APPLiED GEOLOGY

SITE PREPARATION REPORT FOR BLOCK H, TOTTENHAM COMMERCIAL PARK

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REPORT STATUS SHEET

Client:	Goodman Logistics Tottenham Unit Trust
Report Title:	Site Preparation Report for Block H, Tottenham Commercial Park
Report Number:	AG3721-26-AW14
Report Status:	Validated Issue 2
Details of Change:	Amended after Client comments
Date:	October 2026



		Date	Signed for and on behalf of Applied Geology
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- Demolition Plan by UMC Architects, Drawing No. 21682-UMC-0100-SI-DR-A-0203 Rev.P02
- Block Plan – Proposed Site Plan by UMC Architects, Drawing 21682-UMC-0100-SI-DR-A-0202 Rev.P02
- Proposed Ground Floor Plan by UMC Architects, Drawing 21682-UMC-0100-01-DR-A-0220 Rev.P03

APPENDIX B **PREVIOUS REPORT**

- Site Environmental Risk Assessment (SERA) by RPS, Report No. HLEL80437

1.0 INTRODUCTION

An area of land at Tottenham Commercial Park is being redeveloped by Goodman Logistics Tottenham Unit Trust (the Client). The proposals for the site comprise the demolition of existing structures within Block H and the construction of a new substation. It is understood that the industrial units occupying the area to the southwest of the site are not part of the plans and will remain in their current configuration.

The site and the wider industrial estate have been the subject of a Site Environmental Risk Assessment undertaken by RPS in May 2021 (report ref. HLEL80437 included as Appendix B). The RPS report has been made available to Applied Geology for information purposes, and it is understood that the Client has reliance on this report. Whilst the pertinent information with regards to the site will be covered in the following subsections of this report, the aforementioned RPS report should be consulted for further details.

Prior Notification Consent for the demolition of the existing structures within Block H was granted on the 27th of January 2026, under application number HGY/2025/3215. It is understood that the Client is currently preparing to submit a planning application for the demolition of the existing structures within Block H and the subsequent construction of the substation, which will supersede the initial permission. This report has been prepared in order to support the new application, and the recommendations herein should be agreed with the Local Authority prior to implementation.

This report reviews the previous investigation works undertaken across the wider industrial estate, set outs the requirement for a supplementary ground investigation to be undertaken alongside demolition and outlines the procedures to be followed should any contamination be identified as part of subsequent below ground demolition works, groundworks and/or construction works, in the form of a Discovery Strategy.

The terms of reference/brief for the works were mutually developed between Applied Geology and the Client via various emails and conversations. The report should be read in conjunction with the General Notes at the end of the report text.

2.0 SITE DESCRIPTION AND PROPOSALS

2.1 Site Description

The site is located off Leeside Road, Tottenham, approximately 1.5km east of Tottenham. The Ordnance Survey grid reference for the centre of the site is approximately 535339 191512 as shown on the Site Plan (Dwg. AG3721-26-01) in Appendix A.

The site comprising Block H is rectangular in plan shape, measuring approximately 50m by 80m at the extents and covers an area of approximately 0.4Ha, which includes the four interconnected warehouse buildings and adjacent parking areas to the west.

2.2 Proposed Development

The proposal for the site comprises the demolition of existing light industrial structures and the construction of a new sub-station with associated infrastructure. It is understood that the adjacent industrial units will be retained as they are not part of the

redevelopment plans and will remain unchanged. The access routes onto site around the northern and western perimeter of the site will also remain. It is understood that the demolition works will include removal of the floor slabs and any existing foundations down to a depth of 2m below ground level (bgl).

3.0 BACKGROUND INFORMATION

As noted above, the site and the wider industrial estate were previously the subject of a Site Environmental Risk Assessment report undertaken by RPS in May 2021 (report ref. HLEL80437). The pertinent information from this previous report (which itself summarises previous ground investigations) is summarised below.

3.1 Summary of Site History

The site is currently occupied by a Trading Estate comprising a number of light industrial units with Leeside Road running along the northern boundary of the site, and car parking fronting the units.

Earliest available mapping dated 1864, indicates that the site and wider industrial estate comprised undeveloped land, forming part of an allotment garden by c.1915. As of 1935, the area to the north of the site was identified as Leeside Road Gasholder and consisted of a former gasworks and large gasholder. Leeside Depot, a Civil Engineering company, was present in the north from c.1956, expanding across the site by c.1967, with a Warehouse, Civil Engineering Plant Depot with tanks and a Concrete Mixing Depot all noted in the west. By 1981, the central and eastern extents of the site were developed into the Mowlem Trading Estate, and the aforementioned Civil Engineering Plant Depot was demolished by 1987, and the depot was redeveloped by c.2003. The central and western extents were redeveloped to the current configuration by c.2021.

3.2 Geology and Ground Conditions

Published BGS mapping indicates the site is underlain by Superficial Deposits comprising Alluvium (sand, silt, clay), over the Kempton Park Gravel Member (sand and gravel) with the Enfield Silt Member (silt, clay) noted along the western boundary of the site only. The Superficial Deposits are understood to be underlain by Solid Geology of the Paleogene London Clay Formation. This stratum is typically encountered as a bioturbated or poorly laminated bluish grey or greyish brown calcareous silty clay, often with carbonate concretions and disseminated pyrite.

The previous intrusive investigations undertaken by others (and reviewed by RPS) encountered Made Ground soils from surface to depths of between 2.00m and 6.50m bgl, comprising gravel with occasional cobbles of brick, flint, clinker, coal, ash, metal, glass and concrete. The Made Ground soils were underlain by very soft to soft organic rich and locally peaty clay soils considered to represent Alluvium, which were proven to base depths of between 3.50m and 9.00m bgl. Sand and gravel of the Kempton Park Gravel Member were encountered directly beneath the Alluvium, with Solid Geology of the London Clay Formation (stiff becoming very stiff fissured clay) encountered from depths of between 10.00m and 20.50m bgl.

Soils considered to represent the Enfield Silt Member were typically not encountered.

Groundwater ingress was recorded at variable depths of between 2.00m and 19.00m bgl, however, during subsequent monitoring the standing groundwater was generally identified at depths of between 2.72m bgl and 3.29m bgl.

3.3 Hydrology and Hydrogeology

The Superficial Alluvium and the Kempton Park Gravel Member are classified as Secondary A Aquifers. The Superficial Enfield Silt Member and the London Clay Formation are both classified as unproductive strata.

The site is located within groundwater Source Protection Zone 2 (outer protection zone). The RPS report did not specify whether the designation is associated with the Superficial Kempton Park Gravel Member or Undifferentiated Chalk strata at depth.

There are three watercourses noted within 1km of the site, the nearest being Pymmes Brook located c.65m east of the site, whilst the River Lee Navigation and River Lee are located c.285m and c.325m east, respectively. All three watercourses are noted to either be of moderate to poor ecological quality and all three are noted to fail chemical quality standards.

3.4 Summary of Contamination Issues

One previous investigation undertaken in 2014 (known as Phase 1), recorded visual and olfactory evidence of contamination at all investigation locations at varying depths. The type of contamination was not specified, however, subsequent laboratory testing identified elevated concentrations of TPH, lead, PAH and asbestos within the Made Ground soils. Despite being elevated, all concentrations of TPH, Lead and PAH remained below screening limits for a commercial end use scenario. It is not known whether the asbestos was identified as visible (debris, board, cement sheeting) or non-visible (fibres) or whether concentrations were above the hazardous limit (0.1%) or not.

Similarly, elevated TPH and PAH were recorded in the groundwater samples as part of this previous investigation, although ‘elevated’ is not defined in terms of what statutory limits or guidance values were exceeded.

A subsequent intrusive investigation undertaken in 2017 (known as Phase 2), recorded visual and olfactory evidence of contamination in a select number of investigation locations, within the Made Ground and underlying Kempton Park Gravel Member. Again, the type of contamination was not specified, however, subsequent laboratory testing identified elevated concentrations of TPH, PAH and asbestos within the Made Ground. Overall, the TPH concentrations were noted to be less elevated than those recorded as part of the earlier investigation.

Elevated (not defined) concentrations of chromium, zinc, selenium, TPH and PAH were recorded in the groundwater samples analysed as part of this investigation.

No elevated ground gas concentrations were recorded during either of the previous intrusive investigations.

Collectively, the contamination recorded across the wider industrial site to date, has been attributed to the former use of the site as a Civil Engineering Plant Depot and also from the gas works to the adjacent north. To facilitate the previous phases of

redevelopment, limited remediation actions were required, such as barrier pipes for water supply, clean cover systems in areas of soft landscaping (450mm thickness) and the placement of geotextile membranes at the base of such systems. These actions were previously implemented and subsequent Remediation Validation reports provided to the Local Authority, with no further remedial works required.

A Controlled Waters Detailed Quantitative Risk Assessment (DQRA) undertaken for the wider industrial estate concluded that remediation to protect Controlled Water receptors was not considered warranted. This was accepted by the Local Authority, and the associated planning conditions were discharged.

4.0 PROPOSED GROUND INVESTIGATION

4.1 Objectives

No intrusive investigation has been undertaken with the boundaries of the current Block H site, but it can be inferred that, due to the presence of contaminants across the wider site as identified by RPS and discussed above, various degrees of contamination-impacted soils could be present within the subject area.

It is therefore acknowledged that further investigation should be undertaken across the site in order to confirm the presence/absence of such contamination, prior to redevelopment. Further intrusive investigation may also be required to provide sufficient information for detailed assessment and geotechnical design with regards the proposed substation.

4.2 Ground Investigation Scope

It is proposed that the appointed specialist Geoenvironmental Engineer/Consultant should attend site, in order to undertake a series of targeted trial pit excavations across the site (following the demolition of Block H and the removal of the site wide floor slab), in order to confirm the ground conditions, to identify any visual/olfactory evidence of contamination and to also obtain soil samples for chemical analysis to check for potential contamination at varying depths.

Chemical testing will include heavy metals, hydrocarbons, BTEX, MTBE, Asbestos Containing Materials (ACM) and fibre screen and VOCs, should it be deemed necessary based on site observations on PID readings.

The results of the testing will then be compared to relevant screening criteria based on a commercial/industrial end use.

Should areas of localised visual/olfactory contamination be identified during the works or as part of the laboratory analysis, a review of the options available would be undertaken and remedial actions selected dependent on the nature and extent of contamination and risk posed. These would probably comprise localised soil removal although soil treatment could be considered. Soil cover systems are not considered necessary at the site, given that no areas of soft landscaping are proposed.

The previous intrusive investigations undertaken by others, confirmed that no elevated ground gas concentrations were recorded during the return monitoring programmes. As such, gas protection measures are not necessary. However, should significant

hydrocarbon or Volatile Organic Compounds (VOCs) be encoutnered as part of the proposed site investigation, than further assessment would be required.

Following the completion of the ground investigation and any subsequent remedial works, the proposed Discovery Strategy should be implemented during the remaining below ground demolition works, groundworks and construction works, as discussed below.

Boreholes may be added to the proposed scope of supplementary investigation for geotechnical reasons.

5.0 PROPOSED DISCOVERY STRATEGY

5.1 Objectives

The objectives for the Discovery Strategy are as follows:

- To ensure the site condition is suitable for the proposed end use, in this instance a large-scale substation.
- To ensure that if contamination and any below ground structures/features are discovered as part of the below ground demolition works, groundworks or construction works, that there are no residual unacceptable risks associated with the site, with regards Human Health.

5.2 Discovery Strategy Design

Following the completion of the proposed additional ground investigation works, there still remains the potential for unidentified/unexpected contamination and/or below ground structures or features to exist at the site. As such, the following Discovery Strategy is considered warranted and should apply throughout the below ground demolition works, groundworks and construction works.

Upon discovery of any suspicious or suspected contamination/contaminated materials/ features during the redevelopment of the site, Site Personnel should immediately inform the appointed specialist Geo-environmental Engineer/Consultant. The area should then be cordoned off, and works should cease in the vicinity. It is the contractor's responsibility to ensure that this is communicated to all relevant Site Personnel involved in the below ground demolition works, groundworks and construction works.

Examples of when previously unidentified contaminated soils may be exposed include (but are not limited to) the following;

- Following the removal of relict features from former site uses, such as footings, drainage, utilities etc.
- Below ground excavations for new footings, service trenches, drainages etc.
- Piling operations, if a bored or CFA pile solution is used.

The appointed specialist Geo-environmental Engineer/Consultant should attend site to visually inspect and sample material for laboratory testing to enable additional risk assessment to be carried out. In the event that contamination is identified that poses a risk to Human Health receptors, remedial options would most likely comprise localised

soil removal or, potentially but less likely, some form of soil treatment. Soil cover systems are not considered necessary, given the absence of proposed soft landscaping. The Local Authority may need to be notified to agree any remedial measures prior to implementing them.

It is understood that a pre-demolition asbestos survey will be carried out by others on the existing Block H structure and the associated contractors will need to have an asbestos management plan in place, including procedures for dealing with any ACM in soils. This is anticipated to comprise inspection and hand picking of isolated fragments and/or bulk excavation and removal of ACM and/or asbestos impacted soils by a Licensed Asbestos Removal contractor.

5.3 Proposed Verification Sampling and Testing

The sampling and testing of soils, in any areas deemed to be contaminated, will be required to confirm the appropriate remedial options. The testing suite and frequency of testing will be specified by the Geo-Environmental Consultant based on the type and extent of contamination identified.

Following removal of the impacted soils, samples will be taken from the sidewalls and base of the open excavation to confirm the remaining site soils are free from contamination. Results will be assessed by the Geo-Environmental Consultant to determine whether further excavation and removal is required.

Should any soils and/or groundwater require off-site disposal or treatment prior to discharge, samples may need to be taken and tested for waste disposal purposes.

5.4 Waste Soil Disposal

Whilst all suitable hard materials are to be crushed to 6F2 grading specification and where possible, site generated soils are to be reused, a proportion of material if contaminated may need to be disposed of offsite.

Any excavated contaminated soil material and excess spoil disposed of off-site should be treated as waste and classified as Inert, Non-hazardous, or Hazardous for off-site disposal prior to removal from the site as required by the “Duty of Care” (Environmental Protection Act, 1990) legislation together with Annex II of Directive 1999/31/EC (“Landfill Directive”).

All waste soils should be sorted to prevent mixtures of waste types. Where possible, any waste soil should be recycled and the volume of soil to be disposed of should be minimised. Initially, basic characterisation of the waste is required whereby the material should be described and its source of origin recorded. This should also include data on its composition and leaching behaviour, its European Waste Catalogue (EWC) code, and where relevant any hazardous properties according to Annex II of Directive 91/689/EEC. This information should be provided to the licensed waste contractor.

Soils excavated are anticipated to fall under the EWC description “Soil and Stones”, with EWC codes 17 05 03 (hazardous) and 17 05 04 (not hazardous). Waste Acceptance Criteria (WAC) testing is required for all Inert wastes and Hazardous wastes, but not for Non-Hazardous wastes. Limited WAC testing was undertaken as part of the ground investigation on the natural soils and the results showed compliance

with the inert limits, however, it is envisaged that landfill operators will require further testing on the actual waste.

Some pre-treatment of the waste soils arisings will be required prior to disposal. This could range from simple sorting on site to off-site stabilisation prior to disposal.

Any asbestos must be disposed of by suitably licensed contractors to a suitably licensed facility.

Consignment and waste carrier noted will be maintained by the Appointed Contractor and be available to view onsite.

All chemical testing should be undertaken at a UKAS/MCERTS accredited lab.

5.5 Records of below-ground Obstructions and Former Foundations

The details and accurate levels and co-ordinates of any obstruction/structure, former foundations, hard spot etc that were left in place below the 2m dig level shall be recorded by the Demolition Contractor.

5.6 Verification Reporting

A Demolition Completion Statement will be produced on completion of these works. This will include as a minimum:

1. Contamination testing for any material deemed to be contaminated and disposed of offsite.
2. Copies of any waste assessments, transfer notes and associated ‘tip tickets’ (proof of disposal).
3. Laboratory test results from the base and sidewalls of any open excavations following removal of impacted soils, to confirm remaining site soils are free from contamination.
4. Details of asbestos, ACM and asbestos-impacted soils found and removed from site, together with any associated testing and waste consignments, transfer notes.
5. Documentation and photographic evidence showing the removal of the site wide floor slab and foundations beneath the existing Block H. This should include a drawing showing all obstructions, foundations and/or structures left in place below the 2m dig level.

If no unexpected contamination is identified, a statement from the demolition contractor will be included to confirm this.

5.7 Organisations Involved

Details of organisations involved, and their roles are as follows;

Landowner	Goodman Logistics Tottenham Unit Trust
Engineering Consultant	TBC
Demolition Contractor	City Demolition

Construction Contractor	TBC
Geo-environmental/Geotechnical Consultant	Applied Geology Ltd
Local Authority	London Borough of Haringey Alexandra House, 10 Station Road, London. N22 7TY

At this stage, details of all appointed contractors or the programme for the redevelopment works are not finalised. Validation of relevant aspects of the works will need to be coordinated with relevant contractors at appropriate times as works proceed.

6.0 RECOMMENDATIONS

- This Site Preparation Report should be submitted to the Local Authority for comment/approval as part of the planning application.
- This Site Preparation Report should form part of (or be referenced in) the Construction Environmental Management Plan.
- The Demolition Contractor should produce and implement an appropriate Asbestos Management Plan to inspect for and deal with any asbestos below ground that may be uncovered as part of the works.
- At the appropriate time, the Discovery Strategy element of this Site Preparation Report should be updated taking into account the Demolition Completion Statement and the post-demolition ground investigation findings, to make it suitable for the construction phase of works.
- The proposed redevelopment is anticipated to be subject to Planning Conditions identifying the need for supplementary site investigation works during/following demolition of Block H. If contamination is identified as part of these works, there is likely to be a requirement for the Discovery Strategy and/or Remediation Strategy to be submitted for approval.

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GENERAL NOTES

A) The assessment made in this report is based on the site terrain and ground conditions revealed by the various field investigations undertaken and also any other relevant data for the site including previous site investigation reports (if available) and desk study data. There may be special conditions appertaining to the site, however, which have not been revealed by the investigation and which have not, therefore, been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available. It must be recognised that many of the Environmental Searches obtained during the course of the desk study are often lengthy. Applied Geology have, where appropriate and in the interests of simplicity, only reproduced the summary of the searches within the report. A full copy of all the search data is held at the Applied Geology office and is available for inspection if required.

B) Where any data supplied by the Client or other external source, including that from previous site investigations, has been used it has been assumed that the information is correct. No responsibility can be accepted by Applied Geology for inaccuracies within this data.

C) Whilst the report may express an opinion on possible configurations of strata between or beyond the exploratory locations, or on the possible presence of features based on either visual, verbal or published evidence this is for guidance only and no liability can be accepted for the accuracy.

D) Comments on groundwater (and landfill gas) conditions are based on observations made during the course of the present and past investigations or with reference to published data unless otherwise stated. It should be noted, however, that groundwater (and landfill gas) levels vary due to seasonal (or atmospheric conditions) or other effects.

E) The copyright of this report and other plans and documents prepared by Applied Geology is owned by Applied Geology and no such report, plan or document may be reproduced, published or adapted without the written consent of Applied Geology. Complete copies of the report may, however, be made and distributed by the Client as an expedient in dealing with matters related to its submission.

F) This report is prepared and written in the context of the proposals stated in the introduction to the report and should not be used in a differing context. Furthermore, new information, improved practices and legislation may necessitate an alteration to the report in whole or in part after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to Applied Geology for re-assessment and if necessary, re-appraisal.

G) The survey was conducted and this report was prepared for the sole internal use and reliance of the Client. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Applied Geology. If an unauthorised third party comes into possession of this report they rely on it at their peril and Applied Geology owes them no duty of care and skill.

H) Ground conditions should be monitored during the construction of the works and the recommendations of the report re-evaluated in the light of this data by the supervising geotechnical or geo-environmental engineers.

I) Unless specifically stated, the investigation has not taken into account the possible effects of mineral extraction.

J) The economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, depends on very many factors in addition to geotechnical considerations and hence its evaluation is outside the scope of this report.

K) Applied Geology operates as a Consultancy and does not operate it's own laboratory for soil testing, this work being sub contracted to known and respected, generally UKAS accredited, laboratories. Applied Geology can therefore not be held responsible for the testing carried out.

APPENDIX A



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GOODMAN LOGSTICS TOTTENHAM UNIT TRUST

Project:

BLOCK H, TOTTENHAM COMMERCIAL PARK, TOTTENHAM

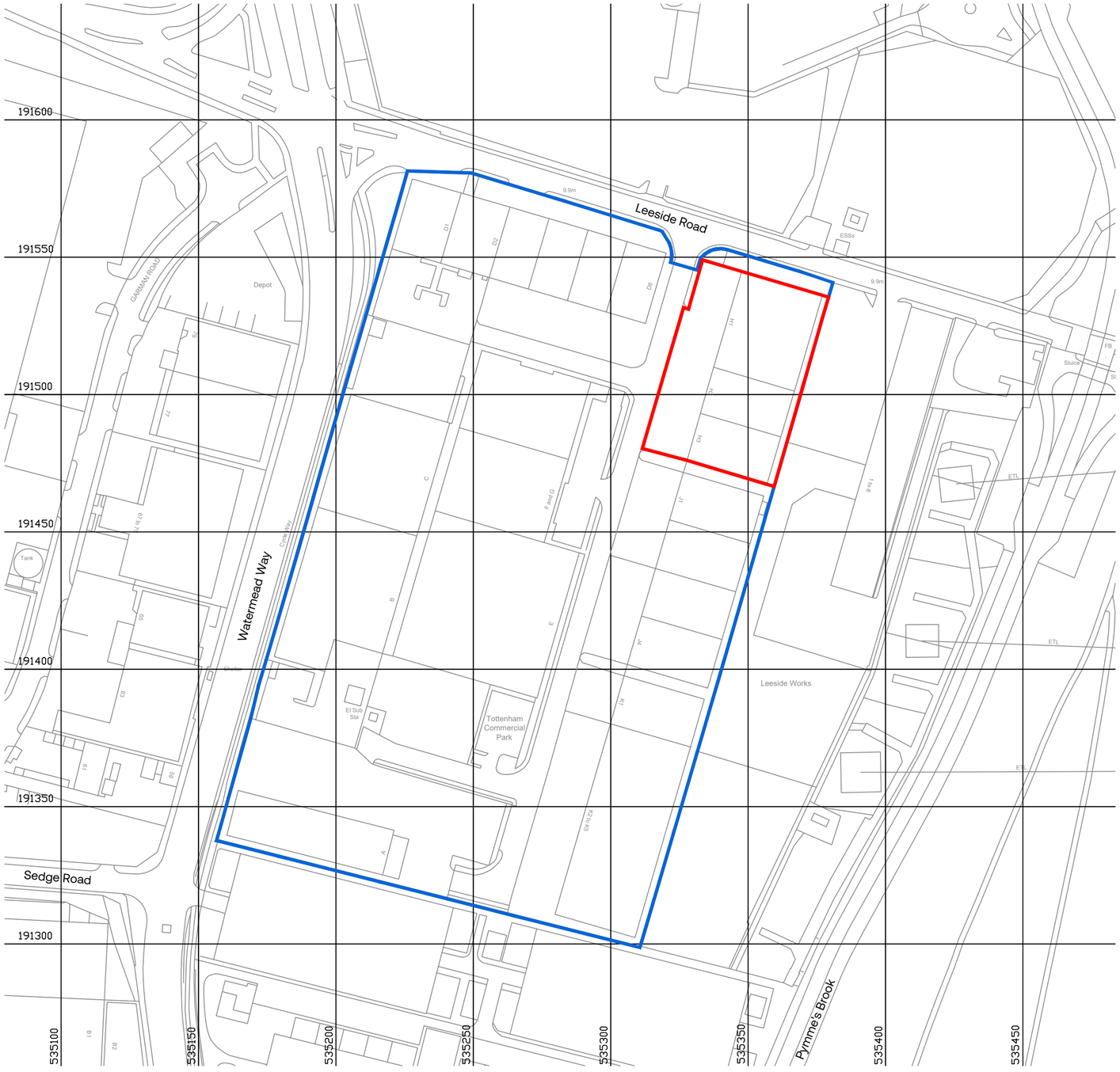
Drawn By:	Checked By:	Paper Size:
KM	MH	A4

Scale:	Date:	NGR:
NTS	07.10.2026	535339 191512

Drawing No:	Revision:
AG3721-26-01	0

Title:

SITE LOCATION PLAN



Site Location Plan Scale 1:1250

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North

Document Scale(s)

25m SCALE 1:1250

Key

Planning Boundary
0.90 Acres / 0.364 Ha

PLANNING

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Project Name

Block H, Tottenham Commercial Park

Employer	Project Address
Goodman UK	**Tottenham Commercial Park, Leeside Road, N17 0QJ**

RIBA Workstage	Suitability
3 - Spatial Coordination	**S2 - Information**

Drawn	Checked	Created	Size
MAC	**LF**	**29.07.2026**	**A2**

UMC Project Reference	Scale	LOD	LOI
21682	**1:1250**	**3**	**3**

Document Title

Site Location Plan

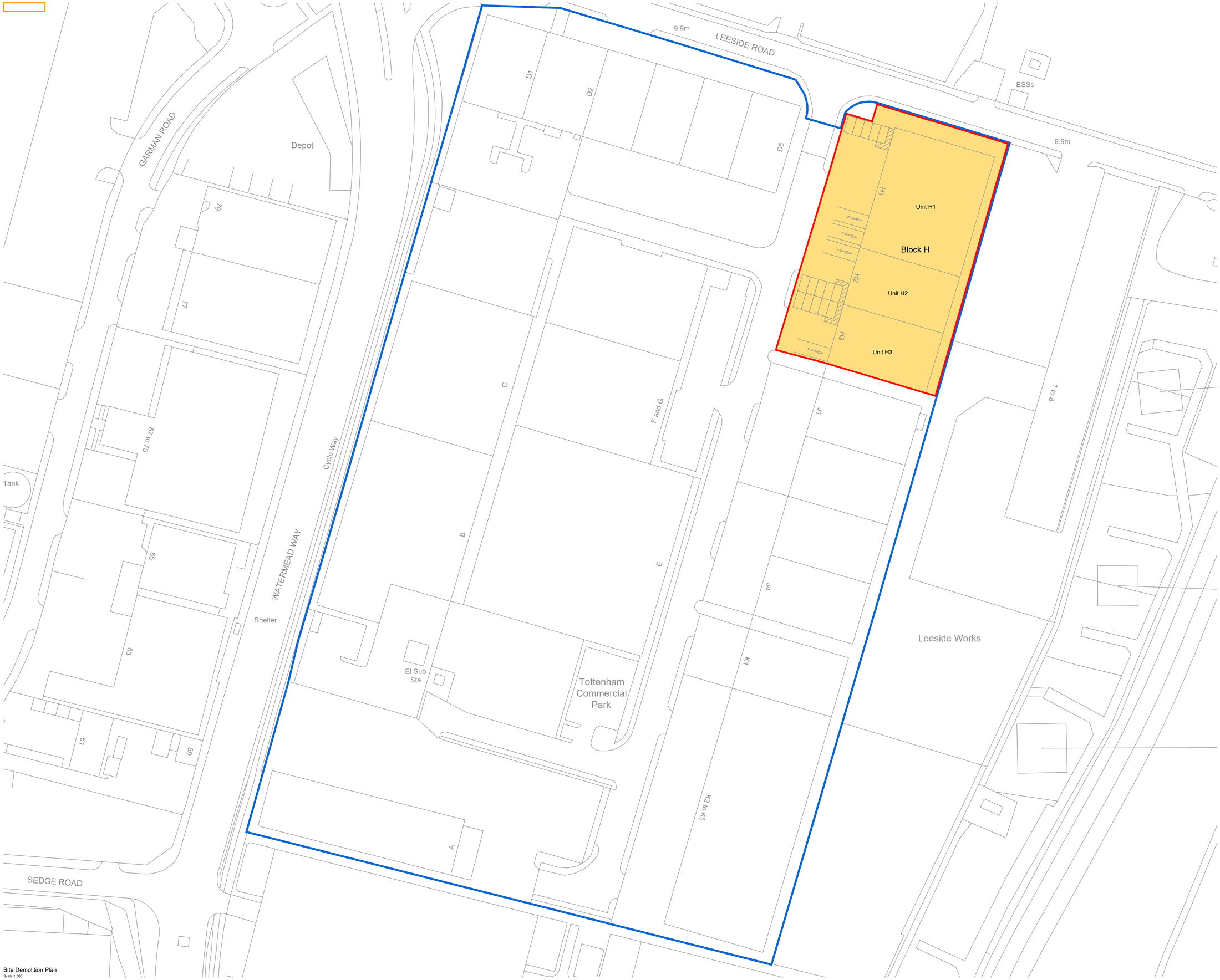
Document Reference

21682 - UMC - 0100 - SI - DR - A - 0201

Revision Note

Blue line updated following comments.

Issue Date	Status	Current Revision
14.08.2026	**Planning**	**P02**



Site Demolition Plan
Scale 1:500

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- Scaling of this document is not recommended.

North

Document Scale(s)

10m SCALE 1:500

Demolition of existing building Block H Unit H1, H2 & H3
Total Buildings GIA - 2,414.8m² / 25,992ft²
Total Buildings GEA - 2,522.2m² / 27,150ft²

Application Site Boundary
0.93 acres / 0.38 hectares

Other Land In Applicant's Ownership
10.01 acres /4.05 hectares

Project Name

Block H, Tottenham Commercial Park

Employer	Project Address
Goodman UK	**Tottenham Commercial Park, Leeside Road, N17 0QJ**

RIBA Workstage	Suitability
3 - Spatial Coordination	**S2 - Information**

Drawn	Checked	Created	Size
DN	**JJM**	**25.09.2025**	**A1**

UMC Project Reference	Scale	LOD	LOI
21682	**1:500**	**2**	**2**

Document Title

Demolition Plan

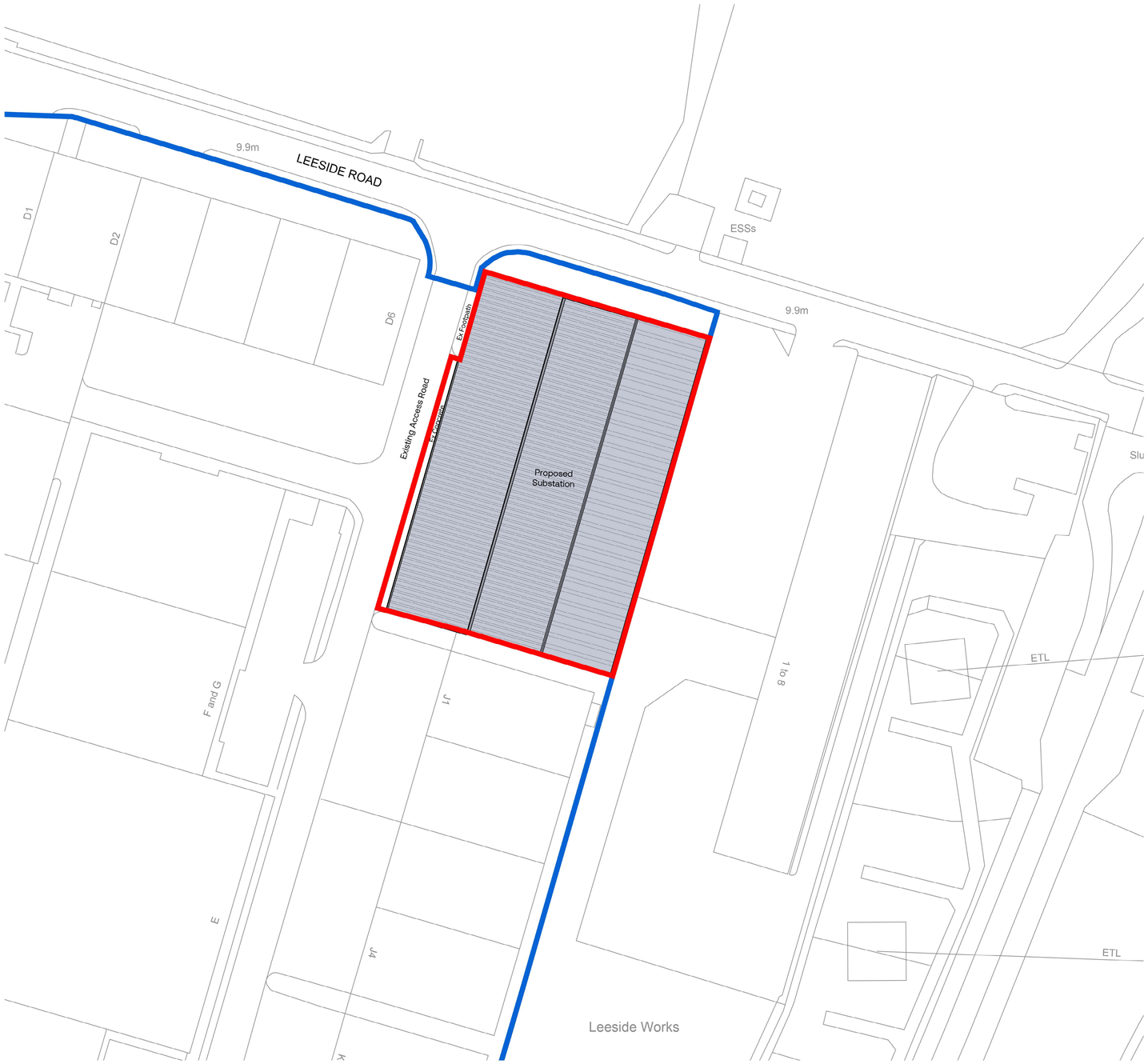
Document Reference

21682 - UMC - 0100 - SI - DR - A - 0203

Revision Note

Initial Issue

Issue Date	Status	Current Revision
25.09.2025	**Initial Issue**	**P02**



Block Plan - Proposed Site Plan Scale 1:500

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North

Document Scale(s)

10m SCALE 1:500

Key:

- Development Boundary

PLANNING

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Project Name

Block H, Tottenham Commercial Park

Employer	Project Address
Goodman UK	**Tottenham Commercial Park, Leeside Road, N17 0QJ**

RIBA Workstage	Suitability
3 - Spatial Coordination	**S2 - Information**

Drawn	Checked	Created	Size
MAC	**LF**	**29.07.2026**	**A1**

UMC Project Reference	Scale	LOD	LOI
21682	**1:500**	**3**	**3**

Document Title

Block Plan - Proposed Site Plan

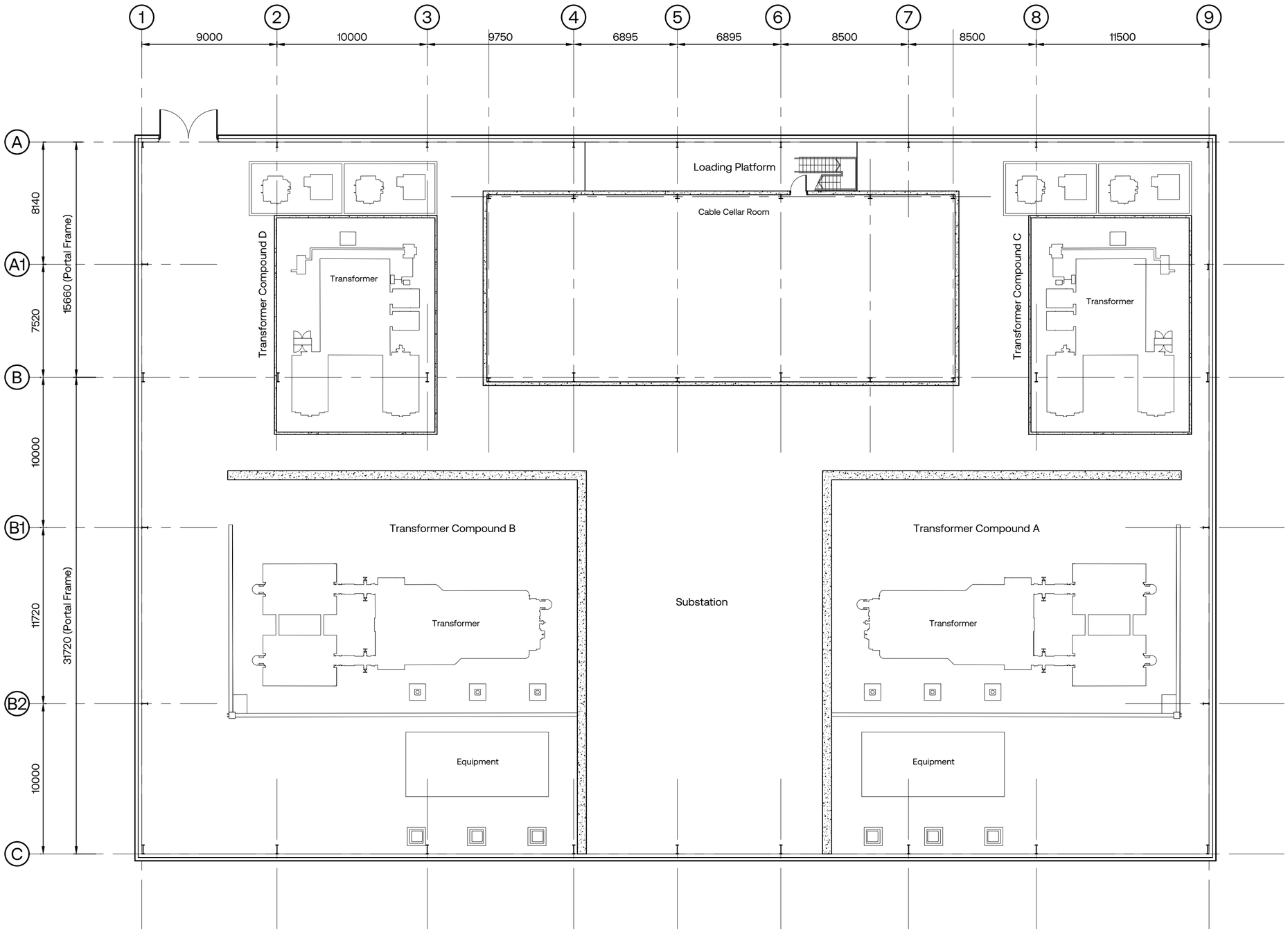
Document Reference

21682 - UMC - 0100 - SI - DR - A - 0202

Revision Note

Floor plan revised to roof plan following comments.

Issue Date	Status	Current Revision
14.08.2026	**Planning**	**P02**



Proposed Ground Floor Plan Scale 1:200

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Document Scale(s)

1m SCALE 1:200

Project Name

Block H, Tottenham Commercial Park

Employer	Project Address
Goodman UK	**Tottenham Commercial Park, Leeside Road, N17 0QJ**

RIBA Workstage	Suitability
3 - Spatial Coordination	**S2 - Information**

Drawn	Checked	Created	Size
MAC	**LF**	**29.07.2026**	**A2**

UMC Project Reference	Scale	LOD	LOI
21682	**1:200**	**3**	**3**

Document Title

Proposed Ground Floor Plan

Document Reference

21682 - UMC - 0100 - 01 - DR - A - 0220

Revision Note

Grids updated to suit removal of Transformers and subsequent cladding panels.

PLANNING

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Issue Date	Status	Current Revision
24.08.2026	**Planning**	**P03**

APPENDIX B

MOWLEM TRADING ESTATE, TOTTENHAM

Site Environmental Risk Assessment (SERA)

FOR

Savills UK Ltd

HLEL80437
Mowlem Trading Estate
Final
28 May 2021

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Date
V2	SERA	Amy Rogers Dan James	Rob Thomson	Rob Thomson	2021.05.28

Approval for issue

Reviewed by	Rob Thomson	Associate Director		2021-05-28
Authorised by:	Rob Thomson	Associate Director		2021-05-28

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EXECUTIVE SUMMARY & RECOMMENDATIONS

Site details

Site Name & Address	Mowlem Trading Estate, Leeside Road, London, N17 0QJ			
Grid Reference	TQ 352 914	***Size***	Approx. 4.07 ha	
Current Status	DISUSED		***Proposed Use***	UNCHANGED ✓
	OPERATIONAL ✓			REDEVELOP
	OTHER			OTHER
Comments	Trading Estate			Unchanged
Reason for Report	BUYING		***Site Details***	FREEHOLD ✓
	SELLING ✓			LEASEHOLD
	REVALUATION			OWNER/OCCUPIER
	REFINANCE			INVESTMENT

Summary

Section A:

Land Use

Significance:	**Moderate**
Site:	Potentially contaminative land uses identified at the site include the former Leeside Depot (Civil Engineering) present in the north from c.1956, expanding across the site by c.1967 with a Warehouse, Civil Engineering Plant Depot with Tanks and a Concrete Mixing Depot in the west. The centre to east was redeveloped to Mowlem Trading Estate by c.1981 comprising two terraces of buildings orientated from north to south. The Civil Engineering Plant Depot, with two Tanks, was cleared by c.1987 and the Depot was redeveloped by c.2003. The central and western areas were redeveloped to the current arrangement by c.2021.

Surrounds:	Potentially contaminative land uses identified within the surrounding area include the Leeside Depot (Civil Engineering Plant Depot) adjacent east (c.1967 to c.1981) then Leeside Works (c.1981 to recent), an Electricity Transformer Station, with two Tanks, adjacent east (c.1967 to c.1987) then Tanks only (c.1987 to recent), a Dept adjacent west (c.1987 to recent), a Metal Pipework Stockyard 15 m north (c.1974 to c.1977), Tanks 20 m southwest (c.1981 to recent), a Gas Holder 30 m northeast (c.1935 to recent), Paper and Stationery Works (c.1956 to c.1967) then Carboard Factory (c.1967 to recent) 60 m southwest, a Blouse and Lingerie Works (c.1956 to c.1967) then Warehouse (c.1967 to recent), a Coal Compound 60 m west (c.1967 to c.1975) an Industrial Estate 90 m southwest (c.1981 to recent), Leeside Chemical Works with Tanks 100 m east (c.1967 to c.1991), Gas Works 100 m west (c.1967 to c.1977), and a Gothic Works (Gas Metres and Stoves) from 100 - 120 m north (c.1915 to c.1987). A number of Works including Alcohol, Chief (paint), Moulded Fibre Goods, Sheet Metal, Die Casting, Engineering, Furniture, and Gas works are located between 100 m to 250 m from the site.

Section B:

Environmental Setting

Sensitivity:	**Low / Moderate**
Comments:	The site is in a light industrial use, occupied by a recently redeveloped trading estate, and is located within a similar land use area. Potentially sensitive receptors to contamination include the underlying Secondary A Aquifer, Pymmes Brook 65 m east, and residential properties with sensitive garden areas (e.g. areas where site users can come into direct contact with the underlying ground) 225 m west. Furthermore, the site is located within groundwater Source Protection Zone 2 (Outer Protection Zone). However, given the distance of the residential properties from the site and that shallow groundwater migration is likely to the east in the direction of the Pymmes Brook, the vulnerability of this receptor is reduced. The potential for risk to environmental receptors has been further assessed in the various Aviron reports, including the summary report provided to RPS for review. The risk to environmental receptors has been deemed reduced as negligible migratory pathways have been identified and it has been concluded by Aviron that offsite areas are also likely to be impacted by contamination. With regards to flood risk, the site is located within an indicative fluvial or tidal floodplain. However, based on our review of a 2016 Flood Risk Assessment report we conclude that the flood

	risk measures applied at the site are sufficient to prevent ingress of flood water in the buildings during an extreme flood event.

Section C: Overall Risk

Risk:	**Low / Moderate**
Comments:	Site investigation works have been completed in redevelopment areas, Phase 1 & Phase 2, which were redeveloped between 2014 and 2017. The investigations identified the presence of Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH) and elevated metals (lead, cadmium, chromium) within soils and groundwater at varying depths. Asbestos contamination was also identified within the Made Ground in isolated areas as well as below floor slabs during the Phase 2 redevelopment. Contamination was also identified subsurface in Phase 3, during excavations for the installation of below ground drainage tanks. Despite the clear evidence that the site is underlain by contamination, significant remediation was not deemed to be required as the position accepted by regulators is that the site and the wider surrounds are likely contaminated as a result of recent and historical industrial operations. It was decided that any remediation undertaken at the site would be futile, as there was an increased potential that offsite sources would result in the re-contamination of the site. Overall, the risk of an environmental liability associated with ground contamination is considered to be low to moderate whilst the site remains in its current commercial use and form. If the site was to be redeveloped at a future point for a more sensitive end use, such as residential, there is the likely possibility that further site investigation as well as remediation would be required to render the site suitable for this use. Any future scheme would require the approval of the local planning authority and input from the Environment Agency on contamination matters.

Acceptability as Security from an Environmental Risk Perspective based on a typical lending scenario:

YES	X	NO		NOT DETERMINED	

Recommendations

Risk Management Recommendations

No further work is considered necessary in relation to ground contamination whilst the site remains in its current use and form.

Other General Environmental Considerations	**N/A**

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1 INTRODUCTION

This Site Environmental Risk Assessment (SERA) report has been prepared by RPS Consulting Services Ltd (RPS) for the benefit of ***Savills UK Ltd*** and their professional advisors in relation to the proposed sale of the site.

1.1.1 Aim

The aim of the report is to provide an initial environmental risk assessment of the site. The report structure has been designed to enable RPS to determine whether the site constitutes a low, moderate or high risk from an environmental / ground contamination perspective. If further work is required to determine the level of environmental risk, a recommendation is made explaining the nature of the work.

A statement is also made on the acceptability of the site as lending security from an environmental risk perspective. This is provided based on typical bank lending arrangements, which is approximately 60% loan to value ratio (LTV).

1.1.2 Scope

The scope is composed of the following three sections:

- Section A - a review of the current and historical uses of the site;
- Section B - a review of the environmental setting of the site; and
- Section C - an environmental risk assessment of the information presented in Sections A and B.

The SERA is essentially a desk study, with information obtained from published maps, reports and any recent work undertaken by RPS. No attempt has been made to obtain information from trade directories or environmental regulators (the Environment Agency in England, Natural Resources Wales (NRW) in Wales or Scottish Environment Protection Agency (SEPA) in Scotland, and the Local Authority) unless specified. No site inspection has been undertaken and no soil sampling or other analyses have been carried out.

1.1.3 Methodology

Environmental regulators use the 'contaminant-pathway-receptor' linkage concept when assessing the risk posed by a contaminated site and in order for a liability to arise each part of the contaminant linkage must be present.

Section A of the SERA provides information relating to the 'contaminant' through a study of current and historical land uses, and the environmental setting information in Section B relates to the 'pathway' and 'receptor' parts. Information is obtained from a number of sources as described below. Details of the site location, the current and proposed site uses and the nature of the transaction have been provided by the client.

Section A - Land Use: This establishes the likelihood for former and current site uses to have caused significant ground contamination. Information on the history of the site has been obtained through a review of historical maps at 1:10,000, 1:2,500 and 1:1,250 scales and Historical Building Plans (where available). The accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between the various map surveys.

Section B - Environmental Setting: This describes the environmental setting of the site since, irrespective of the level of contamination on site, if the location is not 'sensitive' to this contamination, there is a reduced risk of an environmental liability.

The geological sequence underlying the site and the approximate depths of strata are provided by maps published by the British Geological Survey (BGS) at 1:50,000 scale. The hydrogeological classification is

obtained from Aquifer designations from the Environment Agency (EA), Natural Resources Wales (NRW) or Scottish Environment Protection Agency (SEPA). Groundwater quality information is taken from the relevant River Basin Management Plan published by the EA, NRW or SEPA.

The location of surface watercourses is obtained from an inspection of available maps. Surface water quality information is taken from the relevant River Basin Management Plan published by the EA, NRW or SEPA.

The level of flood risk is obtained from readily available EA, NRW or SEPA records, usually from the relevant website. Flood risk from fluvial and tidal sources is also taken under consideration.

Radon is a radioactive gas produced naturally from certain types of geology. This report uses the Indicative Atlas of Radon in England and Wales (2007) or Atlas of Radon in Scotland (2011) produced by the Public Health England (PHE) and the BGS to determine whether the site is located in an area at risk from radon. Where potential issues are identified, a site-specific radon report is obtained from the PHE and BGS to provide an estimate of the probability of the site being affected. Where further recommendations are made, these are in accordance with the Building Research Establishment's guidance (BR211: Protective Measures for New Buildings, 2007) and the Management of Health and Safety Regulations at Work 1999.

Sites located within areas potentially subject to past coal mining activities are identified using information provided on The Coal Authority website.

Areas of residential housing and schools are considered to be more 'sensitive' to contamination than industrial or business areas. For this reason, the presence of a residential area or school is recorded from OS maps if located within 50m of the site.

Section C - Risk Ranking: The risk ranking uses the information in Sections A and B of the assessment to place the site within categories of high, moderate and low environmental risk (or in between). The environmental risk classification for the site takes into account the potential for regulatory or third party liability, the possible impact on value & saleability and the potential for extra-ordinary environment-related development costs.

1.1.4 Terms of Reference

The report provides available factual data for the site obtained only from the sources described in the text and related to the information provided by the client. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.

Imagery included within Appendix A / B contains Ordnance Survey data (license 100035207) under © Crown copyright and database right (2021) and is replicated from Groundsure Report (Ref: RPS-7846585 / RPS-7846586).

This report is written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part.

The report is provided for sole use by the client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client unless otherwise agreed. The copyright in the written materials shall remain the property of RPS but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to RPS by the client of the outstanding amounts.

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2 SITE ENVIRONMENTAL RISK ASSESSMENT

2.1 Section A: Land use

Current Site Use	The site is currently occupied by Mowlem Trading Estate, comprising a number of light industrial units, with Leeside Road running through the centre of the site and car parking located to the front of the units throughout the site.
Proposed Use	RPS is unaware of any proposed change of use at the site.
Historical Use	The site comprised undeveloped land from c.1864, forming part of the Allotment Gardens by c.1915. Leeside Depot (Civil Engineering) was present in the north from c.1956, expanding across the site by c.1967 with a Warehouse, Civil Engineering Plant Depot with Tanks and a Concrete Mixing Depot in the west. The centre to east was redeveloped to Mowlem Trading Estate by c.1981, the Civil Engineering Plant Depot with two Tanks was cleared by c.1987 and the Depot was redeveloped by c.2003. The central and western areas were redeveloped to the current arrangement by c.2021.

On-site Land Use Features	***Dates***
The site comprised undeveloped, likely agricultural land, with a pathway running through the centre of the site, orientated from north to south.	c.1864 to c.1915
Then the north of the site appeared to form part of the wider Allotment Gardens.	c.1915 to c.1956
Then a small structure was marked in the north of the site marked Leeside Depot (Civil Engineering).	c.1956 to c.1967
Then the site comprised a number of buildings forming part of the Leeside Depot (Civil Engineering), with a Warehouse marked in the northwest, a Civil Engineering Plant Depot with two Tanks marked in the west, and a Concrete Mixing Depot marked in the southwest.	c.1967 to c.1981
Then the central and eastern half of the site were redeveloped to comprise two terraces of buildings, orientated from north to south (likely light industrial use) marked Mowlem Trading Estate, with an Electricity Sub-Station in the centre of the site.	c.1981 to c.1987
Then the Civil Engineering Plant Depot with two Tanks in the west was no longer present. The Concrete Mixing Depot in the southwest was marked Depot.	c.1987 to c.2003
Then the Depot in the southwest was no longer present and a number of unspecified buildings were present in the west and southwest.	c.2003 to c.2021
Then the central and western area of the site were redeveloped to comprise a small unspecified building in the southwest, two large buildings in the centre to the west of the site and a smaller building in the north to northwest.	c.2021 to Present

Surrounding Features (250m radius)	*Orientation*	*Distance*	*Dates*
Leeside Depot (Civil Engineering Plant Depot) *Then* Leeside Works	East	Adjacent	c.1967 to c.1981 c.1981 to Recent
Electricity Transformer Station	South	Adjacent	c.1967 to Present
Tanks Electricity Transformer Station with two Tanks *Then* two Tanks only	East	Adjacent	c.1956 to c.1967 c.1967 to c.1987 c.1987 to Recent
Depot	West	Adjacent From 20 m West	c.1987 to c.1991 c.1991 to Recent
Metal Pipework Stockyard	North	15 m	c.1974 to c.1977
Tanks	Southwest	20 m	c.1981 to Recent
Gas Holder	Northeast	30 m	c.1935 to Recent
Paper and Stationery Works *Then* Cardboard Factory	Southwest	60 m	c.1956 to c.1967 c.1967 to Recent
Blouse and Lingerie Works *Then* Warehouse	Southwest	75 m	c.1956 to c.1967 c.1967 to Recent
Coal Compound	West	80 m	c.1967 to c.1975
Industrial Estate	Southwest	90 m	c.1981 to Recent
Leeside Chemical Works with Tanks	East	100 m	c.1967 to c.1991
Gas Works	West	100 m	c.1967 to c.1977
Gothic Works (Gas Metres and Stoves) *Then* with Tanks	North	From 120 m From 100 m	c.1915 to c.1935 c.1935 to c.1956 c.1956 to c.1987
Tanks	Northeast	120 m	c.1935 to c.1977
Alcohol Product Works	Southwest	110 m	c.1956 to c.1977
Chief Works (Paint)	Southwest	120 m	c.1956 to Recent
Tank	Northwest	130 m	c.1974 to c.1987
Shoe Manufactory	Southwest	130 m	c.1935 to c.1956
Moulded Fibre Goods Works *Then* Sheet Metal Works	Southwest	130 m	c.1956 to c.1967 c.1967 to Recent
Broadwater Works (Die Casting)	Southwest	130 m	c.1956 to Recent
Tanks	Northeast	140 m	c.1935 to c.2001
Engineering Works (Electrical Goods)	Southwest	155 m	c.1956 to Recent
Furniture Works	South	160 m	c.1956 to Recent
Electricity Sub-Station	Southwest	180 m	c.1956 to Recent
Railway Corridor	West	190 m	c. 1863 to Present
Engineering Works	South	190 m	c.1956 to Recent
Tottenham and Edmonton Gas Works	Northwest	240 m	c.1872 to c.1991

2.2 Section B: Environmental Setting

GEOLOGY & HYDROGEOLOGY

Geological Sequence:	British Geological Survey mapping indicates the following stratigraphic sequence in the site vicinity: • **Alluvium** (*Quaternary period)* – This comprises clay, silt, sand and gravel and is likely to be a few metres in thickness beneath the site. • **Enfield Silt Member** (Western boundary of the site only) (*Quaternary period)* – This comprises clay and silt and is likely to be a few metres in thickness beneath the site. • **London Clay** (*Palaeogene period)* – This comprises clay, silt and sand and is likely to be of significant thickness beneath the site. Ground conditions across Phase 1 & Phase 2 at the site have been confirmed through ground investigation. This is discussed further in Section 2.3.
Hydrogeological Classification:	Environment Agency mapping indicates that the site overlies a Secondary A Aquifer relating to the superficial Alluvium. These formations are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers. The superficial Enfield Silt Member in the west of the site and the London Clay underlying the superficial deposits across the site are classified as Unproductive Stratum. These formations have a low permeability and have negligible significance for water supply or base flow. The site is located within groundwater Source Protection Zone 2 (Outer Protection Zone). The outer zone covers pollution that takes up to 400 days to travel to the borehole, or 25% of the total catchment area, whichever area is the biggest. This travel time is the minimum amount of time that pollutants need to be diluted, reduced in strength or delayed by the time they reach the borehole.

SURFACE WATER

Surface Watercourses:	Three watercourses within 1 km of the site have been classified for water quality under the River Basin Management Plans (required under the Water Framework Directive). The nearest surface water feature to the site is Pymmes Brook located approximately 65 m east of the site and classified as having a moderate ecological quality and a fail for chemical quality. The River Lee Navigation and River Lea are located approximately 285 m and 325 east respectively and are classified as having a poor ecological quality and a fail for chemical quality. Banbury Reservoir and Lockwood Reservoir are located approximately 410 m east and 550 m southeast, respectively.

NATURAL IMPACTS

Fluvial / Tidal Flood Risk:	According to the Environment Agency flood map, the central and eastern areas of the site are located within Flood Zone 2, with the annual probability of flooding

	classified as greater than 1 in 1000 (0.1%) but less than 1 in 100 (1%). The floodplain appears to be associated with Pymmes Brook, 65 m east. The Environment Agency Flood Map shows the predicted extent of flooding not taking into account the effect of flood defences (if present). Much of the surrounding area is also within the projected floodplain of Pymmes Brook. The site does not appear to benefit from flood defences. See Appendix A, Figure 3 for the Environment Agency flood map. RPS undertook a high level review of a Flood Risk Assessment report, by McCloy Consulting (dated October 2016) and we conclude that, based on the information provided in the report the flood risk measures applied at the site are sufficient to prevent ingress of flood water in the buildings during an extreme flood event. Therefore, it is concluded that the constructed finish floor levels are well above the design event which will provide sufficient mitigation against ingress of water in the building.
Radon:	The site is not located in an area at risk from radon gas.
Coal Mining:	The site is not in an area of past coal mining activity.

ENVIRONMENTAL RECEPTORS (within 500 m)	
Residential areas / schools:	The nearest residential properties with sensitive garden areas (e.g. areas where site users can come into direct contact with the underlying ground) are located approximately 225 m west. No schools have been identified within 500 m of the site.
Other sensitive land uses:	Walthamstow Reservoirs Sites of Special Scientific Interest (SSSI) and Lee Valley Special Protection Area (SPA) and Ramsar Site are located approximately 485 m south. No other environmentally sensitive areas have been identified within close proximity to the site.

2.3 Section C: Existing Reports

RPS has been provided with a *Land Contamination Review* for the site that has been produced by Aviron Associates Limited;

Land Contamination Review, Phases 1 to 3 Mowlem Trading Estate, Leeside Road, Tottenham Hale, N17 0QJ. Prepared for; Diageo Pension Trust (Property Custodian) Limited (as Trustee Custodian of the Diageo Pension Scheme) and Diageo Pension Trust Limited (as Trustee of the Diageo Pension Scheme), reference 21-176.02, dated May 2021.

Aviron Associated Limited (Aviron), has been associated with the three phased redevelopment and refurbishment programme at the site between 2013 and 2019. The scope of instruction provided to Aviron is detailed as assisting with land contamination risk assessments and site investigation works to discharge planning conditions, for the planning consents associated with the scheme phases (1 to 3).

The summary report provided for review states that it focuses on the following: *This assessment shall provide a summary of all reports prepared by Aviron in both the planning application and planning discharge stage for each Phase (1 to 3) of development at MTE. This summary shall focus on the reports prepared to discharge planning conditions and thus gain regularity approval to enable lawful commencement of (re)development works and subsequent occupancy of completed units.*

The report advises that all 23 reports associated with Phases 1, 2 and 3 of the site have not been summarised. Any reports that were produced as part of the planning application process (*Planning Application Submission*) have been excluded and only reports that specifically focussed on discharging planning approval conditions have been included. This reduces the volume of reports summarised from 23 to 17. Aviron states that all reports have been provided to the London Borough of Haringey and Piling Risk Assessments provided to the Environment Agency for comment. Regulatory comments were taken into consideration and in particular for Phase 1 the pile type was altered to limit contamination mobilisation potential.

Phase 1

Prior to redevelopment, the Phase 1 site is described as containing; a Travis Perkins store, scaffolding yard and 22 terraced industrial units. Once developed, Phase 1 has been reassigned as; Unit A, B C and Unit D1 and D2.

The Phase 1 redevelopment included the following reports which were submitted to the London Borough of Haringey to support the discharge of planning approval conditions:

- *Phase I Geo-Environmental Risk Assessment, Reference 13-129.01, dated March 2013.*
- *Phase II Environmental Risk Assessment, Reference 13-129.04, dated July 2013.*
- *Preliminary Geo-Environmental Risk Assessment, Reference 14-126.01 / Issue 2, dated February 2014.*
- *Phase IIb Environmental Risk Assessment, Reference 14-126.02, dated May 2014.*
- *Addendum to Phase IIb Environmental Risk Assessment, Reference 14-126.03, dated July 2014.*
- *Piling Risk Assessment, Reference 14-126.06, dated October 2014.*
- *Remediation Validation Report, Reference 14-126.07 / Revision B, dated October 2016*.

Prior to the redevelopment of Phase 1 the site location was surrounded by; commercial property comprising the Tottenham Marsh electricity transformer station to the south, an Ikea superstore and Leeside Road Gasholder to the north, a bus depot (Arriva Lee Valley) to the east and the Leeside Industrial Estate to the west. For a summary of features that were historically in the surroundings please see Section 2. The preliminary environmental risk assessment undertaken by Aviron identified the following possible issues in ground at Phase 1:

- *Leaching of soil contamination within site wide Made Ground into the underlying aquifer which may be increased as a result of piling.*
- *Potential for migration of on-site contaminated groundwater into off-site controlled waters including surface waters, groundwater and potential abstraction points.*
- *Contamination attack of new infrastructure including services (water mains) and new foundations.*
- *Dermal contact, inhalation and ingestion risk of soil contamination (Made Ground) to construction workers.*
- *Hazardous ground gas and soil vapour ingress risk into new buildings.*

On the basis of this assessment, a site investigation was undertaken that comprised; four cable percussive boreholes to a maximum depth of 20.5 m below ground level and four window sample boreholes.

Ground conditions encountered during the investigation comprised; Made Ground to depths between 2.0 m below ground level (bgl) in WS203 and 6.5 m bgl (BH203) comprising gravel with occasional cobbles of brick, flint, clinker, coal, ash, metal, glass and concrete. Localised clay horizons were also identified overlying, Alluvium to depths between 3.5 m bgl (BH202) and 5.0 m bgl (WS201) comprising clay with horizons of peat, sand and gravel overlying, Kempton Park Gravel Formation to depths between 5.9 m bgl (BH202) and 7.9 m bgl (BH201). Comprising silty, sandy gravel with occasional cobbles over; London Clay Formation to completion depths between 10.0 m bgl (BH204) and 20.5 m bgl (BH201-203)

comprising clay. Groundwater was present in all investigation locations between depths of 2.2 m bgl and 5.5 m bgl.

Visual and olfactory evidence of contamination was identified at all investigation locations at varying depths. Subsequent laboratory testing identified elevated concentration of TPH, lead, PAH, with asbestos identified at a single location (BH204). In particular, the concentrations of TPH identified within the Made Ground are high, despite falling within the assessment limits for a commercial use scenario, these types of recorded concentrations would indicate significant in ground contamination from TPH.

Groundwater sampling in March and April 2014 also recorded elevated concentration of contaminants including TPH and PAH. Aviron states that ground gas monitoring was undertaken on six occasions between March and April 2014, and that no elevated concentrations of ground gas were identified. On completion of the works, an updated risk assessment was produced that concluded that the on-site contamination identified was likely sourced from the historical on-site engineering depot and offsite from the gas works.

Aviron concluded that the proposed redevelopment works at Phase 1 would result in the removal of contaminated soils below ground, in preparation for the installation of new building foundations and improved roadways etc. Additionally, Aviron suggested that remediation of the site pre-redevelopment would have limited benefits as it is likely that offsite areas are also contaminated and would potentially re-contaminate the site. RPS agrees with this statement, given the numerous commercial/industrial practices that have been undertaken on-site and in the surrounds, historically and recently. It would be fair to conclude that the environmental condition of the wider area is likely to be affected. The findings of the investigation and the updated conclusions were presented to and accepted by the London Borough of Haringey.

To facilitate the Phase 1 redevelopment, limited remediation actions were required, such as; hydrocarbon barrier pipe for water fittings, the placing of a minimum of 450 mm of clean cover in areas of soft landscaping, the placing of a geotextile membrane in the base of areas of soft landscaping and the laboratory testing of excavated soils for disposal purposes. These actions were implemented, and a Remediation Validation Report provided to the London Borough of Haringey for sign off. This was achieved with no further works required.

Phase 2

Prior to redevelopment, Phase 2 contained eleven terraced industrial units and an access road that formed part of Mowlem Trading Estate. At the time of the assessment site surroundings included; the Tottenham Marsh electricity transformer station to the south, an IKEA superstore and the Leeside Road Gasholder to the north, a bus depot (Arriva Lee Valley) to the east and recently completed new commercial development to the west comprising Units A, B, C, D1 and D2 (Phase 1). For a summary of features that were historically in the surroundings please see Section 2.

The Phase 2 redevelopment included the following reports which were submitted to the London Borough of Haringey to support the discharge of planning approval conditions:

- *Preliminary Risk Assessment, Reference 15-315.01, dated December 2015.*
- *Phase IIb Environmental Risk Assessment, Reference 15-315.02, dated December 2015.*
- *Piling Risk Assessment, Reference 15-315.03, dated December 2015.*
- *Preliminary Risk Assessment, Reference 16-244.01 / Revision B, dated January 2017.*
- *Phase IIb Environmental Risk Assessment, Reference 16-244.02 / Revision F, dated May 2018.*
- *Piling Risk Assessment, Reference 16-244.03, dated October 2016.*
- *Revised Remediation Strategy (including addendum), Reference 16-244.03, dated September 2017.*
- *Verification Report, Reference 16-244.06, dated July 2018.*

A preliminary risk assessment was undertaken in January 2017 of Phase 2, to establish what potential environmental risks the proposed redevelopment would face. After considering factors such as geology, historical development, current development and on/offsite receptors Aviron concluded these comprised:

- *Leaching of soil contamination within site wide Made Ground into underlying aquifer which may be increased as a result of piling.*
- *Potential for migration of on-site contaminated groundwater into off-site controlled waters including surface waters, groundwater and potential abstraction points.*
- *Contamination attack of new infrastructure including services (water mains) and new foundations.*
- *Dermal contact, inhalation and ingestion risk of soil contamination (Made Ground) to construction workers.*
- *Hazardous ground gas and soil vapour ingress risk into new buildings.*

On the basis of this assessment, a site investigation was undertaken that comprised; three cable percussive boreholes to a maximum depth of 22 m below ground level and six window sample boreholes. Ground conditions encountered during the investigation comprised; Made Ground to depths of between 2.8 m bgl in WS305 and 6.0 m bgl in BH301, comprising generally loose and medium dense gravel (and occasionally cobble) size fragments of brick, flint, clinker, slate, mortar, coal, ash, glass and concrete in varying proportions, with localised soft clay horizons and occasional concrete obstructions.

Asbestos Containing Materials (ACMs) were identified within the Made Ground following floor slab removal. Alluvium was also encountered, comprising very soft and soft organic and locally peaty clay encountered to depths of 4.0 m bgl in (WS303) and 9.0 m bgl (BH302). The Alluvium overlies Kempton Park Gravel Formation, gravelly sand of flint to depths of between 6.5 m (BH303) and 8.1 m bgl (BH301) extending in depth towards the south of the site. The base of the investigative locations encountered London Clay Formation to depths of between 19.5 m bgl (BH301) and 20.5 m bgl (BH302 and BH303) comprising stiff becoming very stiff fissured clay.

Groundwater was identified in all investigation locations at depths between 3 m bgl and 19 m bgl. However, during groundwater monitoring rounds groundwater was generally identified between 2.72 m bgl and 3.29 m bgl.

Visual and olfactory evidence of contamination was identified within boreholes; BH301, WS301, WS302 and WS307. Primarily within the Made Ground and the Kempton Park Gravel Formation. Laboratory analysis of recovered soil samples identified the presence of PAH and TPH in localised areas, as well as asbestos within the Made Ground at three locations (WS301, WS302 and WS307). The concentrations of TPH identified were far below that identified in ground at Phase 1.

Groundwater sampling was undertaken on two occasions in March 2017, where four samples in total were collected. Laboratory analysis of the recovered groundwater samples indicated the presence of chromium, zinc and selenium contamination. TPH and PAH were also identified in the water samples recovered from WS307. Six ground gas monitoring visits were undertaken between February and April 2017, Aviron confirm that no elevated concentrations of ground gasses were identified.

Investigative and monitoring works by Aviron identified; localised PAH, TPH and asbestos within overlying and underlying soils. Localised PAH, nickel, zinc, chromium, copper, TPH, cyanide and sulphate contamination within soil leachate samples. Pervasive chromium and sulphate, and localised zinc, selenium, PAH and TPH contamination within groundwater samples. The contamination has been attributed to the former use of the site as an engineering depot and from the adjacent gas works.

Based on the information obtained from the site investigation, Aviron concluded that the ground conditions and contamination position was broadly similar to that of Phase 1 and that no significant remediation works were required. The only exception in Phase 2, is that a strategy should be put into place to deal with in ground asbestos if encountered during redevelopment works. To establish if remediation works were required in respect to groundwater or offsite receptors, a consultant (Firth

Consultants Limited), was requested to perform a controlled water DQRA. The findings of which are as follows:

Following a DQRA in order to technically quantify risks, the modelling completed by Firth Consultants Limited (FC) concluded that remediation to protect controlled waters receptors is not considered warranted. It is not considered on-site soils and groundwater presents a significant risk to controlled waters and a low risk in this respect is assigned. FC was appointed to complete the DQRA following dialogue with the London Borough and Haringey and the Environment Agency (EA) in regard of the risk the site presented to controlled waters following qualitative risk assessment present in previous report revisions which following a similar premise to that presented and previously approved for Phase 1 of development. In regard of Phase 2 of development the EA required further risk assessment to justify risk which was provided within he DQRA.

Aviron advises in the report that the aforementioned findings were presented to and accepted by the London Borough of Haringey and that associated planning conditions were discharged.

A Remediation Strategy was produced for Phase 2, primarily to manage the risk of removing asbestos that had been identified beneath sub-floor slabs of former buildings. This was required as a condition of the planning approval as a remediation strategy would be required in the event that unexpected contamination was encountered. The London Borough of Haringey approved the Remediation Strategy to enable the previously unidentified Asbestos Insultation Board (AIB) which was found beneath (the former) Unit 6 to be removed by the Client's licensed contractor, Asmatt Limited. Following remediation works, a Verification Report was produced to provide a written account of the works undertaken, namely the asbestos removal and soil analysis results were provided to confirm that any contaminated arisings were removed from site. Aviron suggests that the report; *was accepted by the London Borough of Haringey and Environment Agency to discharge the necessary pre-occupancy planning condition. In doing so the environmental condition of the site was accepted by the regulator such that the site in its redeveloped commercial form was considered environmentally fit-for-purpose and fit for occupancy.*

Phase 3

The third phase of site development works included the refurbishment of eleven existing industrial units which form a part of Mowlem Trading Estate. At the time of the Aviron assessment (January 2018), the site was surrounded by commercial property comprising the Tottenham Marsh electricity transformer station to the south, an IKEA superstore and the Leeside Road Gasholder to the north, a bus depot (Arriva Lee Valley) to the east and recently completed new commercial development to the west (The completed Phase 1 and 2) comprising Units A-G. For a summary of the sites development history please see Section 2.

For Phase 3, the refurbishment of the eleven existing units Aviron produced the following reports to aid with the discharge of associated environmental/contamination planning conditions:

- Preliminary Risk Assessment, Reference 16-244.06, dated June 2018.
- Addendum to Preliminary Risk Assessment, Reference 17-322.02, dated May 2019.

The Preliminary Risk Assessment undertaken by Aviron concluded the following; *In-situ soils were not considered to present a risk to human health given the proposed hardstanding encapsulation. Exposure risks to end users were only considered where areas of new soft landscaping were proposed within the overlying Made Ground. In-situ soils and groundwater were not considered to present a risk to controlled waters following a DQRA performed by FC at the adjacent Phase 2 of Development. Ground gases and soil vapours were not considered to present a risk to the occupancy of new units.*

Having reviewed the information, RPS agrees that as the scope for Phase 3 was the refurbishment of existing buildings only, without any form of ground break, it was not deemed essential that a site investigation was required. However, given the proximity of the Phase 1 and Phase 2 developments, Aviron has concluded that ground conditions and the contamination status of the site are likely to be

broadly comparable with Phases 1 and 2. On the basis of the information presented this seems a fair conclusion.

Between January 2018 and May 2019 an addendum to the Preliminary Risk Assessment was required as below ground drainage tanks were installed within Phase 3 to capture silty biproduct from an on-site bakery. During the excavation works it is commented that the excavation arisings were black, ashy and oily in appearance and required disposal.

RPS has not reviewed any of the raw data (borehole logs, laboratory results or gas/groundwater monitoring records) that has been utilised by Aviron to form its opinion of the environmental condition of the site. On this basis we are reliant on the data that is presented within the Land Contamination Review and have taken this as true at the time of our review, as per the outline of our instruction.

In conclusion, the site has been subject to site investigation, soil sampling, groundwater sampling and ground gas analysis at Phase 1 and Phase 2, to establish the environmental setting and contamination status of the site. This was not required at Phase 3 and the existing buildings were being subject to refurbishment only, within no significant demolition or ground break activities. However, subsequent excavation activities for the installation of drainage tanks encountered contaminated ground, similar to that encountered within Phase 1 and 2.

The investigative works and subsequent soil/groundwater sampling has established that contamination (metals, PAH, TPH) is present subsurface. This is true for the majority of the site and that while this is to an unconfirmed extent beneath Phase 3, it is expected to be similar to Phases 1 & 2 from a contamination perspective.

Despite the findings of investigative works, the presence of contamination should not impact the ongoing use of the site as a commercial industrial estate. This is because there is concrete hardstanding in place across the site that will act as a break layer, preventing human interaction with subsurface contamination and where there are limited areas of soft landscaping these have been covered with a 450 mm layer of clean soils. With regards for the identified contamination to impact offsite receptors, Aviron has concluded that the potential is low as a significant migratory pathway has not been identified and the site surrounds are likely of a poor chemical quality and impacted by contamination from former surrounding industrial practices. On this basis, the regulators were accepting that remediation of the site would have proved to have a negligible positive impact as there is a such a potential for contamination to reoccur from offsite sources.

From a regulatory perspective Aviron suggests that all planning conditions relating to environmental matters have been discharged as the requirements were fulfilled. RPS agrees with the statements that the site is suitable for use from an environmental perspective for its current use (commercial/industrial estate), but any future purchaser with redevelopment plans should consider the fact that there may be/will likely be a further requirement under planning to characterise the site and to address contamination if a more sensitive end use was proposed, such as residential housing.

2.4 Section C: Environmental Risk Assessment

Land Use Significance:	**Moderate**

Comments:

The site is currently occupied by an industrial estate comprising a number of warehouse style, light industrial units. Mapping indicates the central and western half of the site has undergone redevelopment between c.2010 and c.2021.

Historical mapping indicates the site comprised undeveloped land from at least c.1864, forming part of the wider Allotment Gardens by c.1915. Leeside Depot (Civil Engineering) was present in the north from c.1956, expanding across the site by c.1967 with a Warehouse, Civil Engineering Plant Depot with Tanks and a Concrete Mixing Depot in the west. The centre to east was redeveloped to Mowlem Trading Estate by c.1981 comprising two terraces of buildings orientated from north to south. The Civil Engineering Plant Depot with two Tanks was cleared by c.1987 and the Depot was redeveloped by c.2003. The central and western areas were redeveloped to the current arrangement by c.2021.

Potentially contaminative land uses identified within the surrounding area including Leeside Depot (Civil Engineering Plant Depot) adjacent east (c.1967 to c.1981) then Leeside Works (c.1981 to recent), an Electricity Transformer Station, with two Tanks, adjacent east (c.1967 to c.1987) then Tanks only (c.1987 to recent), a Dept adjacent west (c.1987 to recent), a Metal Pipework Stockyard 15 m north (c.1974 to c.1977), Tanks 20 m southwest (c.1981 to recent), a Gas Holder 30 m northeast (c.1935 to recent), Paper and Stationery Works (c.1956 to c.1967) then Carboard Factory (c.1967 to recent) 60 m southwest, a Blouse and Lingerie Works (c.1956 to c.1967) then Warehouse (c.1967 to recent), a Coal Compound 60 m west (c.1967 to c.1975) an Industrial Estate 90 m southwest (c.1981 to recent), Leeside Chemical Works with Tanks 100 m east (c.1967 to c.1991), Gas Works 100 m west (c.1967 to c.1977), and a Gothic Works (Gas Metres and Stoves) from 100-120 m north (c.1915 to c.1987). A number of Works including Alcohol, Chief (paint), Moulded Fibre Goods, Sheet Metal, Die Casting, Engineering, Furniture, and Gas works are located between 100 m to 250 m from the site.

Overall, given the extensive industrial legacy of the site and the surrounding area, the likelihood of significant contamination existing beneath the site is considered to be moderate.

Environmental Setting Sensitivity:	**Low / Moderate**

Comments:

The site is currently in light industrial use occupied by a trading estate (e.g. reduced sensitivity) comprising complete building and hardstanding cover and is located within a similar land use setting. The nearest residential properties are located approximately 225 m west, however given their distance from the site and that shallow groundwater migration is likely to the east in the direction of the Pymmes Brook, the vulnerability of this receptor is reduced. No schools have been identified within 500 m of the site.

The site is predominantly underlain by a Secondary A Aquifer relating to the superficial Alluvium, and an Unproductive Stratum relating to the superficial Enfield Silt Member in the west of the site and the London Clay bedrock underlying the superficial deposits across the site. The site is located within groundwater Source Protection Zone 2 (Outer Protection Zone), covering pollution that takes up to 400 days to travel to the borehole or 25% of the total catchment area.

The nearest surface water feature to the site is Pymmes Brook located approximately 65 m east, however given this is classified as having a moderate ecological quality and a fail for chemical quality, its sensitivity is reduced.

The site is located within Flood Zone 2, with the annual probability of flooding classified as greater than 1 in 1000 (0.1%) but less than 1 in 100 (1%). However, based on our review of a 2016 Flood Risk Assessment report we conclude that the flood risk measures applied at the site are sufficient to prevent ingress of flood water in the buildings during an extreme flood event.

Overall, the sensitivity of the environmental setting is considered to be low to moderate.

Overall Environmental Risk: **Low / Moderate**

Comments:

Site investigation works have been completed in redevelopment areas, Phase 1 & Phase 2, which were redeveloped between 2014 and 2017. The investigations identified the presence of Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH) and elevated metals (lead, cadmium, chromium) within soils and ground water at varying depths. Asbestos contamination was also identified within the Made Ground in isolated areas as well as below floor slabs during the Phase 2 redevelopment. Contamination was also identified subsurface in Phase 3, during excavations for the installation of below ground drainage tanks.

Despite the clear evidence that the site is underlain by contamination, significant remediation was not deemed to be required as the position accepted by regulators is that the site and the wider surrounds are likely contaminated as a result of recent and historical industrial operations. It was decided that any remediation undertaken at the site would be futile, as there was an increased potential that offsite sources would result in the re-contamination of the site.

Overall, the risk of an environmental liability (e.g. third-party liability or regulatory action) relating to ground contamination is considered to be low to moderate whilst the site remains in its current use and form.

REPORT

Appendix A Site Location, Boundary Plans and Flood Map

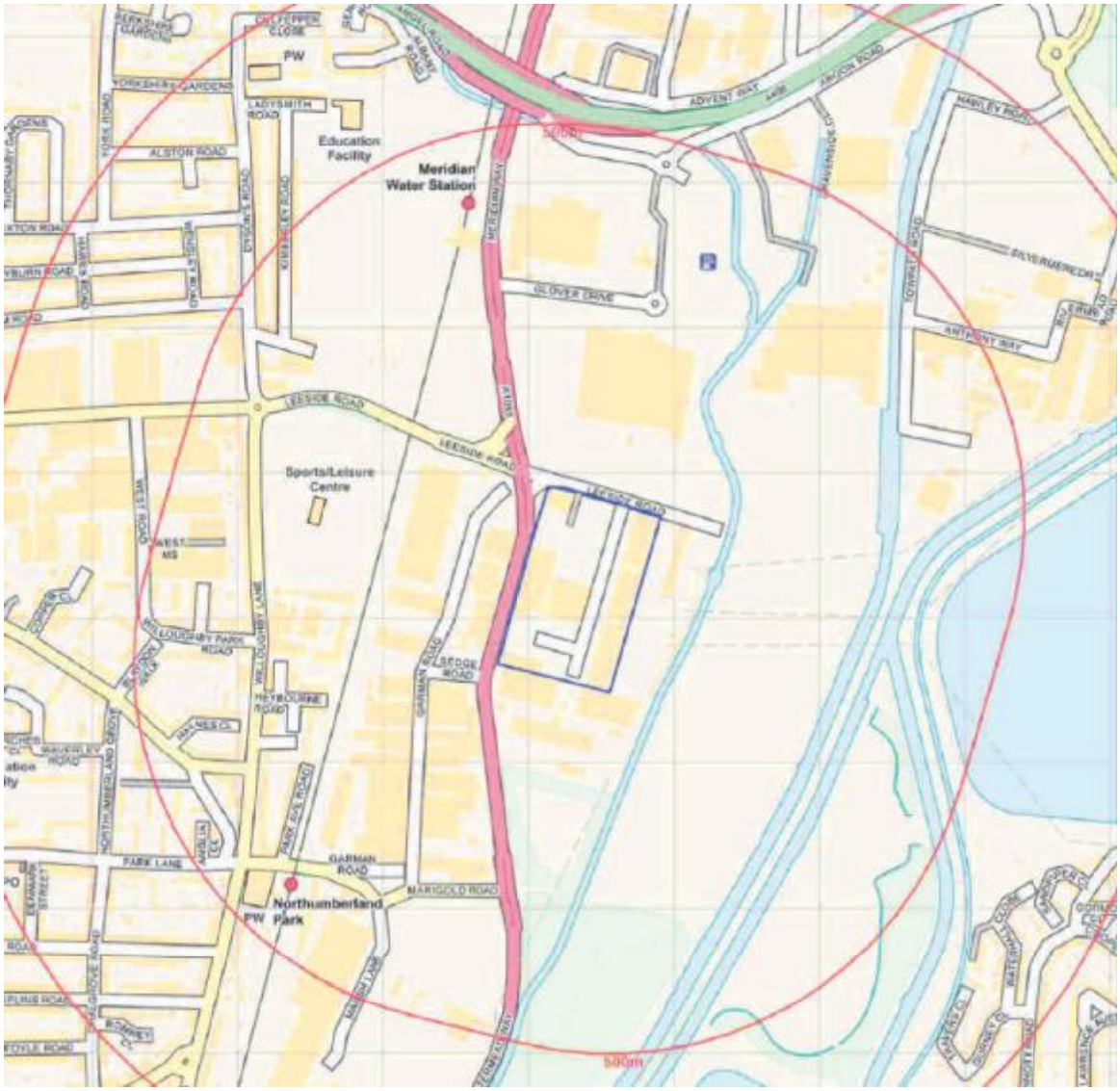

Figure 1: Site Location Plan

Map Date: 2021

Scale: Not to scale

RPS
20 Farringdon Street
London EC4A 4AB

020 7280 3240
www.rpsgroup.com



Figure 2: Site Boundary Plan

Map Date: Current

Scale: Not to scale

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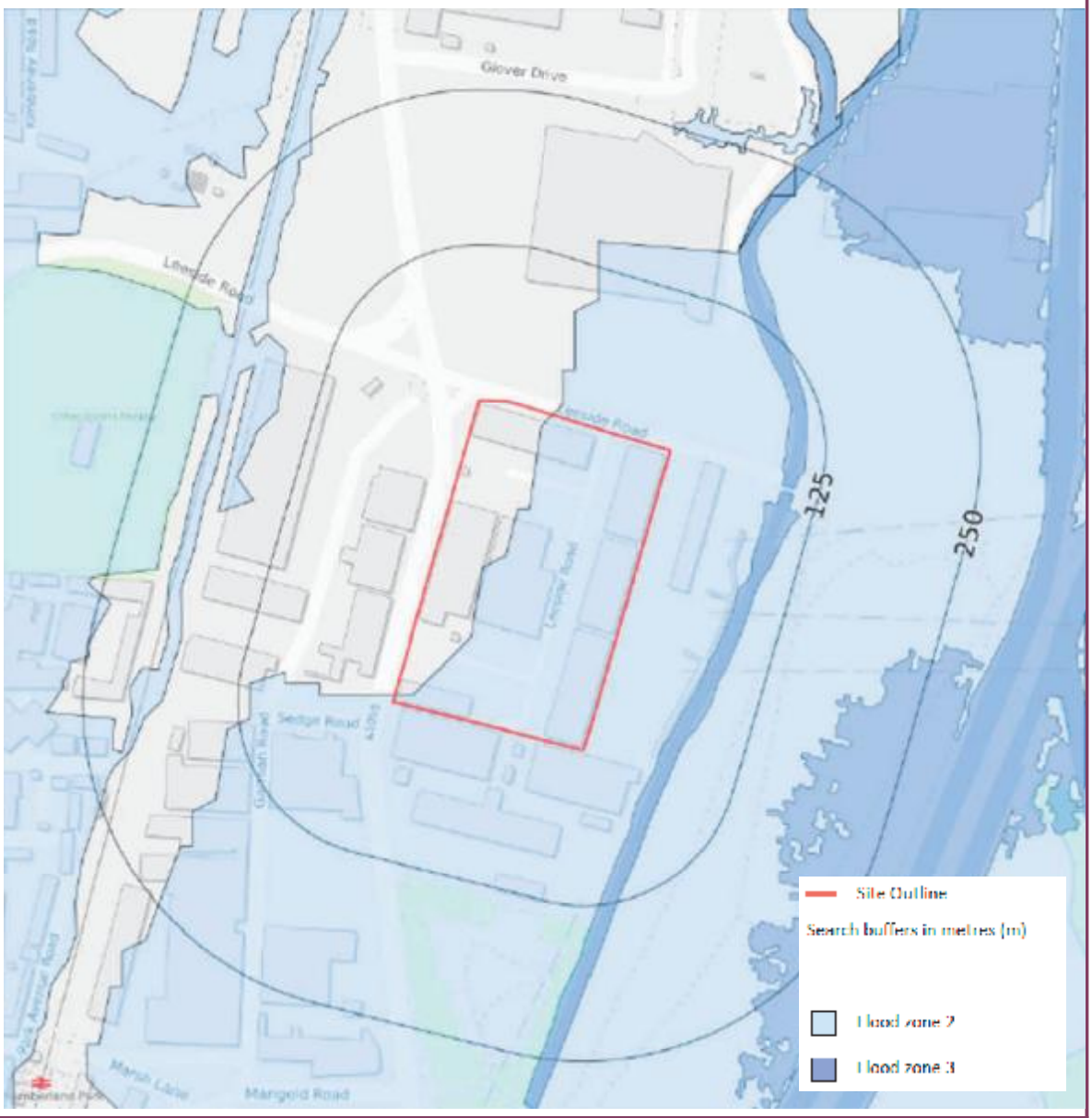

Figure 3: Environment Agency Flood Map

Map Date: Current

Scale: Not to scale

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Appendix B Historical Ordnance Survey Maps

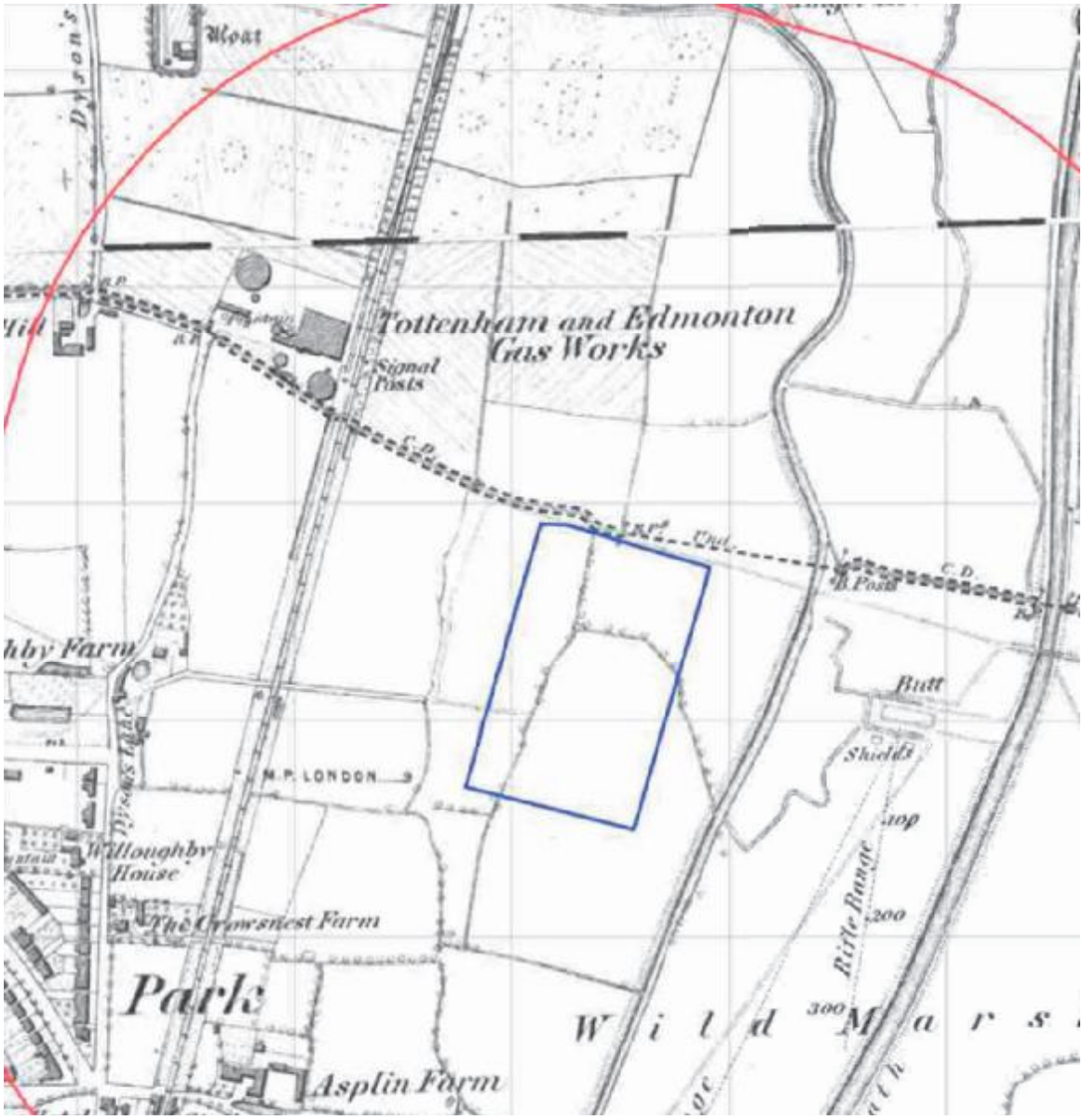

Figure 4: Historical Map Extract

Map Date: 1872 - 1873

Scale: Not to scale

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Figure 5: Historical Map Extract

Map Date: 1935

Scale: Not to scale

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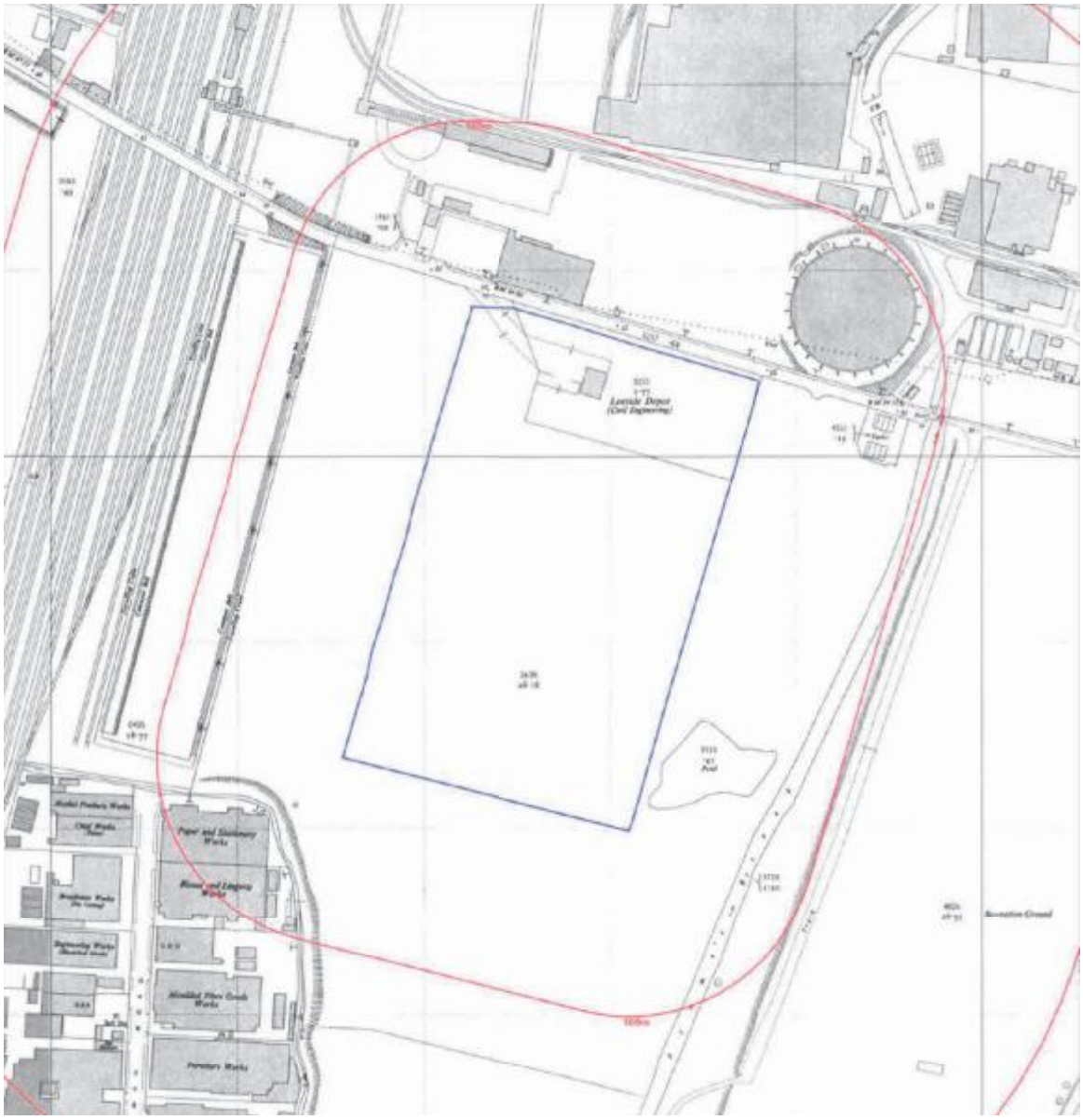

Figure 6: Historical Map Extract

Map Date: 1955 - 1956

Scale: Not to scale

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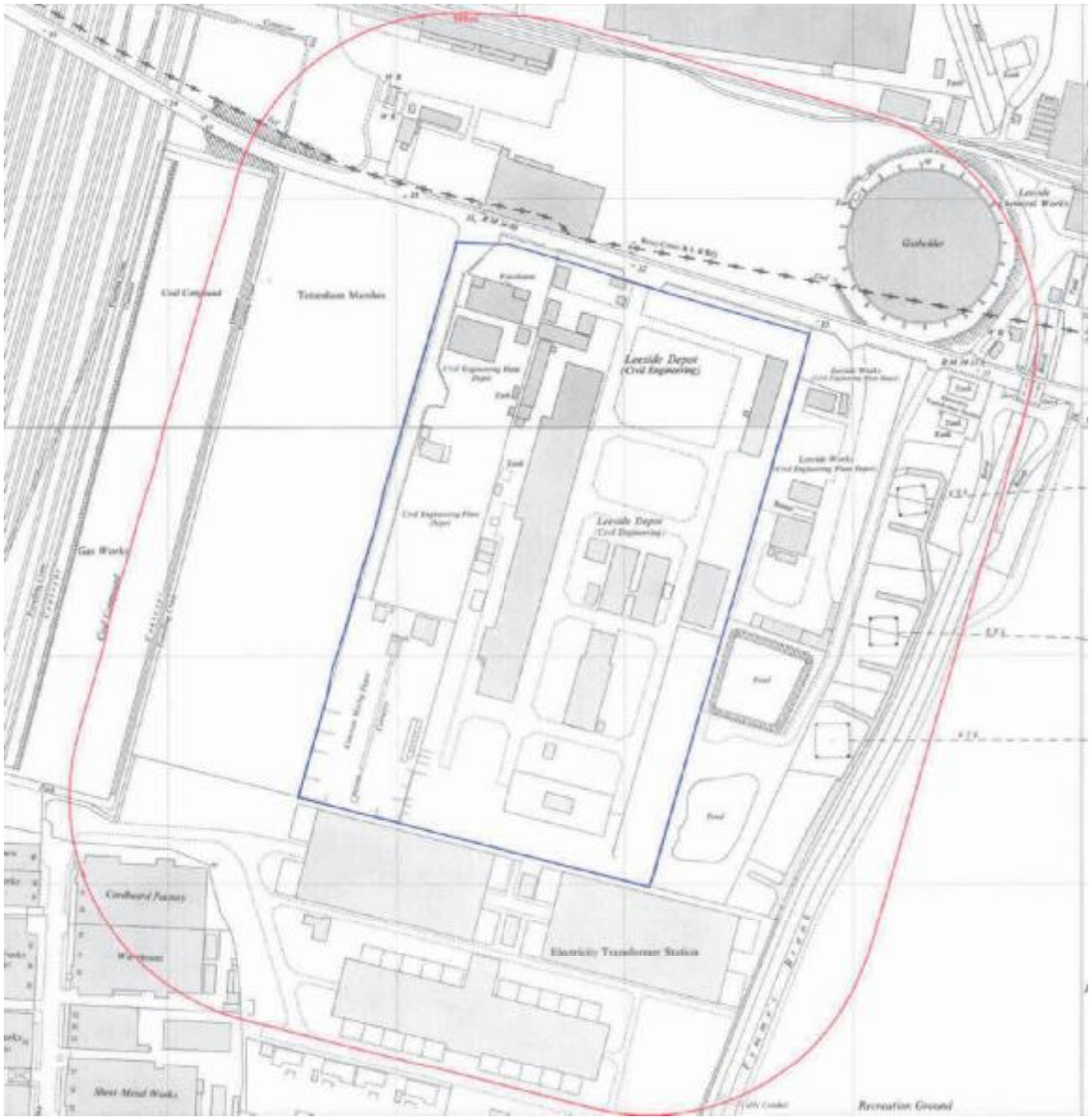

Figure 7: Historical Map Extract

Map Date: 1967

Scale: Not to scale

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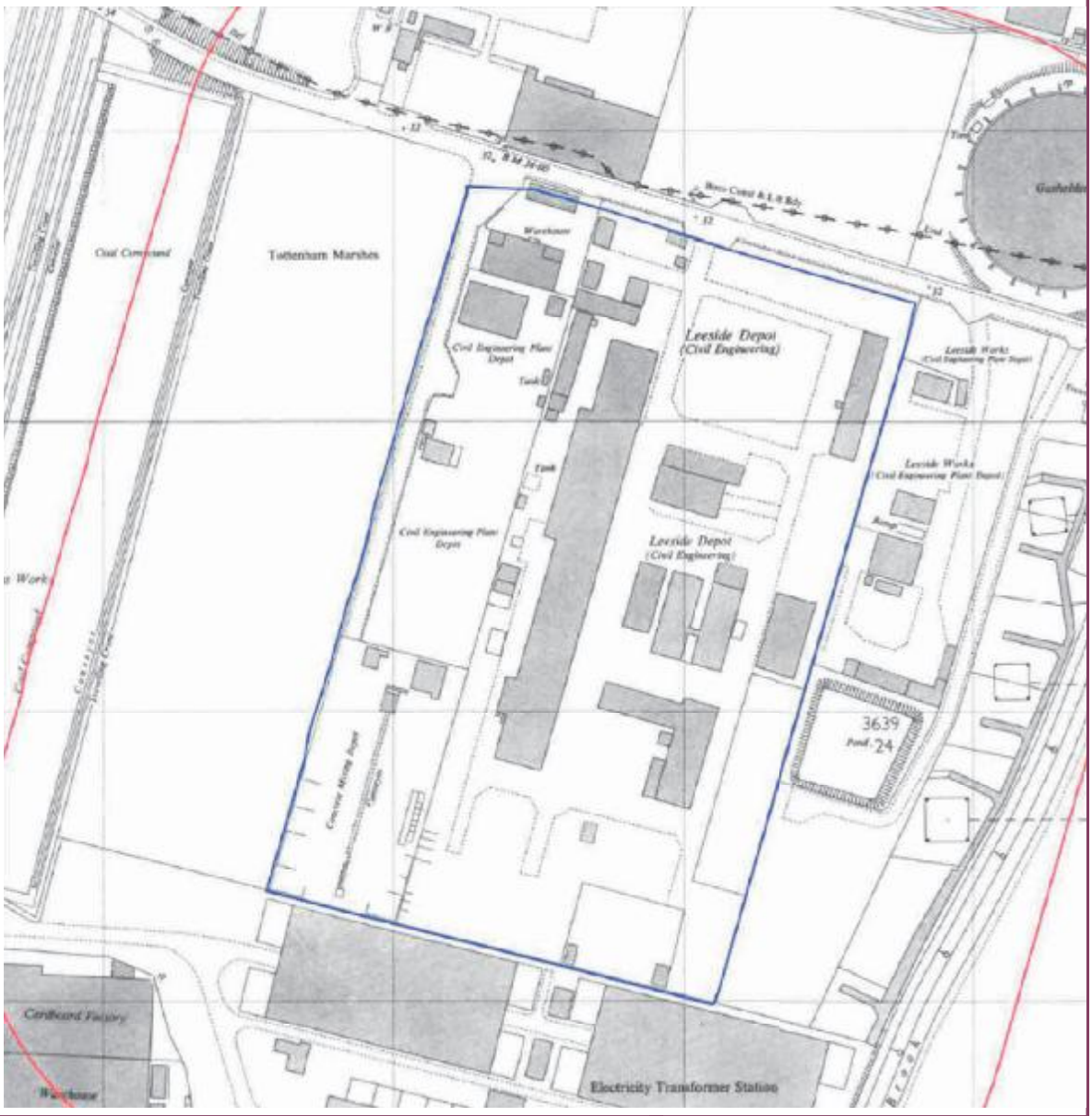

Figure 8: Historical Map Extract

Map Date: 1967

Scale: Not to scale

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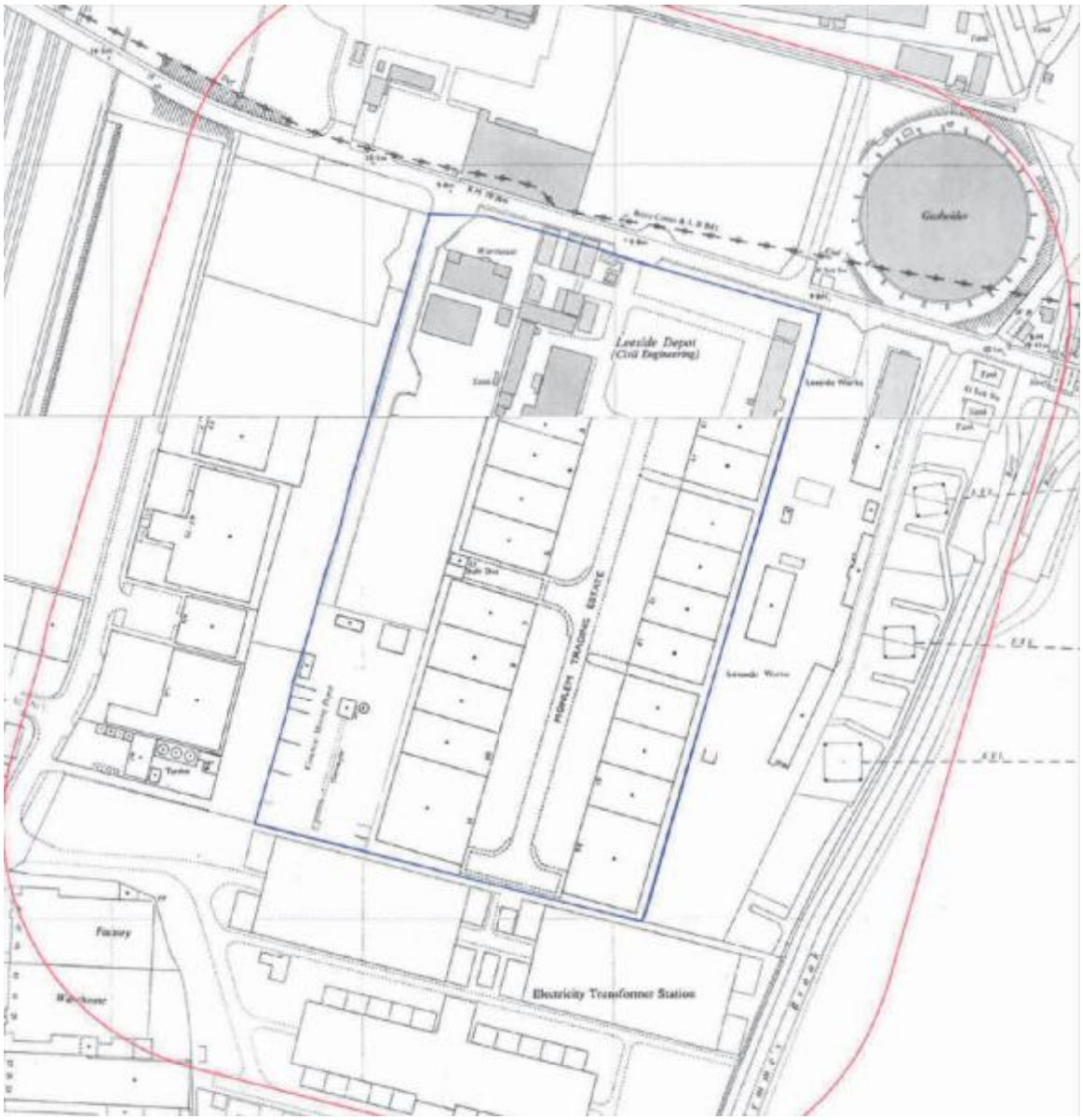

Figure 9: Historical Map Extract

Map Date: 1977 - 1981

Scale: Not to scale

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Figure 10: Historical Map Extract

Map Date: 1987 - 1991

Scale: Not to scale

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Figure 11: Historical Map Extract

Map Date: 2010

Scale: Not to scale

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