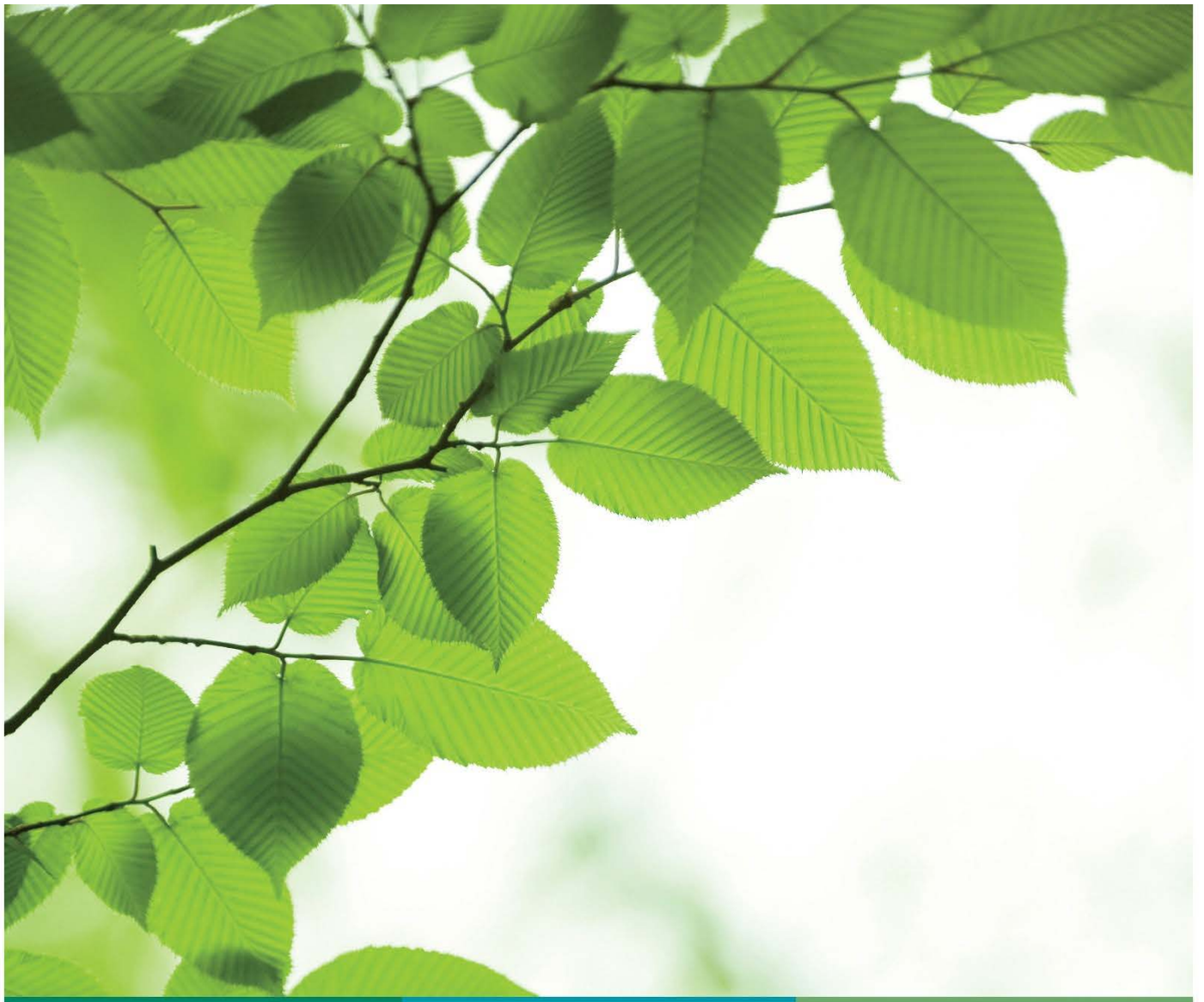




Remediation and Verification Strategy

Ladybarn Park, Manchester

Presented to Manchester City F.C. City in the Community Foundation

Issued: January 2020

Delta-Simons Project No. 18-1673.04



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Report Details

Client	Manchester City F.C. City in the Community Foundation
Report Title	Remediation and Verification Strategy
Site Address	Ladybarn Park Road, Burnage Lane, Withington, Manchester, M20 4NR
Project No.	18-1673.04
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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
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About us

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Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from ten locations - Lincoln, Birmingham, Bristol, Dublin, Leeds, London, Manchester, Newcastle, Norwich and Nottingham - we employ over 100 environmental professionals, bringing experience from across the private consultancy and public sector markets.

Delta-Simons is proud to be a founder member of the Inogen® Environmental Alliance, a global corporation providing multinational organisations with consistent, high quality and cost effective environmental, health, safety, energy and sustainability solutions. Inogen assists multinational clients by resolving liabilities from the past, addressing today's requirements and delivering solutions for the future. With more than 200 offices located on every continent, more than 6,430 staff worldwide, and projects completed in more than 120 countries, Inogen provides a single point of contact for diverse markets as Automotive, Chemical, Consumer Products & Retail, Financial, Food & Beverage, Healthcare, Insurance, Manufacturing, Non Profit Organisations, Oil & Gas, Real Estate, Services Firms, Technology and Transportation, among others.

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1.0 Introduction

1.1 Appointment

Delta-Simons Environmental Consultants Limited (“Delta-Simons”) was instructed by Manchester City F.C. City in the Community Foundation (the “Client”) to undertake the preparation of a Remediation and Verification Strategy (RVS) for land at Ladybarn Park, Burnage Lane, Withington, Manchester, M20 4XA (the “Site”).

1.2 Context & Purpose

The purpose of this document is to provide a formal statement for the likely scope of remediation requirements in relation to the identified contaminants, to facilitate the proposed development of a new Multi-Use Games Area (MUGA) and associated footpaths at the Site, and to support the planning application.

For information on the Site setting, and full details of intrusive investigation undertaken at the Site, this Remediation Strategy and Verification Strategy should be read in conjunction with Delta-Simons’ previous reports, as follows:

- ▲ Delta-Simons (2019), Preliminary Risk Assessment – Ladybarn Park Road, Manchester, dated 22/11/2019, ref., 18-1673.04; and
- ▲ Delta-Simons (2019), Geo-Environmental Assessment – Ladybarn Park Road, Manchester, dated 05/12/2019, ref., 18-1673.04.

1.3 Limitations

This document sets out the measures that will be carried out during the construction to mitigate potentially significant risks as identified by the Site investigation in the context of the proposed end-use of the Site. It does not provide a verification or completion statement for the works. The standard limitations associated with this assessment are presented in Appendix A. In addition, there are the following specific limitations that apply to this assessment:

- ▲ This document is a strategy document and more detailed documentation in terms of a Contractor’s Remediation Method Statement may need to be prepared.

2.0 Proposed Development and Planning Requirements

2.1 Proposed Development

This report refers only to an area of approximately 0.3 Ha, on which the construction of a new Multi-Use Games Area (MUGA) and associated footpaths is proposed. The proposed development area is located within the wider Ladybarn Park. A drawing provided by the Client (included as Drawing 1) indicates the area and plans for the proposed MUGA development.

2.2 Planning Requirements

It is understood that this report will be provided to Manchester City Council as part of the proposed MUGA planning application, and that no planning applications have currently been submitted.

It is anticipated that any potential planning permissions will contain contaminated land conditions, and as such, Delta-Simons has prepared this report and previous reports (detailed in Section 1.2) to assist the discharge of these anticipated contaminated land planning conditions. The implementation of the works outlined within this Remediation and Verification Strategy are expected to be completed and reported within a separate (Verification) stage of works.

3.0 Summary of Land Contamination Assessments

3.1 Background

For information on the Site setting, and full details of the intrusive investigation undertaken at the Site, this Report should be read in conjunction with the reports detailed in Section 1.2.

The Site investigation Exploratory Hole Location Plan is included in Figure 2 for reference.

3.2 Site Information

Table 1: Site Information

Co-ordinates	Centred approximately at National Grid Reference 385990, 392860		Elevation	41.0 m AOD
			Area	0.3 Ha
Site Location	The Site is located off the Kingsway (A34) within Withington, 130 m south west of Mauldeth Road train station and approximately 5 km south of Manchester. A Site location plan is provided as Figure 1.			
General Site Description	The wider Site is currently in use as recreational grounds, with two small buildings present in the north eastern corner and north western corner of the Site, anticipated to be in use as storage and welfare facilities within the park. An electricity substation is present in the west of the wider Site. A wooded area of large trees and bushes with walkways throughout occupies the south. The subject Site for this report comprises an area in the north of the wider public park, and includes areas of well-maintained grass, limited areas of asphalt hardstanding in use as sports pitches, play areas and footpaths.			
Current Surrounding Area	North	Primary school, vehicle repair shops and residential properties.		
	East	Mauldeth Road Train Station and associated northern bound train line, petrol filling station, commercial/light industrial use units and residential properties.		
	South	Primary school and residential properties.		
	West	Construction of residential properties with residential properties beyond.		

3.3 Historical Use of the Site & Surrounding Area

A detailed appraisal of the Site history is presented in the previous reports. The history of the Site and its surroundings can be summarised as follows:

- ▲ From the earliest reviewed map edition, dated 1848, the Site appears to have been in agricultural use, with two small buildings present in the north east of the Site by 1894;
- ▲ By 1907, a proportion of the north of the Site is listed as recreational grounds, where a pavilion is present. There are further small buildings in the north east;
- ▲ By 1922, nine buildings are present in the north east, with one small structure/building in the centre of the Site and band stand in the northern corner in the centre of the recreation ground;
- ▲ In the 1934 map edition, the Site is listed as Ladybarn Park (recreation ground), with tennis courts, two bowling greens, a putting green, playground and wider grassed and wooded areas. The former buildings in the north east, centre and north of the Site are no longer present. Four small buildings are now shown on Site, understood to be small shelters, a pavilion, dressing rooms and toilets. Additionally, a structure, later labelled as an electricity substation is now apparent on Site in the north west corner;

- ▲ By 1959, a further building is present in the north eastern corner, and allotment gardens are listed in the south eastern corner of the Site; and
- ▲ By the 1979 to 1989 mapping, a further small shelter is present in the north of the Site, and the south eastern corner of the Site is no longer listed as allotment gardens. Additionally, the building present in the north west of the Site becomes labelled as an electrical sub-station within the 1979 mapping.

Pertinent features within 500 m of the Site include:

- ▲ Railway in construction shown immediately adjacent to the east of the Site within the 1908 mapping; and
- ▲ A pond adjacent to the east of the Site present in the 1894 mapping and presumably infilled circa the 1908 map edition.

3.3.1 Geology, Hydrology and Hydrogeology

The Site lies within a predominantly residential area, with some surrounding commercial and light industrial land uses. The superficial deposits are indicated to comprise Devensian Till (Secondary Undifferentiated Aquifer), underlain by bedrock of the Chester Formation (Principal Aquifer). The nearest surface water feature is a drain located approximately 300 m to the north of the Site. The overall environmental sensitivity of the Site's setting is considered to be low.

During the recent Delta-Simons ground investigation, the encountered ground conditions comprised Topsoil to 0.20 m bgl, underlain by Made Ground to a maximum proven thickness of 0.6 m bgl. The Made Ground predominantly comprised sand, gravelly sand and sandy gravelly clay. The gravel generally comprised brick, asphalt, clinker, ceramic, glass and natural lithologies.

Groundwater was encountered in three hand pits, between 0.55 m and 0.60 m bgl, within the Made Ground.

3.3.2 Environmental Findings & Recommendations

Following the recent Delta-Simons ground investigation, laboratory results identified the presence of asbestos in two of the 16 soil samples analysed, within the Made Ground. The asbestos quantification determined that the total percentage of asbestos detected within HP1 (0.25-0.35 m bgl) was <0.001 (below limit of detection) and within HP7 (0.25- 0.40 m bgl) was 0.002%. No further contamination was identified in any of the other samples submitted for analysis.

To ensure that the source-pathway-receptor linkage is broken, i.e. to prevent direct contact between the future Site users and the asbestos-impacted material, it is recommended that either the material is removed from Site or that a clean cover layer system is implemented. It is understood that the Client is intending to retain the Made Ground on Site (currently present beneath the bowling green and grassed areas) within proposed raised landscape features and beneath a clean cover layer. The requirements for the clean cover layer are detailed in Section 6.

3.2 Earthworks and Material Management

The proposed redevelopment will require an earthwork programme to reuse the Site-won Made Ground within the raised landscape features. The earthworks will therefore need to be undertaken under a Materials Management Plan, in accordance with the CL:AIRE Code of Practice, to facilitate the reuse of these materials.

4.0 Addressing Previously Unidentified 'Hotspots' of Contamination

4.1 Background

As with any 'Brownfield' development, there is a possibility that unknown localised areas of soil contamination (a 'Hotspot') may be encountered during development works. As such, a 'hotspot' protocol is required during the construction phase of the development. The purpose of the protocol is to provide a ready reference should such an area of contamination be identified by visual or olfactory means during the works.

4.2 Protocol

Should an area of contamination be identified by visual or olfactory means during development works, the following procedure shall be followed:

- ▲ Immediately stop all works in the area where contamination is suspected;
- ▲ Immediately inform the Site Agent who should then contact the Environmental Consultant;
- ▲ The Environmental Consultant shall provide a verbal response outlining immediate actions with regard to Site Health and Safety and to limit the potential for contaminants to migrate;
- ▲ The Environmental Consultant shall judge each occurrence on merit and should it be deemed necessary the Environmental Consultant shall attend Site to oversee the removal of the 'hotspot' and collect validation samples;
- ▲ Any excavated material should be isolated from all other material at the Site, on plastic sheeting and covered with plastic sheeting until the material can be tested for contamination and an appropriate disposal route can be identified;
- ▲ Any 'hotspot' stockpiles and excavations should be fenced off, have appropriate signage and their locations recorded on a Site drawing;
- ▲ Should any excavated material be required to be disposed of at an off-Site location, the material shall be isolated from all other material at the Site prior to disposal at a suitably licensed facility. All documentation associated with the movement and disposal of any such material shall be supplied to the Environmental Consultant shall, including waste transfer documentation;
- ▲ Subject to appropriate Site Health & Safety controls (typically comprising fencing off the excavation) the excavation will remain open until the validation has been completed. Alternatively, for Site Health & Safety reasons, it may be necessary to backfill the excavation with Site derived material. In this case, the location of the excavation will be accurately recorded and the excavation reopened if required, based on the validation results; and
- ▲ The Regulatory Authorities shall be informed by the Environmental Consultant shall of any remedial activities required and associated validation testing results. Representatives of these organisations may also wish to visit the Site.

Implementation of appropriate measures to deal with such finds remain the Contractor's responsibility.

A copy of the protocol is also presented in Appendix B to be extracted and used on-Site.

5.0 Materials Management

5.1 Materials Management for Earthworks

The proposed redevelopment will require an earthworks programme to reuse Site-won Made Ground, within which asbestos fibres have been identified, within a raised landscape feature and beneath a clean cover system. Given that the clean cover system will break the pollutant-pathway-receptor linkage, the presence of asbestos within the Made Ground is not considered to preclude it from reuse. No further sampling and analysis of the Made Ground proposed for placement beneath the clean cover system on Site is considered to be required.

The earthworks will need to be undertaken under a Materials Management Plan (MMP) in accordance with the CL:AIRE Code of Practice to facilitate the reuse of these materials. The Contractor shall be responsible for the preparation of an MMP and obtaining appropriate sign off from a Qualified Person, prior to the commencement of earthworks. It should be noted that if material movement is undertaken without an MMP in place with acceptance from CL:AIRE, or other appropriate licence or exemption, then the works could be perceived by the regulatory body as an unauthorised landfill activity.

5.2 Asbestos in Soils - Earthworks

The groundworks Contractor should be made aware of the possibility of encountering Asbestos Containing Materials (ACM) within the Made Ground across the Site and an appropriate protocol to mitigate exposure of the workforce and general public should be in place with due respect to his duties under the Control of Asbestos Regulations 2012 and with reference to the Joint Industry Working Group Asbestos in Soil and Construction & Demolition (C&D) Materials guidance (published by CL:AIRE) titled "Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition materials: Industry Guidance" (shortened name CAR-SOILTM). The document was prepared with the support of the Health and Safety Executive and presents the definitive explanation of how the legal requirements of the CAR 2012 have been interpreted to apply to work with asbestos contaminated soil and construction & demolition materials. The guidance is underpinned by the fundamental requirements expressed in the Regulations, in relation to the protection of employees from risks related to exposure to asbestos but is set within a carefully considered framework designed specifically for soil and C&D materials contaminated with asbestos.

The Contractor will need to prepare a risk assessment which identifies a safe system of work to handle the asbestos containing soils which is likely to include asbestos awareness training, a protocol for unexpected finds (should gross asbestos material be identified) as well as safe working procedures such as damping down of excavations and stockpiles in line with general dust generation mitigation. The Contractor should determine the need for appropriate levels of PPE and/or RPE and any associated air monitoring as required.

The Contractor shall be responsible for providing appropriate documentation for inclusion within the Verification Report including details of any significant asbestos material encountered.

6.0 Certified Clean Topsoil/Subsoil Layer

6.1 Topsoil/Subsoil - Clean Cover

A clean cover layer will be required to cover all reused Made Ground material placed within the proposed landscaped bund.

Exposure of future Site users to asbestos on Site shall be prevented through the placement of a minimum 300 mm of imported topsoil (150 mm) and subsoil (150 mm) in soft landscaped areas of public open space.

The topsoil / subsoil should be placed on to an appropriate geotextile membrane to act as a separator layer between the clean imported materials and the underlying Made Ground.

In addition, the topsoil / subsoil depth and presence of the geotextile membrane shall be validated on a 20 m grid basis following installation of the material to the appropriate finished levels.

Photographic evidence of this (measured against a levelling staff) shall be obtained for incorporation within the Verification Report.

The methodology for procuring, placing and validating the topsoil cover system should be broadly in line with the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG) guidance for Verification Requirements for Cover Systems, and should comply with contamination requirements to ensure suitability of use.

6.2 Imported Materials and Cover System Verification

It is considered that there will be a requirement for topsoil and subsoil to be imported onto the Site. These materials shall be sourced by the Contractor and documentation submitted on its origin to the Environmental Consultant to confirm acceptability.

The Contractor will need to provide the following information for all topsoil and subsoil prior to importing and placing materials on-Site (to be incorporated within the Verification Report):

- ▲ Details of the locations from which material have been sourced;
- ▲ Records on quantities of materials to be imported to the Site and proposed programme of works; and
- ▲ Chemical data for the soil material.

The soil materials considered for importation shall be sampled while stockpiled off-Site at their source or manufacture location. The Contractor or supplier shall carry out verification tests on the soil materials and await written approval from the Environmental Consultant prior to importing the soil to Site. If chemical data for the soil cannot be provided, then the Environmental Consultant shall arrange for testing to be undertaken.

Samples shall be analysed for a minimum suite of:

- ▲ Asbestos screening;
- ▲ pH;
- ▲ Heavy metals;
- ▲ Total petroleum hydrocarbons; and
- ▲ Speciated Polyaromatic Hydrocarbons (16 PAH).

The samples shall be truly representative of the soil to be offered. The number of samples taken will be determined by the provenance of the soils, in accordance with the aforementioned YALPAG guidance. For greenfield or manufactured soils, at least one representative sample shall be taken for every 250 m³ of imported soil to be used, with a minimum of 3 samples of each soil type tested from each source/supplier.

The chemical criteria against which any imported soils shall be assessed is based on relevant Generic Assessment Criteria applicable at the time of the works for a public open space end use. Alternatively, Delta-Simons Human Health Generic Assessment Criteria as presented in Appendix C shall be used.

7.0 Verification Reporting Requirements

7.1 General

Following completion of the works detailed in Sections 4.0 to 6.0, an Environmental Consultant shall prepare a Verification Report on the works for submission to the Local Authority to satisfy the anticipated contaminated land planning conditions.

The Verification Report will comprise:

- ▲ Details of waste disposal of any material from the Site including waste transfer documentation and details of the receiving treatment/landfill facility;
- ▲ Confirmation of the chemical results, and transfer notes detailing the place of origin of any imported topsoil/subsoil/ fill; and
- ▲ A record of any 'hotspots' found during construction and groundworks and the associated actions taken to remove them. This will include details of the chemical analysis of samples taken from these areas, verification that the entire hotspot has been removed as necessary, appropriate classification of the waste, waste transfer documentation, and details of the receiving disposal facility.

7.2 Re-Use of Soils Under CL:AIRE Protocol

Should re-use of Site-won soils be carried out under the CL:AIRE DoWCoP, a final Verification Report shall be required to provide an audit trail as to where all such materials have been placed in accordance with the requirements of the CL:AIRE DoWCoP.

The Verification Report shall include, but should not be limited to, the following:

- ▲ Site plans & description of proposed earthworks;
- ▲ References to design statements, site investigation data, risk assessments and the Materials Management Plan (MMP) document;
- ▲ Details of the 'Suitable for Use' criteria for all re-used soils;
- ▲ Materials transfer documentation including any Duty of Care documentation (where applicable);
- ▲ Records of earthworks undertaken;
- ▲ Copies of signed declaration by Qualified Person(s); and
- ▲ Any deviations in movements and materials outlined in the MMP document.

Figure 1 – Site Location Plan

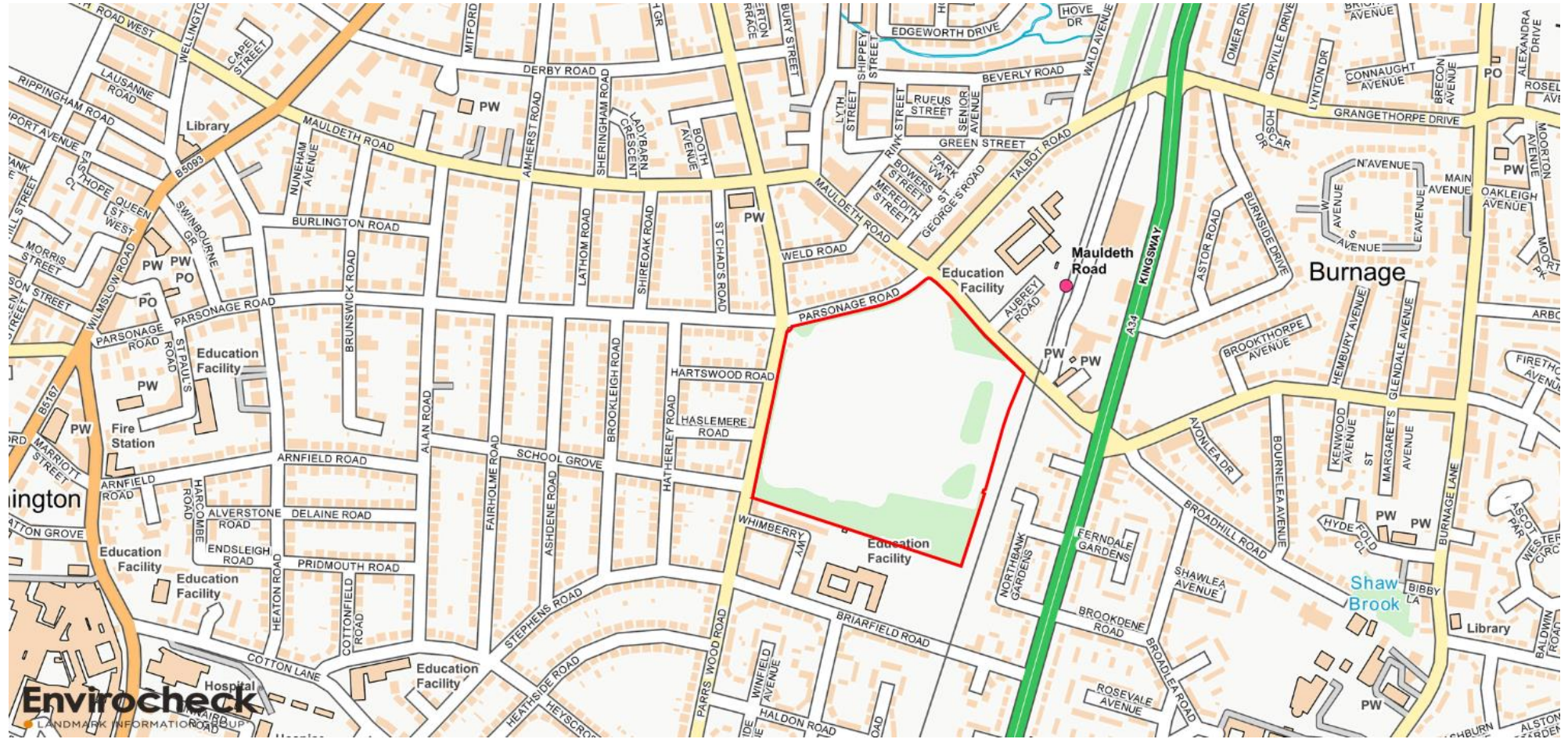
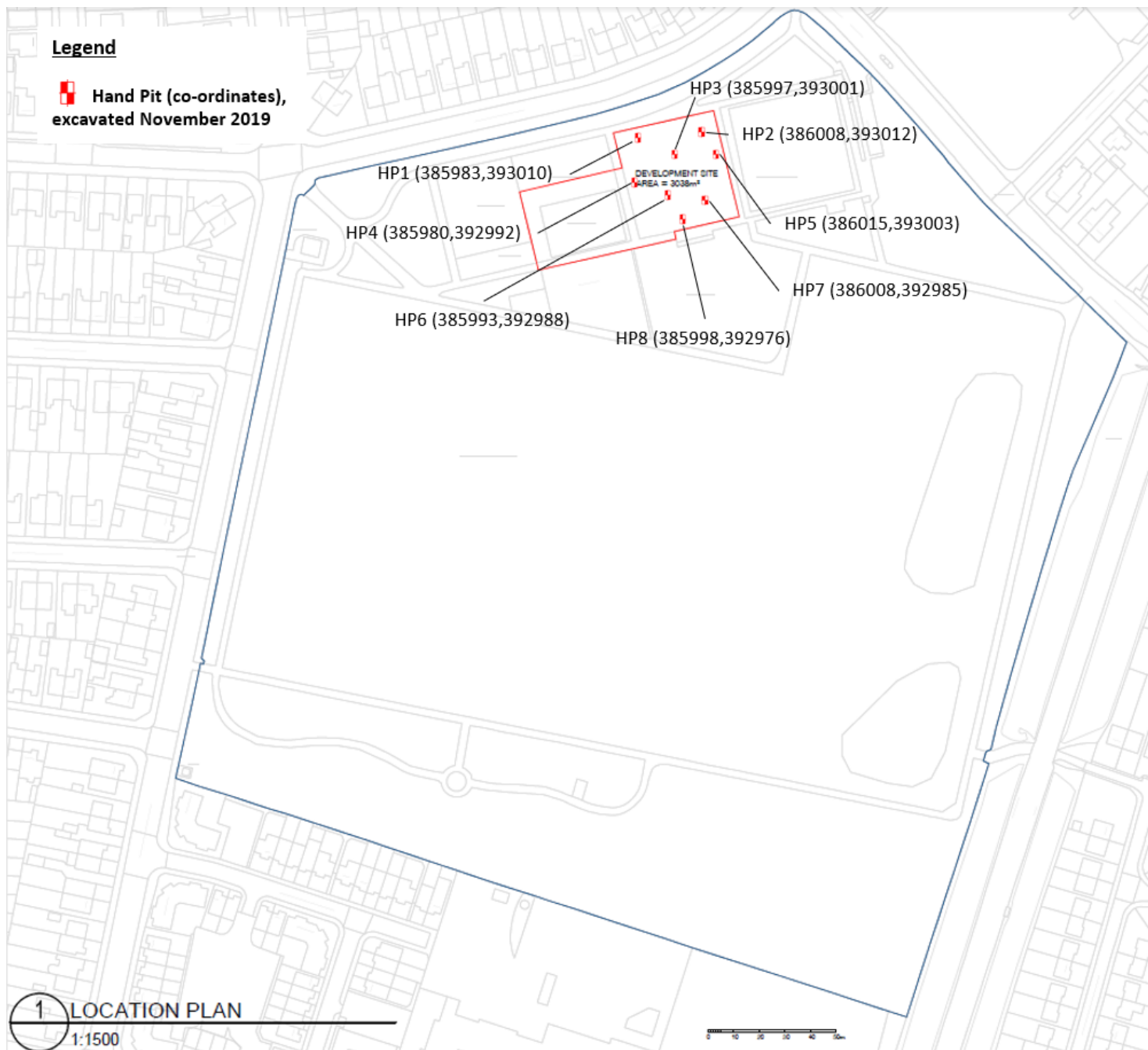
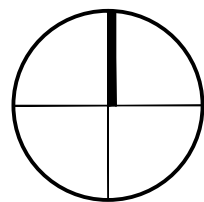


Figure 2 – Exploratory Hole Location Plan



Drawing 1 – Proposed Development Plan - 13034 DB3 B02 XX DR A 90103 P3

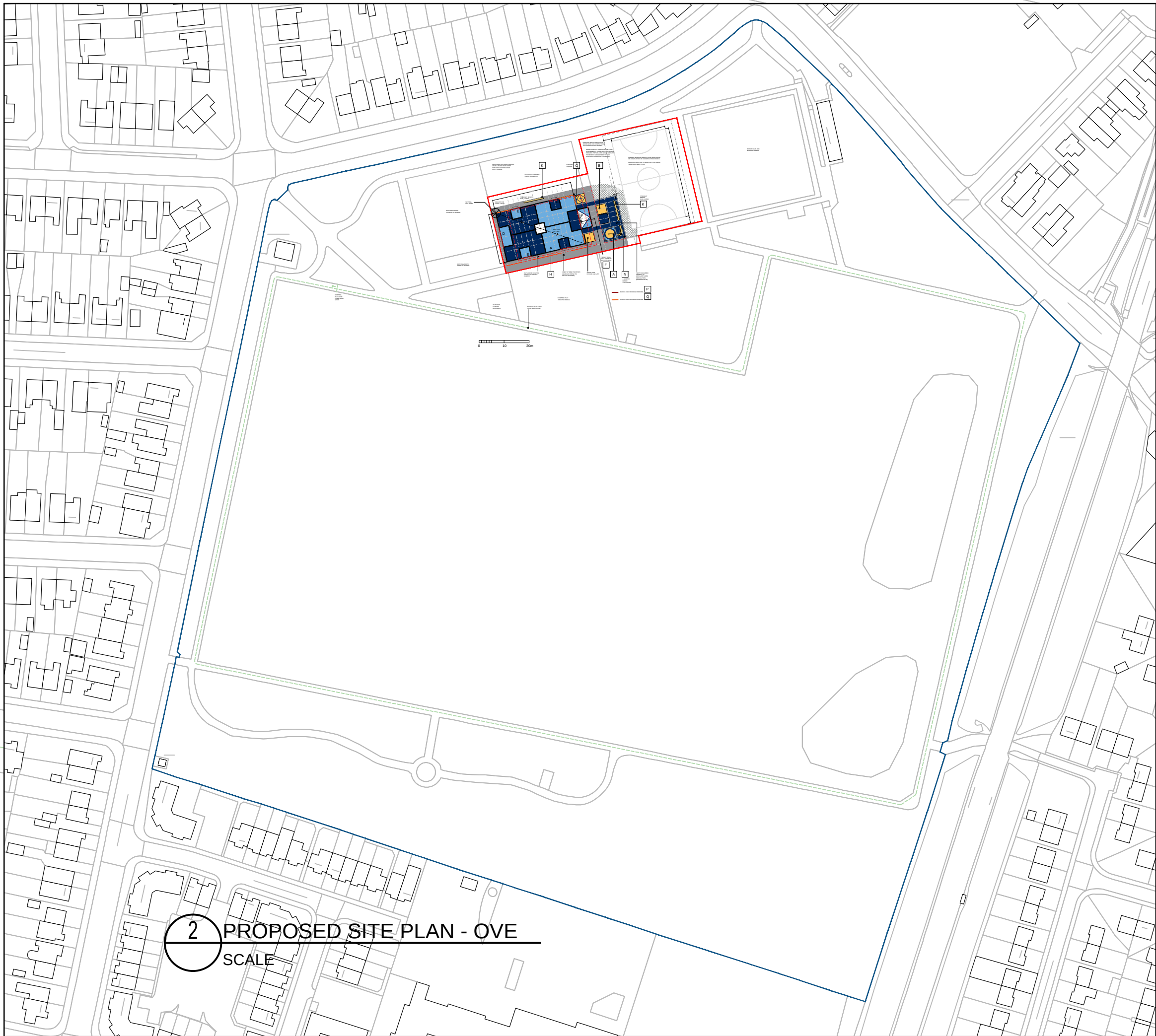


EQUIPMENT KEY		(DRAWING REFERENCE)
A.	4m PANNA	(13034-DB3-BOX-XX-DR-A-90201)
B.	FOOTBALL TENNIS	(13034-DB3-BOX-XX-DR-A-90202)
C.	PASSING SQUARE	(13034-DB3-BOX-XX-DR-A-90203)
D.	STD LARGE GOAL	(13034-DB3-BOX-XX-DR-A-90204)
E.	STD CROSS-PLAY GOAL	(13034-DB3-BOX-XX-DR-A-90205)
F.	LARGE GOAL + 1v1	(13034-DB3-BOX-XX-DR-A-90206)
G.	MAIN PITCH 3/0 (B01)	(13034-DB3-BOX-XX-DR-A-90207)
H.	MAIN PITCH 3/0 (B02)	(13034-DB3-BOX-XX-DR-A-90208)
I.	LARGE GOAL + 1v1 + BASKETBALL	(13034-DB3-BOX-XX-DR-A-90214)
J.	RUN-LOOP MARKERS	(13034-DB3-BOX-XX-DR-A-90209)
K.	LINEAR BENCH	(13034-DB3-BOX-XX-DR-A-90210)
L.	CURVED BENCH	(13034-DB3-BOX-XX-DR-A-90211)
M.	1v1 + BASKETBALL	(13034-DB3-BOX-XX-DR-A-90212)
N.	J-SHAPED BENCH	(13034-DB3-BOX-XX-DR-A-90213)
O.	TYPICAL-DETAILS SHEET	(13034-DB3-BOX-XX-DR-A-90217)
P.	FULL HEIGHT FENCE DETAIL	(13034-DB3-BOX-XX-DR-A-90215)
Q.	MINI FENCE DETAIL	(13034-DB3-BOX-XX-DR-A-90216)

NOTE
STRIKE-THROUGH REPRESENTS A DRAWING THAT IS NOT BEING INCLUDED AS PART OF THE INITIAL TENDER PACKAGE

SPECIFICATION
FOR PERFORMANCE SPECIFICATION PLEASE REFER TO DOCUMENT:

13034-DB3-BOX-XX-SP-A-00002



1 PROPOSED SITE PLAN
1:200

2 PROPOSED SITE PLAN - OVE
SCALE

P3	10/10/19	ISSUED FOR TENDER	TL	TL
P2	27/09/19	AMENDED LAYOUT TO SUIT CLIENT COMMENTS	TL	TL
P1	20/09/19	AMENDED PROPOSED SITE LAYOUT IN LINE WITH RECENT COMMUNICATIONS	TL	TL
REV	DATE	DESCRIPTION	DR	CH

TENDER

darntonB3
ARCHITECTURE
LEEDS

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CLIENT CITY IN THE COMMUNITY	
PROJECT PLAY ZONE PILOTS LADYBARN PARK	
TITLE PROPOSED SITE PLAN	
CREATION DATE 20/09/19	SCALE @ A1 1:200
DRN TL	CHK TL
STATUS S4	REVISION P3
SHEET NO. 13034-DB3-B02-XX-DR-A-90103	
PROJECT NUMBER 13034-DB3-B02-XX-DR-A-90103	
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Appendix A – Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Due to the evolving regulatory climate specific to Per Fluoro Alkyl Substances (PFAS), the scope of works is not intended to be conclusive as it relates to the identification of any PFAS related issues. While Delta-Simons may advise its Client if Delta-Simons becomes aware of the use of PFAS at the subject property, Delta-Simons makes no representation nor accepts any liability that any or all PFAS issues have been identified and/or revealed to its client through its scope of work, as presented herein.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – ‘Hotspot’ Protocol

‘Hotspot’ Protocol

As with any Brownfield development, there is a possibility that an unknown area of soil contamination may be encountered during excavation works. Should an area of contamination be identified by visual or olfactory means the following procedure will be followed:

- ▲ Immediately stop all works in the area where contamination is suspected;
- ▲ Immediately inform the Site Agent who should then contact the Environmental Consultant;
- ▲ The Environmental Consultant will provide a verbal response outlining immediate actions with regard to Site Health and Safety and to limit the potential for contaminants to migrate;
- ▲ The Environmental Consultant will judge each occurrence on merit and should it be deemed necessary. The Environmental Consultant will attend Site to oversee the removal of the ‘hotspot’ and collect validation samples;
- ▲ Any excavated material should be isolated from all other material at the Site, on plastic sheeting and covered with plastic sheeting until the material can be tested for contamination and an appropriate disposal route can be identified;
- ▲ Any ‘hotspot’ stockpiles and excavations should be fenced off, have appropriate signage and their locations recorded on a Site drawing;
- ▲ Should any excavated material be required to be disposed of at an off-Site location, the material will be isolated from all other material at the Site prior to disposal at a suitably licensed facility. All documentation associated with the movement and disposal of any such material will be supplied to The Environmental Consultant, including waste transfer documentation;
- ▲ Subject to appropriate Site Health & Safety controls (typically comprising fencing off the excavation) the excavation will remain open until the validation has been completed. Alternatively, for Site Health & Safety reasons, it may be necessary to backfill the excavation with Site derived material. In this case, the location of the excavation will be accurately recorded and the excavation reopened if required, based on the validation results; and
- ▲ The Regulatory Authorities shall be informed by the Environmental Consultant of any remedial activities required and associated validation testing results. Representatives of these organisations may also wish to visit the Site.

Appendix C – Imported Soils Assessment Criteria

Imported Soils Assessment Criteria

The following Generic Assessment Criteria shall apply as absolute limits for all soils imported for reuse as clean cover **regardless of the end use of the Site**.

The criteria selected are based on Residential with Plant Uptake land use scenario on the basis that imported clean cover soils should be 'clean' and not result in an increase in contaminant loading. It may be possible, in some circumstances, to agree alternative, higher criteria with the appropriate regulatory body, however, this is outside of the scope of this assessment.

Soils shall be tested for a suite of contaminants appropriate to the source land use but as a minimum for the contaminants stated below unless otherwise stated within this strategy. The below criteria assume a minimum of 1% Soil Organic Matter.

In addition to meeting the criteria below, imported materials shall be free from deleterious inclusions and shall be free from invasive weeds (Japanese Knotweed).

Any testing for asbestos must be from a UKAS accredited laboratory and the only acceptable criteria is 'Not Detected'. Any detected asbestos, even is reports as <0.001% is not acceptable. Asbestos containing soils must not be used for clean cover materials.

Criteria for Imported Materials			
Compound	GAC	Source	Comment
Arsenic	37	C4SL	
Cadmium	11	LQM	
Chromium (III)	910	LQM	
Chromium (VI)	6	LQM	
Copper	2400	LQM	
Lead	200	C4SL	
Mercury (inorganic)	40	LQM	
Nickel	130	LQM	
Selenium	250	LQM	
Zinc	3700	LQM	
Acenaphthene	210	LQM	
Acenaphthylene	170	LQM	
Anthracene	2400	LQM	
Benzo[a]anthracene	7.2	LQM	
Benzo[a]pyrene	2.2	LQM	
Benzo[b]fluoranthene	2.6	LQM	
Benzo[ghi]perylene	320	LQM	
Benzo[k]fluoranthene	77	LQM	
Chrysene	15	LQM	
Dibenz[ah]anthracene	0.24	LQM	
Fluoranthene	280	LQM	
Fluorene	170	LQM	
Indeno[123-cd]pyrene	27	LQM	
Naphthalene	2.3	LQM	
Phenanthrene	95	LQM	
Pyrene	620	LQM	
Benzene	0.2	C4SL	
Toluene	130	LQM	
Ethylbenzene	47	LQM	

Criteria for Imported Materials			
Compound	GAC	Source	Comment
Xylene – m/p	56	LQM	
Xylene - o	60	LQM	
Total Petroleum Hydrocarbons (TPH)	500		Professional judgement.
Aliphatic EC5-EC6	42	LQM	
Aliphatic >EC6-EC8	100	LQM	
Aliphatic >EC8-EC10	27	LQM	
Aliphatic >EC10-EC12	130	LQM	
Aliphatic >EC12-EC16	500	LQM	Capped at 500 - professional judgement
Aromatic >EC5-EC7	70	LQM	
Aromatic >EC7-EC8	130	LQM	
Aromatic >EC8-EC10	34	LQM	
Aromatic >EC10-EC12	74	LQM	
Aromatic >EC12-EC16	140	LQM	
Aromatic >EC16-EC21	260	LQM	
Aromatic >EC21-EC35	500	LQM	Capped at 500 - professional judgement
Asbestos	Not Detected		

The respective sources are:

- ▲ Soil Guidance Values (**SGV**) published by the EA;
- ▲ Category 4 Screening Levels (**C4SLs**) published by DEFRA;
- ▲ The 2014 Land Quality Management (**LQM**) / Chartered Institute of Environmental Health (CIEH) Suitable for Use Levels for Human Health Risk Assessment (S4ULs);
- ▲ The guidance values produced by the Environmental Industries Commission (**EIC**), the Association of Geotechnical and Geoenvironmental Specialists (AGS) and Contaminated Land: Application in Real Environments (CL:AIRE) in December 2009; and
- ▲ In house Generic Screening Values (**DS-GACs**) derived by Delta-Simons.