the corner of Abbott Road and East India Dock Road to provide 342 new residential units, 352 sq.m. new retail floorspace (Use Classes A1 and A3), a marketing suite of 407 sq.m. (Use Class A2), semi-basement and ground floor parking, cycle parking, landscaped public open space and private amenity space and other associated works. Permit: 20th June 2012 **(Entire site area excluding Lochnagar Street and addition land to the south of the current masterplan boundary)**.
  - PA/12/02713/S- Submission of Details pursuant to Conditions 14, (foul and surface water) and 15, (site investigation). Permit: 12th December 2012. Reference made to a Land Quality Statement completed by Campbell Reith dated October 2011 (ref: SRMsrm10620 181011-LQS-F1.docx) and Ground Gas Addendum Report issued by

Campbell Reith 20th September 2012 (JWCjap10620-200912-Gas Addendum Ltr v2.doc) – *reviewed under Section 2.4 below*.

- Heather House, Tartan House and Thistle House, Dee Street: PA/00/01518- Refurbishment of existing dwellings including new insulated over-cladding, refurbishment of communal areas and stairs, new glazed stair enclosure for Tartan House, revised entrance areas and refuse arrangements and external works and parking arrangements. Permit: 2nd January 2001 **(Dee Street to Ettrick Street)**.
- Kilbrennan House, Findhorn Street: PA/11/00635/NC- Proposed external and environmental works to include, - New canopies. - New railings to walkways and balconies. - Refurbishment and demolishing of existing pram stores. - New lighting strategy. - Proposed front and rear garden walls. Permit 15th June 2011 (**Ettrick Street to Abbot Road/ Dee Street to Ettrick Street)**.
- 25-47, 53-55 and 40-48 Aberfeldy Street: PA/19/02851/NC- Proposed externally illuminated fascia signs to 17 ground floor commercial units. Permit: 17th February 2020. **(25 to 55 Aberfeldy Street)**
- Former Site N Aberfeldy Estate, Blair Street, London, E14: PA/01/00878- Erection of a 3 & 6 storey residential development including residents off street parking and a communal garden area. Permit 22nd April 2002 (**Blairgowrie Court)**.
  - PA/02/00689- Approval of details pursuant to Condition 3 (contamination remediation detail) for the residential development of 30 flats. Permit: 29th June 2004. Reference made to a Site Investigation Report by AP Geotechnics dated December 2001 (ref: 1978) – *reviewed under Section 2.4 below*.

2.3 Previous Reports

2.3.1 A review of the existing environmental reports provided to RPS for review and those readily available on the London Borough of Tower Hamlets website is provided below.

2.3.2 RPS cannot vouch for the accuracy or validity of the information provided within third party reports and the following opinion is based solely upon the reports. Legal reliance should be sought from the original authors of these reports where their content is considered material to the characterisation of the site. RPS comments are provided in *italics*.

Aberfeldy Estate- Site N Blair Street London E3, AP Geotechnics (2001)

2.3.3 A Ground Investigation Report was completed by AP Geotechnics in December 2001 (ref: 1978). The report was undertaken in connection with the proposed housing redevelopment of the Former Site N, Aberfeldy Estate. *Located in the Braithwaite Park area of the site.*

2.3.4 The investigation was undertaken to confirm the ground conditions beneath the site and assess the potential for any pollutant linkages to be active upon the site.

2.3.5 The site investigation comprised the following: two cable percussion boreholes (BH1 and BH2) and six trial pits (TP1, TP2, TP3, TP4, TP5, TP6); installation of ground gas/groundwater monitoring wells in borehole BH2.

2.3.6 Chemical laboratory testing was undertaken eight soil samples. Samples were analysed for a range of contaminants of concern, including metals, speciated polycyclic aromatic hydrocarbons (PAH), total polycyclic aromatic hydrocarbons (TPH), monohydric phenol and cyanide. *Groundwater samples were not taken as part of the site investigation.*

2.3.7 Encountered ground conditions comprised Made Ground (ranging in thickness between approximately 0.50m to 1.40m); Alluvium (ranging in thickness between approximately 0.80m and

1.40m); The Kempton Park Gravel Member (ranging in thickness between approximately 3.30m to 2.10m); London Clay to a maximum unproven thickness of 20.00m was encountered.

2.3.8 During drilling groundwater was encountered at 5.00m rising to 4.10m bgl. During subsequent monitoring, groundwater levels ranged between approximately 3.30m and 3.60m bgl, within the Kempton Park Gravel Member.

2.3.9 Soil analytical results were compared to guideline values published by the ICRCL. Elevated concentrations of metals were recorded within soil samples of Made Ground. *Groundwater samples were not analysed as part of the site investigation report.*

2.3.10 Three ground gas monitoring visits were undertaken. Methane was not recorded above the instrument limit of detection. Carbon dioxide was recorded at a maximum concentration of 9.1 % v/v. Flow Rates were recorded at 0.3 l/hr.

2.3.11 Further monitoring was suggested to be undertaken due to the elevated levels of carbon dioxide. *No further reports have been made available for review regarding this issue upon the Tower Hamlets Council website.*

2.3.12 It was recommended shallow foundations should bear on the underlying Kempton Park Gravel Member based with a safe bearing capacity of 250kPa.

2.3.13 Due to the fill material (Made Ground) and Alluvium being variable, it was recommended suspended ground floor slabs be adopted for construction.

2.3.14 Groundwater observations made during the investigation suggest excavations should remain above the general groundwater level.

2.3.15 Chemical testing revealed Class 1 of BRE Digest 365 be applied in respect buried concrete classification.

Site Investigation- Culloden Primary School, Mayer Environmental (2004)

2.3.16 A Ground Investigation Report was completed by Mayer Environmental Ltd at Culloden Primary School, located to the immediate south west of the current masterplan boundary, in August 2004 (ref: ME/04/5175 KT). The report was undertaken in connection with the proposed redevelopment of external play areas and soft landscaping at the school.

2.3.17 The site was indicated to previously comprise a school building with associated floor slab with associated soft landscaping.

2.3.18 A site investigation was undertaken by Mayer Environmental Ltd to confirm ground conditions beneath the site and assess the potential for any pollutant linkages to be active upon redevelopment of the site.

2.3.19 The site investigation comprised the excavation of six hand excavated pits (A, B, C, D, E and F).

2.3.20 Chemical laboratory testing was undertaken on six soil samples. Samples were analysed for a range of contaminants of concern, including metals and speciated PAH.

2.3.21 Soil analytical results were compared to Soil Guideline Values (SGV) and elevated concentrations of metals were identified in several samples.

2.3.22 It was therefore recommended that the existing topsoil be removed to a depth of 300mm to 400m and replaced with a suitable clean cover system. *It is not clear whether the remediation recommendations were carried out or approved by the Council.*

Aberfeldy New Village, London, E14 Land Quality Statement, Campbell Reith (2011)

2.3.23 A Land Quality Statement was completed by Campbell Reith in October 2011 (ref: SRMsrm10620181011-LQS-F1.docx). The report was undertaken in connection with the proposed redevelopment of Aberfeldy New Village. The report comprised a Preliminary Phase 1 Desk Study report for the whole site, a detailed site investigation for Phase 1 and a preliminary site investigation with the area associated with Phases 2 to 6. *Phases 4 to 6 partially lie within the current masterplan boundary referenced within this report. Phases 1 to 3 are situated to the south of the current masterplan boundary referenced within the report.*

2.3.24 A historical map review identified the site to comprise housing, a hospital in the south west of the site, a church in the south east and a tramway depot, garage and omnibus depot in the centre of the Phase 1 site (*to the south of the current masterplan boundary*).

2.3.25 At the time of the site walkover the Phase 1 area of the site comprised a demolished area with an electricity substation situated in the far south western corner. Phases 2 to 6 comprised housing and commercial properties including a dry cleaners situated in the Phase 4 area in the centre of the site (*west of 25 to 55 Aberfeldy Street area*). An electricity substation was noted in the south western corner of the Phase 3 area. A row of domestic garages and flammable liquid store was noted in Phase 6 area of the site (*south east of Ettrick Street to Abbot Road area*). *N.B What were considered domestic garages by the Campbell Reith report are understood to actually comprise the rear access to retail properties along the eastern flank of Aberfeldy Street.*

2.3.26 Campbell Reith considered pollutant linkages could be active upon redevelopment of the site relating to former historical site uses including areas of infilling from historical demolition, the former tramway depot, garage and omnibus depot and off site uses relating to the Gas Works situated approximately 35m to the north of the site and an infilled dock located approximately 100m to the south. Current sources at the time of reporting included the dry cleaners, electricity sub stations, domestic garages, flammable liquid store and possible boiler rooms/ oil storage tanks with existing site buildings.

2.3.27 It was also noted the site underwent significant bomb damage during the Second World War. A detailed UXO Risk Assessment for the site was undertaken and was classified as having low to medium of medium to high risk of encountering UXO (*an updated Detailed UXO Assessment for the site was completed in February 2021 – see Section 2.7 below)*.

2.3.28 The Building Control Department at Tower Hamlets Council indicated some sites within the area may have minor ground gas issues.

2.3.29 It was noted that a COMAH registered Gas Works was located approximately 35m from the site. Campbell Reith state 'The presence of a COMAH site in such close proximity may result in the presence of constraints on redevelopment for any sites within restricted zones associated with this entry. It is recommended that the COMAH Controlling Authorities of the Health and Safety Executive, the Environment Agency and Local Authority are involved in discussions with respect to this registration'. *It is understood that this related to the former Gas Works to the east of the current masterplan area, observed during the recent site walkover to be undergoing redevelopment.*

2.3.30 A site investigation was undertaken by Campbell Reith to confirm the ground conditions beneath the site and assess the potential for any pollutant linkages to be active upon completion of the proposed redevelopment.

2.3.31 The detailed site investigation across Phase 1 and preliminary investigations across Phases 2 to 6 comprised the following: eleven cable percussion boreholes, eight windowless sample boreholes, ten trial pits, eleven variable head permeability tests and seven soakaway tests. *The majority of the intrusive exploratory locations were located to the south and east of the current masterplan redline boundary*.

2.3.32 Two cable percussion boreholes (BH201 and BH202) and two trial pits (TP201 and TP202) were undertaken within the current masterplan boundary. BH201 was located in the north western portion of Ettrick Street to Abbot Road; BH202 was located in the eastern portion of Ettrick Street to Abbot Road. TP201 was located in the north eastern portion of Ettrick Street to Abbot Road. TP202 was located in the south western portion of Ettrick Street to Abbot Road.

2.3.33 Chemical laboratory testing was undertaken on up to eleven soil samples and two groundwater samples. Samples were analysed for a range of contaminants of concern, including asbestos screen, metals, speciated polycyclic aromatic hydrocarbons, and speciated total petroleum hydrocarbons (TPH CWG). Waste Acceptance Criteria (WAC) analysis was undertaken on soil samples from the Phase 1 area of the site.

2.3.34 Encountered ground conditions comprised Made Ground (ranging in thickness between approximately 0.75m to 3.10m); Alluvium (ranging in thickness between approximately 1.20m and 2.30m); Kempton Park Gravel Member (ranging in thickness between approximately 2.40m to 5.10m); London Clay (ranging in thickness between approximately 11.30m to 16.40m) and then the Lambeth Group (a maximum unproven thickness of 11.30m being encountered).

2.3.35 It was noted that an hour was spent chiselling in the Lambeth Group between depths of 18.90m and 19.30m below ground level (bgl).

2.3.36 During subsequent monitoring, groundwater levels ranged between approximately 4.46m and 4.96m bgl, within the Kempton Park Gravel Member .

2.3.37 Soil analytical results were compared to Generic Assessment Criteria (GAC) derived using the CLEA framework and the Soil Guideline Value (SGV) for lead, based on a residential use without gardens. Within the Phase 1 area, elevated concentrations of lead, benzo(a)pryrene, dibenzo(ah)anthracene and asbestos were recorded in samples of Made Ground. Within the Phase 2 to 6 area, elevated concentrations of lead, benzo(a)pyrene and asbestos were recorded in samples of Made Ground from BH201 (located in the north western portion of Ettrick Street to Abbot Road) with PAH compounds recorded in a sample of Made Ground in BH204 (*located outside the current master plan boundary*). Concentrations of contaminants of concern within samples of natural strata were all recorded below their GAC.

2.3.38 Analytical results for groundwater samples were compared to Environmental Quality Standards (EQS), and where no EQS values were available, the UK Drinking Water Standards (DWS). Within the Phase 1 area of the site elevated concentrations of TPH and PAH were found to exceed the adopted Screening Criteria. Within the Phase 2 to 6 area of the site, elevated concentrations of PAHs, TPH in both BH201 and BH202. A single nominally elevated concentration of Arsenic Was found to exceed the adopted Screening Criteria within BH202. During the subsequent monitoring visits, groundwater samples obtained from BH201 and BH202 located in north western and eastern portion of Ettrick Street to Abbot Road were described as having a 'sulphurous' and 'rotten' odour. Organic odours were noted from boreholes located on the Phase 1 area.

2.3.39 Two ground gas monitoring visits were undertaken. Within the Phase 1 area, Methane was recorded at a maximum concentration of 1.2% v/v. Carbon dioxide was recorded at a maximum concentration of 8.7% v/v. Flow rates were recorded at -0.2l/hr. Within the Phase 2 to 6 area, Methane was not recorded above the instrument limit of detection. Carbon dioxide was recorded at a maximum concentration of 3.8% v/v. Flow rates were recorded at -0.2 l/hr. *A Ground Gas Addendum Report was issued by Campbell Reith 20th September 2012 (JWCjap10620-200912-Gas Addendum Ltr v2.doc), detailing the findings of an additional six rounds of ground gas monitoring to the site investigation. The addendum report concluded that gas protection measures were not specifically required for the Phase 1 development as a whole. However, it was recommended that a 1,200g DPM material be installed in a fashion so as to function as a gas barrier in the western portion of Block C (where no car/park basement was proposed).*

2.3.40 It was concluded that the removal and validation of identified hotspots with the Phase 1 area and recommended that a suitable clean cover system be installed within all areas of soft landscaping that directly overlie impacted soils. It was concluded additional investigation was required for Phases 2 to 6 to confirm conclusions made on sites pollutant linkages.

2.3.41 A geotechnical assessment of the site was undertaken as part of the report and included undertaking laboratory testing on samples from the encountered strata. The recommendations from the reports indicated the Made Ground and Alluvium was not suitable as a founding strata unless subject to ground improvement. Block A was not suitable for shallow foundations bearing on the Kempton Park Gravel Member, however ground improvement would allow a raft design to be adopted with a safe bearing capacity of 125kPa. Piled foundations are recommended for all other blocks due to ground conditions or high water table.

2.3.42 The retaining wall to form the basement for block C was recommended as being embedded subject to further groundwater monitoring. If the basement area was dewatered then pad foundations could be adopted founded on the Kempton Park Gravel Member with a safe bearing capacity of 250kPa. Otherwise piling is recommended with suspended floor slabs.

2.3.43 An ACEC class of AC-3 should be adopted for buried concrete in the Phase 1 area and an ACEC Class of AC-4 should be adopted in the Phase 2 to 6 area. It was suggested that this could be reduced through further testing.

2.3.44 Further works were recommended to establish the groundwater regime and confirm the preliminary findings of the site investigation for Phases 2 to 6.

Aberfeldy New Village Phase 3, Land Quality Statement, Campbell Reith (2015)

2.3.45 A Land Quality Statement was completed by Campbell Reith in November 2015 (ref: LIjb12004-050815-LQS F1. Doc). The report was undertaken in connection with the proposed redevelopment of Phase 3 of Aberfeldy New Village located to the immediate south of the current masterplan redline boundary. The report comprised a Preliminary Phase 1 Desk Study report and Site Investigation Report for the Phase 3 area.

2.3.46 A historical map review identified previous site uses to comprise an omnibus depot (demolished c. 1970) and a garage (demolished c. 1953). At the time of the walkover the site comprised seven blocks of flats (five storeys in height) and domestic garages situated along the southern boundary. An electricity substation was noted in the south west of the site.

2.3.47 A site investigation was undertaken by Campbell Reith to confirm the ground conditions beneath the site and assess the potential for any pollutant linkages to be active upon the site. The site investigation comprised the following: nine cable percussion boreholes, thirteen dynamic continuous sampling holes, four machine dug trial pits, five hand dug trial pits and five hand dug inspection pits.

2.3.48 Soil analytical results were compared to Generic Assessment Criteria (GAC) derived using the CLEA framework and the Soil Guideline Value (SGV) for lead, based on a 'purposed end use a four residential blocks'. *RPS interprets this screening criteria as residential without homegrown produce.* Elevated concentrations of lead, PAH compounds and a hotspot of arsenic was identified. Asbestos was encountered within samples of Made Ground from across the Phase 3 area. Six samples were sent for Waste Acceptance Criteria (WAC) analysis.

2.3.49 Analytical results for groundwater samples were compared to Environmental Quality Standards (EQS), and where no EQS values were available, the UK Drinking Water Standards (DWS). Elevated concentrations of TPH were identified in samples of groundwater with visual and olfactory evidence of hydrocarbon contamination noted.

2.3.50 Nine ground gas monitoring visits were undertaken. Methane was not recorded above instrument limit of detection. Carbon dioxide was recorded at a maximum concentration of 12.0% v/v. Maximum flow rates were recorded at 0.3l/hr.

2.3.51 It was recommended a detailed qualitative risk assessment and additional site investigation be undertaken to address elevated hydrocarbon concentrations within groundwater in the north east of the area and that suitable clean cover system be installed within all areas of soft landscaping that directly overlie impacted soils.

2.3.52 Installation of gas protection measures were recommended in the residential units of Block J.

2.3.53 The report identified a number of geotechnical hazards for the site, including, soft and compressible Made Ground and Alluvium, the potential for obstructions associated with historical developments, shallow groundwater, the potential for the Made Ground and London Clay Formation to be aggressive to buried concrete and groundwater under significant sub-artesian pressure within the Lambeth Group.

2.3.54 A piled foundation solution was recommended for all four blocks on the site (blocks F to H and J). The single storey basement beneath block G was proposed to be constructed using sheet piles. Floor slabs were proposed to be suspended with a long term soil heave pressure of up to 30kPa in relation to the block G basement floor slab.

2.3.55 An ACEC Class of AC-3 was recommended for buried concrete, increasing to AC-4 for any concrete in contact with the London Clay Formation that had the potential to be oxidised.

Aberfeldy New Village Phase 3, Additional Ground Investigation, Campbell Reith (2016)

2.3.56 A letter report was completed by Campbell Reith in March 2016 (ref: SRBpmb010317- 12004-GI Letter Report.doc.). The report documented additional ground investigation that was undertaken in connection with recommendations made in the above report and to provide further information on the following: the depth of the Kempton Park Gravel Member adjacent to Sam March House; additional soil sampling with screening and quantification for asbestos; and additional soil sampling and analysis for waste classification.

2.3.57 Depths to the base of the Kempton Park Gravel Member within the area surrounding Sam March House varied between 8.30m and 10.20m bgl. Asbestos was encountered at five out of nine exploratory locations with concentrations ranging from <0.001% to 0.003%.

2.3.58 It was also stated in the letter repot that additional groundwater monitoring will also be undertaken of part of the works to establish the extent of hydrocarbon contamination in groundwater in the east of the site, and results will be provided under a separate cover. *RPS has not been provided with the results from the additional groundwater monitoring undertaken as part of these works.*

Aberfeldy New Village Phase 3a, Verification Report, Campbell Reith (2020)

2.3.59 A Verification report was completed by Campbell Reith in August 2020 (ref: SRB 12004 070820 Verf Report F1). The report was undertaken in connection with the development of Phase 3a and requirement to discharge condition 25(d) of the planning application PA/15/00002.

2.3.60 The report detailed the findings of the watching brief carried out during the redevelopment of Phase 3a, along with verification of imported clean cover in areas of soft landscaping. The submission was approved on 14th September 2020. *N.B this submission does not cover the Phase 3b area, which was also included under the planning permission and required verification.*

Ground Investigation Report at Leven Road, South Bromley, London, E14 Structural Soils (2007)

2.3.61 The following site investigation report was undertaken adjacent to the eastern boundary of the site area between Abbot Road and Nairn Street.

2.3.62 A Ground Investigation Report was completed by Structural Soils in March 2007 (ref: 61610). The report was undertaken in connection with the proposed housing redevelopment of North End 84 Leven Road.

2.3.63 The site was indicated to formerly comprise a 'lolly pop stick manufacturing facility, which is noted to include a basement or basements in the sites southern portion and a bunded oil tank at an undisclosed location.

2.3.64 A site investigation was undertaken by Structural Soils to confirm ground conditions beneath the site and assess the potential for any pollutant linkages to be active upon redevelopment of the site.

2.3.65 The site investigation comprised the following: three cable percussion boreholes (BH1, BH2 and BH3) and five window sample boreholes (WS1, WS2, WS3, WS4 and WS5); installation of ground gas/groundwater monitoring wells in boreholes BH1, BH2 and BH3.

2.3.66 Chemical laboratory testing was undertaken on up to 20 soil samples and 2 groundwater samples. Samples were analysed for a range of contaminants of concern, including: asbestos screen, metals, speciated polycyclic aromatic hydrocarbons (PAH), extractable petroleum hydrocarbons (EPH), speciated total petroleum hydrocarbons (TPH) and petrol range hydrocarbons (PRH). *RPS considers these analysis out of date given the time period of the investigation.*

2.3.67 Geotechnical testing was undertaken on nineteen soil samples for a range of testing including moisture content, liquid limit, plastic limit and plasticity index, particle size distribution, triaxial compression, pH and sulphate and BRE SD1 suite.

2.3.68 Encountered ground conditions comprised Made Ground (ranging in thickness between approximately 1.40m and 3.10m); the Alluvium (proven to depths between 2.70m and 3.70m); the Kempton Park Gravel Member (proven to depths between ranging in thickness between 7.30m and 10.40); and then The London Clay Formation including the Harwich Formation (a maximum unproven thickness of 20.0m was encountered). *The base of the London Clay Formation is indicated to be present between depths of 19.30m and 19.50m.*

2.3.69 A strong hydrocarbon odour was noted in BH2 between 3.10m and 4.70m bgl and in WS4 between 3.60m and 4.00m bgl. Between 19.30m and 19.50m very dense silty very sandy gravel was encountered in all cable percussion holes. This is considered to be part of the Harwich Formation.

2.3.70 During subsequent monitoring, groundwater levels were recorded at 5.60m within the Kempton Park Gravel Member.

2.3.71 Soil analytical results were compared to Soil Guideline Values (SGV) and the derived vales using the early CLEA model based on a residential use with and without gardens. In absence to CLEA guidelines ATRISK soil screening values were used. Elevated concentrations of PAHs, TPHs were recorded within soil samples of Made Ground. Elevated concentrations of TPHs were identified in a sample of Kempton Park Gravel Member. *RPS considers this screening criteria outdated.*

2.3.72 Analytical results for groundwater samples were compared to Environmental Quality Standards (EQS), and the UK Drinking Water Supply Regulations 2000 guidelines where no EQS values were available the 'Dutch' guideline values were used. All concentrations of contaminants of concern were recorded below their assessment criteria. *RPS considers this screening criteria outdated.*

2.3.73 Three ground gas monitoring visits were undertaken. Methane was not recorded above the instrument limit of detection. Carbon dioxide was recorded at a maximum concentration of 1.8% v/v. Flow rates were not recorded at 0.6l/hr.

2.3.74 It was considered WAC testing indicated material across the site would be unlikely to be classified as non-hazardous waste except one sample which was classed as hazardous deriving from WS3.

2.3.75 It was recommended bored pile foundations be bored into the London Clay Formation and ground floor slab be suspended.

2.3.76 Chemical testing revealed AC-2 be applied in Made Ground soils and AC-1 conditions be applied in natural soils with respect to buried concrete classification.

2.3.77 Recommendations were made for further investigation and desk top study regarding the location of the former fuel tank and notification upon contamination discovery by site workers. *Further documentation is not available for review upon the Local Authority Planning website.*

2.4 Environmental Setting

Geology

2.4.1 Based on British Geological Survey (BGS) mapping (1:50,000-scale) and the Environment Agency (EA) Groundwater Vulnerability mapping (1:100,000-scale), the stratigraphic sequence and aquifer classifications beneath the site are indicated to be as follows:

Table 2-5 – Descriptions of Geological Strata

Strata	Description & approximate thickness	Aquifer Classification
Alluvium	This stratum comprises clay, silt, sand and peat. Likely to be a couple approximately 1m in thickness beneath the site.	Secondary Undifferentiated
Kempton Park Gravel Member	Comprising orange brown sandy gravel, up to 5m in thickness beneath the site.	Secondary A Aquifer
London Clay Formation	This stratum comprises clay, silt and sand. Likely to be between approximately 11.00m and 16.50m in thickness beneath the site.	Unproductive Stratum
Lambeth Group	This stratum comprises clay, silt, sand and gravel and is likely to be approximately 15m in thickness beneath the site.	Secondary A Aquifer
Thanet Formation	Comprising fine-grained sand that can be clayey and glauconitic. Likely to be approximately 10m in thickness beneath the site.	Secondary A Aquifer
White Chalk Subgroup	White Chalk with flints to depth.	Principal Aquifer

2.4.2 Made Ground is likely to be present across the site as a result of past construction/demolition activities and potentially also from bomb damage sustained during WWII.

2.4.3 Ground conditions encountered within the boundary of the current masterplan as part of the 2011 Campbell Reith site investigation, as detailed in Section 2.4 above, comprised the following:

- Made Ground: Approximately 0.75m to 3.10m in thickness, generally comprising silty gravelly sand/ slightly gravelly clay;
- Alluvium: Approximately 1.20m to 2.30m in thickness, generally comprising soft or soft to firm clay with discrete lenses of peat and occasional plant remains. Localised varying proportions of sand and gravel were also observed;
- Kempton Park Gravel Member: Approximately 2.40m to 5.10m in thickness, generally comprising sand and gravel;
- London Clay Formation: Approximately 11.30m to 16.40m in thickness, generally comprising stiff laminated clay with calcite fragments and bands; and
- The Lambeth Group: Comprising an upper granular layer comprising very dense sand with varying proportions of gravel, a middle layer comprising very stiff, locally very stiff to hard clay/ silt and a lower granular layer (to depths of up to 30.00m bgl).

Hydrogeology

2.4.4 The site is located above a Secondary Undifferentiated Aquifer relating to the Alluvium. These formations have varying characteristics in different locations.

2.4.5 The Kempton Park Gravel Member, underlying the Alluvium, is classified by the EA as a Secondary A Aquifer. These formations are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers.

2.4.6 The Kempton Park Gravel Member is underlain by an Unproductive Stratum, which relates to the London Clay Formation. These formations have a low permeability and have negligible significance for water supply or base flow.

2.4.7 Underlying the London Clay formation at depth are Secondary A Aquifers relating to the Lambeth Group and Thanet Formation.

2.4.8 The White Chalk Subgroup at depth is classified as a Principal Aquifer. These formations comprise rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

2.4.9 Groundwater was encountered within monitoring wells BH201 and BH202 (installed within Ettrick Street to Abbot Road area of the site) at depths ranging between 4.96mbgl and 4.99m bgl; and 4.46m bgl and 4.96m bgl, respectively during the 2011 Campbell Reith site investigation. The installation for BH201 was screened across the Alluvium, Kempton Park Gravel Member and London Clay Formation. The installation for BH202 was screened across the Made Ground, Kempton Park Gravel Member and London Clay Formation.

2.4.10 Based on the above, there is considered likely to be three distinct types of groundwater body beneath the site. ***Perched groundwater*** is likely to be present within granular Made Ground and shallow Alluvium deposits. A continuous ***shallow groundwater*** body is likely to be present within the Kempton Park Gravel Member. A continuous ***deep groundwater*** body is likely to be present within the more permeable lower layers of the Lambeth Group, the Thanet Formation and White Chalk Subgroup. There is potential for the deep groundwater body to be under artesian type conditions, where being confined by the more cohesive upper layers of the Lambeth Group.

2.4.11 According to EA data, the site is not located in a groundwater Source Protection Zone (SPZ).

2.4.12 Information provided by the EA indicates that there are records of twenty active licensed groundwater abstractions within 2km of the site. Those that may potentially be abstracted for potable use are detailed in the table below:

Table 2-6 – Potentially Potable Licensed Groundwater Abstractions

Licence Holder	Approx. Distance and Direction from Site	Source	Use
Britannia Hotels Limited	1600m South west	Not specified	Drinking, cooking, sanitary and washing
The Mile End Park Partnership	1785m West	Not specified	Drinking, cooking, sanitary and washing

Surface Water

2.4.13 There are two watercourses within 1km of the site which are classified within a River Basin Management Plan published by the EA under the European Water Framework Directive (2000). A list of readily identifiable nearby watercourses and water bodies is as follows:

Table 2-7 – Nearby Watercourses and Water Bodies

Watercourse / Body	Quality	Approximate Distance

	Classification	and Direction from Site
The River Lea (Part of Thames Middle)	Chemical Quality- Fail Ecological Quality- Moderate	100m East
The River Thames (Thames Middle)	Chemical Quality- Fail Ecological Quality- Moderate	700m South
Limehouse Cut	Not classified	400m North west

2.4.14 Information provided by the EA indicates seven records of active licensed surface water abstractions within 2km of the site. The details of these are as follows:

Table 2-8 – Licensed Surface Water Abstractions

Licence Holder	Use	Approximate Distance and Direction from Site
Pura Foods Limited	Non- evaporative cooling	410m East
Blackwall Aggregates Limited	Mineral Washing	1470m South
Canal and River Trust	Heat Pump	1605m South west
Price Waterhouse	Non- evaporative cooling	1610m South west
Canal and River Trust	Non- evaporative cooling	1620m South west
Canal and River Trust	Heat Pump	1740m South
Canal and River Trust	Heat Pump	1870m South

Ecologically Sensitive Sites

2.4.15 Natural England data indicates that there are no ecologically sensitive sites that constitute environmental receptors as defined within Table 1 of the DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012), located within a 1km radius of the site.

Radon

2.4.16 According to the Indicative Atlas of Radon in England and Wales published by the Health Protection Agency (part of Public Health England) and the BGS, the site is not located in a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level).

Coal Authority

2.4.17 The Interactive Map Viewer on the Coal Authority website indicates that the site is not located in a coal mining reporting area.

BGS Ground Stability Hazard Ratings

2.4.18 BGS Ground Stability Hazard ratings for the site are summarised as follows

Table 2-9 – BGS Ground Stability Hazard Ratings

Ground Stability Hazard	BGS Risk rating
Collapsible ground	Very Low
Compressible ground	No Hazard
Ground dissolution	No Hazard
Landslide	Very Low
Running sand	Low

Shrinking or swelling clay	Low to Moderate

2.5 Authorised Processes and Pollution Incidents

Landfills and Waste Sites

2.5.1 Information provided by a number of sources (detailed below) shows that there are two recorded licensed or known historical landfill sites and two waste treatment / transfer sites recorded within 250m of the site. These are described within the following table.

Table 2-10 – Landfill / Waste Transfer / Waste Treatment Sites

Source of Record	Approx. Distance and Direction	Licence Details	Waste Type and Details
Landfill Sites (Historical)			
Landmark	155m South	Not supplied	Not supplied
Landmark	245m East	Not supplied	Not supplied
Scrap Yards & Waste Transfer / Treatment Sites			
Landmark	80m North west	Blackwall Marine Diesel Limited	Vehicle depollution facility
Landmark	100m North	Quick Skips London Recycling Ltd	HCI Waste TS and treatment
Landmark	110m North west	Huckles Transport Ltd	Construction, Demolition, household and communal untreated waste
Landmark	110m South east	Wells Haulage	Commercial and construction waste
Landmark	116m South east	Blackwall Transfer Station	Commercial and construction waste
Landmark	117m South east	R. S Contractors Ltd	Construction, demolition, household and commercial waste.
Landmark	201m North west	Cleanaway Ltd	Inert waste, Gen. Non-Putresc Waste
Landmark	238m East	Erith Haulage Co Ltd/ Shanks & Mc Ewan (Southern) Ltd	Inert waste, Gen. Non-Putresc Waste/ Commercial and construction waste.

Environmental Permits

2.5.2 EA and Local Authority data indicates that there are nine processes regulated by an Environmental Permit (under the Environmental Permitting Regulations 2010) within 500m of the subject site. These are outlined in the table below:

Table 2-11 – Environmental Permits

Licence Holder	Approx. Distance and Direction from Site	Permitted Activity
J Ash and Sons	75m North	Hot dip galvanising
Telehouse International Corporation of Europe Limited	150m South east	Combustion of any fuel greater of equal to 50Mw
Global Switch Limited	185m South	Combustion of any fuel greater of equal to 50Mw

Licence Holder	Approx. Distance and Direction from Site	Permitted Activity
Lowe Furniture Services Ltd.	235m East	Manufacture of wood based products
Orchard Wharf Service Station	270m South east	Petrol filling station
Star Cotton Street	310m South west	Petrol filling station
Cemex UK Materials Ltd	365m North	Blending, packing, loading and use of bulk cement
Bright Clean Dry Cleaners	500m South west	Dry cleaning
Modern Mix Concrete	500m North west	Blending, packing, loading and use of bulk cement

2.5.3 The dry cleaners, understood to be present in the west of 25 to 55 Aberfeldy Street area, is not recorded within the Envirocheck report obtained for the site.

COMAH Sites

2.5.4 There are three records of operations under the Control of Major Accident Hazards (COMAH) Regulations 1999, located within 500m of the site.

Table 2-12 – Recorded operations listed under COMAH within 500m

Company name	Approx. Distance and Direction from Site	Type	Status
National Grid Gas Plc (Poplar Holder Station)	35m North east	Upper tier	Active
Transco Plc (Leven Road)	40m North east	Upper tier	Active
Transco Plc (Twelvetrees Crescent)	360m North	Upper tier	Active

2.5.5 The operations listed above relating to National Grid Gas Plc and Transco Plc are considered likely to relate to operations of the former Poplar Gas Works, now undergoing redevelopment.

Pollution Incidents

2.5.6 Environment Agency data indicates that there is one record of 'major' or 'significant' pollution incidents within 500m of the site. This is outlined in the following table:

Table 2-13 – Pollution Incidents on site and significant incidents within 500m

Location/Address	Approx. Distance and Direction from Site	Receiving Medium and Date	Severity of Incident and Type
Bow	150m North	River Thames 6th December 1994	Significant Incident/ Oils- unknown

2.6 Unexploded Ordnance

2.6.1 CIRIA Report C681 (Stone *et al* 2009) outlines recommendations for dealing with the potential risk associated with the legacy of Unexploded Ordnance Risk, largely relating the WWII bombing and military sites.

2.6.2 Reference to the bombsight mapping indicates high explosive bombs were dropped in the south east of the site at Blair Street, in the centre of the site at Abbott Road, Nairn Street and to the south of Lochnagar Street in the northern portion of the site.

2.6.3 The historical maps dating from between c.1946 to c.1954 indicate buildings in the centre, southwest and southeast of the site to be in ruin, potentially indicating WWII bomb damage.

2.6.4 Reference to the Zetica Unexploded Bomb Risk mapping indicates that the site is in an area of high potential risk from Unexploded Bombs. The Risk map indicates a Luftwaffe target was located approximately 200m to the east of the site. The site is in an area of known military history, in general accordance with CIRIA Report consideration of undertaking further risk assessment in the form of a Desk Based Threat Assessment should be considered.

2.6.5 A Detailed Unexploded Ordnance (UXO) Threat and Risk Assessment Report was completed by Alpha Associates in February 2021 (ref:8557). The report concluded the risk level given to the site is high and recommends that a UXO Emergency Response Plan, UXO safety awareness briefing and intrusive magnetometer survey are undertaken for 'blind' intrusive works such as borehole drilling. It was recommended that, in addition to the above, non-intrusive survey and UXO Watching Brief are undertaken for 'open' intrusive works such as excavations and trenching.

2.7 Regulatory Consultations

2.7.1 The Environmental Health Department at Tower Hamlets Borough Council was consulted regarding any known contamination issues at the site. The Council website states, '*currently no sites within the London Borough of Tower Hamlets have been determined as contaminated land as defined under Part 2a of the Environmental Protection Act 1990*'.

3 OUTLINE CONCEPTUAL SITE MODEL

3.1 Background

3.1.1 An outline conceptual site model (CSM) consists of an appraisal of the *source-pathway-receptor* 'contaminant linkages' which is central to the approach used to determine the existence of 'contaminated land' according to the definition set out under Part 2A of the Environmental Protection Act 1990. For a risk to exist (under Part 2A), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- **Source** referring to the source of contamination (Hazard).
- **Pathway** for the contaminant to move/migrate to receptor(s).
- **Receptor** (Target) that could be affected by the contaminant(s).

3.1.2 Receptors include human beings, controlled waters and buildings / structures. The National Planning Policy Framework, used to address contaminated land through the planning process, follows the same principles as those set out under Part 2A. Further details on the Part 2A regime are presented within Appendix E.

3.1.3 As part of the assessment the potential risks to receptors for potential source is given one of the following classification:

- **Low risk** - it is considered unlikely that issues within the category will give rise to significant harm to identified receptors
- **Moderate risk** - it is possible, but not certain that issues within the category will give rise to significant harm to receptors
- **High risk** - there is a high potential that issues within the category will give rise to significant harm to identified receptors

3.2 Potential Pollutant Linkages

3.2.1 Each stage of the potential pollutant linkage sequence has been assessed individually on the basis of information obtained during the site reconnaissance, review of previous Phase 1/Phase 2 reports and this desk study exercise and are discussed in the following section.

Potential Contaminant Sources

On Site – Current

3.2.2 Previous site investigation has identified Made Ground to be present beneath the site and this is considered likely to be widespread owing to historical construction/demolition activities and potentially also from bomb damage sustained during WWII. Where present, this could represent a potential sources of contaminants of concern and/or ground gas.

3.2.3 Current on site potential sources of contaminants of concern include:

- A dry cleaners located in the west of 25 to 55 Aberfeldy Street area;
- Domestic garages located in the south east of the Ettrick Street to Abbot Road area;
- Electricity substation located in the south of the Blairgowrie Court area;
- Flammable liquid store in the south east of the Ettrick Street to Abbot Road area as identified in the 2011 Campbell Reith report; and
- Petroleum storage indicated at the base of residential blocks in the area between Abbot Road and Nairn Street.

3.2.4 There may also be potential for plant rooms (including oil storage tanks) to be present within properties that were not accessible at the time of the site walkover.

3.2.5 The locations of readily identifiable current on site potential sources of contamination are indicated on Figure 3.

3.2.6 Organic rich natural superficial Alluvium deposits may also represent a potential source of ground gas generation.

On Site – Historical

3.2.7 Historical maps indicate an electricity substation located in the centre of the site from c.1954 to c.1975.

3.2.8 Macintosh's Farm was present in the Braithwaite Park area of the site between c.1869 to c.1896, however, given the time elapsed since this land use, it is not considered a potentially significant source of contamination.

3.2.9 No further significant historical on site potential sources of contamination have been identified.

Off Site – Current

3.2.10 Current off-site potential sources of contaminants of concern include the derelict area to the immediate north of the site (labelled as a scrap yard and Tire Change on aerial mapping).

3.2.11 An electricity substation was observed to be present in the south of Culloden Primary School, located to the south west of the site, during the site walkover.

3.2.12 The former Poplar Gas Works was located approximately 95m to the east of the site. During the walkover the site was under construction and therefore it is considered the site has either been/or will be undergoing remediation to the satisfaction of the London Borough of Tower Hamlets. However, there is potential that residual contamination relating to this previous land use may still be present.

3.2.13 Active petrol filling station entries are recorded approximately 270m to the south east and 310m to the south west of the site. Given their distance, these potential source of contaminants of concern are not deemed to present a significant risk to the site.

Off-Site – Historical

3.2.14 Historical maps indicate off-site significant potentially contaminative land uses to include: a former clothing factory (subsequently of unspecified use), located adjacent to the site from c.1947 to c.1998; Islay Wharf (subsequently infilled), located adjacent from c.1896 to c.1982; Poplar Gas Works located approximately 95m to the east of the site from c.1896 to c.2006; a garage located approximately 40m to the south of the site from c.1916 to c.1938; a car shed (subsequently a trolley bus depot, then depot) located approximately 40m to the east of the site from c.1916 to present; Ailsa Wharf (with associated tanks) located approximately 50m to the north east from c.1896 to c.1975; Devon Wharf located approximately 50m to the east from c.1916 to c.1955; Glaucus Works located approximately 50m to the east from c.1947 to c.1999; a rifle range located approximately 90m to the north west from c.1954 to c. 1961; a sawmill located approximately 100m to the north west from c. 1896 to c.1949; Poplar Hospital located approximately 100m to the south from c. 1920 to c.1982; St Leonards Warf (comprising multiple cylindrical tanks) located approximately 100m north from c.1896 to c.1995; a bus depot located approximately 100m south from c.1947 to c.1975; East India Dock with associated warehouses located approximately 120m south from c.1869 to c.1985; warehouses then goods shed located approximately 120m south east from c.1869 to c.1948; East India Dock Quay (subsequently infilled) located approximately 190m south from c.1869 to c.1985; and GER Wharf then Blackwall Goods Depot then Depot located approximately 125m to the south east from c.1916 to c.1991.

3.2.15 Historical landfills are indicated approximately 155m to the south (associated with infilling of the former East India Dock) and 245m to the east of the site (potentially associated with a former waste transfer station in this area).

3.2.16 The 2011 site investigation completed by Campbell Reith on the Phase 1 area of the previous masterplan (located to the south of the existing masterplan area) identified elevated concentrations of lead, benzo(a)pryrene, dibenzo(ah)anthracene and asbestos in samples of Made Ground and elevated concentrations of TPH and PAH within groundwater samples.

3.2.17 Further investigation of Phase 3 (comprising Phase 3a and Phase 3b) of the previous masterplan (also located to the south of the existing masterplan area) identified elevated concentrations of lead, PAHs, a hotspot of arsenic and asbestos within samples of Made Ground and elevated concentrations of TPH within groundwater samples. Remedial works have been completed with a verification report produced for the Phase 3a area. However, details regarding remedial works and a verification report for the both the Phase 1 and Phase 3b area have not been made available for review. It is likely that these sources of contaminants of concern have been removed as part of remediation works. However, residual contamination relation to these contaminants of concern may still be present.

3.2.18 A site investigation report by Structural Soils in March 2007 (ref: 61610) make recommendations for further investigation to location of a former fuel tank within North End, 84 Leven Road (located to the east of the area between Abbot Road and Nairn Road). No further information was available upon the Local Authorities Planning website.

Potential Pathways

3.2.19 In areas of the site covered by buildings or hardstanding the risks to future on site human health receptors via the pathways of dermal contact and ingestion will be mitigated. However, in areas of soft landscaping, the pathways of dermal contact and ingestion could still be active. In addition, there would be potential for the airborne migration of soil/dust from these areas.

3.2.20 There is the potential for ground gas and volatile contaminants of concern in soil and/or groundwater (if present) beneath the site to impact future site users via the inhalation pathway in indoor areas.

3.2.21 There is the potential for contaminants of concern (if present) beneath the site to migrate on or off-site via granular horizons of the Made Ground (if present) and the Kempton Park Gravel Member (if present). These may impact controlled waters receptors or on/off-site human heath receptors via the dermal contact, ingestion and vapour inhalation pathways.

Potential Receptors

3.2.22 Potential post development human health receptors include future site users and off-site human health receptors.

3.2.23 Providing construction workers adopt appropriate levels of hygiene and personal protective equipment, they are not considered to be at significant risk from potential contaminants of concern and have not been considered further as part of this assessment.

3.2.24 The Secondary A Aquifer relating to the Kempton Park Gravel Member beneath the site is considered to represent a sensitive receptor.

3.2.25 The nearest surface water feature is the River Lea, which is located approximately 100m to the east of the site.

3.2.26 The Lambeth Group and Thanet Formation (both classified as Secondary A Aquifers) and the White Chalk Subgroup (classified as a Principal Aquifer) are present beneath the site at depth. However, these are not considered potential receptors due to the protection they are likely to be afforded by a significant thickness of the overlying London Clay Formation.

3.3 Outline Conceptual Site Model

3.3.1 An outline CSM has been developed on the basis of the site reconnaissance and desk study. The CSM is used to identify potential sources, pathways and receptors (i.e. potential pollutant linkages) on site post development and is summarised in the table below.

Table 3-1 – Outline Conceptual Site Model

Potential Source	Contaminants of Concern	Via	Potential Pathways	Linkage Potentially Active?	Receptors	Qualitative Risk Rating	Notes
On site – current: Made Ground, dry cleaners, flammable liquid store, domestic garages, petroleum storage and electricity substation Contaminants of concern identified by previous on site investigations **On site – historical:** N/A	Metals, hydrocarbons, polychlorinated biphenyls (PCBs) and asbestos	Soil	Direct contact/ingestion	✓	Future site users	Low to moderate	Inactive in areas of building or hardstanding. Residual risk in areas of soft landscaping, particularly if soils are exposed or disturbed.
			Inhalation of volatiles	✓		Low to Moderate	Inhalation pathway potentially remains active in internal areas.
			Airborne migration of soil or dust	✓	Off-site users	Low to Moderate	Inactive in areas of building or hardstanding. Residual risk in areas of soft landscaping, particularly if soils are exposed or disturbed.
			Leaching of mobile contaminants	✓	Kempton Park Gravel Member (Secondary A Aquifer)	Low to Moderate	Potential for leaching of contaminants within shallow soils or perched, discontinuous groundwater.
		Groundwater	Direct contact/ingestion	✓ ✓	Future site users Off-site users	Low to Moderate	Inactive in areas of building or hardstanding. Residual risk in areas of soft landscaping that can be readily disturbed.
			Inhalation of volatiles	✓ ✓	Future site users Off-site users	Low to Moderate	Potential for inhalation of groundwater contaminant vapours, particularly in internal areas.
			Vertical and lateral migration in permeable strata	✓ ✓	Kempton Park Gravel Member (Secondary A Aquifer) The River Lea	Low Low	Potential for vertical and lateral migration of contaminants in continuous groundwater body within the Kempton Park Gravel Member.

Potential Source	Contaminants of Concern	Via	Potential Pathways	Linkage Potentially Active?	Receptors	Qualitative Risk Rating	Notes
Off-site – current: Scrap yard/Tire Change, electricity substation **Off site – historical:** Poplar Gas Works, garage, sawmill, wharves (with associated tanks), East India Dock, works, warehouses, depots Contaminants of concern identified by previous off-site investigations	Metals, hydrocarbons, solvents and PCBs	Groundwater	Direct contact/ingestion	✓	Future site users	Low to moderate	Inactive in areas of building or hardstanding. Residual risk in areas of soft landscaping that can be readily disturbed.
			Inhalation of volatiles	✓	Future site users	Moderate	Potential for on site migration of significant concentrations of contaminants of concern from off-site sources with inhalation of volatiles, particularly in internal areas.
On and off-site – Made Ground, natural Alluvium deposits, landfills or bio-degradation of contamination	Carbon dioxide and methane	Ground Gas	Inhalation of ground gas	✓	Future site users	Low to moderate	Previous investigations identified limited gas risk.
			Explosive risks	✓ ✓	Future site users Future and off-site Structures	Low to moderate	Previous investigations identified limited gas risk.

Note The Qualitative Risk Rating does not consider the potential for the pathway to be active. In the event that a Moderate or High Qualitative Risk Rating is identified further assessment is recommended.

4 PRELIMINARY GEOTECHNICAL RISK ASSESSMENT

4.1 Preliminary Geotechnical Risk Register

4.1.1 The following table summarises the potential geotechnical hazards associated with the proposed development based on previous site investigations and freely available published information. Preliminary information relating to the hazards and associated engineering considerations are provided.

4.1.2 The potential risks are given one of the following classifications:

- **Low risk** - it is considered unlikely that issues within the category will give rise to significant damage in relation to the proposed development.
- **Moderate risk** - it is possible, but not certain that issues within the category will give rise to significant damage in relation to the proposed development.
- **High risk** - there is a high potential that issues within the category will give rise to significant damage in relation to the proposed development.
- **N/A -** The anticipated ground conditions are not consistent with this hazard.

Table 4-1 – Preliminary Geotechnical Risk Register

Hazard Description	Potential for Hazard	Comments / Possible Engineering Requirements
Sudden lateral / vertical changes in ground conditions	Moderate	Previous site investigations undertaken within the area indicate ground conditions from existing ground level are generally consistent but variable in thickness with Made Ground (0.75m to 3.10m) overlying Alluvium (0.20m to 2.30m), overlying the Kempton Park Gravel Member (2.40m to 9.10m) which is underlain by the London Clay Formation (8.60m to 16.40m) followed by the Lambeth Group (unproven thickness of 11m). Published information in the area indicates the Lambeth Group to be approximately 15m thick and overlying the Thanet Formation approximately 10m thick which is underlain by the White Chalk Subgroup to depth. Where encountered at shallow depths the Kempton Park Gravel Member should provide a suitable bearing stratum for shallow spread foundations supporting lightly to moderately loaded structures. If shallow foundations are not applicable or high loads anticipated, then Piled foundations extending into the London Clay Formation, Lambeth Group or other deeper formations may be required.
Highly compressible / low bearing capacity soils, (including peat and soft clay)	Moderate/ High	The BGS database indicated a high risk for compressible ground on the site. Based on previous site investigation undertaken, a significant and variable thickness of Made Ground and Alluvium is expected to be present across the site. These soils are likely to be un suitable as founding strata unless ground improvement is undertaken. Alternatively deeper foundations may be required.
Ground dissolution features / natural cavities	N/A	Ground conditions beneath the site are not consistent with this hazard.
Shrinking and swelling clays	Moderate	Previous site investigation undertaken across the site and surrounding area indicates the Made Ground to be cohesive in its low layers and to be of a low volume change potential. The underlying Alluvium was indicated as having a high volume change potential. The London Clay Formation is considered a material subject to high volume change potential. Any basements which are excavated into moderate or high volume change soil may need suitable heave protection measures incorporated.
Slope stability/retaining wall issues	Low/ Moderate	Whilst no significant slopes are present on site, any temporary slopes created as part of the development should be subject to appropriate geotechnical design based on site-specific site investigation information. Any works close to the retaining walls forming the underpasses for the A12 should be subject to appropriate geotechnical based design to ensure the integrity of the structures are not compromised.
High groundwater table (including waterlogged ground)	Moderate	The River Lee is located approximately 100m to the east of the site and is tidal. Previous investigations have encountered a variable groundwater level within the Made Ground, Alluvium and Kempton Park Gravel member ranging from -0.5m AOD to -3.50m AOD. Deeper groundwater strikes at the boundary between the London Clay Formation and Lambeth Group were also recorded. These were under sub artesian pressure rising up between 2m to 6m within 20mins. Excavations below these depth may be unstable and excavation support as well as groundwater control measures may be required. Whilst the previous reports do not indicate this, the shallow groundwater body may be tidally influenced and this should be considered while undertaking groundwater monitoring and geotechnical design.
Filled and Made Ground (including embankments)	Moderate	Made Ground of variable thickness is likely to be present across the site as a result of past construction/demolition activities and potentially also from bomb damage sustained during WWII. Previous site investigations undertaken across the site and in the surrounding area encountered Made Ground to a maximum depth of up to 3.10m bgl. As a result, buried obstructions may be present.
Obstructions (including foundations, services, basements, tunnels and adjacent sub-structures)	Moderate/ High	The site has had significant development history. Relic structures are likely to be encountered within the footprint of current structures, which may require removal to enable the construction of the proposed development. It is likely these obstructions, if encountered may be removed using standard construction plant, unless any former basements of piled foundations are encountered. The main Thames Water Sewer runs across the site following the alignment of Abbot Road, along with a secondary sewer along the western boundary of the site. (See section 4.3 for more detail). The impact of the works on this infrastructure may need to be assessed if any development is to take place in close proximity.
Underground mining	Low	The site is not located in an area of known underground mining.
Concrete classification	Moderate	Previous site investigations undertake on and around the site have indicated an Aggressive Chemical Environment for Concrete (ACEC) Classification of AC-3 to AC-4. Specific site based testing will be required to confirm this for each development phase.
Seismic Activity	Low	The Eurocode 8 seismic hazard zoning maps for the UK (Musson and Sargeant, 2007) indicate that horizontal Peak Ground Acceleration (PGA) values with 10% probability of being exceeded in 50 years (475 year return period) are between 0.00 and 0.02g, which is considered very low.

4.2 Preliminary Geotechnical Assessment

Ground Conditions

4.2.1 The ground conditions at the site are anticipated to comprise Made Ground, associated with historical development of the site, overlying Alluvium, overlying the Kempton Park Gravel Member which, in turn, is underlain by the London Clay Formation, Lambeth Group, Thanet Formation and White Chalk Subgroup at depth.

4.2.2 The Made Ground and Alluvium are likely to be of low strength, high compressibility and volume change and as such would comprise an unsuitable bearing stratum for shallow foundations.

4.2.3 A site-specific detailed ground investigation will be required to determine the geotechnical characteristics of the soils present on site, to inform any mitigation measures required and to confirm groundwater levels which may be tidally influenced.

Foundations

4.2.4 For lightly to moderately loaded structures, it is anticipated that shallow foundations in the Kempton Park Gravels will be suitable, subject to confirmation of the depth to the stratum. For moderately to highly loaded structures, piled foundations extending into the London Clay Formation, Lambeth Group or deeper strata will be required. It is likely that Continuous Flight Auger (CFA) or bored piles will be most suitable based on the site setting and anticipated ground conditions.

4.2.5 The guidance set out in NHBC Chapter 4.2 Building Near Trees will need to be adhered to in relation to specifying minimum foundation depths and any heave precautions required for basements within soils with a medium or high volume change potential.

4.2.6 Subject to confirmation of proposed loading, it is considered likely that a combination of foundation solutions will be used across the site depending on the type and size of the buildings and if basements are present.

4.2.7 In areas were the buildings are developed above or near the existing Thames Water Sewers, an impact assessment will need to be undertaken to determine any affects and mitigation measures to protect these assets.

Floor Slabs

4.2.8 Suspended floor slabs are likely to be required based on the anticipated ground conditions on site. If appropriate, ground improvement techniques maybe used to facilitate ground bearing floor slabs subject to site specific ground investigation.

Buried Structures

4.2.9 Given the significant development history of the site and the presence of a number of buildings, there is the potential for buried structures to be present. Buried/ relict structures will most likely need to be removed to enable the construction of the proposed development. It is likely these obstructions, if encountered, may be removed using conventional earth moving plant unless any former basement or piled foundations are encountered.

4.2.10 In the areas were underpasses are present beneath the A12 care should be taken to avoid damaging the structures. Appropriate geotechnical assessment and design should be undertaken for any temporary or permeant retaining wall or slopes constructed with the vicinity of these structures.

4.2.11 The main Thames Water Sewer runs across the site following the alignment of Abbot Road, along with a secondary sewer along the western boundary of the site. The Thames Water Asset Location Search report is provided within Appendix A. Where buildings are proposed in close proximity to these assets, a build over agreement and impact assessment will be required with Thames Water to enable works to be undertaken. As part of this agreement a Ground Movement Assessment (GMA) will be likely required for all Thames Water Assets which may be influenced by the proposed development.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Geo-Environmental

5.1.1 The outline CSM produced upon completion of the desk study assessment has identified a number of potential pollutant linkages that may be active upon the redevelopment of the site. These are predominantly associated with the following potential pollutant pathways:

- Dermal contact and ingestion of contaminants of concern present within shallow Made Ground and perched groundwater by future site users upon completion of the development; and
- Potential risk to future site users from volatile contaminants of concern in groundwater migrating beneath the site from significant off-site sources to impact future site users via the inhalation pathway in indoor areas.

5.1.2 It is therefore recommended that the potential for pollutant linkages identified by the CSM to be active upon completion of the redevelopment is assessed through development specific geo-environmental site investigation. The scope of this investigation should include the following:

- Drilling of a number of boreholes across the site targeting identified potential sources and pollutant linkages;
- Collection of soil and groundwater samples with chemical analysis of these samples for contaminants of concern;
- Installation and monitoring of groundwater and gas monitoring wells;
- Assessment of ground conditions and generic quantitative risk assessment of soil and groundwater chemical analysis results to determine the potential for the identified potential pollutant linkages to remain active upon redevelopment of the site;
- Assessment of the ground gas regime within shallow soils beneath the site; and
- Provision of recommendations (where necessary) for remediation/mitigation measures to ensure that any identified potential pollutant linkages are not active upon redevelopment of the site.

5.2 Geotechnical

5.2.1 The Made Ground and Alluvium present beneath the site are likely to be of low strength, high compressibility and volume change and as such would comprise an unsuitable bearing stratum for shallow foundations.

5.2.2 For lightly to moderately loaded structures, it is anticipated that shallow foundations in the Kempton Park Gravels will be suitable, subject to confirmation of the depth to the stratum. For moderately to highly loaded structures, piled foundations extending into the London Clay Formation, Lambeth Group or deeper strata will be required.

5.2.3 Previous site investigations undertake on and around the site have indicated an Aggressive Chemical Environment for Concrete (ACEC) Classification of AC-3 to AC-4.

5.2.4 The main Thames Water Sewer runs across the site following the alignment of Abbot Road, along with a secondary sewer along the western boundary of the site. The Thames Water Asset Location Search report is provided within Appendix A. Where buildings are proposed in close proximity to these assets, a build over agreement and impact assessment will be required with Thames Water to enable works to be undertaken. As part of this agreement a Ground Movement Assessment (GMA) will be likely required for all Thames Water Assets which may be influenced by the proposed development.

5.2.5 Development specific geotechnical investigation will be required to inform preliminary foundation, floor slab, basement and pavement design as part of the redevelopment.

5.3 Additional Considerations

5.3.1 Whilst no asbestos containing material was noted during the walkover, given the age of the buildings across the development it is highly likely that asbestos containing material may be present. In addition, the large amount of fly tipping around Lochnager Street may be a potential source of asbestos.

5.3.2 A Detailed UXO Threat and Risk Assessment Report for the site has been completed by Alpha Associates in February 2021 (ref:8557). The report concluded the risk level given to the site is high and recommends that a UXO Emergency Response Plan, UXO safety awareness briefing and intrusive magnetometer survey are undertaken for 'blind' intrusive works such as borehole drilling. It was recommended that, in addition to the above, non-intrusive survey and UXO Watching Brief are undertaken for 'open' intrusive works such as excavations and trenching.

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Figures

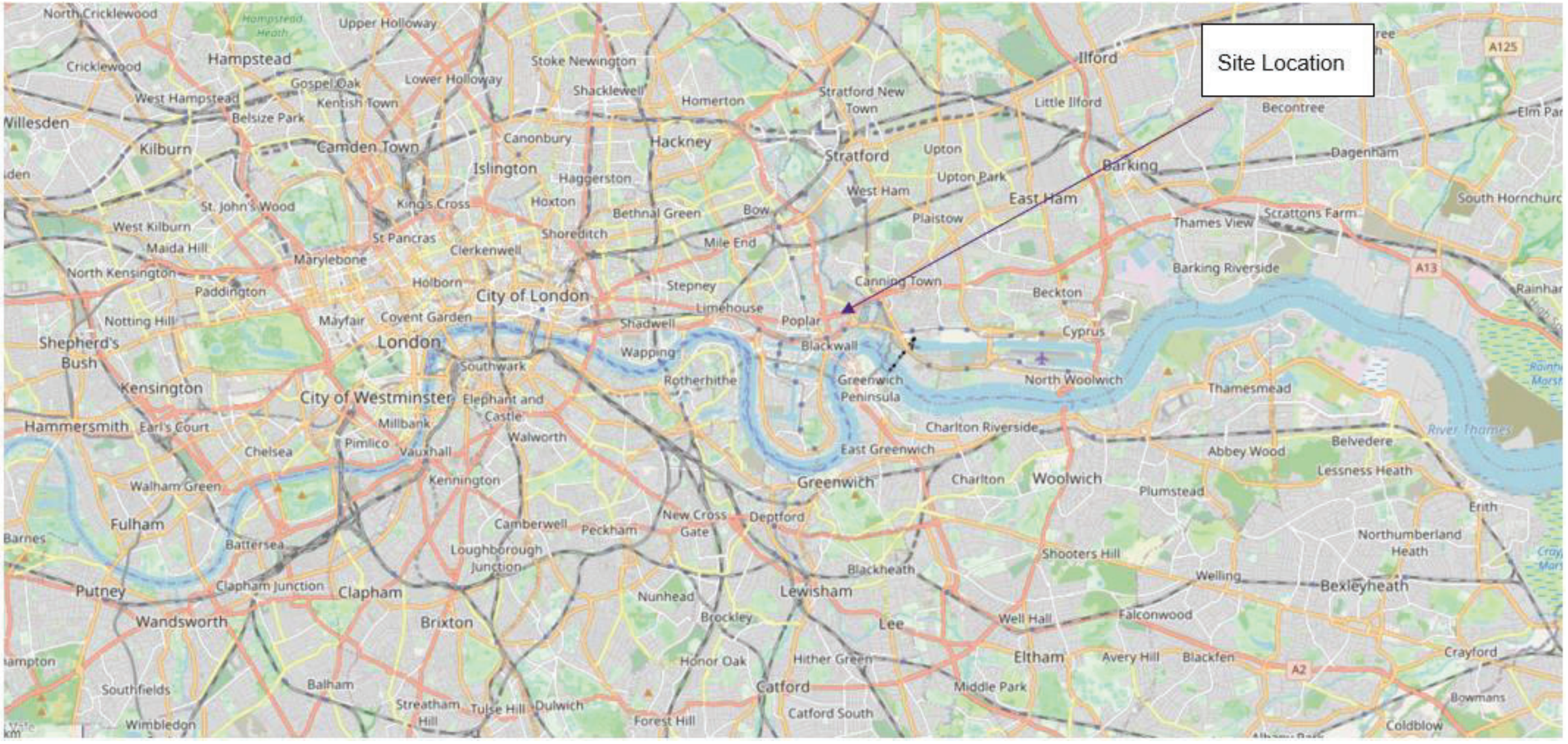

Figure 1: Site Location Plan.

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Client:	Aberfeldy New Village LLP		
Project:	Aberfeldy Village Masterplan		
Checked By:	JL		
Job Ref:	JER8921	**Date:**	April 2021