



scenario will also include existing surrounding buildings. The initial testing in the wind tunnel will be conducted without soft or hard landscaping features to provide a worst-case, conservative result.

- 8 The wind microclimate at all key receptor areas, such as walkways, seating areas, main entrances, bus stops, and roads will be assessed.
- 9 A combined total of 136 years of wind climate data, obtained at Heathrow, Gatwick and Stansted airports, will be corrected so that it represents winds over standard open terrain at a height of 10m above ground. The Weibull parameters (statistical properties of wind climate) will be used to generate the statistical model of the wind frequency (by speed and direction) for the region, which will be used in the detailed wind tunnel assessment.

Future Baseline Conditions

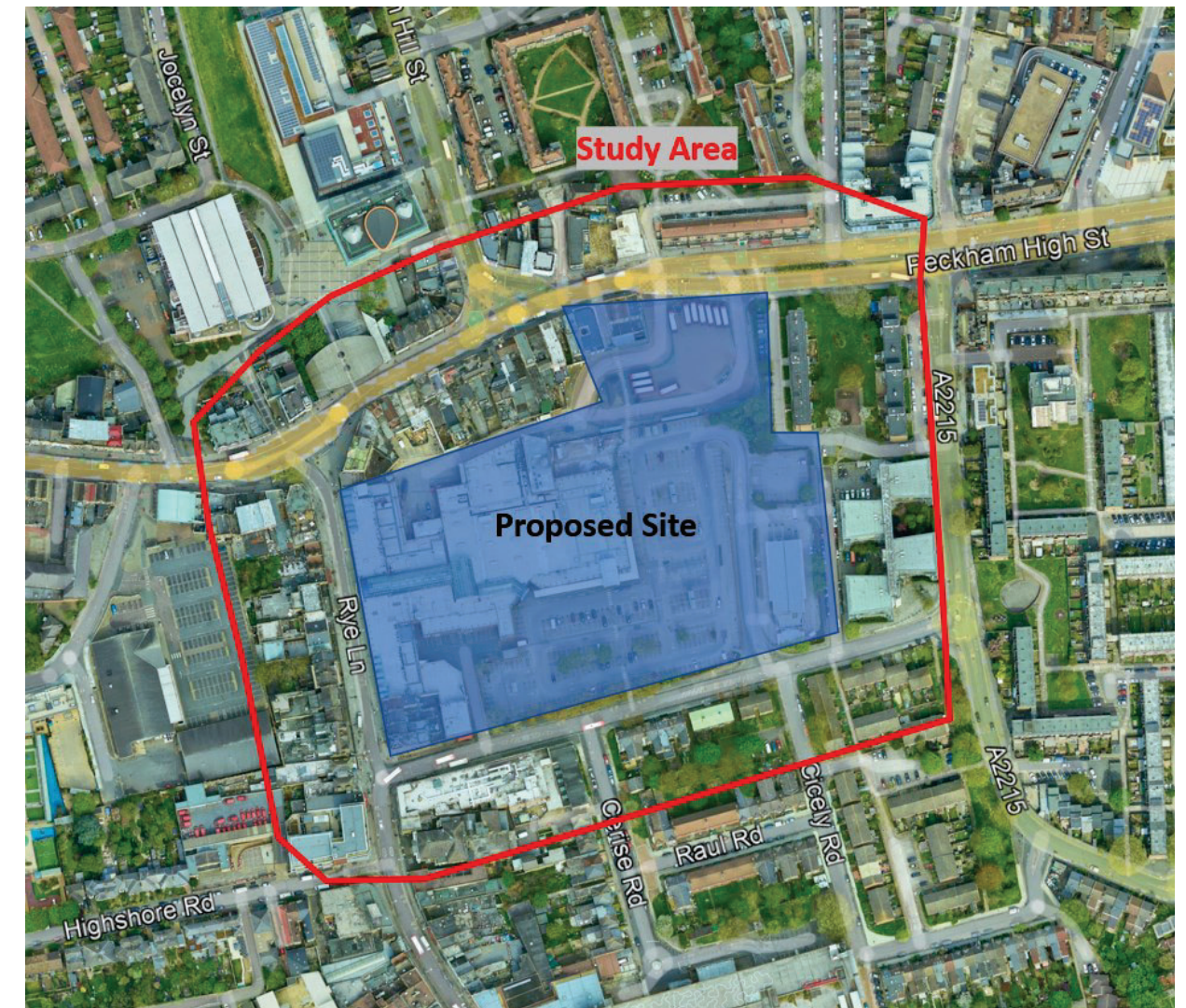
- 10 The evolution of the baseline condition (assuming the Proposed Development does not come forward) may be considered using professional judgement informed by the results of the Existing Site configuration and a cumulative effects assessment. However, there have been no cumulative schemes identified within the 500m radius from the centre of the site that would necessitate a cumulative assessment.

Receptors

- 11 The sensitivity of receptors in the context of wind microclimate is related to the intended pedestrian use at each location; there are no published definitions for sensitivity, as the important consideration is whether the wind conditions experienced at a particular receptor location are suitable for the intended use (in terms of pedestrian comfort and safety) at that location. All receptors are highly sensitive to local wind microclimate conditions and are given an equal weighting.
- 12 The receptors will include, but will not be limited to:
 - Thoroughfares
 - Entrances
 - Outdoor seating areas for restaurants and cafes
 - General public outdoor amenity space
 - Designated standing areas in public outdoor amenity space
 - Play areas
 - Cyclist paths
 - Roads
 - Pedestrian crossings
 - Bus stops
 - Private balconies
 - Public balconies, podiums, and terraces
- 13 The nearby surrounding area will be instrumented with measurement probes. The probes will be positioned based on a professional judgement of the likely potential effects of the Proposed Development and the existing pedestrian activities in the surrounds. The intended extent of the study area has been presented in Figure 1.



Figure 1. Intended Extent of the Study Area



Assessment of Effects

- 14 The assessment of the wind microclimate will be based on the results from a series of tests of physical models within the wind tunnel to provide a detailed and quantitative assessment. Prior to the wind tunnel testing, a Computational Fluid Dynamics (CFD) study will be carried out during the design process to assess different iterations of the Proposed Development and identify potential areas where the wind microclimate would benefit from mitigation measures.
- 15 A 1:400 scale 3D model of the site, the Proposed Development, and the surrounding buildings within up to a 500m radius of the centre of the site will be constructed. Four scenarios will be tested:
 - Scenario 1: Existing Site Condition – The Existing Site with the existing surrounding buildings (baseline condition);
 - Scenario 2: Interim Phase of the Proposed Development with Existing Surrounds – Interim Phase of Proposed Development with the existing surrounding buildings (the remaining phases of the Proposed Development will be modelled as an open area that will be representative of the completion of the remaining demolition works);
 - Scenario 3: the Completed Proposed Development with Existing Surrounds; and
 - Scenario 4: the Completed Proposed Development with Existing Surrounds and Proposed Landscaping.
- 16 The wind tunnel methodology for quantifying the pedestrian level wind environment is outlined below within the following four steps:



- Step 1: The site's induced wind speeds are measured for the appropriate scenarios at the appropriate pedestrian level(s) in the wind tunnel;
 - Step 2: Standard meteorological data for the region are adjusted to account for conditions at the site (this accounts for the upwind terrain roughness around the site);
 - Step 3: Data from Step 1 and Step 2 are combined to obtain the expected frequency and magnitude of wind speed for the scenarios and at the appropriate pedestrian level; and
 - Step 4: The results of Step 3 are compared with against the Lawson Criteria to 'grade / score' the conditions within and around the site.
- 17 To model the effects of gustiness or turbulence of the approaching winds to the site, a series of grid, barrier and floor roughness elements will be employed in the wind tunnel to create a 'boundary layer' that is representative of the urban location of the site. The wind tunnel model will include relevant buildings and other topographical features up to a 500m radius from the centre of the site.
- 18 Wind speed measurements within and around the site for the tested scenarios will be established using pressure-based wind speed sensors / probes at key receptor areas. These will be used to measure the mean and gust wind speeds at a full-scale height of approximately 1.5m above the surface. Wind speeds will be measured at the sensor locations for 36 wind directions (in 10° increments) with 0° representing wind blowing from the north, 90° from the east, and so on.
- 19 The Lawson Criteria will be adopted for this assessment. The Lawson Criteria set out pedestrian activities and reflect the fact that less active pursuits require more benign wind conditions. If the measured wind conditions exceed the threshold wind speed for more than an allowable percentage of time, then they are unacceptable for the stated pedestrian activity and the expectation is that there may be complaints of nuisance or people will not use the area for its intended purpose.
- 20 The variant of the Lawson Criteria that will be adopted for this assessment will be the City Lawson Criteria, which are outlined in the "Wind Microclimate Guidelines for Developments in the City of London (2019)". The City Lawson Criteria, for comfort and safety, are shown in Table 1 and Table 2.

Table 1 City Lawson Criteria for Comfort

Category	Mean and GEM Wind Speed (5% exceedance)	Description
Frequent Sitting	2.5m/s	Acceptable for frequent outdoor sitting use, e.g. restaurant, café.
Occasional Sitting	4m/s	Acceptable for occasional outdoor seating, e.g. general public outdoor spaces, balconies and terraces intended for occasional use, etc.
Standing	6m/s	Acceptable for entrances, bus stops, covered walkways or passageways beneath buildings.
Walking	8m/s	Acceptable for external pavements, walkways.
Uncomfortable	>8m/s	Not comfortable for regular pedestrian access.

Table 2 City Lawson Criteria for Safety

Category	Mean and GEM Wind Speed (5% exceedance)	Description
Pedestrian Safety Limit	15m/s	Presents a safety risk for pedestrians, especially to more vulnerable members of the public.

Mitigation

- 21 Should mitigation measures be required to provide wind conditions within a particular area to be safe and/or suitable for the intended use, then mitigation measures will be developed in consultation with the Applicant and

the Design Team. Mitigation measures may then be tested through additional rounds of wind tunnel studies. Following mitigation testing, the significance of any residual effects may then be classified.

Policy and Legislation

- 22 This assessment will be undertaken considering relevant legislation and guidance set out in national, regional and local planning policy.
- 23 Reference will be made to the following:
- National Planning Policy Framework (NPPF) (2023);
 - The London Plan (2021) – Spatial Development Strategy for Greater London (the 'London Plan');
 - The London Environment Strategy (2018);
 - Shaping Neighbourhoods: Play and Informal Recreation – Supplementary Planning Guidance (2012); and
 - The Southwark Plan 2019-2036 (2022).

Demolition and Construction

- 24 The potential wind microclimate impacts and likely effects during demolition and construction will not be directly assessed within the wind tunnel study, as this would be a temporary condition as the existing buildings will be demolished and the Proposed Development is constructed.
- 25 A qualitative assessment will be provided for the demolition and construction works between the Existing Site configuration and the Interim Phase configuration as well as between the Interim Phase configuration and the Completed Proposed Development configuration. This qualitative assessment will be based on Windtech's professional judgement (informed by an assessment of the background wind microclimate in the area, the results of the wind tunnel testing for the baseline and completed development scenarios, and Windtech's experience of assessing wind in the built environment).
- 26 It will be assumed that there will be restricted access (i.e., not accessible to the public) to the site during demolition and construction, and therefore windier conditions will be tolerable as the area is not for typical pedestrian use where the tolerable wind speed threshold would be lower.

Phasing

- 27 To take into consideration phasing, the wind microclimate assessment will include test configurations that will represent each key phase of the Proposed Development. It is understood that the Proposed Development will include two key phases.

Completed Development

- 28 To predict the local wind environment associated with the completed Proposed Development, and the resulting pedestrian comfort and safety within and immediately surrounding the site, wind tunnel testing of the completed Proposed Development will be undertaken.
- 29 A detailed assessment of the mean and gust wind conditions at the site and surrounds for different wind directions will be used to determine the pedestrian comfort and safety levels, which provide a basis to assess the potential wind microclimate impacts and likely effects of the Proposed Development with respect to its intended use.

Cumulative Assessment

- 30 Cumulative schemes within the surrounds that are already under construction will be considered as existing surrounding buildings.
- 31 There have been no cumulative schemes identified within the 500m radius from the centre of the site that would necessitate a cumulative assessment.



Annex D: Preliminary Ecological Appraisal

Berkeley Homes (North East London)
Ecological Services

Preliminary Ecological Appraisal
Aylesham Centre, Peckham



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Date: March 2022

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Executive Summary

Purpose	Schofield Lothian was commissioned by Trium Environmental Consulting LLP (Trium), on behalf of Berkeley Homes Ltd, to undertake a Preliminary Ecological Appraisal (PEA) of land at Aylesham Centre, Peckham, to evaluate the existing ecological value of the site and to identify any ecological constraints to the Proposed Development.
Introduction	A PEA, consisting of a field survey and desk study, was undertaken on 24th February 2022. The PEA followed the Chartered Institute of Ecology and Environmental Management (CIEEM) Preliminary Ecological Appraisal (2017) guidelines, standard Phase 1 habitat survey protocol (JNCC, 2010) and British Standard 42020 (2013) 'Biodiversity – Code of Practice for Planning and Development'. The Site is located within the London Borough of Southwark, in the centre of Peckham. The site borders Rye Lane, Handover Park and McKerrell Road. The surrounding area is largely comprised of commercial and residential uses, as well as Peckham bus station and depot to the north. There are no national statutory designated sites within 5km of the site.
Key Findings	The site contains primarily built structures operating as retail units, as well as areas of hard-standing, forming pavements as well as a large car park. Scattered young and semi-mature trees are also present. The habitats on site are of low ecological value . The site could support nesting birds and offers negligible potential for roosting bats.
Recommendations	Nesting Birds – The scattered trees and scrub on site offer some potential for nesting birds. Additionally, pigeons were observed within the Aylesham Centre. It is therefore recommended that any removal of trees or scrub on site and building demolition, take place outside of the nesting bird season (March – September). Alternatively, an ecologist should undertake a site walkover to confirm the absence of breeding birds. Exclusion measures should be put in place to remove the likelihood of nesting pigeons being present within the Aylesham Centre Bats – There are some potential features suitable for roosting bats, but given the highly urbanised nature of the site, as well as limited connectivity to commuting or foraging opportunities for bats, the site is considered to be of negligible suitability for bat species.
Conclusions	Based on the findings of the PEA, the site has low ecological value . The Proposed Development provides exciting opportunities for potential biodiversity enhancement; such as the installation of green roofs and enhancement the local environment by increasing tree and scrub habitats.

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1 Purpose of the document

- 1.1.1 The purpose of this document is to provide information regarding any protected and /or notable habitats and species that occur or have the potential to occur on or near the Proposed Development(s) and identification of the potential impacts of the works.
- 1.1.2 This assessment has been designed to meet:
- Chartered Institute of Ecology and Environmental Management 'Guidelines for Preliminary Ecological Appraisal' (2017); and
 - British Standard 42020 (2013) 'Biodiversity – Code of Practice for Planning and Development'.
- 1.1.3 The objectives are to:
- Identify any designated sites for nature conservation and habitats on, near and adjacent to the site;
 - Identify any notable and/ or protected plant or animal species of nature conservation value, which may occur on or near the site;
 - Identify the presence of any invasive plant species on or adjacent to the site;
 - Provide a habitat map with target notes of ecological features as identified above;
 - Undertake a preliminary assessment of the potential impacts on any ecological receptors of conservation value identified on, near or adjacent to the site; and
 - Recommend further surveys, mitigation, and enhancement measures as appropriate.

1.2 Validity of data

- 1.2.1 The findings of this study are valid for a period of 24 months from the survey on 24th February 2022. If works have not commenced within two years of this date, then an updated site visit should be carried out by a suitably qualified ecologist to assess any changes in the habitats present on site, and to inform a review of the conclusions and recommendations made.

2 Introduction

2.1 Background Information

- 2.1.1 Schofield Lothian was appointed by Trium Environmental Consulting LLP (hereby known as Trium) on behalf of Berkeley Homes Ltd (the Applicant) to carry out an extended Phase 1 habitat survey of land at Aylesham Centre Peckham, London, in order to inform a Preliminary Ecological Appraisal (PEA).
- 2.1.2 By undertaking an investigation of the habitats and species present, this report will provide Trium with a greater understanding of the ecological value of the area. It identifies any potential risks, obligations and restrictions that may be necessary to guarantee compliance with wildlife legislation.

2.2 Site Description

- 2.2.1 The site borders Rye Lane, Handover Park and McKerrell Road. The surrounding area is largely comprised of commercial and residential uses, as well as Peckham bus station and depot adjacent north (see Figure 1).
- 2.2.2 The site area is approximately 2.8 hectares (ha) and is currently occupied by a Morrisons supermarket and petrol station, which are connected to the Aylesham Centre. The Aylesham Centre is a wider retail space that exists within the site boundary. It offers retail space that faces onto Rye Lane. The main façade of the built structure is a brickwork building with a glass roof over the atrium of the building.

2.3 Scope of Works

- 2.3.1 The following surveys were commissioned by Trium and form part of this PEA:
- Desktop study and ecological data search; and
 - Extended Phase 1 habitat survey.

2.4 Proposed Works

- 2.4.1 The site is allocated within the Southwark Plan for the provision of a residential-led mixed use development. The Southwark Plan sets out requirement for provision of at least 850 new homes, including a mix of private and affordable tenures, and reprovion of at least the existing amount of commercial floorspace currently on the site.
- 2.4.2 Whilst the development proposals are currently evolving, the Applicant intends to submit a planning application for the comprehensive phased redevelopment of the site involving the demolition of existing buildings and provision of residential, retail, commercial uses and associated works.

2.5 Quality Assurance

- 2.5.1 This survey and subsequent report were undertaken in line with Schofield Lothian’s Business System (SBS). Our SBS places great emphasis on honesty, respect, integrity and trust, collaboration, and accountability. All staff members are committed to establishing and maintaining our certification to the international standards¹.
- 2.5.2 All lead Schofield Lothian ecologists are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct when undertaking ecological work.

Figure 1: Site Redline Boundary



¹ BS EN ISO 9001:2015, 14001:2015 and 18001:2007.

3 Methodology

3.1 Zone of Influence

- 3.1.1 The Zone of Influence (Zoi) is the area over which the ecological features identified may be subject to significant effects because of the Proposed Development. These will vary between ecological receptors.

3.2 Desk Study

- 3.2.1 An ecological desk study was undertaken to determine the presence of any designated sites for nature conservation, habitats of conservation importance and protected and notable species that occur within 1 kilometre (km) of the study area. Due to the Site's location within a heavily urban area and lack of ecological connectivity to the Site, 1km was deemed an appropriate distance for the data search. Further data was obtained from Greenspace information for Greater London (GiGL)² and the Multi-Agency Geographic Information for the Countryside (MAGIC) website³.
- 3.2.2 Only records from within the last ten years and considered relevant to the Site have been included in this report.

Table 3-1 Sources of desk study records

Source	Information Requested
Greenspace Information for Greater London	Protected and priority species (1 km) Sites of local importance (1km)
Multi-Agency Geographic Information for the Countryside	International statutory sites (5km) National statutory sites (2km)

- 3.2.3 The search buffers listed in Table 3-1 are sufficient to cover the potential Zoi of the Proposed Development. For protected and priority species, and sites of local importance the impacts of the Proposed Development were not expected to exceed 1km, due to the urban setting of the Site and lack of ecological connectivity.
- 3.2.4 For International designated and National sites, the search buffer was extended to 5km and 2km respectively.

² <https://www.gigl.org.uk/>

³ <https://magic.defra.gov.uk/MagicMap.aspx>

3.3 Extended Phase 1 habitat survey

- 3.3.1 A field survey in the form of an 'extended' Phase 1 habitat survey was undertaken by Rorie Hather and Jessie Buller, qualifying members of CIEEM, on 24th February 2022.
- 3.3.2 All habitats within the survey area were identified and mapped in compliance with the 'Handbook for Phase 1 habitat survey: a technique for environmental audit' (Joint Nature Conservation Committee, 2010⁴). The dominant plant species were recorded and any protected, uncommon or invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981⁵ (as amended) were noted.
- 3.3.3 The survey was 'extended' to also assess the potential of the Site to support protected and notable species, including bats. This involved an external inspection of the buildings to assess their potential to support roosting bats according to scale, in accordance with Bat Conservation Trust's (BCT's) Good Practice Guidelines for Bat Surveys⁶.

3.4 Assessment and Evaluation

- 3.4.1 This PEA has been produced in broad accordance with CIEEM's Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017b)⁷ and Guidelines for Ecological Report Writing (CIEEM, 2017a)⁸.
- 3.4.2 Where relevant and appropriate, the evaluation of ecological features and the potential ecological impacts of the proposals have followed CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018)⁹.
- 3.4.3 The level of value of specific ecological receptors is assigned using a geographic frame of reference, with international, national, regional, county (metropolitan), district, local and site only value in descending order. A negligible value is assigned where the habitat offers minimal value to wildlife. Where best practice guidelines are unavailable or unclear, experienced ecologists have used their judgement to assess and categorise the suitability of habitats for protected and/or notable species, refer to Table 3-2.
- 3.4.4 The need and scope for additional species surveys has been determined based on the suitability of the habitats for protected and/or notable species, the potential impacts of the Proposed Development and the nature of the legal protection afforded to the species likely to be present.
- 3.4.5 Value judgements are based on various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations (such as Sites of Special Scientific Interest), or for undesignated features the size, conservation status (locally, nationally or internationally), and the quality of the ecological resource. In terms of the latter, 'quality' can refer to habitats (for instance if they are particularly

⁴ http://archive.jncc.gov.uk/pdf/pub10_handbookforphase1habitatsurvey.pdf

⁵ <http://www.legislation.gov.uk/ukpga/1981/69>

⁶ Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition)

⁷ <https://cieem.net/wp-content/uploads/2019/02/Guidelines-for-Preliminary-Ecological-Appraisal-Jan2018-1.pdf>

⁸ <https://cieem.net/resource/guidelines-for-ecological-report-writing/>

⁹ <https://cieem.net/wp-content/uploads/2019/02/Combined-EcIA-guidelines-2018-compressed.pdf>

diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats) or species populations or assemblages.

Table 3-2: Scale of Constraints

Likelihood	Definition
High	An actual or potential constraint that is subject to relevant legal protection and is likely to be a material consideration in determining the planning application (e.g., statutory nature conservation designations and European/nationally protected species). Further survey likely to be required (as detailed in this report) to support a planning application.
Moderate	An actual or potential constraint that is covered by national or local planning policy and depending on the level of the potential impact because of the Proposed Development may be a material consideration in determining the planning application. Further survey may be required to support a planning application
Low	Unlikely to be a constraint to the Proposed Development or require further survey prior to submission of a planning application. Mitigation is likely to be covered under Construction Environmental Management Plan (CEMP) or precautionary working method statement (e.g., generic requirements for the management of nesting bird risks).

4 Limitations

- 4.1.1 Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate. However, if assessed in conjunction with a Phase 1 habitat survey, they can contribute to a robust ecological assessment of a site.
- 4.1.2 The site survey was undertaken in the winter season outside of the key botanical season (April – October), however given the habitats on site are unlikely to support important floral species, it is not considered a constraint to the survey.
- 4.1.3 The desk study and field survey will not produce a comprehensive list of plants and animals as this will be limited by factors that influence their presence (e.g., activity and dormancy periods). An assessment can however be made of the habitats within the survey area, their nature conservation value and potential to support protected or priority species.
- 4.1.4 Despite the limitations described, there are deemed to be no significant limitations to this PEA.

5 Results

5.1 Desk Study

Statutory designated sites

- 5.1.1 A desk-based search shows that there are no sites with European or National statutory designation within the 5km of the site, and one Local Nature Reserves (LNRs) within 2km. It is not within the Impact Risk Zone for any Sites of Special Scientific Interest.
- Nunhead Cemetery (LNR) is located 1.5km to the south-east of the Site;

Non-statutory designated sites

- 5.1.2 A desk-based search shows that there are nine Sites of Importance for Nature Conservation (SINCs). Table 5-1 shows the non-statutory designated sites within 1km of the Site.
- 5.1.3 The Southwark Plan 2022 also identifies additional SINCs, the nearest of which is Surrey Canal Walk, located approximately 125m to the north of the site

Table 5-1: Non-Statutory Designated Sites

Site Number & Name	Status	Details	Distance and direction from Site (m)
Borough Importance			
SoBI09 Peckham Rye Park and Common	Park	A large and popular open space, with many areas that are good for wildlife within the historic landscape	1000 S
SoBII02 Grove Park Cuttings and Peckham Rye to East Dulwich Railsides	Railside	These thickly-wooded railside form an important green corridor for wildlife.	320 SW
SoBII24 Nunhead Railway Embankments	Railside	Two steep, narrow railway embankments covered in dense woodland	1500 SE
Local Importance			
SoL07 Lucas Gardens	Gardens	A small and well-used park, right opposite the Town Hall.	940 W
SoL12 Goldsmith Road Nature Garden	Gardens	A small nature garden, close to the centre of Peckham.	320 SW
SoL16 Bird-in-Bush Park	Public park	An imaginatively-landscaped small park with long grass, plenty of trees and shrubs, and an ecology area.	800 NE
SoL17 Consort Park	Public park	An interesting small park with scattered scrub of goat willow and buddleia.	715 SE

Site Number & Name	Status	Details	Distance and direction from Site (m)
SoL21 Bellenden Road Tree Nursery	Tree nursery	A tree nursery which also has some planted native trees and a pond	350 W
SoL26 McDermott Road Nature Garden	Gardens	A garden, a wildflower meadow and a woodland area - the latter includes birch, ash and oak trees.	620 S

5.2 Priority habitats

- 5.2.1 Priority habitats include those listed in Section 41 of the Natural Environment and Rural Communities Act (2006) habitats of principal importance as well as those listed in The London Biodiversity Action Plan (BAP)¹⁰. Deciduous woodland is the only priority habitat within 1km of the site.

5.3 Protected or notable species records

- 5.3.1 The MAGIC website showed no record of previous applications for European Protected Species (EPS) development licences within 1km of the survey area.
- 5.3.2 Records of protected and/or notable species have been obtained from the GiGL report, see Table 5-2. Only records within 10 years and those considered potentially relevant to the Site have been included.

Table 5-2: Protected and notable species records from GiGL

Species	Number of records	Date of most recent record	Distance of nearest record (m) from Site
Birds			
Swift (<i>Apus apus</i>)	32	15/07/2020	960 S
Grey Wagtail (<i>Motacilla cinerea</i>)	2	15/01/2017	1002 S
House Sparrow (<i>Passer domesticus</i>)	46	09/06/2014	435 N
Tawny Owl (<i>Strix aluco</i>)	2	12/01/2016	545 SW
Starling (<i>Sturnus vulgaris</i>)	9	22/10/2019	1060 NW
Redwing (<i>Turdus iliacus</i>)	17	23/12/2017	747 S
Invertebrates			
Common Darter (<i>Sympetrum striolatum</i>)	1	28/09/2014	588 SW
Stag Beetle (<i>Lucanus cervus</i>)	126	18/07/2020	692 NW
Cramp-Ball Fungus Weevil (<i>Platyrhinus resinosus</i>)	1	-/12/2012	588 SW
Mammals (bats)			
Serotine (<i>Eptesicus serotinus</i>)	1	09/06/2015	841 W
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	19	01/09/2020	322 SW
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	11	24/07/2020	468 E
Leisler's bat (<i>Nyctalus leisleri</i>)	6	13/09/2017	767 E
Noctule (<i>Nyctalus noctula</i>)	4	04/09/2014	730 S
Mammals (excl. bats)			
West European Hedgehog (<i>Erinaceus europaeus</i>)	13	2015	937 SW
Amphibians			
Common Toad (<i>Bufo bufo</i>)	7	07/04/2018	614 W

¹⁰ <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/london-plan-2021>

5.4 Phase 1 habitat survey

- 5.4.1 The results of the extended Phase 1 habitat survey are presented below. A Phase 1 habitat survey map of the Proposed Development site is provided in Appendix A. This map illustrates the location and extent of the different habitat types recorded within the survey area at the Proposed Development site. Photographs taken during the field survey are presented in Appendix B.

- 5.4.2 Table 5-3 details the weather conditions at the time of the surveys.

Table 5-3: Weather conditions during survey

Parameter	Survey 1 (PEA)
Date(s)	24/02/2022
Start time and finish time	1pm to 4pm
Temperature (°C)	7
Cloud Cover (%)	80
Wind (Beaufort Scale)	3
Precipitation	Showers

5.5 Habitats

Buildings and Hardstanding

- 5.5.1 The site is dominated by buildings and hard-standing. Aylesham shopping centre is formed of a large continuous brickwork building that offers retail space. A glass roof is present on the atrium of the building, with Morrisons shopping centre adjoining the main building. A large car park is present within the east of the site, as well as a re-fuelling station.
- 5.5.2 Most built structures appear to be well-sealed with flush joints offering limited space for roosting bats or nesting birds. However, pigeons were noted within the Aylesham Centre walkways, as well as a large amount of bird droppings. This habitat is of low ecological value.

Scrub

- 5.5.3 There are some ornamental shrubs and scrub planted around the site. These mainly consist of cotoneaster and laurel (*Prunus laurocerasus*). They primarily form linear features near boundaries and are sparse within the site. This habitat is of negligible ecological value.

Trees

- 5.5.4 Scattered trees can be found around the site, such as sycamore (*Acer pseudoplatanus*), cherry (*Prunus* sp.) and ash (*Fraxinus excelsior*). The trees are of mixed maturity, and some have potential to support nesting birds. The trees have limited connectivity due to the nearby urban environment. The tree line present adjacent to Hanover Park are relatively mature and offer the best opportunity for nesting birds/roosting bats.
- 5.5.5 This habitat has a low ecological value.

6 Potential Impacts

6.1 Designated Sites & Priority Habitats

- 6.1.1 Given the scale of the Proposed Development, and the lack of likely impacts beyond the site boundary (in line with a Construction Environmental Management Plan), nearby designated sites / priority habitats are sufficiently well separated so that no impacts on their designated features are anticipated because of the works.

6.2 Habitats

- 6.2.1 The ecological importance of the terrestrial habitats present within the Site is low, the impact is considered to be minimal. The minimal ecological disturbance would be contained on the site only and will not impact the ecological habitats surrounding the Site.

6.3 Protected / Notable Species

- 6.3.1 The following section considers the likely impact of the proposals on protected or notable species. This is based on those species for which potentially suitable habitat occurs within or adjacent to the Proposed Development Site. Please refer to Table 3-2 for the definitions of the scale of constraints.

Bats

- 6.3.2 No evidence of bats was recorded during the external assessments of the buildings or trees at Aylesham Centre, Peckham. On the whole, the buildings were well sealed and offered very limited roosting opportunities. The buildings and structures, when considering the surrounding area and high levels of disturbance from humans and lighting, did not support any suitable roosting features, and are defined as having a negligible potential to support roosting bats in accordance with the BCT criteria. While there were some cracks within mortar of the brickwork, it is thought the features are too shallow to offer a real opportunity for roosting bats.
- 6.3.3 The site may offer limited commuting and foraging opportunities for bats. However, the highly urban context of the Site, high levels of disturbance from lighting as well as sparse vegetation on site allows for negligible opportunities for commuting and foraging bats.

Nesting birds

- 6.3.4 No sightings of black redstarts have been recorded within 1km of the Site in the last ten years. The site provides a negligible potential for nesting black redstart and / or peregrine falcon. Black redstart requires areas of sparse wasteland vegetation and stony ground for feeding and tall and complex structures with ledges and crevices for nesting, which are currently absent on the site. Existing levels of disturbance on the site and in the surrounding area would also likely discourage black redstart from nesting on the site, even if suitable habitat was present.
- 6.3.5 A wide range of passerine bird species were recorded in the desk study. The habitats could support local assemblages of birds which might use the buildings and vegetation to nest within.

Removal of vegetation and building refurbishment in the nesting bird season could impact active nests and cause a legal offence. Loss of the trees, ornamental planting and buildings would have the potential to result in the loss of nesting bird habitat.

- 6.3.6 The survey was conducted outside of breeding bird season; however, groups of starlings and pigeons were both noted on site during the Phase 1 habitat walkover. The impact of the Proposed Development is considered to be low on nesting birds, and of a site scale, due to the limited habitats in the surrounding area.

Invertebrates

- 6.3.7 The site includes very limited habitat for invertebrates. A minimal number of invertebrates have been recorded within 1km of the Site within the last 10 years which suggests the impact of the Proposed Development on invertebrates is negligible.

Other mammals

- 6.3.8 The Site provides some suitable habitat for common mammals, such as red fox (*Vulpes vulpes*) including the car park which red foxes could use as a place of refuge. Common wild mammals, such as red fox, may venture onto the Site during the demolition and construction of the Proposed Development and there is a possibility that they may be killed or injured.
- 6.3.9 A record of west European hedgehog (*Erinaceus europaeus*) was noted in the desk study. The Site does not offer suitable habitats for hedgehogs. The building refurbishment and construction works are considered unlikely to impact hedgehog populations and have therefore not been considered further within this assessment.
- 6.3.10 The impact on other mammals is considered to be low.

Plants

- 6.3.11 None of the habitats recorded during the extended Phase 1 habitat survey are of high botanical or habitat value and no native plant species of national importance were present.
- 6.3.12 Cotoneaster was recorded on site, and some species of this plant are listed on Schedule 9 of the Wildlife & Countryside Act (1981 as amended), which makes it illegal to distribute or allow the spread of cotoneaster species into the wild. The impact of this invasive species is considered to be low.

Table 6-1: Ecological Features and Scale of Constraint

Ecological Feature	Scale of Constraint
Statutory Designated Sites	Negligible
Non-Statutory Designated Sites / Notable Habitats	Negligible
Bats	Negligible
Other mammals	Low. Take precautions to ensure any holes are covered to not endanger fox species.
Nesting birds	Low. Site is likely used for nesting by common and widespread bird species.
Plants – invasive species	Low.

7 Compensation & Recommendations

7.1 Nesting birds

- 7.1.1 All birds, their active nests and eggs are protected from harm under the WCA. This legislation makes it an offence to kill, injure or take any wild bird or to take, damage or destroy the nest of any wild bird while that nest is in use or being built. An offence could therefore occur during clearance and refurbishment work on the Site.
- 7.1.2 The buildings and vegetation could support nesting birds. To ensure legal compliance, clearance of habitat suitable for nesting birds (all vegetation and buildings) should be undertaken outside the nesting bird season (i.e. between October and February inclusive). However, should this not be practical, the following measures must be adhered to:
- Works must be undertaken in line with a Precautionary Working Method Statement (PWMS);
 - Prior to clearance, an ecologist should carry out a nesting bird inspection of areas to be cleared;
 - Should any active birds' nests be found, the work may not take place within an appropriate established buffer zone (usually 5m), which should be left intact until it has been confirmed that the young have fledged, and the nest(s) is no longer in use.

7.2 Wild mammals

- 7.2.1 All wild mammals, including red fox, are protected by the Wild Mammals (Protection) Act 1996 which makes it an offence to intentionally cause any wild mammal unnecessary suffering by certain methods. Common wild mammals, such as red fox, may venture onto the Site during the refurbishment and construction of the Proposed Development.
- 7.2.2 To avoid an offence, measures should be employed during the construction phase, including the covering of all deep holes and trenches overnight and/or the provision of planked escape routes for any wildlife that may fall in. In addition, any liquids held on-Site should be stored in a secure lock-up. These measures should be implemented through a Demolition and Construction Method Statement (DCMS) or similar. Hoarding around the perimeter of the Site should also minimise the likelihood of any wild mammals gaining access to the Site.

7.3 Plants – Invasives

- 7.3.1 Some species of cotoneaster are listed on Schedule 9 of the Wildlife and Countryside Act. When removing this plant, it must be chipped or burnt on site or removed to a licenced landfill as controlled waste.

7.4 Habitat Management Plan

- 7.4.1 A Habitat Management Plan / Landscape Management Plan should be developed for the site. The aim of the plan would be to facilitate the appropriate maintenance of landscaped areas and to provide replacement planting, as necessary. The plan would also outline proposed management measures to maintain the ecological value of any new habitats created, such as biodiverse roof(s) and areas of new planting.

8 Enhancements

- 8.1.1 Planning policy at the national and local level and strategic biodiversity partnerships encourage inclusion of ecological enhancements in development projects. Ecological enhancements can also contribute to green infrastructure and ecosystem services such as storm water attenuation and reducing the urban heat island effect. The following measures would be suitable for integration into the Proposed Development site's design.

Native tree and scrub planting

- 8.1.2 It is recommended that the native trees present on site (Ash, Sycamore, Cherry) be retained and protected during the refurbishment and construction of the Proposed Development. It is recommended that native trees and scrub species are included within any landscaping to enhance the site.
- 8.1.3 It is recommended wildlife planting should be integral to the soft landscape plans and should include native species and/or species of recognised wildlife value. The use of nectar-rich and berry producing plants will attract a wider range of insects, birds and mammals and continue to accommodate those already utilising the site. Where possible, larger shrubs should be under-planted to create greater structure and cover for wildlife. The use of block planting of single species should be avoided in favour of a higher diversity of plant types per square metre.

Good horticultural practice

- 8.1.4 Good horticultural practice should be utilised, including the use of peat-free composts, mulches and soil conditioners, native plants with local provenance and avoidance of the use of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Installation of Green Roofs

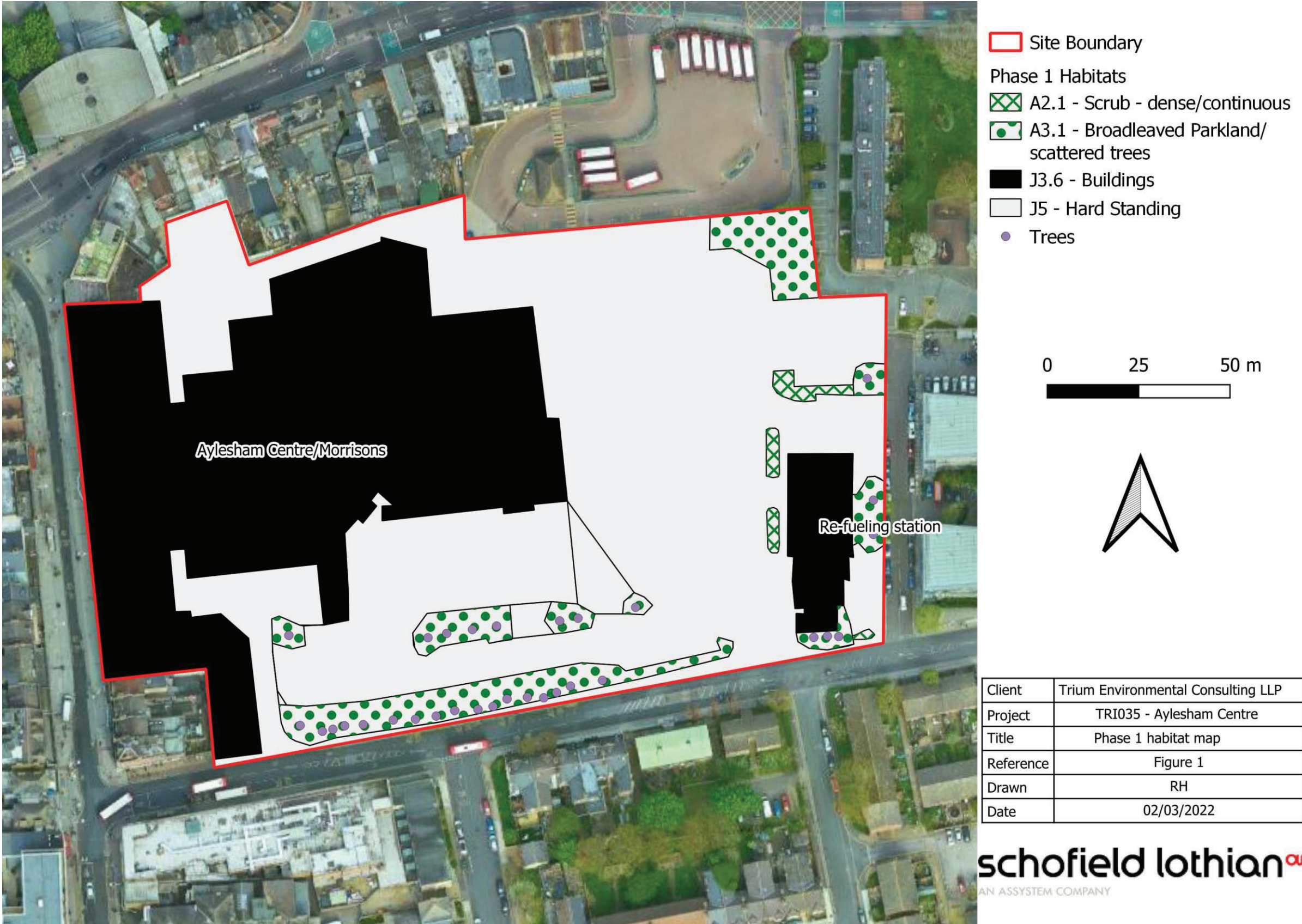
- 8.1.5 It is recommended that green roofs containing intensive planting are provided on the refurbished buildings. To maximise biodiversity, this should comprise of the intensive planting of a range of native grasses and flowering plants. This would provide habitat for birds and invertebrates and would represent a valuable ecological enhancement. This should ideally only be accessible for maintenance purposes, to minimise disturbance to wildlife. If the roof terraces are to be open to the public, it is recommended that the intensive planting is kept off walking routes to avoid disturbance.
- 8.1.6 Other features could be installed on an intensive green roof terrace, to enhance its ecological value. A bird bath and bird feeders could be provided, to provide washing and feeding

opportunities for birds. Stone or log piles would also provide shelter for a variety of invertebrates. An insect house could also be installed.

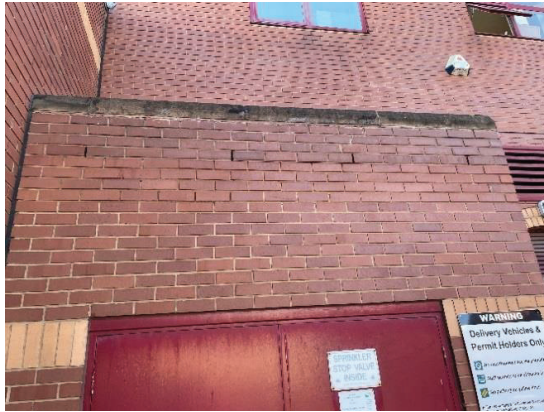
Provision of wildlife boxes

- 8.1.7 Bird boxes could be installed within the tree planting on the ground and on the roof amongst green roof terraces.
- 8.1.8 Insect houses can be installed both within the ground level intensive planting and on the intense green roof terraces.
- 8.1.9 Bird boxes should be installed on the refurbished buildings, to provide roosting habitat for bats and nesting habitat for birds, respectively. These could be installed onto or within the walls or on the roof of the buildings.
- 8.1.10 Bird boxes should be installed with different sized holes (including both 32mm and 26mm diameter) to cater for different species, including notable species that could occur on the site. This should include nest boxes for house sparrow on the proposed buildings, such as the Schwegler 1SP Sparrow Terrace. A further suggestion is the Schwegler No 24 Brick Box and Schwegler 1B Bird Box, including both 32mm and 26mm diameter holes. These boxes should also be located adjacent to any landscaped areas, at least 3m above the ground and facing southeast to north, to avoid direct sunlight and the heaviest rain.

Appendix A Phase 1 Habitat Survey Map



Photograph 5: Glass atrium within Aylesham Centre	Photograph 6: Glass atrium within Aylesham Centre. Pigeon visible
Photograph 7: Edge of site boundary on Rye Lane	Photograph 8: Morrisons from bus garage
Photograph 9: Morrisons goods entrance	Photograph 10: Morrisons goods entrance

Photograph 11: Morrisons goods entrance	Photograph 12: Morrisons goods entrance boundary
	
Photograph 13: Morrisons goods entrance	Photograph 14: Morrisons goods entrance.
	
Photograph 15: Morrisons goods entrance	Photograph 16: Morrisons goods entrance and cracks within mortar
	

Photograph 17: Re-fueling station	Photograph 18: Re-fueling station
	
Photograph 19: View from the square facing south.	Photograph 20: The east façade of the building
	
Photograph 21: Tunnel facing the west of the Site.	Photograph 22: Holly tree (Ilex) to the south of the Site.
	

Appendix C Relevant Legislation

C.1 The Conservation of Habitats and Species Regulations 2017

- C.1.1 The Conservation of Habitats and Species Regulations 2017 consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.
- C.1.2 Under the Regulations, competent authorities i.e. government departments and public bodies, have a general duty to have regard to the EC Habitats Directive and Wild Birds Directive. The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000. The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the precautionary principle applies i.e. consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.
- C.1.3 The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a few purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

C.2 The Wildlife and Countryside Act (WCA) 1981 (as amended)

- C.2.1 The WCA, as amended, consolidates and amends pre-existing national wildlife legislation in order to implement the Bern Convention and the Birds Directive. It complements the Habitat Regulations 2010 (as amended), offering protection to a wider range of species. The Act also provides for the designation and protection of national conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSIs).
- C.2.2 Schedules of the act provide lists of protected species, both flora and fauna, and detail the possible offences that apply to these species. All relevant species-specific legislation is detailed later in this Appendix.
- C.2.3 Schedule 1 – Part 1 relates to birds and their young, for which it is an offence to intentionally or recklessly disturb at, on or near an 'active' nest. Schedule 1 – Part 2 relates to birds afforded

special protection during the close season which is 1 February to 31 August (21 February to 31 August below high-water mark), but which may be killed or taken outside this period.

C.3 The Countryside and Rights of Way (CROW) Act 2000

- C.3.1 The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife.
- C.3.2 Legislation detailed in the WCA places a duty on government departments and the National Assembly for Wales to have regard for biodiversity and provides increased powers for the protection and maintenance of SSSIs. The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

C.4 The Natural Environment and Rural Communities (NERC) Act 2006

- C.4.1 Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all their functions. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity. These lists superseded Section 74 of the CROW Act 2000.

C.5 UK Biodiversity Action Plan

- C.5.1 The United Kingdom Biodiversity Action Plan (UK BAP), first published in 1994 and updated in 2007, was a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UK BAP contained a list of priority habitats and species of conservation concern in the UK and outlined biodiversity initiatives designed to enhance their conservation status. Lists of Broad and Local habitats were also included. The priority habitats and species correlated with those listed on Section 41 and 42 of the NERC Act.
- C.5.2 The UK BAP required that conservation of biodiversity be addressed at a County level through the production of Local BAPs. These were complementary to the UK BAP, however, were targeted towards species of conservation concern characteristic of each area. In addition, several local authorities and large organisations have produced their own BAPs.

C.6 Species and Habitats of Material Consideration for Planning in England

- C.6.1 In 2011, the government published the 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' to replace the previous England Biodiversity Strategy. In 2012 the UK BAP was replaced by the UK Post-2010 Biodiversity Framework.
- C.6.2 Previous planning policy (and some supporting guidance which is still current, e.g. ODPM Circular 06/2005, now under revision), refers to UK BAP habitats and species as being a material consideration in the planning process. Equally many local plans refer to BAP priority habitats and species. Both remain as material considerations in the planning process, but such habitats and species are now described as Species and Habitats of Principal Importance for Conservation in England, or simply priority habitats and priority species under the UK Post-2010 Biodiversity Framework. The list of habitats and species remains unchanged and is still derived from Section 41 list of the Natural Environment and Rural Communities (NERC) Act 2006. As was previously the case when it was a BAP priority species hen harrier continues to be regarded as a priority species although it does not appear on the Section 41 list.

C.7 Birds of Conservation Concern 4: the Red List for Birds

- C.7.1 Birds of Conservation Concern 4: the Red List for Birds was published in December 2015.
- C.7.2 Commonly referred to as the UK Red List for birds, this is the fourth review of the status of birds in the UK, Channel Islands and Isle of Man, and updates the last assessment in 2009. Using standardised criteria, 244 species with breeding, passage or wintering populations in the UK were assessed by experts from a range of bird NGOs and assigned to the Red, Amber or Green lists of conservation concern.

C.8 Protection of Badgers Act 1992

- C.8.1 Under the Protection of Badgers Act 1992, it is an offence to disturb a badger in its sett or damage, destroy or obstruct access to a badger sett. If the proposed work will involve works coming within 30m of an active badger sett Natural England's standing advice will need to be consulted and a mitigation plan drawn up. After which a licence will need to be applied for from Natural England to undertake any works. It should be noted that badgers cannot be captured and moved purely for development purposes.

Appendix D About Schofield Lothian

- D.1.1 Schofield Lothian is an infrastructure consultancy delivering added value professional services to Clients.
- D.1.2 Combining over 40 years of expertise in infrastructure with Assystem's 'Engineering Powered by Digital' approach for truly unparalleled added value professional services
- D.1.3 We have in-depth expertise in these service areas:
- Consents & Engagement Services
 - Environment & Sustainability Services
 - Project Management Services
 - Commercial Management Services (Quantity Surveying, Estimating & Contracts)
- D.1.4 Our customised Client Teams bring Client's expertise and experience to deliver an effective and sustainable solution for your project (via secondment, service teams or advisory).
- D.1.5 Through our values we have a vibrant and successful company, where people can thrive, and Clients prosper.
- D.1.6 We believe passionately in delivering added value through a collaborative approach and have the flexibility to respond quickly to facilitate the client's requirements.

D.2 Values

- D.2.1 Our values are part of our DNA. They guide the way we work with each other, with our clients, and within our communities. Our values are:
- Honesty – we tell the truth, we will be sincere and fair
 - Respect – we show regard and consideration for the opinions of other
 - Integrity & Trust – we demonstrate strong moral principles and are trustworthy
 - Collaboration – we work to achieve shared goals
 - Accountable – we are accountable and responsible for our actions and results
- D.2.2 Through these values we have a vibrant and successful company where people can thrive, and clients prosper. They define our culture.

D.3 Accreditations

- D.3.1 Quality processes are very important to us especially in delivering our professional services to Clients. In addition to our in-house Business System (SBS), which outlines the processes and procedures within the company, we are accredited to these international recognised standards:
- ISO 9001 Quality Management System
 - ISO 14001 Environmental Management System
 - BS OHSAS 18001 Health & Safety Management System
 - IIP Investors in People
- D.3.2 We are also accredited to the following industry standards: RISQS Railway Industry Supplier Qualification Scheme, UDVB Utilities and ConstructionOnline.

Annex E: Phase 1 Land Contamination Assessment

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**PHASE 1
CONTAMINATION
ASSESSMENT
REPORT**

Aylesham Centre
Redevelopment

Aylesham Centre
Hanover Park
Peckham
London
SE15 5EW

Prepared for:
Berkeley Homes Limited

13th May 2022

Project Number:
RMA-C2361



environmental planning consultancy

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APPENDICES

Appendix A: Groundsure Report
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General Notes

This report has been prepared by RMA Environmental Ltd (RMA) and provides available factual data for the site at the time of the study and as obtained from the sources described in the text. The data is related to the site on the basis of the site location which has been provided by the Client.

It should be appreciated that the desk study information is not necessarily exhaustive and that further information relevant to the site and its proposed use may be available. The accuracy of map extracts cannot be guaranteed, and it should be recognised that different conditions on site may have existed between and subsequent to the various map editions.

Any borehole data from the British Geological Survey (BGS) sources is included on the following basis: *'The British Geological Survey accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation'*.

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1 INTRODUCTION

Background

- 1.1 This Phase 1 Land Contamination Assessment has been prepared by RMA Environmental Ltd for Trium Environmental Consulting ('Trium') on behalf of Berkeley Homes Limited in support of a full planning application for the phased redevelopment of the Aylesham Centre located on Hanover Park Road in the London Borough Southwark, SE15 5EW (i.e. the site).
- 1.2 The site currently comprises of Aylesham shopping centre, Morrisons supermarket, car park and petrol station.
- 1.3 The scheme proposals (hereafter referred to as 'the Proposed Development') will comprise of a comprehensive phased redevelopment of the site involving demolition of all existing buildings and provision of c.850 homes, 10,500sqm (GIA) of retail (and other e-class commercial/business/service use) floorspace and associated works.
- 1.4 The objective of this Phase 1 Contamination Assessment is to gather information on site conditions and to identify any potential risks of ground contamination resulting from historical or current land uses on or in close proximity to the site.

Scope of Work

- 1.5 This Phase 1 Contamination Assessment report presents the information on and addresses the following:
 - current use and condition of the site including any visual evidence of potentially contaminative operations on site;
 - land use history in the context of potentially contaminative activities (based on a review of available Ordnance Survey maps);
 - environmental setting in terms of geology, hydrogeology, hydrology and surrounding land uses;
 - a review of a third-party Groundsure Environmental Database report relating to the site and its surroundings (this is included within Appendix A of this report);
 - a review of a previous Phase 1 Environmental Assessment (Delta-Simons) undertaken for the site in March 2021;
 - a review of the Environment Agency's (EA) website to identify any potential environmental issues relating to the site or surrounding areas;
 - development of a preliminary conceptual site model and identification of potential risks to human health and environmental receptors; and

- conclusions and recommendations.

Technical Approach

1.6 This assessment generally follows the guidance provided in the following publications:

- Environment Agency Land Contamination Risk Management (LCRM) – (EA, 2020)¹;
- Managing and Reducing Land Contamination: Guiding Principles (GPLC, EA 2016)²;
- National Planning Policy Framework (NPPF, 2021)³;
- National Health Building Council Part 4 Foundations – Chapter 4.1 Land Quality: Managing Ground Conditions (NHBC, 2021)⁴;
- The London Plan (2021)⁵; and
- The Southwark Plan (2022)⁶; and other relevant planning policy and guidance documents.

¹ Environment Agency. (2020). Land Contamination Risk Management.

² Environment Agency. (2016). Managing and reducing land contamination: guiding principles (GPLC)

³ Department for Levelling Up, Housing and Communities. (2021). National Planning Policy Framework

⁴ National House Building Council. (2021). Part 4 Foundations – Chapter 4.1 Land Quality: Managing Ground Conditions. (online). Available at: <https://nhbc-standards.co.uk/4-foundations/4-1-land-quality-managing-ground-conditions/>

⁵ Mayor of London. (2021). The London Plan. The Spatial Development Strategy for Greater London

⁶ London Borough of Southwark. (2022). The Southwark Plan 2019-2036.

2 SITE LOCATION AND LAYOUT

Site Location

- 2.1 The site covers an area of approximately 2.72 hectares (ha) and is located in the London Borough of Southwark; it currently comprises of Aylesham shopping centre, Morrisons supermarket, car park and petrol station.
- 2.2 The site is in an urban area and is centred around National Grid Reference (NGR) TQ 34272 76642 (refer to Figure 1.1). It is bordered by the following land uses:
- retail units and Peckham bus station are located immediately to the north, beyond which Peckham High Street is located;
 - Mckerrell Road borders the site to the west, beyond which residential flats are situated;
 - Hanover Park road is located along the southern boundary of the site, beyond which a mix of residential and commercial buildings are located; and
 - Rye Lane borders the site to the west;

Site Environmental Setting

Geology

- 2.3 According to the British Geological Survey (BGS) online viewer, the entire site is underlain by the superficial deposits of the Interglacial Lacustrine Deposits comprising of clay and silt. The entire site is further underlain by the bedrock geology of the Lambeth Group comprising of clay, silt and sand.
- 2.4 From reviewing the BGS 1:50,000 map series England and Wales Sheet 270 for South London, it shows the site to be located in an area of previously worked ground. In addition, the Groundsure report identifies that the area of worked ground appears to be located within the southern extent of the site. The BGS map also shows that the bedrock geology of the Lambeth Group is further underlain by the Thanet Sand Formation and Upper, Middle and Lower Chalk Group Formations.
- 2.5 From reviewing BGS mapping, there are two available borehole records located on site, the first is located in the far north-western corner of the site (TQ37NW138) which was drilled to a depth of 53.64 m. Groundwater was encountered within this borehole at a depth of 8.5 m and had the following geological sequence:
- likely made ground (approximately 3.4 m thick);
 - river drift deposits (Interglacial Lacustrine Deposits) (approximately 2.4 m thick);
 - Woolwich and reading beds (Lambeth Group) (approximately 12.5 m thick);

- Thanet sand formation (approximately 10.0 m thick); and
 - upper chalk (approximately 25.5 m thick).
- 2.6 The second borehole record is located along the northern boundary of the site (TQ37NW387) and was drilled to a depth of 15.24 m and indicates that made ground is approximately 0.30 m thick which is then underlain by clay and sands. The varying thicknesses of made ground could be in relation to the site being underlain by previously worked ground and suggests historical infilling has been undertaken at the site.
- 2.7 The site is in an area where between 1% - 3% of properties are above the Action Level for radon according to the Groundsure Geo Insight report (Appendix A), however no radon protection measures are considered to be necessary for the Proposed Development in accordance with Building Control Regulations in England.
- 2.8 Zetica produce unexploded bomb risk maps for sites within the UK and a review of these has confirmed that the site is located within an area with a high risk of Unexploded Ordnance (UXO) (refer to Appendix B). From reviewing historical maps, the northern and north-eastern extent of the site shows ruins in 1950 mapping which indicates that the area was most likely subject to World War Two bombing. Therefore, as the site is of high risk, it is recommended in line with Zetica Mapping guidance that additional detailed UXO survey is undertaken.

Hydrogeology

- 2.9 Online EA data sources provide the hydrogeological information as summarised in Table 2.1 below.

Table 2.1: Aquifer Properties

Aspect	Designation	Description
Groundwater Source Protection Zone (SPZ)	None	The site is not located within a groundwater SPZ.
Superficial Aquifer Designation: Interglacial Lacustrine Deposits	Unproductive Strata	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
Bedrock Aquifer Designation: Lambeth Group	Secondary A Aquifer	These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
Bedrock Aquifer Designation: Thanet Sand Formation		
Bedrock Aquifer Designation: Chalk Formation	Principal Aquifer	These are layers of 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.

Hydrology

- 2.10 The closest 'main river'⁷ is the Ravensbourne river which is located approximately 3.0 km east of the site.
- 2.11 The second closest 'main river' is the River Thames which is located approximately 3.2 km north of the site.
- 2.12 A 'lost watercourse'⁸ is located approximately 370 m south of the site known as the 'River Peck' which is culverted/routed underground.
- 2.13 The site falls within the Water Framework Directive (WFD)⁹ London surface water management catchment.

⁷ Main Rivers described by the EA as the following "usually larger rivers and streams" the rest of which are described as Ordinary Watercourses.

⁸ Described as a covered channel in which water flows, typically known as a culvert.

⁹ Gov (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations.

3 SITE RECONNAISSANCE AND DESK STUDY

General

- 3.1 A desk study has been carried out using information obtained from Groundsure Enviro Insight and Geo Insight Report for the area, as well as a review of published information and information obtained from regulatory bodies (and online). A full copy of the Groundsure Report is included as Appendix A.
- 3.2 A site walkover was undertaken on the 21st April 2022. Access into the buildings were restricted at the time of the visit however the following site observations were made (site photographs are included within Appendix C of this report):
- there was no significant visual evidence of hydrocarbon spillages or staining on areas of hardstanding and the site was considered to be generally well managed;
 - underground tanks are located in the south-eastern corner associated with the fuel station;
 - plant material such as air conditioning units are located on the top of the supermarket roof space; and
 - a delivery court yard is located in the south-western corner of the site, this contains bin storage area and plant machinery located on hardstanding.

Site History

- 3.3 Historical maps have been obtained as part of the Groundsure Enviro Insight report (refer to Appendix A).
- 3.4 The historical information of relevance is summarised in Table 3.1 below.

Table 3.1: Summary of Historic Mapping

Year of Change (Scale)	On Site	Surrounding Area
1871-1875 (1:1,056) (1:2,500) (1:10,560)	Open park spaces are located within the northern, north-eastern and south-western extents of the site. 'Avenue House' is located within the eastern extent of the site. A number of large houses and associated gardens are located along the southern and south-eastern extents of the site. The north-western extent of the site comprises of residential	The 'Red Bull Yard' and a British Boys School are located immediately to the north of the site, along with numerous buildings. Sunderland Wharf is located approximately 100 m north and Walton's Wharf approximately 150 m north of the site. 'Peckham Brewery' is located approximately 200 m north of the site. 'Hope Brewery' is situated approximately 130 m north-east of the site, beyond which a 'Drill Ground' is located.

Year of Change (Scale)	On Site	Surrounding Area
	housing and a number of larger unnamed buildings.	Various churches and chapels are located around the site including, 200 m north, 50 m south and 10 m east of the site. 'Hanover Nursery' is located approximately 110 m south of the site. Peckham Rye Station and associated train tracks are located approximately 180 m south of the site.
1894–1899 (1:1,056) (1:2,500) (1:10,560)	New residential houses have been developed along the eastern boundary of the site. One of the buildings along the southern boundary of the site is known as the 'Conservative Club'. Many of the residential buildings have been demolished in the south-western and north-western extents of the site and new larger buildings have been developed over these areas.	'Surrey Canal – Peckham Branch' is located approximately 100 m north of the site. 'Eagle Saw Mill' is located approximately 170 m north of the site. Residential estates have replaced Hanover Nursery to the south of the site. A 'Coal Depot' is situated approximately 170 m south of the site. A 'Tramway Depot' is located approximately 80 m west of the site. 'Peckham Wharf' is located approximately 150 m north-west of the site.
1916 – 1920 (1:2,500) (1:10,560)	One of the buildings along the southern boundary of the site is labelled as 'Hanover Hall'. The large building within the eastern extent of the site has been extended eastwards and southwards.	A Timber Yard is now located next to Peckham Wharf, 150 m north-west of the site.
1938 - 1948 (1:10,560)	No significant change from the previous edition.	No significant change from the previous edition.
1950-1955 (1:1,250) (1:2,500) (1:10,560)	A ruin is mapped within the northern extent of the site. Avenue House has been demolished in the eastern extent of the site. 'Peckham Garage (London Transport)' has been built within the north-eastern corner of the site. An electricity substation is located along the eastern boundary of the site. A 'Gantry' is mapped within the central extent of the site.	An electricity substation is mapped approximately 100 m north of the site. Peckham Coach Station is located approximately 110 m north of the site. Many of the buildings to the north-east of the site are no longer mapped, with some areas labelled as 'ruins'. 'Phoenix Works (clothing)' is located approximately 110 m east of the site. Rye Lane Garage (London Transport) is located approximately 50 m west of the site. A Plaster Works is located approximately 200 m north-west of the site.

Year of Change (Scale)	On Site	Surrounding Area
1962 – 1969 (1:1,250) (1:10,560)	A car park is located within the central extent of the site.	No significant change from the previous edition.
1971-1979 (1:1,250) (1:2,500) (1:10,000)	The residential houses along the eastern boundary have been demolished.	Sunderland Wharf (100 m north) and Walton's Wharf (150 m north) of the site has been infilled. A garage is located approximately 200 m north of the site. A warehouse is located approximately 100 m north-east of the site. A car park has been developed approximately 10 m east of the site. A saw mill is located approximately 100 m north-west of the site. An electricity substation is located approximately 180 m north-west of the site.
1985-1989 (1:1,250) (1:10,000)	The large building in the eastern extent and some buildings within the southern extent of the site has been demolished and redeveloped into 'The Aylesham Centre' with associated car park.	A multi-storey car park is located approximately 150 m south of the site.
1991-1995 (1:1,250) (1:10,000)	An electricity substation is located within the south-western extent of the site.	An electricity substation is located approximately 150 m south of the site.
2001-2003 (1:1,250) (1:10,000)	Peckham Garage in the north-eastern extent of the site has been demolished to accommodate for the extension of the Aylesham Centre to the east and existing car park to the south. A petrol station is now located within the south-eastern corner of the site.	Peckham Bus Station is located immediately north-east of the site.
2010-2020 (1:10,000)	No significant change from the previous edition.	No significant change from the previous edition.

Consultation

- 3.5 A Contaminated Land Enquiry has been made to Southwark Council and this is included within Appendix D of this report. The consultation confirms that the site is not designated as contaminated land under Part 2A of the Environmental Protection Act 1990 and therefore is not included on any contaminated land remediation/special sites register as required under the act. There are no proposals to carry out further inspection of the land following the act. The council confirmed that the south of the site is covered by an area of Made Ground and have advised that there are no records of any pollution incidents/records of contamination at the site or nearby and therefore have no concerns regarding ground conditions on or adjacent to the property site.

Environmental Data Searches

- 3.6 Environmental data has been obtained for the site from the Groundsure report (Appendix A) and from data from the EA and local authority websites.

Table 3.2: Historical Industrial Sites

Entry	On Site	0-250 m
Historical Industrial Land Uses	0	34
Historical Tanks	0	2
Historical Energy Features	3	28
Historical Petrol Stations	0	0
Historical Garages	8	2
Historical Military Land	0	0

- 3.7 According to the Groundsure report, there are no records of historical potentially contaminative industrial land uses located on site. However, there are 34 potentially contaminative land uses within 250 m radius of the site that include depots, police stations, railway stations/buildings/sidings and nurseries. The closest of these is located 15 m west of the site and is referred to as a 'Tramway Depot'.
- 3.8 There are no records of historical tanks on site, there are however two records of unspecified historical tanks located within a 250 m radius of the site, the closest of which is located 214 m south of the site.
- 3.9 According to the Groundsure EnviroInsight report, there are three records of historical energy features on site, described as electricity substations which are shown to be located within the south-western extent and far eastern boundary of the site. There are a further 28 records located within 250 m of the site relating to electricity substations.
- 3.10 According to the Groundsure report, there are eight records of historical garages on site described as 'London Transport Garage' whose extents cover the northern, eastern and western extents of the site. There are two other historical garages located within 250 m of the site, the closest of which is 36 m west of the site.
- 3.11 There are no records of any historical petrol stations or historical military located on site or within a 250 m radius.

Table 3.3: Waste and Landfill

Entry	On Site	0-250 m
Active or Recent Landfill	0	0
Historical Landfill	0	0
Historical Waste Sites	0	0
Licensed Waste Site	0	0
Waste Exemptions	0	2

- 3.12 There are two waste exemptions within a 250 m radius of the site, the closest of which is 92 m north-east of the site and is described as 'sorting and de-naturing of controlled drugs for disposal'.

- 3.13 According to the Groundsure report, there are no records of active, recent or historical landfill sites, historical waste sites or licensed waste sites on site or within 250 m radius of the site.

Table 3.4: Current Industrial Land Uses, Permits, Incidents and Registers

Entry	On Site	0-250 m
Recent Industrial Land Uses	4	33
Current or Recent Petrol Stations	1	0
Electricity Cables	0	0
Gas Pipelines	0	0
Sites Determined as Contaminated Land	0	0
Control of Major Accident Hazards	0	0
Regulated Explosive Sites	0	0
Hazardous substance storage/usage	0	0
Historical licensed industrial activities (IPC)	0	0
Licensed industrial activities (Part A (1))	0	0
Licensed pollutant release (Part A(2)/B)	3	2
Radioactive Substance Authorisations	0	0
Licensed Discharges to controlled waters	0	0
Pollutant release to surface waters (Red List)	0	0
Pollutant release to public sewer	0	0
List 1 Dangerous Substances	0	0
List 2 Dangerous Substances	0	0
Pollution Incidents (EA/NRW)	0	2
Pollution inventory substances	0	0
Pollution inventory waste transfers	0	0
Pollution inventory radioactive waste	0	0

- 3.14 According to the Groundsure report, there are four records of recent industrial land uses on site including a petrol station and car wash (south-eastern corner of the site), an electricity substation (south-western extent) and consumer products specified as Specsavers Hearcare (western boundary), although this land use is not considered contaminative and therefore is not considered further within this assessment. In addition, there are 33 other records of recent industrial land uses within a 250 m radius of the site. These are described as electricity substations, bus station, vehicle repair and servicing, telecommunication features and rail station.
- 3.15 There is one petrol station located on site within the south-eastern extent, there are no further petrol stations within 250 m radius of the site.
- 3.16 According to the Groundsure report, there are three licensed pollutant releases (Part A(2)/B) on site. Two of these permits are related to the unloading of petrol into storage at service stations and the other permit is for 'dry cleaning' within the Morrison supermarket. There are two other licenced pollutant releases within 250 m of the site, which are both used for as 'dry cleaning'.
- 3.17 There are two records of pollution incidents (EA/NRW) within 250 m radius of the site involving construction and demolition waste and asbestos materials. The closest of which

was 153 m south-east of the site and consisted of 'construction and demolition materials and wastes' which had a Category 3 (Minor) impact on the land environment.

Table 3.5: Hydrogeology and Hydrology

Entry	On Site	0-250 m
Groundwater Abstraction Licences	0	0
Surface Water Abstraction Licences	0	0
Potable Water Abstraction Licences	0	0
Source Protection Zones	0	0
Water Networks	0	0
WFD Surface Water Body Catchments	1	0
WFD Surface Water Bodies	0	0
WFD Groundwater Bodies	1	0

- 3.18 According to the Groundsure report, the site is reported to be located within part of the London Management Catchment draining to the tidal Thames Water Framework Directive (WFD) operational catchment.
- 3.19 There is one recorded WFD groundwater body located on site according to Groundsure known as 'Greenwich Tertiaries and Chalk' which has an overall rating of poor for 2019.

Table 3.6: Flooding

Entry	On Site and Surrounding Area
Environment Agency Flood Zone 2	None (within 50 m)
Environment Agency Flood Zone 3	None (within 50 m)
Risk of flooding from Rivers and Sea on site	None (within 50 m)
Flood Defences	None (within 250 m)
Areas Benefiting from Flood Defences	None (within 250 m)
Flood Storage	None (within 250 m)
BGS Groundwater Flooding susceptibility	Low (within 50m)

- 3.20 The site is located within Flood Zone 1 (low risk) and therefore has no risk of flooding from rivers and sea.
- 3.21 According to BGS Groundwater flooding susceptibility, the site has a Low risk of groundwater flooding.

Table 3.7: Designated Environmentally Sensitive Sites

Entry	On Site	0-250 m
Sites of Special Scientific Interest (SSSI)	0	0
Conserved wetland sites (Ramsar sites)	0	0
Special Areas of Conservation (SAC)	0	0
Special Protection Areas (SPA)	0	0
National Nature Reserves (NNR)	0	0
Local Nature Reserves (LNR)	0	0
Designated Ancient Woodland	0	0
Biosphere Reserves	0	0

Entry	On Site	0-250 m
Forest Parks	0	0
Marine Conservation Zones	0	0
Green Belt	0	0
Proposed Ramsar sites	0	0
Possible Special Areas of Conservation (pSAC)	0	0
Potential Special Protection Areas (pSPA)	0	0
Nitrate Sensitive Areas	0	0
Nitrate Vulnerable Zones	0	0
SSSI Impact Risk Zones	0	0
SSSI Units	0	0

- 3.22 There are no designated environmentally sensitive sites within the site or within 250 m radius of the site.

Table 3.8: Natural Hazards

Entry	On Site
Shrink swell clays	Moderate (within 50 m)
Running sands	Negligible (within 50 m)
Compressible deposits	Moderate (within 50 m)
Collapsible deposits	Very Low (within 50 m)
Landslides	Very low (within 50 m)
Ground dissolution of soluble rocks	Negligible (within 50 m)

- 3.23 According to Groundsure, the risk of shrink-swell within the majority of the site is Low, however a small area in the south-western extent of the site is classified as Moderate as the ground conditions are predominantly high plasticity.
- 3.24 According to Groundsure, the risk of running sand problems within the site is Negligible. Running sand conditions are not thought to occur whatever the position of the water table and there are no identified constraints on land use due to running conditions.
- 3.25 The risk of compressible deposits is considered to be Moderate on site as compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.
- 3.26 The risk of collapsible deposits is Very Low according to Groundsure, as deposits with potential to collapse when loaded and saturated are unlikely to be present.
- 3.27 The risk of landslides on site is considered to be Very Low and BGS information for the site suggests that slope instability problems are not likely to occur but consideration of potential problems for adjacent areas impacting on the site should be considered.
- 3.28 The risk of ground dissolution of soluble rocks within the site is considered to be Negligible. BGS information for the site states that soluble rocks are either not thought to be present within the ground or not prone to dissolution and therefore dissolution features are unlikely to be present.

Table 3.9: Mining

Entry	On Site	0-250 m
Natural Cavities	0	0
British Pits	0	0
Surface Ground Workings	0	14
Underground Workings	0	0
Historical Mineral Planning Areas	0	0
Non-coal Mining	1	1
Mining Cavities	0	0
JPB Mining Areas	0	0
Coal Mining	0	0
Brine Areas	0	0
Gypsum Areas	0	0
Tin Mining	0	0
Clay Mining	0	0

- 3.29 According to the Groundsure EnviroInsight report, there are no surface ground workings on site, there are however 14 records of a surface ground workings within 250 m of the site described as ponds and canals. The closest of which was 18 m south of the site and is described as a 'Pond'.
- 3.30 According to the Groundsure Enviro insight report, there is one potential record of non-coal mining on site for chalk. BGS use classes to differentiate the areas with different degrees of likelihood for the existence of underground workings resulting from non-coal mining activities. They are based on a combination of geological factors relating to the known distribution of mineral veins and other commodities that have been mined in the UK supplemented by information on known and suspected locations of workings.
- 3.31 The on site record has a classification of C (Unlikely) which is described as: *"Hazards because of underground mine workings are unlikely. The rock types present in these areas are such that mineral veins may be present on which it is possible that mining has been undertaken and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be of localised extent and infrequent."*
- 3.32 In addition, there is one record of potential non-coal mining located 71 m south-east of the site which is classified as A (Rare) which is described as: *"Hazards because of underground mine workings are rare. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent"*.

Table 3.10: Railway Infrastructure and Projects

Entry	On Site	0-250 m
Underground Railways (London)	0	0
Railway Tunnels	0	0
Historical Railway and Tunnel Features	0	24
Royal Mail Tunnels	0	0

Entry	On Site	0-250 m
Historical Railways	0	0
Railways	0	12
Crossrail 1	0	0
Crossrail 2	0	0
HS2	0	0

3.33 According to the Groundsure report, there are 24 recorded historical railway and tunnel features located within a 250 m radius of the site including tramway/railway sidings and railways. The closest of which is tramway sidings located 75 m west of the site.

3.34 There are 12 records of railways within 250 m radius of the site, the closest of which is located 185 m south of the site and is known as the 'Catford Loop Line'.

Asbestos

3.35 The Phase 1 Environmental Assessment (Delta-Simons, 2021) states that asbestos containing materials (ACMs) are understood to be located within buildings on site and that various asbestos surveys have been undertaken on site over the recent years with an asbestos register reviewed annually and maintenance/removal work is carried out as necessary. The most recent asbestos re-inspection survey was conducted in 2020 for the site (Tetra Consulting, 2020) which recommended eight areas of ACMs for continued management. These areas mainly comprise of flooring in the form of thermoplastic tiles/vinyl flooring and one area with containing bituminous product within a sink unit. The Phase 1 Preliminary Risk Assessment and Geotechnical Desk Study (RPS, 2018) recommended that an asbestos refurbishment/demolition survey should be undertaken in advance of any works being carried out.

Mineral Safeguarding

3.36 Due to the underlying geology, it is considered unlikely that it would be commercially viable or desirable to extract minerals or other materials from the site.

4 CONCEPTUAL SITE MODEL

General

4.1 The assessment of risk from contamination follows the source-pathway-receptor approach as described in LCRM¹⁰ and is summarised as follows (refer to Figure 4.1).

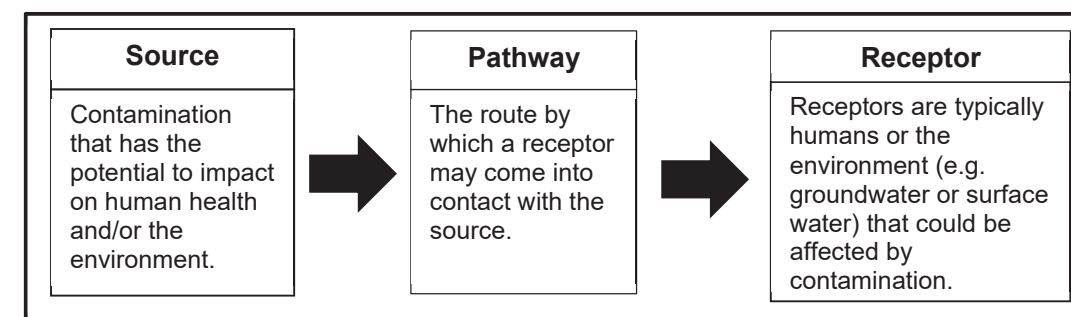


Figure 4.1: Source-Pathway-Receptor Model

4.2 If there is no source-pathway-receptor (SPR) linkage in place, it is concluded that there is no risk of harm. If, however, there is a linkage between source and receptor, then a risk-based assessment called a Qualitative Risk Assessment (QRA) is used to determine the significance or potential impact of the SPR-linkage.

4.3 The QRA process involves the identification of sources based on historical mapping and data searches, together with identification of the exposure pathway and sensitive receptors. A Conceptual Site Model (CSM), which defines the key sources, pathways and receptors that have been identified as being relevant to this site is then developed.

4.4 In terms, of identifying 'significant' pollution linkages (i.e. those that could require remediation), a level of risk is assigned to each linkage. The overall risk of each pollution linkage is determined by classifying each linkage with a probability and consequence classification. Probability of a pollution linkage is classified as either having a High Likelihood, Likely, Low Likelihood and Unlikely occurrence. Similarly, the consequence of a pollution linkage is classified as either being Severe, Medium, Mild and Minor. A 'Risk Estimation' matrix table is then used to determine the overall risk of the pollution linkages. Where the level of risk is Moderate or greater, then the pollution linkage is considered 'significant' and further investigation is required.

4.5 Descriptions and definitions for each probability, consequence and risk classifications, including the risk matrix table is included within Appendix E of this report.

4.6 The Conceptual Site Model has been prepared with due regard to the advice contained in the Contaminated Land (England) Regulations 2006¹¹ and associated statutory guidance on contaminated land.

¹⁰ Environment Agency. (2020). Environment Agency Land Contamination Risk Management (LCRM)

¹¹ Gov (2006) The Contaminated Land (England) Regulations.

Review of Potential Sources of Contamination

- 4.7 Based on the information presented in the Sections 2-3 of this report, the potential sources of contamination that could impact on receptors have been identified and are summarised in Tables 4.1 and 4.2 below.

Table 4.1: Potential Sources of Contamination – On Site

Source	Location on Site	Activity	Potential Contaminants
Garages (<i>historical</i>)	Northern, eastern and western extent of the site	London Transport Garages	TPHs, PAHs, BTEX and VOCs
Electricity Substations (<i>historical and current</i>)	Eastern and south-western extent of the site	Electrical Infrastructure	PCBs, Radiation and other Hydrocarbons
Existing buildings on site (<i>current</i>)	Mainly in the central and western extent of the site	Aylesham shopping centre and Morrisons supermarket	Asbestos
Petrol Station and Car Wash (<i>current</i>)	South-eastern extent of the site	Fuel refilling and car washing	TPH, PAHs, BTEX, VOCs
Car Park (<i>historical and current</i>)	Central and southern extent of the site	Car Park	PAHs, Hydrocarbons

Table 4.2: Potential Sources of Contamination – Off Site

Source	Location to the site	Activity	Potential Contaminants
Garages/Depots/Yards (<i>historical and current</i>)	15 m west of the site	General garage related activities, tramway depots, coal depot and Peckham bus station	TPH, PAHs, BTEX, VOCs
Surface Ground Workings (<i>historical</i>)	The closest was 18 m south of the site	Ponds and Canals	Heavy Metals and Ground Gas
Electrical Substations (<i>historical and current</i>)	31 m east of the site	Electrical infrastructure	PCBs, Radiation and other Hydrocarbons
Railway Infrastructure (<i>historical and current</i>)	The closest was 75 m west	Railway sidings, railway station, railway buildings, tramway sidings and railways	PAHs, heavy metals, TPH, creosote, lead, cleaning solvents and other Hydrocarbons
Nursery (<i>historical</i>)	108 m south of the site	Growing and selling of plants	Pesticides, Fertilisers, Asbestos
Wharfs (<i>historical</i>)	110 m north of the site	Wharf related activities	PAHs, Asbestos, and other Hydrocarbons
Tanks	The closest is 214 m	Unspecified	Unknown

Source	Location to the site	Activity	Potential Contaminants
(<i>historical</i>)	south of the site		
Telecommunication Feature (<i>current</i>)	225 m south of the site	Mast	PAHs, Hydrocarbons

Review of Potential Exposure Pathways

- 4.8 A review of the identified potential pathways that could exist at the site, whether or not a source of contamination has been identified in Tables 4.1 and 4.2, is summarised in Table 4.3.

Table 4.3: Potential Exposure Pathways and Receptors

Receptor	Pathway	Present	Notes
Human Health			
Future site users	Dermal contact, ingestion or inhalation of soil and soil dust	NO	There are no proposed areas of exposed soils at ground level within the Proposed Development. Any planting at podium or roof level will use clean soils.
	Migration in permeable strata and inhalation of gas and/or organic vapour	YES	There is significant thickness of made ground that underlies part of the site and therefore there is potential for ground gas to underlie the site. There is potential evidence that the site has been infilled in the past given the recorded 'worked ground' under the site.
	Potential ground gas migration in permeable strata, accumulation and risk of explosion	YES	There is significant thickness of made ground that underlies part of the site and therefore, there is potential for ground gas underlying the site which could accumulate within buildings. There is potential evidence that the site has been infilled in the past given the recorded 'worked ground' under the site.
Adjacent site users	Ingestion/inhalation of windblown dust	YES	Commercial and residential buildings are located within the surrounding area (<100 m distance). Construction effects only.
Demolition, Construction workers and service repair staff	Dermal contact, ingestion, or inhalation of soil and soil dust and/or hazardous material	YES	Site workers could be exposed to soil contamination during groundworks and/or other substances during demolition/construction.

Receptor	Pathway	Present	Notes
	Migration in permeable strata and inhalation of gas and/or organic vapour	YES	There is significant thickness of made ground that underlies part of the site and therefore this increases the potential for ground gas underlying the site. There is potential evidence that the site has been infilled in the past given the recorded 'worked ground' under the site.
Development			
Future plant life	Plant uptake in the areas of public open space and gardens	NO	There are no proposed areas of exposed soils at ground level within the development. Any planting at roof or podium level will use clean soils.
Buried Services / Infrastructure	Direct Contact	YES	The Proposed Development will include buried services (utilities) which are susceptible to corrosion from contact with pollutants within soil.
Environment			
Surface Water (Ravensbourne river) (River Peck)	Surface runoff (The River Ravensbourne is located 3 km east of the site) (The River Peck is culverted and the nearest point to the site is 370 m to the south)	NO	As the River Peck is culverted and located 370 m from the site there is limited risk that contaminated runoff from construction related activities can enter the watercourse. The Ravensbourne River is not considered to be at risk due to its distance from the site.
Superficial Aquifers: Interglacial Lacustrine Deposits (Unproductive aquifer)	Leaching from soil and vertical fluid movement	NO	Piling and foundation works are likely to penetrate through the made ground into the Interglacial Lacustrine Deposits, however as this superficial geology is impermeable, it is unlikely that it could open up new groundwater pathways within the superficial geology.
Bedrock Aquifer: Lambeth Group and Thanet Sand Formation (Secondary A Aquifers)	Leaching from soil and vertical fluid movement	YES	Piling and foundation works will penetrate through the superficial geology and into the underlying permeable Lambeth Group and Thanet Sand bedrock geology. Therefore, it is considered likely that new groundwater pathways would open up within the permeable bedrock geology.

Potentially Complete SPR-Linkages

- 4.9 Based on the sources, pathways and receptors identified, Table 4.4 below summarises all potential complete pollutant linkages for the site and identifies the level of risk from each. Risk definitions are provided within Appendix E.

Table 4.4: Potential Complete SPR-Linkages

Source (Location)	Contaminants	Pathway	Receptor	Probability	Consequence	Overall Risk	Justification and/or Mitigating Factors
Potential Historical Contamination in Soils and Groundwater (on site and off site)	Hydrocarbons, Metals, PAHs, Asbestos, Radiation, PCBs	Ingestion, dermal contact and fugitive inhalation	Future site users	No Linkage	Mild	No Risk	There are no proposed areas of exposed soils within the development at ground level and therefore there is no risk of future site users coming into contact with potentially contaminated soils. Any planting at podium or roof level will use clean soils.
			Demolition, Construction and service repair workers	Likely	Medium	Moderate	Contractors may be working directly in soils and/or groundwater and there is the potential that contamination could be present in made ground. However, any risk from construction will be mitigated by good construction practices, such as Personal Protective Equipment (PPE).
		Windblown Dust	Adjacent site users	Low	Mild	Low	Good construction practices will be followed to ensure that adjacent site users are not affected (such as dust suppression measures).
		Plant Uptake	Future Planting	No Linkage	Mild	No Risk	There are no proposed areas of exposed soils within the development at ground level. Any planting at podium or roof level will use clean soils.
		Direct Contact	Buried Services	Low	Mild	Low	The Proposed Development will include buried services (utilities); therefore any pipes and utilities will be designed appropriately to reduce the risk of corrosion/damage.
		Vertical migration within soils and geology during construction	Superficial Aquifer (Interglacial Lacustrine Deposits)	Unlikely	Medium	Low	Any piling and foundation works will likely penetrate into the Interglacial Lacustrine Deposits, however as this is classified as an unproductive aquifer, it is considered impermeable and therefore it is unlikely that new groundwater pathways could open up within the superficial geology on site. A Construction Environmental Management Plan (CEMP) will be implemented and includes measures such as appropriate maintenance of demolition/construction vehicles to ensure the risk of contamination from general construction related activities entering the ground below is low.

Source (Location)	Contaminants	Pathway	Receptor	Probability	Consequence	Overall Risk	Justification and/or Mitigating Factors
			Bedrock Aquifer (Lambeth Group and Thanet Sand Formation)	Likely	Medium	Moderate	Piling and foundation works will penetrate through the made ground and superficial geology into permeable bedrock geology of the Lambeth Group and Thanet Sand Formation which could open up groundwater pathways and cause contamination remobilisation. In order to verify contamination conditions, a comprehensive intrusive investigation will be undertaken and will include an assessment of contamination status to inform the detailed design and confirmation of groundwater levels. An appropriate foundation works risk assessment including a Piling Method Statement would be prepared prior to construction to inform the foundation designs for the various element of the Proposed Development and an appropriate quality assurance and control regime would be implemented. This would ensure that the source or pathway (or both) would be removed.
Existing Buildings (on site)	Asbestos	Ingestion, dermal contact and/or fugitive inhalation	Demolition and Construction Workers	Likely	Medium	Moderate	Given the historical and existing land uses on site, as well as previous Asbestos Surveys undertaken on site, it is more than likely that Asbestos Containing Materials (ACMs) are present on site. The most recent asbestos survey was conducted for the Aylesham Centre in 2020 which identified eight areas of ACMs mainly within thermoplastic flooring. Asbestos demolition surveys will be undertaken for all buildings prior to demolition and any asbestos will be removed by a competent contractor prior to commencement of demolition/construction.
Existing Electricity Substation, (on site)	PCBs, Radiation and Hydrocarbons	Surface Water Runoff	Surface Water (River Peck)	Unlikely	Mild	Very Low	The electricity substation on site is a contained unit and it is considered unlikely that any contaminants would be able to enter the existing drainage system for the site especially considering the closest watercourse is culverted.
Existing Petrol station, car wash and car park (on site)	Hydrocarbons, PAHs and Metals			Low	Medium	Low	It is considered that there is a low potential risk of surface water contamination from existing contaminative uses on site as well as and from construction related activities if not managed properly to the River Peck, this is because it is culverted and located 370 m from the site

Source (Location)	Contaminants	Pathway	Receptor	Probability	Consequence	Overall Risk	Justification and/or Mitigating Factors
							The planning application will include an appropriate surface water drainage strategy which will provide sufficient mitigation and treatment for surface water runoff.
Existing Ground Gas (on site and off site)	Ground Gas	Ground Gas Accumulation	Future Site Users	Moderate	Severe	High	There is significant thickness of made ground that underlies part of the site, and this is likely to be associated with past historical infilling assumed to have been undertaken given that the site is recorded to be underlain by 'worked ground'. Therefore, this increases the likelihood of ground gas underlying the site. It is therefore recommended that ground gas monitoring is undertaken as part of the site investigation works, specifically in the western and southern extents where made ground has been recorded or has been identified as 'worked ground'. Following this a detailed ground gas risk assessment will be put forward to the council and mitigation measures will be agreed and implemented if necessary.
		Ground Gas Migration within permeable strata and inhalation of organic Vapours	Construction Worker and service repair workers	Moderate	Severe	High	
			Future Site Users	Moderate	Severe	High	

5 SUMMARY & RECOMMENDATIONS

- 5.1 This Phase 1 Contamination Assessment has been prepared with due regard to the advice contained in the Contaminated Land (England) Regulations 2006 and associated statutory guidance on contaminated land.
- 5.2 From reviewing the baseline data, historical and existing commercial and industrial land uses on the site including garages, electricity substations, petrol station and car park are considered potential contaminative sources of asbestos, hydrocarbons, heavy metals, radiation and PAHs/TPHs. Similarly, there are a number of potentially historic and existing contaminative land uses within a 250 m radius of the site including electricity substations, wharfs, historical tanks and garages, nurseries and railway infrastructure.
- 5.3 A Contaminated Land Enquiry has been made to Southwark Council and this is included within Appendix D of this report. The consultation confirms that the site is not designated as contaminated land under Part 2A of the Environmental Protection Act 1990 and therefore is not included on any contaminated land remediation/special sites register as required under the act.
- 5.4 The existing site currently comprises of Aylesham Shopping Centre, Morrisons Supermarket, car park and petrol station. The site is within an area where between 1% - 3% of properties are above the Action Level for radon, however no radon protection measures are considered necessary in accordance with Building Control Regulations. According to Zetica, the site is located within an area at High risk of UXO. Zetica recommend that as the site is of high risk, additional detailed UXO research is undertaken.
- 5.5 Given the historical and existing land uses on site, there is the high potential that Asbestos Containing Materials (ACMs) are present on site. The most recent asbestos re-inspection survey recommended eight areas of ACMs for continued management. These areas mainly comprise of flooring in the form of thermoplastic tiles/vinyl flooring and one area with containing bituminous product within a sink unit. It is recommended that an asbestos demolition survey should be undertaken in advance of any works being carried out.
- 5.6 Pollution pathways within the site and surrounding area have been identified to determine complete SPR pollutant linkages; each linkage has been classified with a risk by following the QRA methodology as defined within Appendix E. The identified pollutant linkages and their overall risk classification are as follows:
- there is **No Risk** to future site users from potential contamination within soils and groundwater as there are no proposed areas of exposed soils at ground level on site;
 - the overall risk of potential contamination within soils and groundwater from on-site and off-site sources is **Moderate** for demolition and construction workers and **Low** for adjacent site users;
 - there is **No Risk** of potential contamination within soils and groundwater via plant uptake;

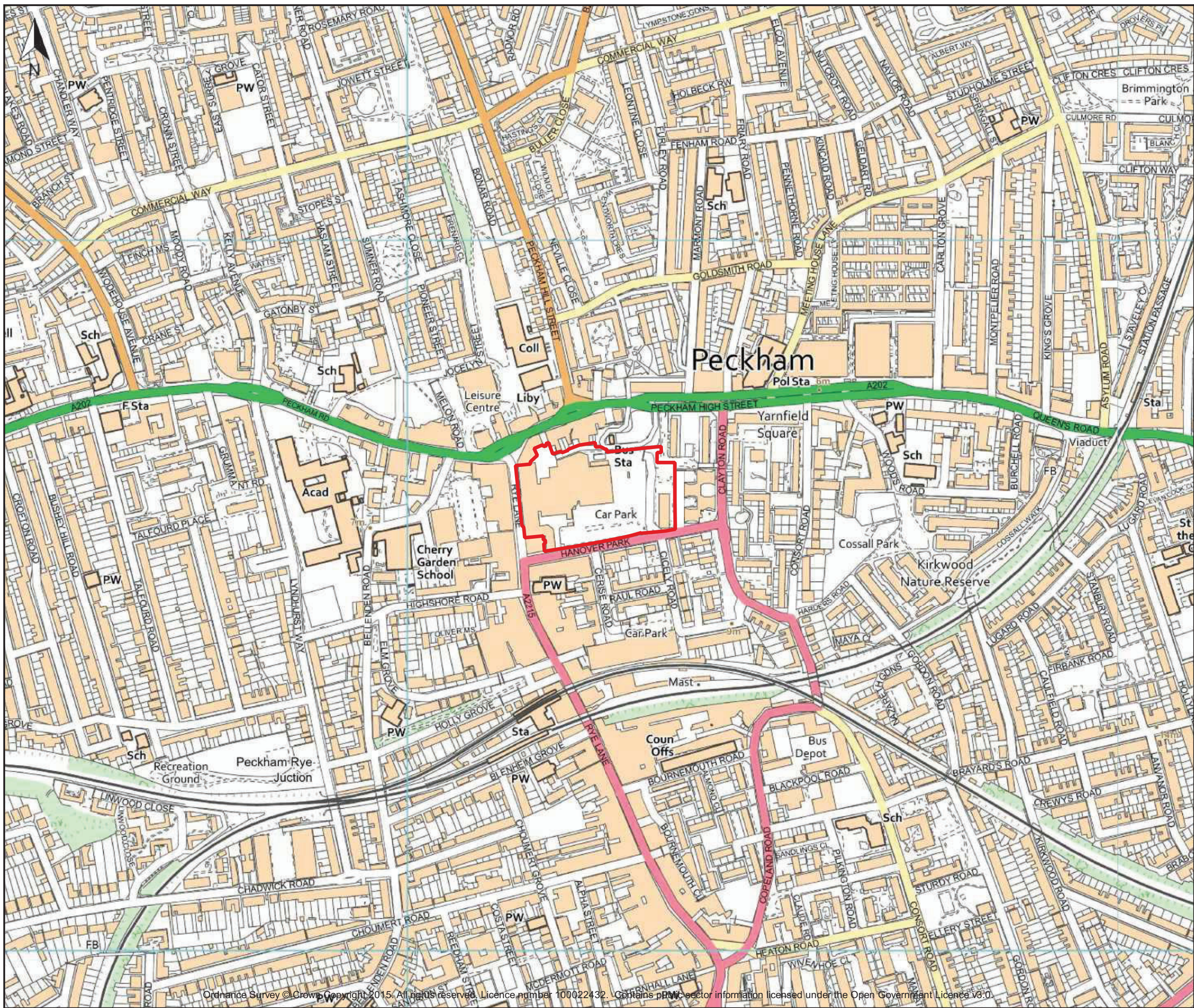
- the overall risk of potential contamination within soils and groundwater from on-site and off-site sources via direct contact is **Low** for buried services (utilities);
 - the overall risk of potential contamination within soils and groundwater from on-site and off-site sources is **Low** for the superficial geology as it is unproductive strata and therefore is unlikely to open up new groundwater pathways;
 - the overall risk of potential contamination within soils and groundwater from on-site and off-site sources is **Moderate** for the bedrock geology as piling and foundation works could open up pathways to the Lambeth Group and Thanet Sand Formation and cause contamination from general construction-related activities;
 - the overall contamination risk from the existing buildings is considered to be **Moderate** for demolition and construction workers due to the presence of ACMs;
 - there is **Very Low** risk of surface water contamination from the existing electricity substation on surface water (River Peck).
 - there is **Low** risk of surface water contamination from the existing petrol station, car wash and car park on surface water (River Peck) as the watercourse is culverted. As well as this an appropriate surface water drainage strategy will provide sufficient mitigation;
 - the overall risk from existing ground gas and organic vapour accumulation/migration and risk of explosion to construction/demolition workers and future site users is **High** due to the significant thickness of made ground that underlies parts of the site and potential historical infilling on site. It is therefore recommended that ground gas monitoring is carried out.
- 5.7 Based on the above complete pollutant linkages the following measures are recommended:
- any planting will occur in above ground planters using clean soils;
 - good demolition and construction practices will be used to reduce the contamination risks to demolition/construction workers on site and adjacent site users, this will include ensuring demolition/construction workers wear appropriate personal protective equipment (PPE), dust suppression measures and that any necessary licences would be obtained for the storage, treatment and disposal of waste;
 - it is recommended that an intrusive site investigation (Phase 2 Investigation) including a ground gas monitoring/assessment is undertaken prior to commencement of demolition and construction to determine the contamination status of the underlying soil and groundwater and following this an appropriate foundation works risk assessment including a Piling Method Statement would be prepared to inform the foundation designs for the various element of the Proposed Development and an appropriate quality assurance and control regime would be implemented. This would normally be secured by condition and the findings of the investigations will be reported

to the Local Authority and a remediation and/or mitigation strategy and verification report will be prepared and agreed;

- any pipes and utilities will be designed appropriately to reduce the risk of corrosion/damage;
- an appropriate surface water drainage strategy will be implemented, and this will ensure that any runoff from the site will be treated to an appropriate water quality;
- construction vehicles will be properly maintained to reduce the risk of hydrocarbon contamination and will only be active when required. The implementation of the CEMP will minimise the risk of redistribution any potential contamination around the site, such as vehicle washdown; and
- it is recommended that an Asbestos demolition survey is undertaken for all buildings prior to demolition and that all ACMs are safely removed (and/or other hazardous materials) prior to the commencement of demolition/construction. Any waste will be removed by a specialist contractor.

5.8 Overall, with the recommended mitigation measures implemented, it is concluded that the contamination risk to the Proposed Development and/or identified receptors would be **Negligible**.

Figures



Key
 Application Site

Figure 1.1: Site Location Plan

Client:

Trium Environmental Consulting

Project:

Aylesham Centre

Project No.:

C2361



Drawn: KM	Checked: MS	Date: 09/03/2022	Scale: 1:5,000@A3
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Appendix A Groundsure Report



534265.4312534372, 176640.85526390522

Order Details

Date: 09/03/2022
Your ref: C2361_-_Aylesham_Centre
Our Ref: GS-8578115
Client: Rob Murdock

Site Details

Location: 534265 176640
Area: 2.72 ha
Authority: [London Borough of Southwark](#)



Summary of findings

p. 2 Aerial image

p. 8

OS MasterMap site plan

p.13 groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	<u>Historical industrial land uses</u>	0	1	33	14	-
16	1.2	<u>Historical tanks</u>	0	0	2	4	-
17	1.3	<u>Historical energy features</u>	3	0	28	20	-
19	1.4	Historical petrol stations	0	0	0	0	-
19	1.5	<u>Historical garages</u>	8	2	6	4	-
20	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
21	2.1	<u>Historical industrial land uses</u>	0	1	55	17	-
24	2.2	<u>Historical tanks</u>	0	0	5	6	-
25	2.3	<u>Historical energy features</u>	9	0	86	74	-
31	2.4	Historical petrol stations	0	0	0	0	-
31	2.5	<u>Historical garages</u>	12	6	9	5	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
34	3.1	Active or recent landfill	0	0	0	0	-
34	3.2	Historical landfill (BGS records)	0	0	0	0	-
35	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
35	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
35	3.5	Historical waste sites	0	0	0	0	-
35	3.6	<u>Licensed waste sites</u>	0	0	0	1	-
36	3.7	<u>Waste exemptions</u>	0	0	2	7	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
37	4.1	<u>Recent industrial land uses</u>	4	5	28	-	-
40	4.2	<u>Current or recent petrol stations</u>	1	0	0	2	-
40	4.3	Electricity cables	0	0	0	0	-
40	4.4	Gas pipelines	0	0	0	0	-
41	4.5	Sites determined as Contaminated Land	0	0	0	0	-



41	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
41	4.7	Regulated explosive sites	0	0	0	0	-
41	4.8	Hazardous substance storage/usage	0	0	0	0	-
41	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
42	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
42	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	3	0	2	2	-
43	4.12	Radioactive Substance Authorisations	0	0	0	0	-
43	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
43	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
43	4.15	Pollutant release to public sewer	0	0	0	0	-
44	4.16	List 1 Dangerous Substances	0	0	0	0	-
44	4.17	List 2 Dangerous Substances	0	0	0	0	-
44	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	2	3	-
45	4.19	Pollution inventory substances	0	0	0	0	-
45	4.20	Pollution inventory waste transfers	0	0	0	0	-
45	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
46	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
47	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
48	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
49	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
49	5.5	Groundwater vulnerability- local information	None (within 0m)				
50	5.6	<u>Groundwater abstractions</u>	0	0	0	0	13
53	5.7	Surface water abstractions	0	0	0	0	0
54	5.8	<u>Potable abstractions</u>	0	0	0	0	1
54	5.9	Source Protection Zones	0	0	0	0	-
54	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
55	6.1	Water Network (OS MasterMap)	0	0	0	-	-



55	6.2	Surface water features	0	0	0	-	-
56	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
56	6.4	WFD Surface water bodies	0	0	0	-	-
56	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
58	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
58	7.2	Historical Flood Events	0	0	0	-	-
58	7.3	Flood Defences	0	0	0	-	-
59	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
59	7.5	Flood Storage Areas	0	0	0	-	-
60	7.6	Flood Zone 2	None (within 50m)				
60	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
61	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
63	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
64	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
65	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
65	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
65	10.4	Special Protection Areas (SPA)	0	0	0	0	0
65	10.5	National Nature Reserves (NNR)	0	0	0	0	0
66	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	1
66	10.7	Designated Ancient Woodland	0	0	0	0	0
66	10.8	Biosphere Reserves	0	0	0	0	0
66	10.9	Forest Parks	0	0	0	0	0
67	10.10	Marine Conservation Zones	0	0	0	0	0
67	10.11	Green Belt	0	0	0	0	0
67	10.12	Proposed Ramsar sites	0	0	0	0	0

67	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
67	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
68	10.15	Nitrate Sensitive Areas	0	0	0	0	0
68	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
69	10.17	SSSI Impact Risk Zones	0	-	-	-	-
69	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
70	11.1	World Heritage Sites	0	0	0	-	-
71	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
71	11.3	National Parks	0	0	0	-	-
71	11.4	<u>Listed Buildings</u>	0	2	31	-	-
73	11.5	<u>Conservation Areas</u>	1	0	2	-	-
74	11.6	Scheduled Ancient Monuments	0	0	0	-	-
74	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
75	12.1	<u>Agricultural Land Classification</u>	Urban (within 250m)				
76	12.2	Open Access Land	0	0	0	-	-
76	12.3	Tree Felling Licences	0	0	0	-	-
76	12.4	Environmental Stewardship Schemes	0	0	0	-	-
76	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
77	13.1	Priority Habitat Inventory	0	0	0	-	-
77	13.2	Habitat Networks	0	0	0	-	-
77	13.3	Open Mosaic Habitat	0	0	0	-	-
77	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
78	14.1	<u>10k Availability</u>	Identified (within 500m)				
79	14.2	<u>Artificial and made ground (10k)</u>	1	0	0	0	-
80	14.3	<u>Superficial geology (10k)</u>	1	0	1	1	-

81	14.4	Landslip (10k)	0	0	0	0	-
82	14.5	<u>Bedrock geology (10k)</u>	1	0	1	3	-
83	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	1	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
84	15.1	<u>50k Availability</u>	Identified (within 500m)				
85	15.2	<u>Artificial and made ground (50k)</u>	1	0	0	0	-
86	15.3	Artificial ground permeability (50k)	0	0	-	-	-
87	15.4	<u>Superficial geology (50k)</u>	1	0	1	1	-
88	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
88	15.6	Landslip (50k)	0	0	0	0	-
88	15.7	Landslip permeability (50k)	None (within 50m)				
89	15.8	<u>Bedrock geology (50k)</u>	1	0	1	2	-
90	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
90	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	0	1	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
91	16.1	<u>BGS Boreholes</u>	2	0	42	-	-
Page	Section	Natural ground subsidence					
94	17.1	<u>Shrink swell clays</u>	Moderate (within 50m)				
95	17.2	<u>Running sands</u>	Negligible (within 50m)				
96	17.3	<u>Compressible deposits</u>	Moderate (within 50m)				
97	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
98	17.5	<u>Landslides</u>	Very low (within 50m)				
99	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
101	18.1	<u>Natural cavities</u>	0	0	0	3	-
102	18.2	BritPits	0	0	0	0	-
102	18.3	<u>Surface ground workings</u>	0	3	11	-	-
103	18.4	Underground workings	0	0	0	0	0
103	18.5	Historical Mineral Planning Areas	0	0	0	0	-



103	18.6	<u>Non-coal mining</u>	1	0	1	1	1
104	18.7	Mining cavities	0	0	0	0	0
104	18.8	JPB mining areas	None (within 0m)				
104	18.9	Coal mining	None (within 0m)				
105	18.10	Brine areas	None (within 0m)				
105	18.11	Gypsum areas	None (within 0m)				
105	18.12	Tin mining	None (within 0m)				
105	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
106	19.1	<u>Radon</u>	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
107	20.1	<u>BGS Estimated Background Soil Chemistry</u>	1	0	-	-	-
107	20.2	<u>BGS Estimated Urban Soil Chemistry</u>	9	3	-	-	-
108	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
109	21.1	Underground railways (London)	0	0	0	-	-
109	21.2	Underground railways (Non-London)	0	0	0	-	-
110	21.3	Railway tunnels	0	0	0	-	-
110	21.4	<u>Historical railway and tunnel features</u>	0	0	24	-	-
111	21.5	Royal Mail tunnels	0	0	0	-	-
111	21.6	Historical railways	0	0	0	-	-
111	21.7	<u>Railways</u>	0	0	12	-	-
112	21.8	Crossrail 1	0	0	0	0	-
112	21.9	Crossrail 2	0	0	0	0	-
112	21.10	HS2	0	0	0	0	-



Recent aerial photograph

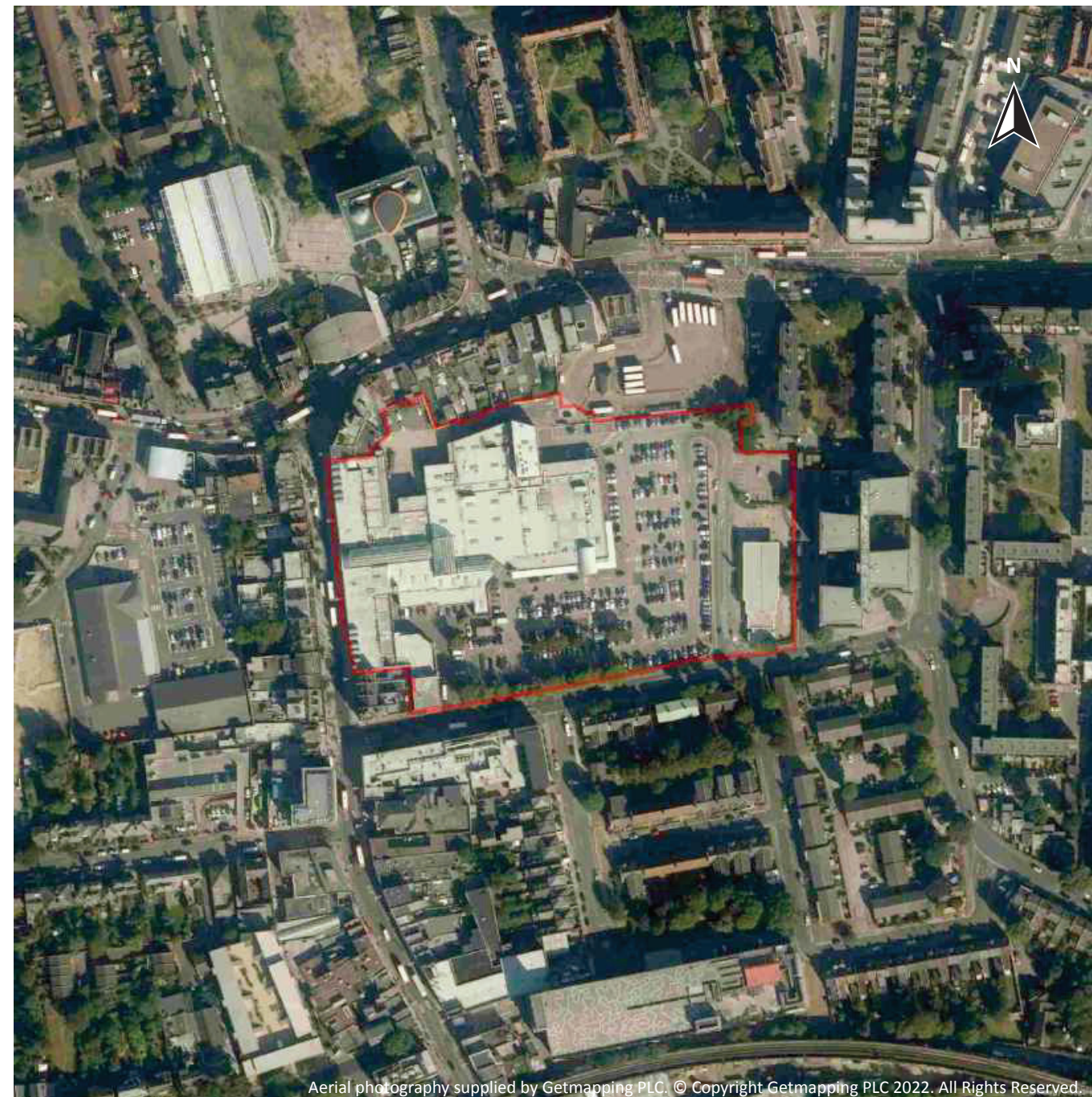


Capture Date: 29/06/2019

Site Area: 2.72ha



Recent site history - 2016 aerial photograph



Capture Date: 23/09/2016

Site Area: 2.72ha

