



VERIFICATION RECORDS - SOIL COVER LAYER

Development At:

Cranwood House

100 Woodside Avenue

Muswell Hill

N10 3JA

Konform Ltd

In Support of Planning Application Ref:

HGY/2021/2727 Condition 17D & 18

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Report Title:	Verification Report - Soil Cover System – Cranwood House, 100 Woodside Avenue, Muswell Hill, N10 3JA.
Report Reference No:	LQ1213-V2.0

Prepared For:	Konform Ltd, Craycombe, Parsonage Lane, Sawbridgeworth CM21 0ND
Project Reference No:	LQ1213

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	Issue 1	Issue 2
Version No.	Version 1	Version 2
Date	13/10/2025	17/04/2026
Remarks	1 st issue	Updated to include Blocks A & B



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1. INTRODUCTION

1.1 Appointment

Kalex Ltd was commissioned by Konform Ltd, the client, to prepare a Verification Report for the provision of a capping layer of certified clean material in accordance with the requirements of the Remediation Method Statement, being installed at Cranwood House, 100 Woodside Avenue, Muswell Hill, N10 3JA (the site, see **Site Location Plan**, appended).

This report is to verify the placement of a capping layer of certified clean material using imported soils for gardens and soft landscaping. Report limitations are in **Appendix 01**.

1.2 Background

Development proposals include the demolition of the existing building and redevelopment of site to provide 41 new homes (Use Class C3) within 3 buildings ranging from 3 to 6 storeys in height, with associated vehicular access from Woodside Avenue, wheelchair parking, landscaping, refuse/recycling, and cycle storage facilities. New stepped access to Parkland Walk from Woodside Avenue.

Planning permission (ref. HGY/2021/2727) was granted by Haringey Council on 10/10/2022, which is subject to conditions, including those related to land contamination. The land contamination conditions (Conditions 17 and 18) are summarised below.

17) Prior to the commencement of the approved development (other than for investigative work):

a. Using the information already submitted on the Ground Investigation Report Rev. 01 (ref. STS5215-G01 by Soiltechnics Ltd dated May 2021), an intrusive site investigation shall be conducted for the site using information obtained from the desktop study and Conceptual Model. The site investigation must be comprehensive enough to enable: a risk assessment to be undertaken, refinement of the Conceptual Model, and the development of a Method Statement detailing the remediation requirements where necessary.

b. The risk assessment and refined Conceptual Model shall be submitted, along with the site investigation report, to the Local Planning Authority which shall be submitted to, and approved in writing by, the Local Planning Authority prior to that remediation being carried out on site.

c. Where remediation of contamination on the site is required, completion of the remediation detailed in the method statement shall be carried out, and.

d. A report that provides verification that the required works have been carried out, shall be submitted to, and approved in writing by the Local Planning Authority before the development is occupied.

Reason: To ensure the development can be implemented and occupied with adequate regard for environmental and public safety.

18) If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until a remediation strategy detailing how this contamination will be dealt with has been submitted to and approved in writing by the Local Planning Authority. The remediation strategy shall be implemented as approved.

Reasons: To ensure that the development is not put at unacceptable risk from, or adversely affected by, unacceptable levels water pollution from previously unidentified contamination sources at the development site in line with paragraph 109 of the National Planning Policy Framework.

The site underwent redevelopment, and soil for soft landscaping in Block C was imported in August 2025 and for Blocks A and B soil was imported between February and April 2026.



1.3 Previous Environmental Assessment Reports

Previous reports for the site are summarised in **Table1-1** below.

Table 1-1 – Previous reports

Title	Date	Author
Ground Investigation Report Rev 01, ref: STS5215-G01	May 2021	Soiltechnics Limited
Supplementary Contamination Investigation and Remediation Method Statement, ref: BC652 L0.1/JT	October 2023	The Brownfield Consultancy Limited

1.4 Aims and Objectives

The client instructed Kalex to assist with the discharge of planning condition 17D & 18, assessing land quality to verify that the client's remediation objectives have been met, to meet the requirements of the warranty provider. The remediation objectives relate to clean soil cover in soft landscaped areas:

- Condition 17 D relates to the implementation of the remediation strategy and provision of a verification report.
- Condition 18 relates to the implementation of a discovery strategy for unexpected contamination.

The scope of work is outlined below.

1.5 Scope of Work

The verification report is formed of several lines of evidence including evidence of material delivery to site, evidence for that material's suitability, and additional evidence in the form of site investigation and soil sampling to confirm the quality of the soil regarding contamination.

The site investigation results are presented in **Section 2** of this report and the methodology is summarised below.

Evidence of material deliveries to site are presented in **Section 3** of this report.

The investigation was undertaken in accordance with BSI (2017)¹, and comprised the following:

-  Retrieval of representative soil samples from the placed soil cover layer.
-  Geo-environmental assessment of the strata encountered including an assessment of the visual and olfactory evidence of contamination.
-  Representative soil samples were collected from each of the exploratory holes and transferred to a UKAS accredited laboratory for testing.
-  The laboratory data was summarised and subject to Generic Quantitative Risk Assessment.
-  Confirmation that the verification has been completed as required.

¹ BS 10175:2026: Investigation of potentially contaminated sites. Code of practice - Code of practice.



2. PREVIOUS INVESTIGATION FINDINGS AND RECOMMENDATIONS

Salient information regarding ground conditions and land contamination provided in the Soiltechnics Limited report ref. STS5215-G01 and The Brownfield Consultancy Limited report ref BC652 L01/JT has been summarised below. These reports should be read for full details.

Soiltechnics Limited (Report ref: STS5215-G01)

The encountered ground conditions comprised:

- Made ground of grey/brown and brown gravelly clay with gravels of concrete, brick, flint, ash, igneous rock, and bituminous coated materials were encountered to in all locations and generally to depths between 0.20m and 1.10m.
- Six boreholes were formed across the site to depths of between 10-25m. These boreholes encountered made ground generally between 0.2m and 1.1m but locally deeper (up to 3.3m depth) overlying London Clay Formation. Some lower strength soils were encountered beneath the made ground to depths of around 2-2.5m. It is possible that these soils are London Clay derived Head deposits as the area is recorded within an area of Head propensity. As this cannot be proven, we have called all soils London Clay but taken this into consideration in foundation design.
- The London Clay (LC) deposits were encountered in all the borehole positions. The LC horizon extended beyond 25m depth and comprised firm becoming stiff brown becoming bluish grey clay.
- The site is not located within a groundwater Source Protection Zone (SPZ), and no groundwater inflows were observed in any of the exploratory excavations during the ground investigation.

Advice regarding protection of end users included:

- Based on the above assessment, a hotspot of beryllium appears to be present around BH06. Marginally elevated concentrations of PAH have also been identified within the made ground at BH06 and BH01. On this basis, Soiltechnics recommended further samples of made ground be collected and tested to allow refinement of the statistical analysis and determine whether these were isolated concentrations or more widespread. This should include additional sampling around the vicinity of BH01 and BH06 as well as more generally.
- Based on current development proposals, if these areas are found to be isolated hotspots, it is unlikely significant remediation will be required as they are located beneath proposed buildings/hardstandings, which will sever the pathway to end users.
- If low level contamination is identified more generally within the made ground, it is likely either a capping layer will be needed within gardens/soft landscapings or made ground will require removal from these areas.
- Based on monitoring observations to date, development categorisation, and the site characteristic gas situation and with reference to Table 4 of BS 8485:2015+A1:2019, the development requires gas protective measures which would achieve a 'gas protection score' of 3.5. Lists of protective measures which each produce a score value are produced in Tables 5, 6 and 7 of BS 8485:2015+A1:2019.

Based on monitoring observations outlined in the Soiltechnics Limited Ground Investigation Report, development categorisation, and the site characteristic gas situation and with reference to Table 4 of BS 8485:2015+A1:2019, the development requires gas protective measures which would achieve a 'gas protection score' of 3.5. Lists of protective measures which each produce a score value are produced in Tables 5, 6 and 7 of BS 8485:2015+A1:2019.



GeoShield Limited were instructed to produce a detailed gas safety verification plan, a full version of the report ref: GEO105182 is available in **Appendix 03 – GeoShield Verification Plan**.

This pre-verification plan reviews the design to ensure it is compliant with the developer and planning authority requirements and in conjunction with the relevant investigation report in accordance with BS8485:2015 +A1 2019.

In summary, the design does achieve a required level of attention to detail with its robust specific gas membrane design (2.0 points), the structural barrier of a Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations (1.5 points).

The Brownfields Consultancy Limited (Report ref: BC652 L01/JT)

In accordance with the recommendations made by Soiltechnics, it was noted that site will be installing gas membranes in the new structures and adopting upgraded water supply pipework (Protectaline). The Brownfield Consultancy were commissioned to undertake a supplementary soil investigation to refine the conceptual site model and to determine whether capping layers are required in public open space and private gardens.

The encountered ground conditions comprised:

- The ground conditions encountered were consistent with the published geological map and the findings of the previous site investigation. Made ground overlies London Clay. Made ground comprised humic gravelly sand and sandy gravel & cobble with variable clay content. Gravel comprised flint, brick, concrete, and clinker.
- Underlying the made ground, London Clay was encountered in all exploratory hole locations and comprised brown and grey silty clay.

Recommended remedial actions included:

- Within proposed landscaped and planted areas, The Brownfield Consultancy recommended a capping layer of certified clean material be placed to break the exposure pathways. A minimum capping thickness of 600mm in private gardens and 450mm in communal landscaped areas was proposed. A geotextile membrane was to be placed at the base of the capping layer and at least the top 150mm should comprise good quality topsoil suitable for plant growth. Soils that are imported to site should be chemically validated as clean and conform to the acceptable guideline values.
- In-situ validation of the placed topsoil is to be undertaken by an independent Geoenvironmental Consultancy, comprising a series of hand dug pits to confirm the thickness of soils, with a photographic record. Validation sampling of the placed soils shall also be undertaken.
- A 'Watching Brief' will be undertaken by the developer, comprising the visual and olfactory assessment of all exposed soils during site clearance and excavations. Should any previously unidentified contamination or deleterious materials be encountered during ground works, work will stop and further ground investigation, risk assessment and updated remediation strategy will be undertaken as appropriate. Where contamination is identified or suspected, consultation will be undertaken with a suitably experienced engineer to decide the most appropriate action.
- Gas protection measures and upgraded water supply pipework should be adopted for this development. Gas protection measures are to be installed in accordance with CS 2. A detailed design will be required to be submitted to the Local Planning Authority for approval.



3. REMEDIATION EXCAVATIONS AND DUTY OF CARE RECORDS

The Soiltechnics Limited Ground Investigation Report ref: STS5215-G01, stated that elevated concentrations of Beryllium and Polycyclic Aromatic Hydrocarbons (PAHs) were recorded in the Made Ground and thus remediation would be required. It is acceptable to leave Made Ground below future hardcover, but it must not form part of any future landscaping or gardens.

As such, to accommodate for the installation of the cover layer, the made ground was excavated and removed from site as waste to a suitably permitted facility.

The made ground was encountered to depths between 0.20m and 1.10m and described as comprising grey/brown and brown gravelly clay with gravels of concrete, brick, flint, ash, igneous rock, and bituminous coated materials.

The disposal facility was J&R Haulage, Hoe Lane, Nazeing, Waltham Abbey, EN9 2RJ under the Environmental Permit number EPR/EB3900XJ. J&R Haulage also acted as the waste carrier under registration number CBDU146504. The environmental permit, waste carriers license, and a selection of waste transfer notes (WTN) are presented in **Appendix 02 – Soil Export Receipts**. A full set of WTN are available for inspection upon request.

4. CLEAN COVER SOURCE MATERIALS

Clean cover materials were provided by the following supplier and haulage contractor.

Soil Import Source:	Block C - Topsoil (Crown Quarry, Ardleigh) provided by SRC Group, Old Ipswich Road, Ardleigh, Colchester, CO7 7QR Blocks A & B – Topsoil (Springbridge Group Limited), 24 Oxford Road, Denham, Uxbridge, UB9 4DF
Haulier:	SRC Group, Old Ipswich Road, Ardleigh, Colchester, CO7 7QR

Receipts for the material movements are presented in **Appendix 04 – Soil Import Receipts**. A total of 2 loads of clean cover were imported to site for the Block C soft landscaped areas, equating to approximately 25m³ materials. A total of 5 loads of clean cover were imported to site for the Block A & B soft landscaped areas, equating to approximately 75m³ materials.

The suppliers, SRC Group Limited & Springbridge Group Limited, undertake a quality control program including regular sampling and testing of their soil materials for sale. The supplier provided the client with quality control test results for their routine program which confirmed their soil materials were compliant with the British Standard (BS3882).

The most recent results of the sampling and testing of the materials delivered to site, as provided by the supplier, are presented in **Appendix 05**. In the soil sample, contaminant concentrations were all below the GAC criteria for the site.

The first two loads of topsoil delivered to site for the Block C area, on 28th August 2025 were stockpiled until the report ref: 25-10266-1 dated 08th April 2025 was reported confirming the materials would be well-suited to general landscaping purposes. The first load of topsoil delivered to site for the Block A & B areas, on 25th February 2026 was stockpiled until the report ref: 26-00597-2 dated 02nd February 2026 was reported confirming the materials would be well-suited to general landscaping purposes.

To provide additional lines of evidence of soil suitability at the site, additional sampling and testing of the placed soils are presented in the following report sections.



5. VERIFICATION SAMPLING AND ANALYSIS

5.1 Sampling Strategy

5.1.1 Fieldwork

On 28th August 2025 a total of three trial pits, ref. TP01, TP02 and TP03, were excavated using hand tools to a depth of 0.60mbgl to prove remediation had been completed as specified. The pits were in proposed private garden areas of the Block C development area. Furthermore, on the 18th of March 2026 a total of six trial pits, ref. TP04 to TP09, were excavated using hand tools to a depth of 0.60mbgl to prove remediation had been completed as specified, these six pits were located in the communal residential spaces in Blocks A & B; their locations are shown on the appended **Verification Location Plan**.

Representative samples of the soils encountered at pre-determined exploratory hole locations were recovered to target shallow soil depths and stratum types. The samples were taken at depths between 0.10m and 0.48m.

Dedicated containers (e.g., amber jars, vials, plastic tubs etc.) provided by the laboratory, were used for the collection of samples. To minimise the potential for cross contamination, disposable gloves were changed for each sample collected / equipment used was cleaned between each sampling event.

Loss of volatile compounds through desorption and volatilisation from the samples was limited by filling and tightly enclosing the samples in dedicated amber jars, thus ensuring minimal headspace, and storing at a low temperature (i.e., a refrigerated cool box), which further minimised biodegradation of organic compounds.

Samples were transported to the laboratory in dedicated containers maintained at a low temperature. All samples and analytical requests were recorded on the laboratory chain of custody form prior to dispatching for analysis.

5.1.2 Scheduled Analysis of Soil Samples

Soil samples were recovered from the exploratory hole locations during the site investigation, all of which were transferred to the laboratory in accordance with the procedures detailed above. Across all landscaped areas, a total of 8 soil samples were analysed for a suite of determinands as detailed below:

Soil Contamination Testing Determinands
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium III
Chromium VI
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Vanadium
Zinc
Speciated PAH (USEPA 16)
Speciated petroleum hydrocarbons
Methyl tertiary butyl ether (MTBE)
Benzene, toluene, ethylbenzene, xylenes (BTEX)
pH
Asbestos screen



6. SOIL COVER INVESTIGATION

6.1 Ground Conditions

The ground conditions encountered within the verification pits, ref. TP01 to TP09, excavated to depths between 0.32m and 0.68m, is summarised below.

The ground conditions in all pits were consistent, comprising between a 0.32m and 0.68m thick layer of dark brown slightly sandy slightly gravelly topsoil, with rootlets. Sand is fine to coarse. Gravel is fine to medium, subrounded to subangular, underlain by a geotextile membrane to at least the base of the pits.

Hand-dug trial pits across all locations in Block C were terminated before reaching the full 600 mm clean cover depth specified in the RMS for private gardens. It is understood that a 300 mm concrete capping layer has been installed beneath the private garden areas of Block C to provide protection for the high-voltage power cable. When combined with the depth of placed topsoil within these areas, the total cover achieves the required minimum of 600 mm. The uppermost 150 mm consists of good-quality topsoil, suitable for supporting plant growth, in accordance with the RMS requirements.

Hand-dug trial pits across all locations in Blocks A & B were evidenced to meet their minimum clean cover depth of 450 mm, as specified in the RMS for residential communal spaces.

It should be noted that, as a consequence of landscaping, the marker layer/geomembrane was anticipated to be below the depth of excavation at some locations.

6.1.1 Visual and Olfactory Evidence of Contamination

There was no visual or olfactory evidence of contamination noted during the trial pitting (e.g., hydrocarbons, solvents etc.).

6.1.2 Groundwater Occurrence

Groundwater was not encountered in any of the trial pits.

6.1.3 Photographic Record

A series of trial pit photographs is presented in **Appendix 6**.

6.2 Laboratory Testing Results

This data is summarised in **Appendix 07** and the laboratory certificates are in **Appendix 08**.



7. GENERIC QUANTITATIVE RISK ASSESSMENT

7.1 Introduction

The completed development at the site includes areas of soft landscaped private gardens. We have applied the GAC for residential with consumption of homegrown produce to the entire data set to provide a comprehensive assessment based on the data summarised in **Appendices 05 and 06**.

7.2 Asbestos Containing Material

No asbestos was observed in the site soil during the site investigation. Asbestos fibres were not detected in any of the screened samples.

7.3 Analysis Results Assessment

With respect to the adopted GACs for the residential (private gardens) end use scenario, the analysis results recorded no exceedances of the various determinants within the suite of analysis.

7.4 Undiscovered Contamination

Konform confirmed that during the redevelopment works, there were no occurrences of additional contamination discovery, and a confirmation statement is in **Appendix 09**.



8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

A soil cover system has been applied in both private gardens and communal soft landscaped areas using imported soils.

Soil quality data was provided by the supplier to confirm the materials' compliance with the relevant British Standard and Konform undertook a soil verification and sampling exercise of the placed soils to confirm suitability.

The required depth of soil cover layer was confirmed by pits excavated depths between 0.32m and 0.68m at nine locations.

A total of eight soil samples plus two from the relevant suppliers, is a total of 10 soil samples representing 100m³ material, which exceeds the requirement for a minimum of three samples per source or one sample per 50m³ of imported material.

Asbestos was not detected in any of the samples screened.

The analysis results for representative samples from the soil cover layer recorded concentrations of the various determinants that were below their respective screening values for the proposed end use.

Based on the remediation completed that included installation of a concrete capping layer to provide protection to a high-voltage power cable, importation of a clean topsoil cover layer to depths between 0.32m and 0.68m, and the results of soil analysis, the identified risks to human health have been mitigated and the remediation objectives have been met.

8.2 Recommendations

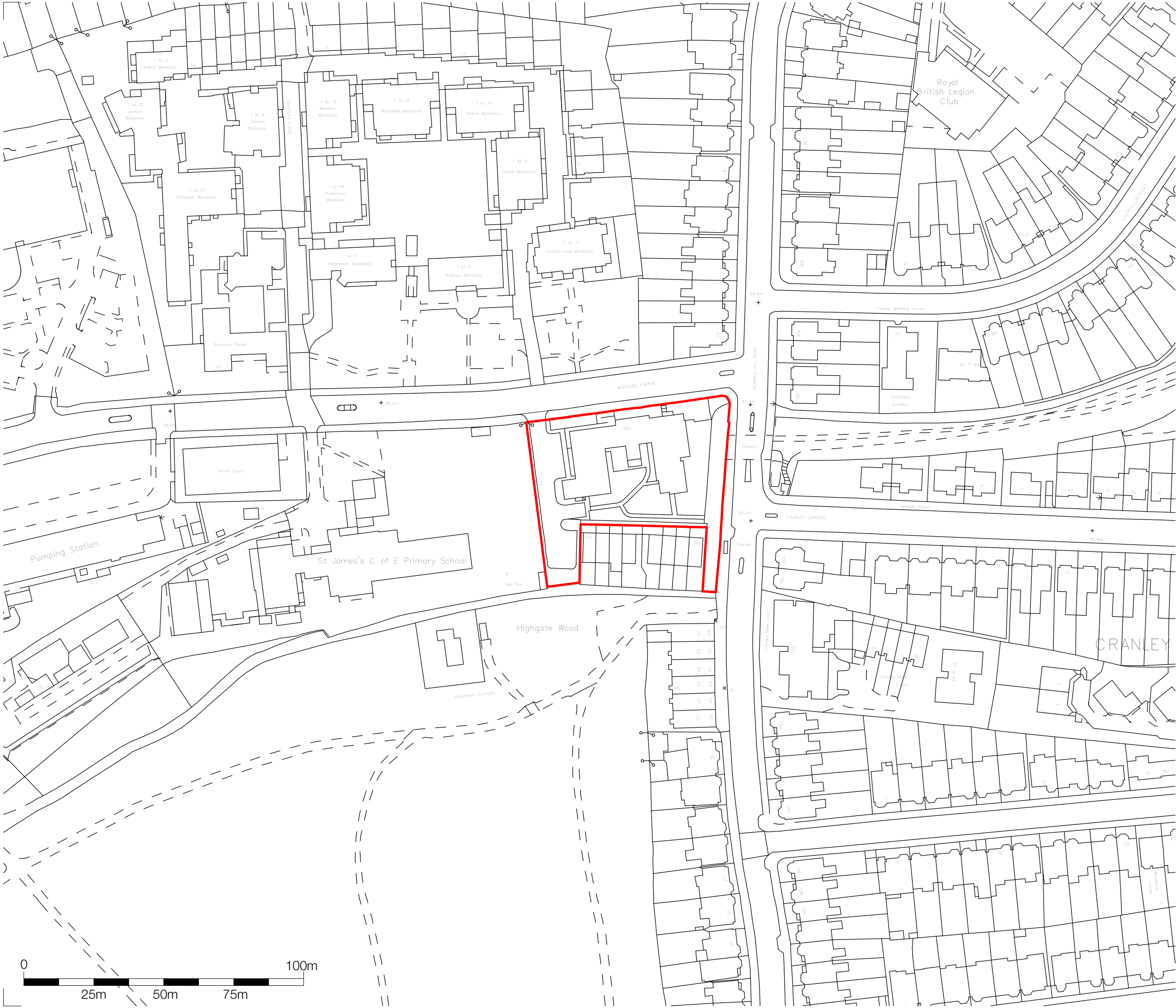
This report should be submitted to Haringey Council in support of Condition 17D of planning permission reference HGY/2021/2727 for the site.

The declaration provided by the developer in **Appendix 09** addresses the information required for Condition 18 which relates to unexpected contamination, and the validation recorded presented within this report address the information required in respect of Condition 17D verification report.

Building Control will likely require copies of the report for their comment and approval.



Site Location Plan



Notes

- 1. Do not scale this drawing.
- 2. All dimensions must be checked on site and any discrepancies verified with the architect.
- 3. Unless shown otherwise, all dimensions are to structural surfaces.
- 4. Drawing to be read with all other issued information. Any discrepancies to be brought to the attention of the architect.
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Site boundary

P1	23/08/21	Planning Submission	AM
Rev	Date	Description	Drawn / Checked

Project name

Cranwood House

Muswell Hill

Drawing number	Rev
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3649 - LB - XX - XX - DP - A - 1010	P1
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Drawing

Existing - Site Location Plan

Purpose of issue	
Planning	
Scale	Date
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Client	
London Borough of Haringey	

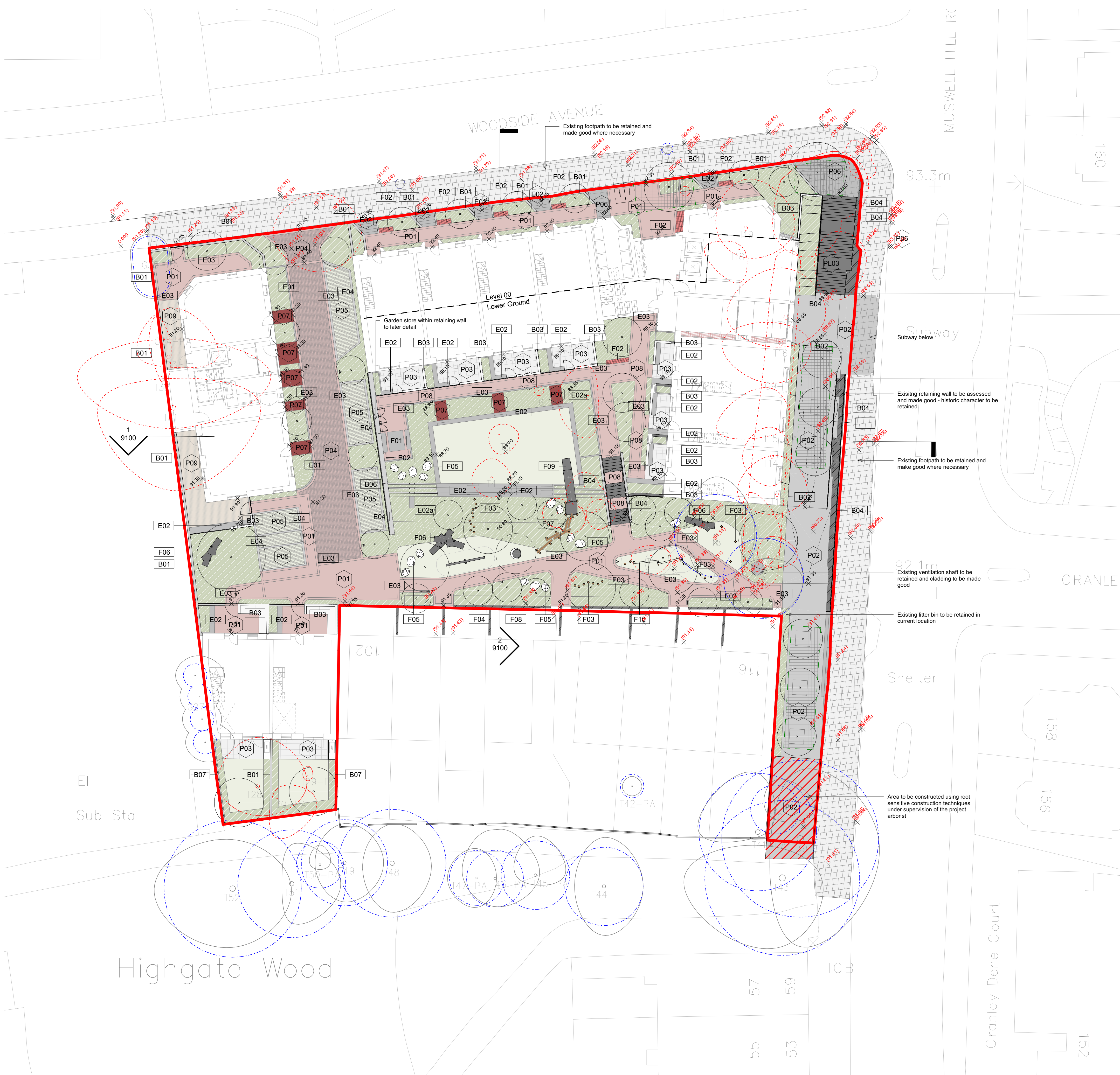
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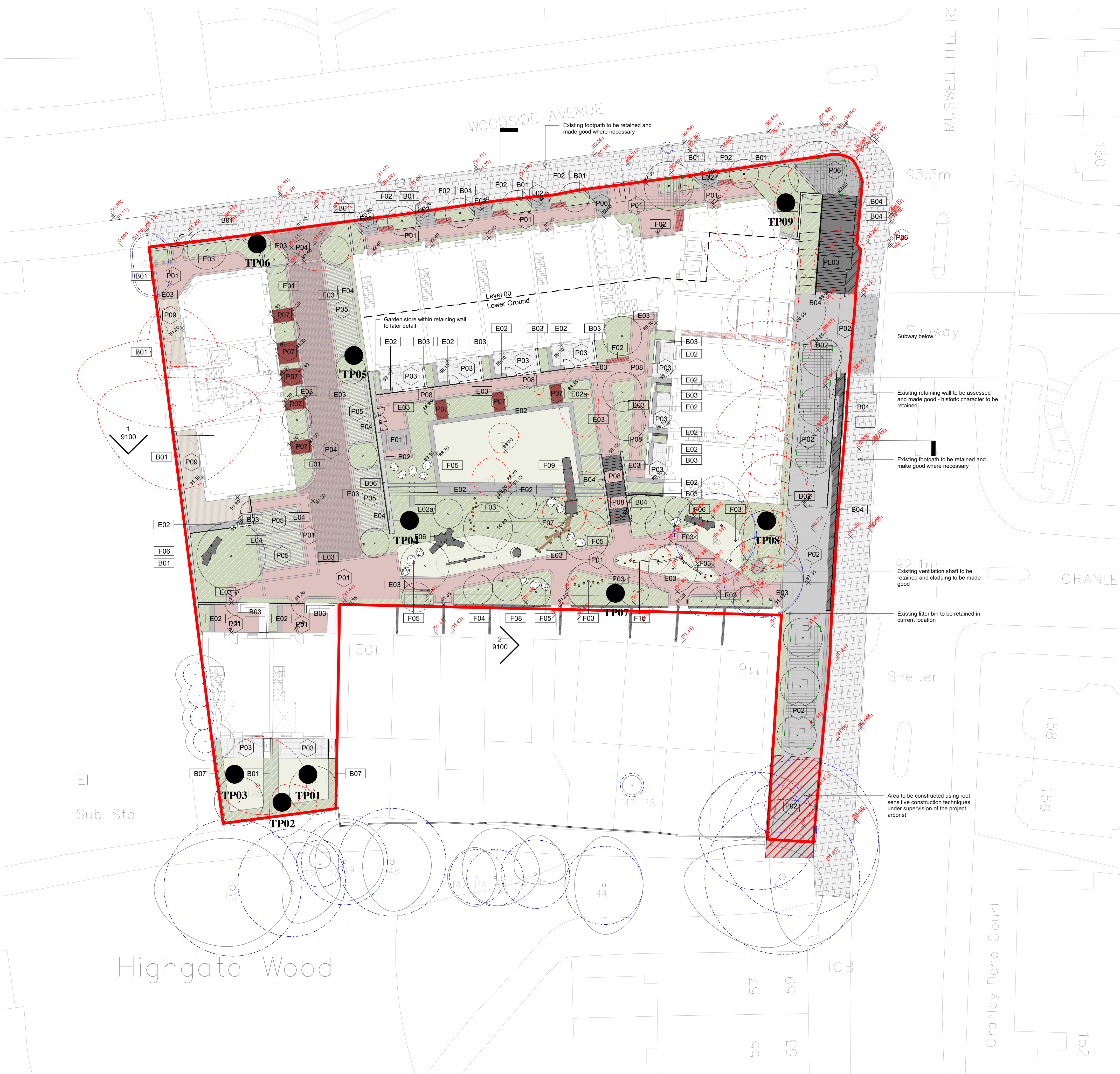


Proposed Development Plan





Verification Location Plan





Appendix 01 – Report Limitations