Flood Risk Assessment
November 2023

ABERFELDY VILLAGE MASTERPLAN

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ECOWORLD INTERNATIONAL
CREATING TOMORROW & BEYOND

New Aberfeldy Masterplan

Flood Risk Assessment

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1.4	07/04/2022	Updated to include Jolly's Green within the application boundary
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1.6	03/11/2023	Description of development updated

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1.6	3/11/2023	Description of development updated			
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Contents

1 Introduction

1.1 Purpose of Report

Parmarbrook has been instructed by Aberfeldy New Village LLP (joint venture between EcoWorld London and Poplar HARCA) to prepare a Flood Risk Assessment (FRA) in support of a hybrid planning application for the New Aberfeldy Masterplan.

The scope of this report is limited to an assessment of flood risk at the site and the measures required to appropriately mitigate flood risk for the lifetime of the development, taking into consideration the vulnerability of the proposed use to flood risk. A preliminary surface water drainage scheme is reported separately.

This report supersedes the Flood Risk Assessment 1.5 dated 21/10/2022 previously submitted in support of the Hybrid Application (LBTH Ref: PA/21/02377/A1 and GLA Ref: 2023/0300/S3) and should therefore be read on a standalone basis.

Following a resolution to refuse planning permission by the London Borough of Tower Hamlets (LBTH) Strategic Development Committee (SDC) in February 2023, and the subsequent direction that the Mayor of London will act as the local planning authority for the purposes of determining the Hybrid Application, the design of the scheme has been amended to accommodate second staircases in all buildings over 18m in height.

For the sake of completeness only it should be noted that the above referenced amendments follow previous amendments to the Hybrid Application, made prior to its consideration by the LBTH SDC, the assessments of which were set out within previous revisions of this [document name]. In summary the previously assessed changes were: the incorporation of Jolly's Green within the red line boundary, the removal of the previously proposed Block A3 and associated increase in open space and play space, an increase in the number of affordable rented family homes, and the inclusion of second staircases in Plots F & I.

To confirm, the new Description of Development will be read as follows:

"Hybrid application seeking detailed planning permission for Phase A and Outline planning permission for future phases, comprising:

Outline planning permission (all matters reserved) for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m AOD) and up to 140,591 (GEA) of floorspace comprising the following mix of uses: Residential (Class C3); Retail, workspace, food and drink uses (Class E); Car and cycle parking; Formation of new pedestrian route through the conversion and repurposing of the Abbott Road vehicular underpass for pedestrians and cyclists connecting to Jolly's Green; Landscaping including open spaces and public realm; and New means of access, associated infrastructure and highway works.

In Full, for residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and open space. This application is accompanied by an Environmental Statement."

Further information is set out within the accompanying Covering Letter (as prepared by DP9 Ltd, dated November 2023) and the updated Planning Statement (as prepared by DP9 Ltd, dated November 2023).

1.2 Information Source

The assessment has been undertaken in accordance with the below documents and guidance detailed within the National Planning Policy Framework (NPPF) and the accompanying Planning Practice Guidance (PPG).

- Ordnance Survey (OS);
- British Geological Survey (BGS);
- Environment Agency (EA);
- Department for Environment, Food and Rural Affairs (DEFRA);
- Thames Water Sewer Records;
- National Planning Policy Framework, July 2021
- National Planning Practice Guidance (NPPG) August 2021
- Policy SI 12 Flood Risk Management, The London Plan 2021
- Policy SI 13 Sustainable Drainage, The London Plan 2021
- London Borough of Tower Hamlets Local Plan 2020
- London Borough of Tower Hamlets Strategic Flood Risk Assessments
- London Borough of Tower Hamlets Preliminary Flood Risk Assessment
- London Borough of Tower Hamlets Local Flood Risk Management Strategy
- London Borough of Tower Hamlets Surface Water Management Plan

It is to be noted that this FRA has been undertaken as a desktop study and no intrusive site investigations have been undertaken to inform this report.

2 Planning Policy and Guidance

2.1 National Planning Policy Framework

The thrust of national planning policy, as articulated in the NPPF is that inappropriate development in areas at risk of flooding should be avoided where possible, as summarised below:

- Inappropriate development in areas at risk of flooding should be avoided and that development should be directed away from areas at highest risk (whether existing or future), but where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere (NPPF para. 159).
- The policy of seeking to steer development to areas with the lowest risk of flooding, from any source, is implemented through the application of the flood risk sequential test. Development should not be allocated or permitted if there are reasonably available sites, appropriate for the proposed development in areas with a lower risk of flooding. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding (NPPF para. 162).
- If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives) the exception test may have to be applied. The need for the test will depend on the potential vulnerability of the site and of the vulnerability of the development proposed (as set out in Annex 3 of NPPF; also PPG Table 2 and Table 3) (NPPF para. 163). For example, the exception test need not be applied for less vulnerable development in any flood zone, or for more vulnerable development in flood zones 1 or 2.
- Where the exception test must be applied, application of the test for development proposals at the application stage should be informed by a site-specific flood risk assessment. For the test to be passed it should be demonstrated that: (a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; (b) and the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall (NPPF para. 164). Both elements of the test should be satisfied for the development to be permitted (NPPF para. 165).
- A site-specific flood risk assessment should be provided for all development in flood zones 2 and 3 [whilst] in flood zone 1, an assessment should accompany all proposals involving: sites of 1 ha or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use (NPPF para. 167).
- Development should not increase flood risk elsewhere (NPPF para. 167).
- Development should only be allowed in areas at risk of flooding where the flood risk assessment (and the sequential and exception tests, as required), demonstrate that: a) within the site, the most vulnerable development is located in areas of lowest flood risk (unless there are overriding reasons to prefer a different location); b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment; c) the development incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate; d) any residual (flood) risk can be safely managed; and e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan (NPPF para.167).

- Applications for some minor development and changes of use should not be subject to the sequential or exception tests (NPPF para. 168). The exceptions are stated in Footnote 56.
- Major development should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems should: a) take account of advice from the lead local flood authority; b) have appropriate proposed minimum operational standards; c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and d) where possible, provide multifunctional benefits (NPPF para. 169).

2.2 The London Plan 2021: Policies SI 12 & SI 13

The London Plan 2021 provides an overall strategic plan for the Mayor of London, 32 London boroughs and the City of London Corporation. The plan sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20 – 25 years.

Policies SI 12 and SI 13 are related to improving water quality, flood mitigation and reducing flood risk through sustainable urban drainage systems.

Policy SI 12 (Flood Risk Management) states that:

A. Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.
B. Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.
C. Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.
D. Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.
E. Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

Policy SI 13 (Sustainable Drainage) states that:

A. Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.
B. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2) rainwater infiltration to ground at or close to source
3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens).
4) rainwater discharge direct to a watercourse (unless not appropriate)
5) controlled rainwater discharge to a surface water sewer or drain
6) controlled rainwater discharge to a combined sewer.

C. Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.
D. Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

2.3 London Borough of Tower Hamlets Local Plan 2031

The Local Plan was adopted in January 2020, it sets out how the borough of Tower Hamlets will grow and develop until 2031 and identifies how many new homes, jobs and services are needed to support our growing population, and where and how they should be provided. It will also shape how our places will look and feel and influence the way that our communities interact with each other and the spaces around them. It also provides a series of policies to ensure development is well-designed, accessible, safe and respects and enhances the environment, and can be delivered alongside new infrastructure and local services.

Policy D.ES4 (Flood Risk) states that:

1. Development is required to be located in areas suitable for the vulnerability level of the proposed uses with:
    a. highly vulnerable uses not allowed within flood zone 3a
    b. essential infrastructure and more vulnerable uses within flood zone 3a required to pass the exception test, and
    c. highly vulnerable uses within flood zone 2 required to pass the exception test.
2. Development is required to provide a flood risk assessment if it meets any of the following criteria:
    a. The development site is over 1 hectare in size within flood zone 1
    b. The site is within flood zones 2 or 3a
    c. The development may be subject to other sources of flooding, as defined in the Tower Hamlets Strategic Flood Risk Assessment.
3. The flood risk assessment should include:
    a. A sequential test if the development is in flood zone 2 or 3
    b. The risks of both on and off-site flooding to and from the development for all sources of flooding including fluvial, tidal, surface run-off, groundwater, ordinary watercourse, sewer and reservoir
    c. An assessment of tidal risk in the event of a breach in the River Thames defences
    d. The impact of climate change using the latest government guidance
    e. Demonstration of safe access and egress, and
    f. Mitigation measures, taking account of the advice and recommendations set out in the Tower Hamlets Strategic Flood Risk Assessment.
4. Site design of development which meets criteria outlined in Part 2 above is required to:

   a. undertake a sequential approach to development layout to direct highest vulnerability uses to areas of the site with lowest flood risk, and
   b. incorporate flood resilience and/or resistance measures.
5. Development is required to protect and where possible increase the capacity of existing water spaces and flood storage areas to retain water.
6. Development is required to enable effective flood risk management through:
   a. requiring development along the River Thames and the River Lea and its tributaries to be set back by the following distances unless significant constraints are evidenced:
      i. A minimum of a 16-metre buffer strip along a tidal river, and
      ii. A minimum of a 8-metre buffer strip along a fluvial river.
   b. optimising opportunities to realign or set back defences and improve the riverside frontage to provide amenity space and environmental enhancement.

Policy D.ES5 (Sustainable Drainage) states that:

1. Development is required to reduce the risk of surface water flooding, through demonstrating how it reduces the amount of water run-off and discharge from the site through the use of appropriate water reuse and sustainable drainage systems techniques.
2. Major development is required to submit a drainage strategy which should demonstrate that surface water will be controlled as near to its source as possible in line with the sustainable drainage systems hierarchy.
3. Development is required to achieve the following run-off rates:
   a. New development in critical drainage areas is required to achieve a greenfield run-off rate and volume leaving the site
   b. All other development should seek to achieve greenfield runoff rate and volume leaving the site. Where this is not possible, the minimum expectation is to achieve at least 50% attenuation of the site's surface water run-off at peak times prior to redevelopment.

2.4 London Borough of Tower Hamlets Strategic Flood Risk Assessments

The LBTH Strategic Flood Risk Assessment was published in August 2017 to determine flood risk across the borough.

The Level 1 SFRA aims to collate and review all information available regarding flood risk for the borough, to enable the Sequential Test to be undertaken. In addition, it identifies areas at risk of flooding from all sources and provides information to allow the LBTH to set suitable policies to address flood risk management.

The Level 2 SFRA allows the Exception Test to be undertaken for Sites which cannot be located within a lower flood risk area. This report also provides enough information to assist each borough with strategic planning for their administrative area.

Information from both SFRAs regarding tidal, fluvial, surface water, sewer and groundwater flooding is included within Section 2 of this FRA.

2.5 London Borough of Tower Hamlets Preliminary Flood Risk Assessment

The LBTH's Preliminary Flood Risk Assessment (PFRA) was published in May 2011, to provide a high-level summary of flood risk to the borough.

The report describes the probability and subsequent consequences of past and future flooding, and considers flooding from overland surface water runoff, groundwater, sewers and ordinary watercourses. Information from the PFRA regarding flooding is included within Section 2 of this FRA.

2.6 London Borough of Tower Hamlets Local Flood Risk Management Strategy

The LBTH Local Flood Risk Management Strategy (LFRMS)xii was published in June 2015, to provide guidance and information for residents, businesses and developers regarding Tower Hamlets strategy for dealing with flooding within the borough.

It was completed to fulfil LBTH's requirement and duties as Lead Local Flood Authority (LLFA) and sets out how LBTH plan to manage flood risk across the Borough. In general, the LFRMS describes LBTH's commitment to work to address local flood risk and provides a framework of how local flood risk will be managed.

2.7 Environmental Permitting and Land Drainage Consent

Under the Environmental Permitting (England and Wales) Regulations 2016 an Environmental Permit for Flood Risk Activities is required from the Environment Agency for any permanent or temporary works, including works:

- In, over or under a designated main river
- Within 8 m of the top of bank of a designated main river or of the landward toe of a flood defence (16 m if it is a tidal main river or a sea defence).

In addition, any permanent or temporary works within the floodplain of a designated main river may also require an Environmental Permit for Flood Risk Activities. A permit is separate to and in addition to any planning permission granted.

Land drainage consent may be required from the lead local flood authority or drainage board for work to an ordinary watercourse.

Undertaking activities controlled by local byelaws also requires the relevant consent.

3 Site Description & Context

3.1 Site Location

The Aberfeldy estate is located in Lansbury ward in the south-east of Tower Hamlets. Aberfeldy is one of the most physically and geographically segregated parts of the borough, with the A12 and A13 road networks splitting the estate from the rest of Poplar and Blackwall.

The site is located to the south of the River Lea and the Leven Yard Gasworks site. It is bounded to its west by the A12 and borders the Aberfeldy Village Development and Culloden Primary School to the south.

The site is centred on the approximate National Grid Reference TQ 38483 81132, as shown in Figure 1.

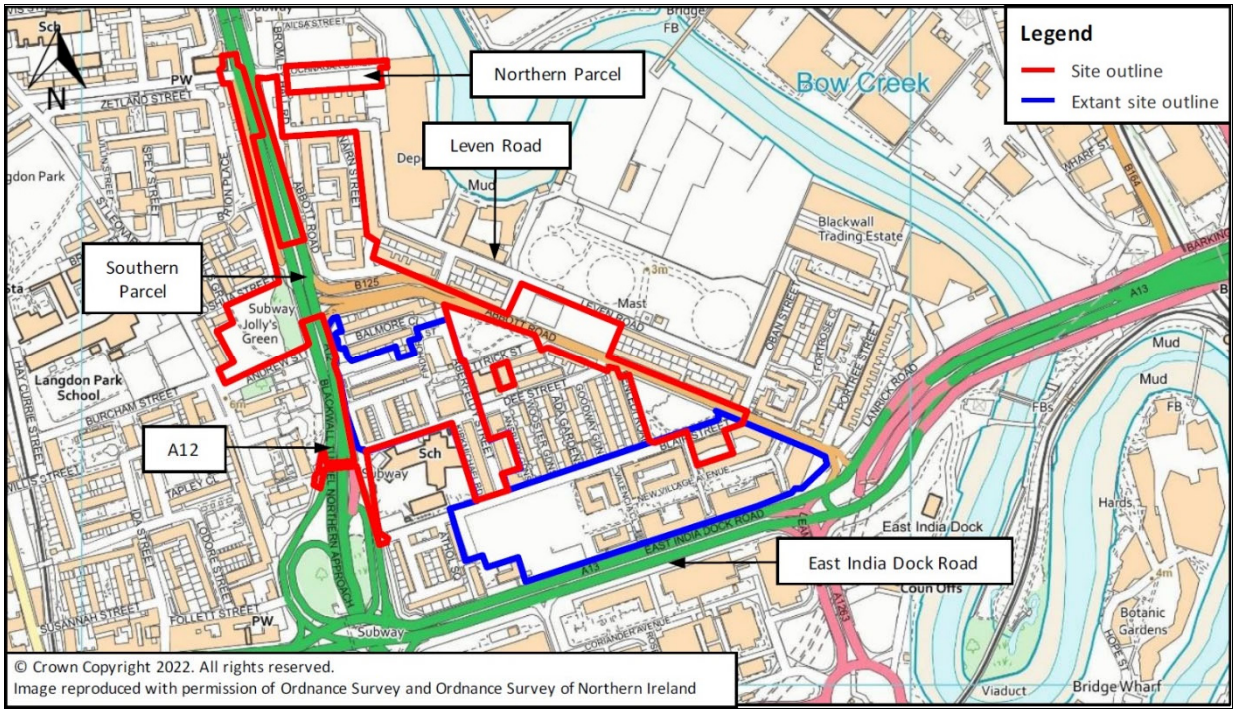

Figure 1 - Site Location

3.2 Existing and Proposed Development

The existing site includes:

- Existing homes on the Aberfeldy estate, including the properties and land around Balmore Close
- The Nairn Street Estate to the north and the new Poplar Works development adjacent to the A12.
- Land at Lochnagar Street to the north of Bromley Hall School
- Abbott Road and the existing green spaces or Braithwaite Park and Leven Road Open Space
- Land along Blair Street, adjacent to Braithwaite Park, which will complete the courtyard building within the built phase of Aberfeldy Village; and
- The existing vehicular underpass, Jollys Green, land parallel to the A12 and the pedestrian underpass at Dee Street.

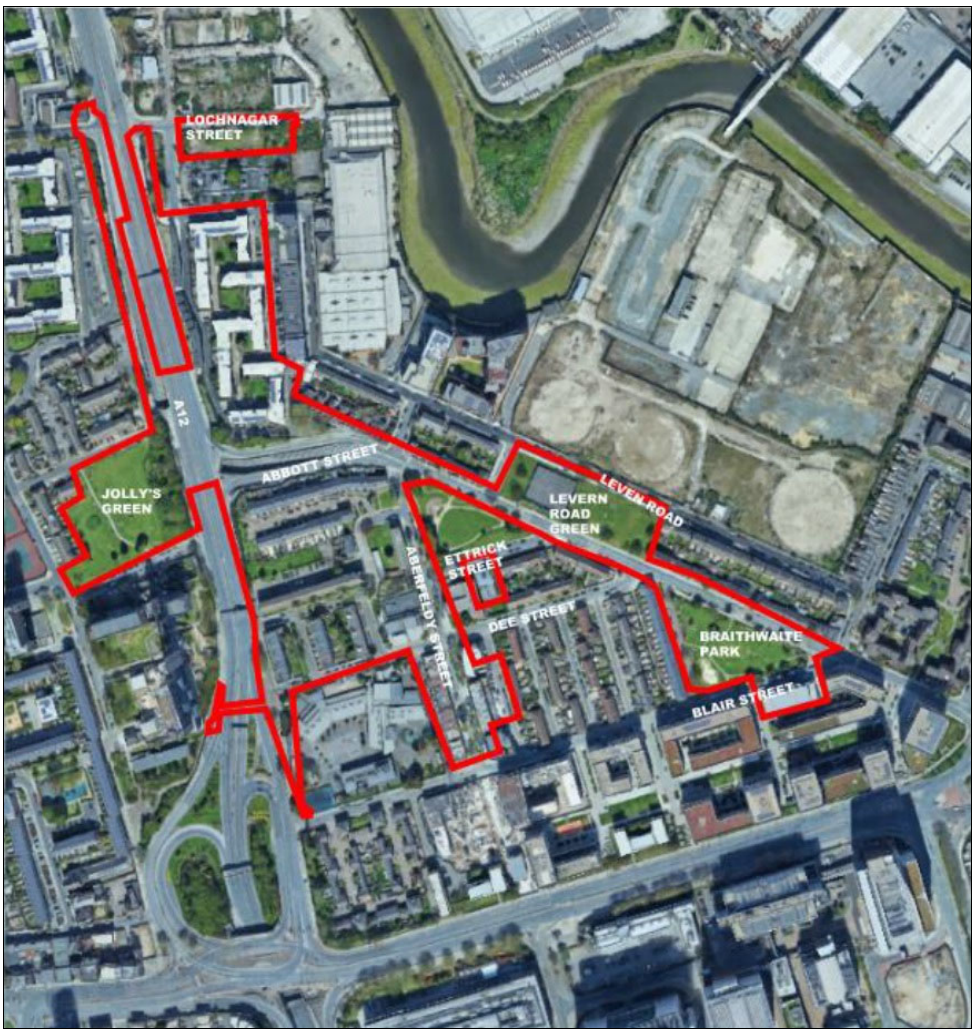

Figure 2 - Site Aerial View

A portion of the site benefits from an extant outline planning permission (ref: PA/11/02716/PO) for the construction of 1,176 residential units, of which 901 will have been constructed following completion of phase 3.

The proposed new masterplan is a once in a generation opportunity to reshape the heart of Poplar by maximising the LLP, Poplar HARCA and Tower Hamlets' landholdings which will deliver:

- A neighbourhood that fosters growth through high quality mixed use redevelopment
- A revitalised local centre with new retail, commercial workspace, civic and faith facilities
- Considerable public realm focused on walkability, healthy streets and creating a child friendly place
- Opportunity for improved connectivity to, from and through the site
- A significant number of new high quality homes providing a significant contribution to LBTH housing targets.

The proposals comprise a Hybrid application seeking detailed planning permission for Phase A and Outline planning permission for future phases, comprising:

Outline planning permission (all matters reserved) for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m AOD) and up to 140,591 (GEA) of floorspace comprising the following mix of uses: Residential (Class C3); Retail, workspace, food and drink uses (Class E); Car and cycle parking; Formation of new pedestrian route through the conversion and repurposing of the Abbott Road vehicular underpass for

pedestrians and cyclists connecting to Jolly's Green; Landscaping including open spaces and public realm; and New means of access, associated infrastructure and highway works.

In Full, for residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and open space. This application is accompanied by an Environmental Statement.

The NPPG classifies residential development as More vulnerable to flood risk, and commercial and retail development as Less Vulnerable to flood risk.

Refer to Appendix A for the illustrative Aberfeldy New Masterplan Layout.

3.3 Waterbodies in the Vicinity of the Site

Waterbodies in the vicinity of the site are identified in Figure 3.

The River Lee is located a minimum of approximately 160 m east of the site and flows in a generally southerly direction to its confluence with the River Thames. The River Thames is located approximately a 550 m south of the site and flows in an easterly direction towards the Thames Estuary.

According to the main river map both the River Lee and the River Thames are classified as a 'main river'. The Environment Agency carries out maintenance, improvement and construction work on main rivers to manage flood risk.

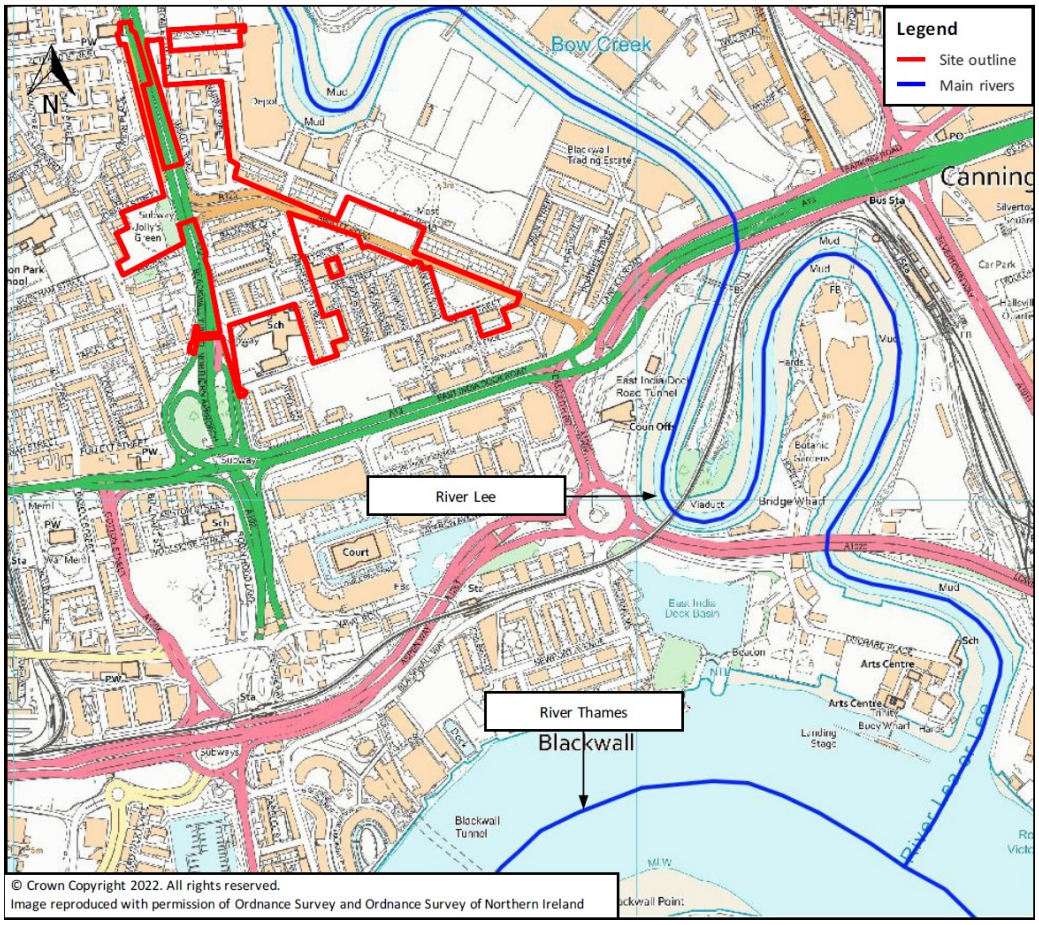

Figure 3 – Location and Designation of Waterbodies

3.4 Site Levels and Topography

The existing site levels have been extracted from the Lidar Digital Terrain Model (DTM) provided by the Department for Environment, Food & Rural Affairs (DEFRA) Survey Data portal. The maps identify the existing levels to Ordnance datum as illustrated in Figure 4.

The DTM indicates that the site levels range between approximately 1.4 and 5.3 metres Above Ordnance Datum (m AOD), with the northern site parcel situated approximately 2.0 m higher than the southern parcel.

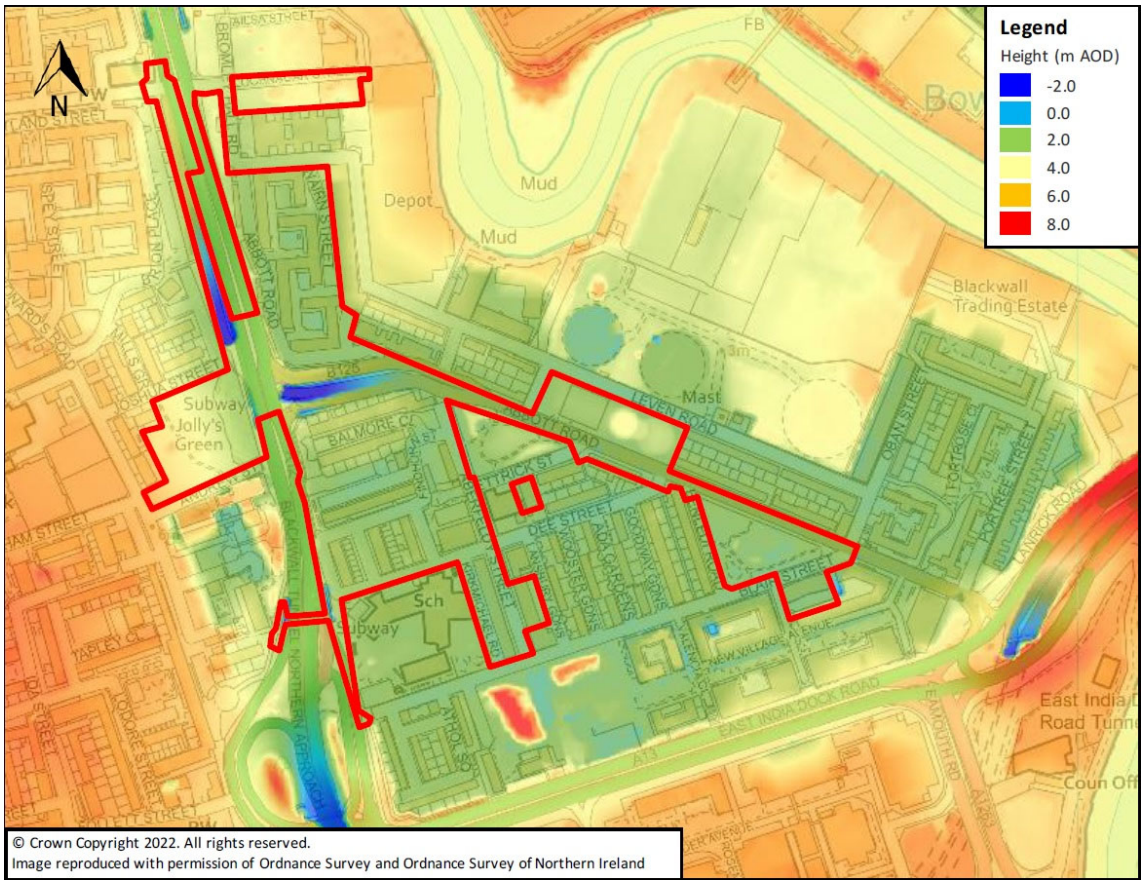

Figure 4 – Lidar level data

3.5 Site Geology and Hydrogeology

British Geological Survey (BGS) mapping indicates that the superficial deposits at the majority of the site comprise alluvium - clay, silt, sand and peat formed up to 2 million years ago in the Quaternary Period. In the western area Sands and Gravels of the Kempton Gravel Member appear at shallow depths. (Figure 5).

The bedrock geology at the site comprises clay, silt and sand of the London Clay formation - sedimentary bedrock formed approximately 48 to 56 million years ago in the Palaeogene Period (Figure 6).

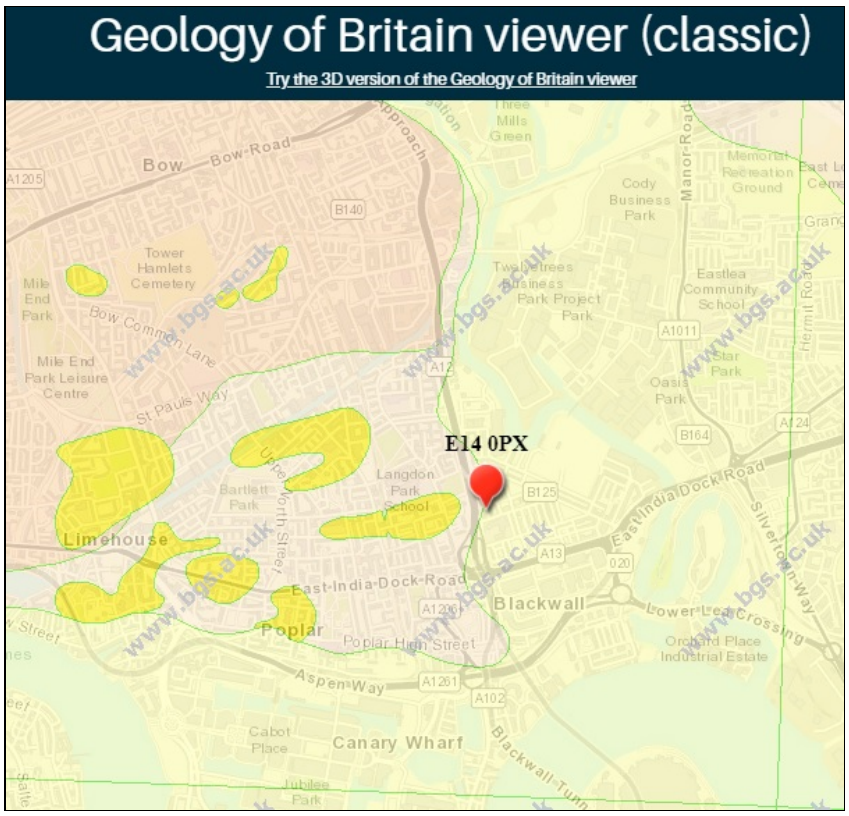

Figure 5 - Site Superficial deposits

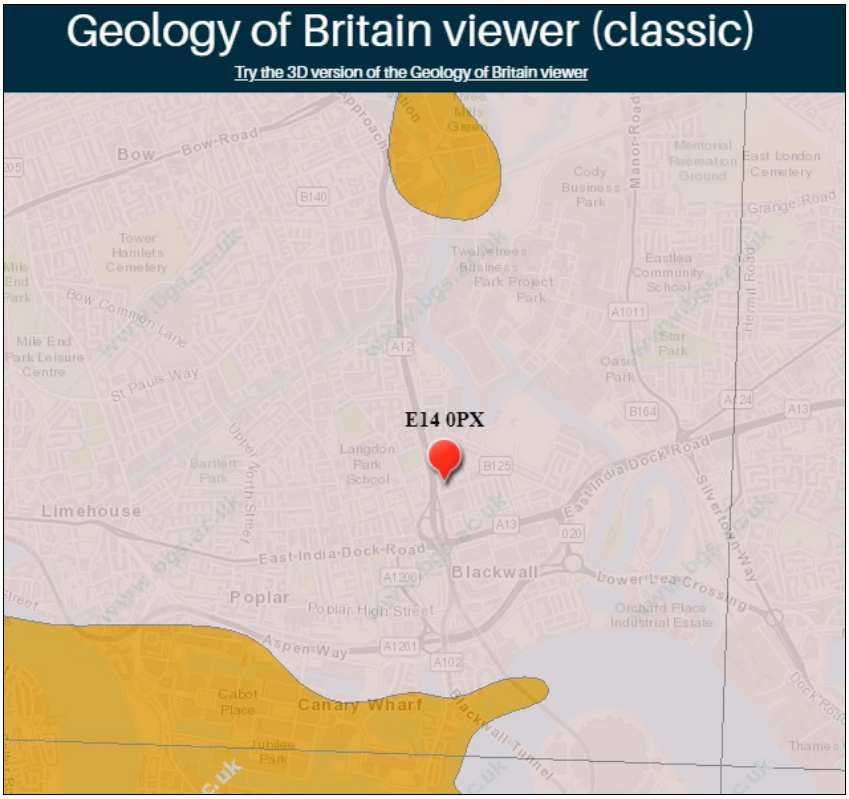

Figure 6 - Site Bedrock Geology

The National Geoscience Data Centre's Single Onshore Borehole Index holds five records of boreholes within the site boundary. These indicate that made ground is present to a maximum depth of 2.5 m below ground level (bgl) underlain by silty sandy clay interlaid with gravel to a depth of 25.0 m bgl.

Refer to Appendix B for the BGS Historic borehole logs.

The EA provides publicly available mapping which indicates the aquifer classifications and groundwater vulnerability of geological deposits of England and Wales.

Aquifer designations reflect the importance of aquifers in terms of groundwater as a resource and in their role in supporting surface water flows and wetland ecosystems. Aquifer maps are split into two different types of aquifer designations; superficial, which are permeable unconsolidated deposits and bedrock which are solid, permeable formations.

Environment Agency (EA) records indicate that the Sands and Gravels of the Kempton Gravel Member are considered a Secondary A Aquifer. Alluvium deposits are considered a Secondary Aquifer (undifferentiated) (Figure 7).

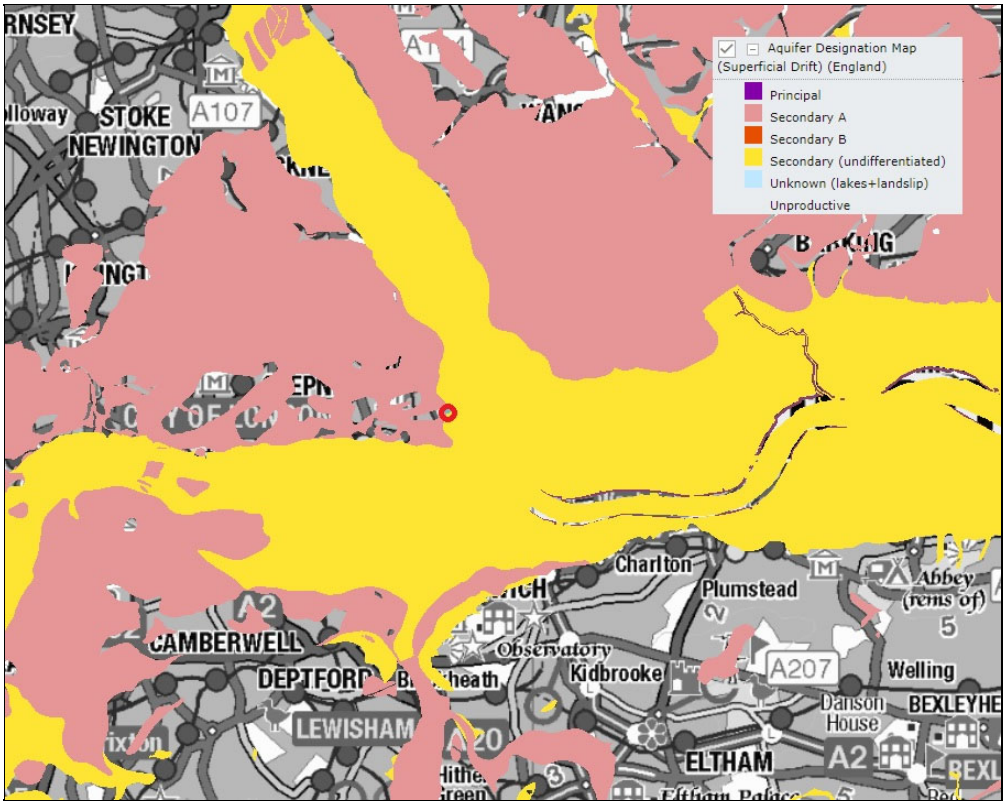

Figure 7 – Environment Agency Aquifer Designation Map (Superficial)

The London Clay in the bedrock is considered an Unproductive strata (Figure 8).

Figure 8 – Environment Agency Aquifer Designation Map (Bedrock)

Therefore, the Groundwater Vulnerability Zone is considered to be Medium-Low. (Figure 9).

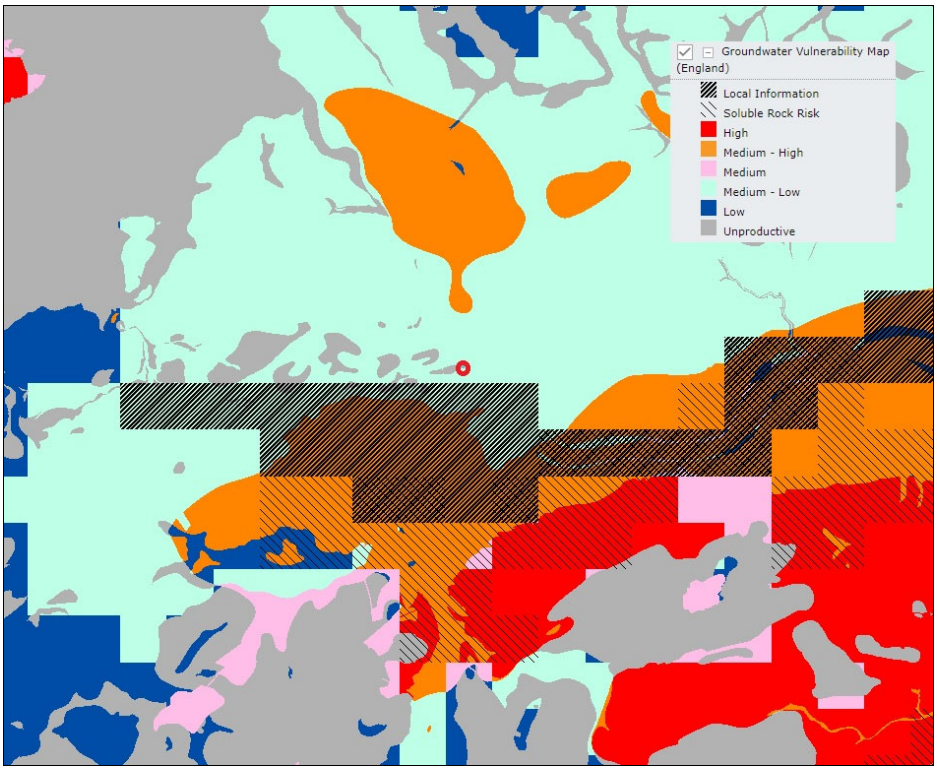

Figure 9 – Environment Agency Groundwater Vulnerability Map

According to the Soilscapes maps produced by the National Soils Research Institute, soil conditions at the western area of the site are described as 'Loamy soils with naturally high groundwater'. In the central and eastern areas they are indicated as 'Loamy and clayey soils of coastal flats with naturally high groundwater' (Figure 10).

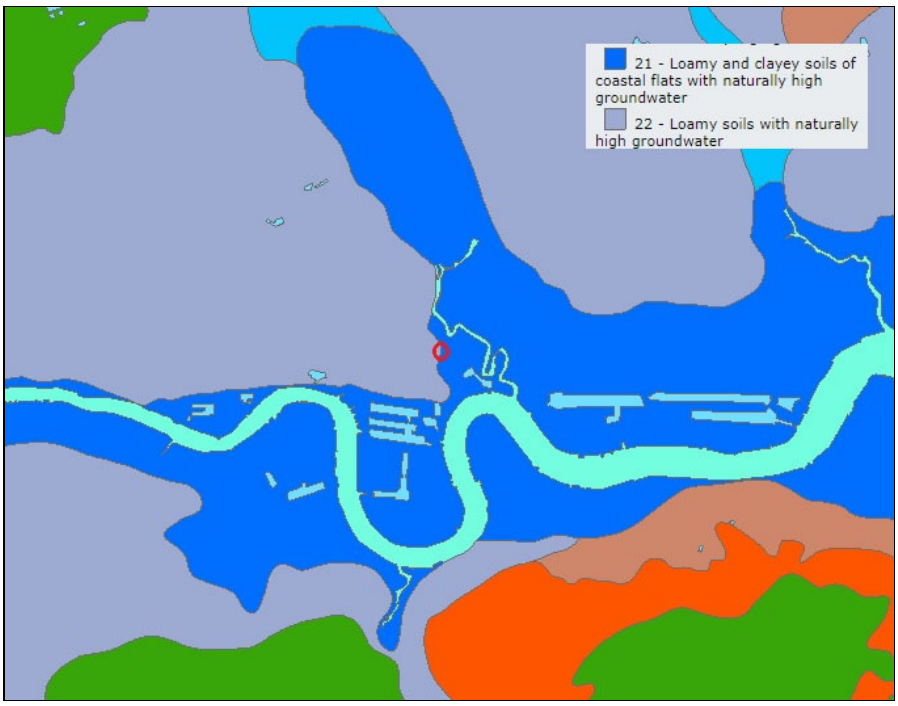

Figure 10 – Soilscape (England) Map

EA define Source Protection Zones (SPZs) for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk.

The SPZ map in the area shows that the site is not located within a catchment, outer or inner designated source protection zones **(Figure 11)**.

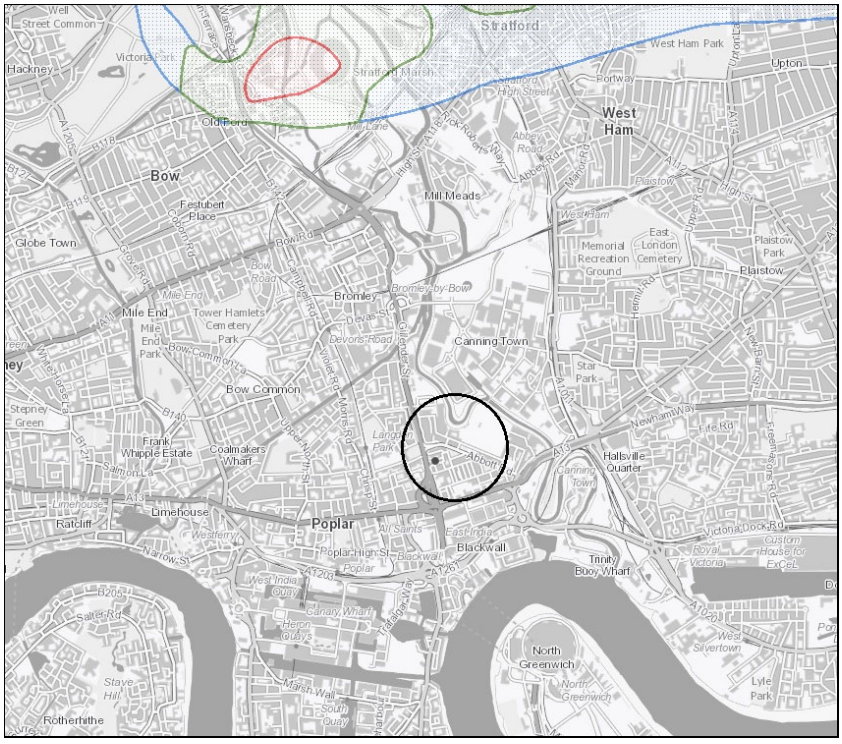

Figure 11 – Environment Agency Source Protection Zones Map