



Contamination Investigation Report

at

Littlefold Family Resource Centre, Linnet Close, Waterloo
Hampshire PO8 9UY

for

PDP Architecture Limited

Reference: 21511/CIRRev1.0

August 2024

Control Document

Project

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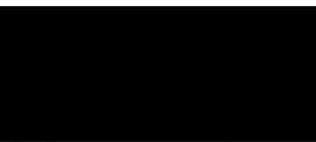
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This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.



Commission

This document comprises the Contamination Investigation Report (CIR) and incorporates the results, discussion, and conclusions to this intrusive works. General site data is recorded below:

Commission Record	
Client	PDP Architecture Limited
Site Name	Littlefold Family Resource Centre, Linnet Close, Waterlooville, Hampshire PO8 9UY
Grid Reference	SU 68148 11812
Soils Limited Quotation Ref	Q28943, dated 29 th May 2024
Clients Purchase Order	Q28943, dated 29 th May 2024

The record of revision to this document is presented below:

Record Of Revisions		
Revision	Date	Reason
1.0	August 2024	Initial delivery to Client

Note(s): The latest revised document supersedes all previous revisions of the CIR produced by Soils Limited.

Documents associated with this development that must be referred to are given below.

Record Of Associated Documents			
Reference	Type	Date	Creator
21511/PIR Rev 1.0	Preliminary Investigation Report	July 2024	Soils Limited
21511_1	Change Request Form		
18177-PD001	Existing Site & Location Plan	June 2024	PDP Architecture LLP
18177-PD002	Existing Site & Elevations		
18177-PD011	Proposed Site & Location Plan		
18177-PD012	Proposed Plans & Elevations		

Limitations and Disclaimers

The report was prepared solely for the brief described in Section 1.1 of this report.

The contents, recommendations and advice given in the report are subject to the Terms and Conditions given in Soils Limited's Quotation and subsequent Change Request 21511_1.

Soils Limited disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report has been prepared by Soils Limited, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Conditions of Contract of Business and taking into account the resources devoted to us by agreement with the Client.

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The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the Client in accordance with their brief. As such these do not necessarily address all aspects of ground behaviour at the site.

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Unless the site investigation works have been designed and specified in accordance with EC7, this report is a Geotechnical Investigation Report and is not necessarily a Ground Investigation Report as defined by EC7 (Eurocode 7 Part 1, §3.4, Part 2, §6.1) or a Geotechnical Design Report (Eurocode 7 Part 1, §2.8) as defined by Eurocode 7 and as such may not characterise the ground conditions and additional works may be required to comply with the requirements of EC7.

Within the report reference to ground level relates to the site level at the time of the investigation, unless otherwise stated.

Exploratory hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sample borehole implies the specific technique used to produce an exploratory hole.

The chemical analyses were undertaken by Derwentside Environmental Testing Services (DETS) in accordance with their UKAS and MCERTS accredited test methods or their documented in-house testing procedures. This investigation did not comprise an environmental audit of the site or its environs.

Ownership of land brings with it onerous legal liabilities in respect of harm to the environment. "Contaminated Land" is defined in Section 57 of the Environment Act 1995 (as updated 2021) as:

"Land which is in such a condition by reason of substances in, on or under the land that significant harm is being caused or that there is a significant possibility of such harm being caused or that pollution of controlled waters is being or is likely to be caused".

It must be noted that a detailed survey of the possible presence or absence of invasive species, such as Japanese Knotweed, is outside of the scope of investigation.

Deleterious materials may be present in any Made Ground that pose a potential risk to site workers, end users and adjacent vulnerable receptors. These could include a range of contaminants, including asbestos, especially if the material includes large fractions of demolition derived materials.

The investigation, analysis or recommendations in respect of contamination are made solely in respect of the prevention of harm to vulnerable receptors, using where possible best practice at the date of preparation of the report. The investigation and report do not address, define or make recommendations in respect of environmental liabilities. A separate environmental audit and liaison with statutory authorities is required to address these issues.

All environmental works are undertaken in the context of, and in compliance with, BS10175+A2 2017 and LCRM (EA 2021) and all other pertinent planning, standards, documentation and guidance appropriate to the site at the time of production which may include, but are not necessarily limited to, documents provided by BS/CEN/ISO, NHBC, AGS, CIEH, CIRIA, SoBRA and CLAIRE.

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Section 1 Introduction

1.1 Objective of Investigation

The Client commissioned Soils Limited to undertake an intrusive ground investigation and to prepare a Contamination Investigation Report to supply the Client and their designers with information regarding ground conditions, to assist in preparing a scheme for the development that was appropriate to the settings present on the site.

The investigation was to be made by means of contamination laboratory testing undertaken on soil samples taken from the exploratory holes.

Soil samples were taken for chemical laboratory testing to enable recommendations for the safe redevelopment of the site and the protection of site workers, end-users and the public from any contamination identified as dictated by the Conceptual Site Model (CSM) in the Preliminary Investigation Report undertaken for the site by Soils Limited (Report ref: 21511/PIR, July 2024), presented in Appendix C.1.

An assessment of the geotechnical ground conditions did not form part of the brief for the present investigation.

1.2 Site Description

The site comprised an irregularly shaped plot approximately 60m in length (N-S) and 35m at its widest (E-W). At the time of the site investigation works (July 2024), a two-storey, 'T'-shaped commercial building occupied the central site area, with a primary porch-covered entrance accessed by footpaths from the southeast corner of the site and from the vehicle parking area to the north of the building. The structure was immediately bound on all sides by bound macadam and concrete paving hardstanding areas, with grass-covered soft landscaping extending beyond to the boundaries in the south and east.

The site was bounded on all sides by metal fencing approximately 2m in height, with a vehicle access gate to the northwest, and pedestrian access gates to the west and southeast. Beyond the fencing to the west was vehicle parking associated with the wider residential land use. The southern, eastern and northern site boundaries were noted to be heavily vegetated with shrubs and bushes. Mature non-coniferous trees additionally lined the eastern and northern site boundaries, beyond which was a public access footpath. The site was noted to be bound on all sides by residential buildings.

Overall, from Google Earth™ data, the site topography was noted to dip approximately 2° towards the south, with the broader area also shown to dip to the south at approximately 3°.

The site location plan is given in Figure 1. An aerial photograph of the site and its close environs has been included in Figure 2.

1.3 Proposed Development

The proposed development would comprise the renovation of the existing structure on site, transitioning from commercial to residential land use. The existing structure would remain in place, with the interior being divided into 10No. residential units, totalling 4No. one bedroom and 6No. two bedroom apartments. The existing main access point and associated porch would be removed, with access proposed to each of the ground floor apartments from the centre of the building, and the first-floor apartments by way of the existing stairwell.

Parking for 14No. vehicles would be present in an area of hardstanding to the north of the site at the location of existing bound macadam hardstanding. An additional 20No. cycle spaces, including 16No. secure spaces, would be located on the northern boundary of the building. It is understood that no further structures would be added to the site as part of the proposed renovation.

It is understood that existing areas of soft landscaping will remain to the south and east of the structure.

In compiling this report reliance was placed on drawing number 18177-SK101A, Dated June 2024, prepared by PDP Architecture LLP. The recommendations provided within this report are made exclusively in relation to the scheme outlined above and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

Development plans provided by the Client are presented in Appendix E.

1.4 Anticipated Geology

The 1:50,000 BGS map showed the site to be located directly upon superficial deposits of Head Deposits overlying units of the Lambeth Group bedrock.

1.4.1 Head (Superficial)

Head is poorly sorted and poorly stratified, angular rock debris and/or clayey hill wash and soil creep, mantling a hillslope and deposited by solifluction and gelifluction processes. Solifluction is the slow viscous downslope flow of waterlogged soil and other unsorted and unsaturated superficial deposits. The term gelifluction is restricted to the slow flow of fluidized superficial deposits during the thawing of seasonally frozen ground. The flow is initiated by meltwater from thawing ice lenses. Polymict deposit comprises gravel, sand and clay depending on upslope source and distance from source. Locally with lenses of silt, clay or peat and organic material.

1.4.2 Lambeth Group (Bedrock)

Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignite and occasional sandstone and conglomerate. The Lambeth Group was deposited in fluvial, estuarine, lagoonal or proximal marine environments.

It directly overlies the Chalk or Thanet Sand Formation and is succeeded by the Harwich and London Clay Formations and is generally less than 50m thick.

The deposits of fine-grained sand, flint gravel beds, mottled clay, shell beds and altered beds form a complex interdigitating sequence, which is divided into three formations and several informal lithological units.

Section 2 Site Works

2.1 Proposed Project Works

The proposed intrusive investigation was designed to provide information on the ground conditions and to assist the safe development of the site. The intended investigation, as outlined within the Soils Limited quotation (28943, dated 29th May 2024), was to comprise the following items:

- 4-6No (up to) 3m Windowless sampler boreholes
- 3No. gas monitoring wells
- Contamination testing

2.1.1 Actual Project Works

The actual project works were undertaken on 2nd July 2024, with subsequent sample logging, laboratory testing, monitoring, and reporting. The actual works comprised:

- 6No 3m Windowless sampler boreholes (WS01 to WS06)
- 3No. gas monitoring wells (WS01, WS03 and WS05)
- Contamination testing

An additional hand-dug pit (HP01) was excavated on 30th July 2024 in order to gain further samples for laboratory testing.

Three windowless sampler boreholes (WS01, WS03 and WS05) were backfilled with gravel and bentonite following the installation of monitoring wells, the remaining three boreholes (WS02, WS04 and WS06) were backfilled with gravel. Exploratory hole backfill details are presented in the borehole logs in Appendix B.1. All exploratory hole locations have been presented in Figure 3.

Following completion of site works, soil cores were logged and sub sampled so that samples could be sent to the laboratory for contamination testing.

2.2 Ground Conditions

On 2nd July 2024 six windowless sampler boreholes (WS01 – WS06) were drilled, using a Premier Compact 110, to depths of 3.00m below ground level (bgl) at locations selected by Soils Limited using a development plan provided by the Client.

Three standpipes were installed within window sample borehole locations (WS01, WS03 and WS05) to allow for continued monitoring of both groundwater and ground gas.

A single hand-dug pit (HP01) was excavated to a depth of 0.50m bgl on 30th July 2024.

The maximum depths of exploratory holes have been included in Table 2.1.

All exploratory holes were scanned using a Cable Avoidance Tool (C.A.T.) and signal generator (Genny) prior to excavation to ensure the health and safety of the operatives.

Table 2.1 Final Depth of Exploratory Holes

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
W S01 ^w	3.00	WS05 ^w	3.00
WS02	3.00	WS06	3.00
WS03 ^w	3.00	HP01	0.50
WS04	3.00		
Note(s): ^w -well installation. The depths given in this table are taken from the ground level on-site at the time of investigation.			

The approximate exploratory hole locations are shown on Figure 3.

The soil conditions encountered were recorded and soil sampling commensurate with the purposes of the investigation was carried out. The depths given on the exploratory hole logs and quoted in this report were measured from ground level.

The soils encountered from immediately below ground surface have been described in the following manner. Where the soil incorporated an organic content such as either decomposing leaf litter or roots or has been identified as part of the in-situ weathering profile, it has been described as Topsoil both on the logs and within this report. Where man has clearly either placed the soil, or the composition altered, with say greater than an estimated 5% of a non-natural constituent, it has been referred to as Made Ground both on the log and within this report.

For more complete information about the soils encountered within the general area of the site reference must be made to the detailed records given within Appendix B, but for the purposes of discussion, the succession of conditions encountered in the exploratory holes in descending order can be summarised as:

Topsoil (TS)
Made Ground (MG)
Head (HD)
Lambeth Group (LMBE)

The ground conditions encountered in the exploratory holes are summarised in Table 2.2.

Table 2.2 Ground Conditions

Strata	Depth Encountered (m bgl)		Typical Thickness (m)	Typical Description
	Top	Bottom		
TS	0.00	0.15 – 0.25	0.20	Dark grey slightly sandy, slightly gravelly SILT. Gravel is flint. Frequent rootlets.
MG	0.07 – 0.15	0.25 – 0.6	0.28	Brownish grey gravelly SAND. Gravel is limestone, flint, concrete and brick.

Strata	Depth Encountered (m bgl)		Typical Thickness (m)	Typical Description
	Top	Bottom		
HD	0.20 – 0.60	0.50 ¹ – 1.70	0.85	Firm brown and light grey slightly sandy slightly gravelly CLAY. Gravel is flint.
LMBE	0.60 – 1.70	3.00 ¹	Not proven	Stiff to very stiff yellowish brown mottled reddish brown and grey CLAY.

Note(s): ¹ Final depth of exploratory hole. ² Base of strata not encountered. The depths given in this table are taken from the ground level on-site at the time of investigation.

2.3 Ground Conditions Encountered in Exploratory Holes

The ground conditions encountered in exploratory holes have been described below in descending order. The engineering logs are presented in Appendix B.1.

2.3.1 Made Ground and Topsoil

Soils described as Topsoil were encountered in three exploratory holes (WS02, WS03 and HP01) from ground level to a depth of between 0.15m to 0.25m bgl.

The Topsoil comprised either dark brown slightly gravelly, silty sand, or soft dark brown slightly sandy, slightly gravelly clay or silt with fine rootlets. Gravel was fine to coarse, sub-angular to sub-rounded of flint.

Soils described as Made Ground were encountered in five out of the seven exploratory holes to depths ranging between 0.25m (WS03) and 0.60m bgl (WS04).

The Made Ground typically comprised brown to yellowish brown slightly clayey, slightly gravelly sand. Gravel was fine to coarse, angular to sub-rounded of limestone, brick, concrete and flint. No clear visual or olfactory evidence of contamination was identified during logging by an Engineer.

The established depth of Made Ground and Topsoil found at each exploratory hole location have been included in Table 2.3.

Table 2.3 Established Depth of Made Ground/Topsoil

Exploratory Hole	Strata	Depth (m bgl)
W S01	MG	0.25
WS02	TS	0.15
	MG	0.30
WS03	TS	0.25
WS04	MG	0.60
WS05	MG	0.45
WS06	MG	0.40
HP01	TS	0.20

2.3.2 Head

Head deposits were encountered in all exploratory hole locations aside from WS04, seen to directly underlie units of Topsoil or Made Ground. The proven depths to the base of the unit ranged from 0.70m bgl (WS06) to 1.70m bgl (WS01).

Units of the Head were generally described as firm to stiff dark brown and yellowish brown mottled light grey or reddish brown slightly sandy, slightly gravelly clay. Shallow units of Head were additionally noted to comprise light brown slightly silty, clayey, very gravelly sand and slightly sandy, clayey gravel. Gravel was fine to coarse, sub-angular to sub-rounded of flint.

The established depth of Head found at each exploratory hole location have been included in Table 2.4.

Table 2.4 Established Depth of Head

Exploratory Hole	Depth (m bgl)
W S01	1.70
WS02	1.50
WS03	1.00
WS04	Not encountered
WS05	1.00
WS06	0.70
HP01	0.50 ¹
Note(s): ¹ Final depth of exploratory hole.	

2.3.3 Lambeth Group

The Lambeth Group deposits were encountered in all windowless borehole locations (WS01 – WS06). Seen to underly the Head in all exploratory holes aside from WS04, where Lambeth Group units were identified directly underlying Made Ground.

The Lambeth Group deposits were generally described as stiff to very stiff yellowish or reddish brown mottled grey clay.

The base of Lambeth Group units was not encountered at any exploratory hole location. Proven depths of the Lambeth Group deposits have been included in Table 2.5.

Table 2.5 Established Depth of Lambeth Group

Exploratory Hole	Depth (m bgl)
W S01	3.00 ¹
WS02	3.00 ¹
WS03	3.00 ¹
WS04	3.00 ¹
WS05	3.00 ¹
WS06	3.00 ¹
Note(s): ¹ Final depth of exploratory hole.	

2.4 Groundwater

Groundwater was not encountered within any of the exploratory holes to the maximum depth of 3.00m bgl achieved during the initial site investigation works.

Changes in groundwater level occur for reasons including seasonal effects and variations in drainage, tidal effects. The investigation was conducted in July (2024), when groundwater levels should be falling towards their annual minimum (lowest) elevation, which typically occurs around September. The annual maximum (highest) typically occurs around March.

Further groundwater monitoring was conducted within the standpipes installed on site following completion of site works and has been presented in Table 2.6.

Table 2.6 Groundwater Monitoring

Exploratory Hole	Well Depth (m bgl)	Depth to Water (m bgl)	
		Depth	Date
W S01	3.00	1.29	19.07.2024
		1.43	05.08.2024
WS03	3.00	Dry	19.07.2024
			05.08.2024
WS05	3.00	Dry	19.07.2024
			05.08.2024

Note(s): Date presented for initial 2No. of 6No. total monitoring visits only

At the time of writing (August 2024), only two of the six total monitoring visits had been completed. The remaining groundwater monitoring data will be included and interpreted as an addendum to this report upon completion.

Section 3 Determination of Chemical Analysis

3.1 Site Characterisation and Revised Conceptual Site Model

The Preliminary Investigation Report undertaken by Soils Limited (report ref: 21511/PIR dated July 2024) identified a very low to moderate risk of ground contamination from previous usage of the site and offsite sources.

The Contamination Investigation Report identified Made Ground to depths between 0.25m and 0.60m bgl.

There were no clear visual or olfactory indicators of contamination noted.

The initial CSM from the Preliminary Risk Assessment and revised CSM following the intrusive investigation are presented in Appendix C.1.

3.2 Soil Sampling

Exploratory hole locations were established to provide an overview of ground conditions across the site, additionally targeting areas of proposed soft landscaping, together with enabling the collection of samples to enable chemical characterisation of the underlying strata.

Representative samples for potential environmental testing were obtained from the exploratory holes at depths of between 0.10m and 2.85m to allow appropriate representation of the materials encountered.

3.3 Determination of Chemical Analysis

The driver for determination of the analysis suite was the information obtained from the Preliminary Investigation Report and intrusive investigation.

The chemical analyses were carried out on 3 No. samples of Made Ground and 1 No. sample of the Head. The nature of the analyses is detailed in Table 3.1.

Table 3.1 Chemical Analyses Suites-Soil

No. of Tests	Determinants	Soil Tested	
		MG	HD
4	Metal suites: Arsenic, Boron (Water Soluble), Cadmium, Chromium (total & hexavalent), Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc		
4	Organic Matter		
4	pH		
4	Polycyclic aromatic hydrocarbons (PAH) – (EPA 16)		
4	Phenols – total monohydric		
4	Extractable petroleum hydrocarbons (EPH) – Texas banding		
4	Asbestos screening		

The soil testing was carried out in compliance with the MCERTS performance standard,

and the results are shown in Appendix C.2, test report 24-08749.

Section 4 Qualitative Risk Assessment

4.1 Assessment Criteria

The assessment criteria used to determine risks to human health are derived and explained within Appendix C.3.

4.2 Representative Contamination Criteria -Soil

In compiling this report, reliance was placed on drawing number 18177-PD011, Dated June 2024 and was prepared by PDP Architecture LLC. The recommendations provided within this report are made exclusively in relation to the scheme outlined above and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

Based on the proposed development, the results of the chemical analysis have been compared against generic assessment criteria (GAC) for a '**Residential with home grown produce**' end use, as presented in SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination December 2014 (C4SL), derived for the protection of human health. Where this document has not published screening values for determinants, GACs derived for the same end use have been adopted from the following published guidance; DEFRA Soil Guideline Values (SGV) and LQM/CIEH/Suitable 4 Use Level (S4UL).

To assess the potential toxicity of organic determinants (Petroleum Hydrocarbons and Polyaromatic Hydrocarbons) to the human health, soils samples were analysed for Soil Organic Matter (SOM). The selected samples analysed recorded, SOM values of between 2.9% and 7.9%. For each soil sample tested, the resultant SOM allowed for the correct comparison to be made with the appropriate guideline value for each organic determinants analysed.

4.3 Risk Assessment – Made Ground

Table 4.1 outlines the samples that have exceeded their relevant assessment criteria. The full laboratory report is presented in Appendix C.2.

Table 4.1 Summary of GAC Exceedances – Made Ground

Location	Depth (m bgl)	Contaminant	Concentration	Guidance Level
W S04	0.20	Arsenic	83	37
		Lead	542	200
Note(s): Units mg/kg				

The risk assessment has established potential pollutant linkage in relation to human health from a single sample with elevated arsenic and lead concentration within the Made Ground. Recommendations in relation to this material are made in Section 4.8.

4.4 Asbestos

The test certificate for each sample submitted for contamination analysis during this investigation includes the results of an Asbestos Screen. In each case 'Not detected' was reported.

This finding does not obviate the risk of asbestos being present on the site and the Client must seek advice from qualified and competent asbestos specialist during and prior to undertaking works to ensure compliance with appropriate legislation and guidance.

4.5 Risk to Controlled Waters

The site is located on a Secondary A superficial aquifer and a Secondary A bedrock aquifer and is within a Zone I groundwater source protection zone. There were no groundwater abstractions within 1km of the site.

The groundwater flow was established to be in a southerly direction based on the dominant surrounding topography and nearest abstraction well within the source protection zone.

The nearest surface watercourse feature is located approximately 106m to the northwest of the site.

Groundwater was encountered within the western area on site during the initial two rounds of monitoring. Although groundwater is present on site, it appears to be localised to the area surrounding WS01 in the south-west of the site. No contaminants were seen to exceed the relevant GAC from any of the proximal exploratory holes. It is therefore initially thought that the risk to controlled waters is very low, pending the results from the additional monitoring visits.

4.6 Risk from Ground Gas Ingression

Potential sources of ground gas within influencing distance of the site identified within the CSM comprise:

- Infilled Historic Chalk Pit
- Registered Landfill Site
- Residential Garages
- Waste Disposal Services
- Potentially Infilled Land

Taking into consideration the likely potential source of ground gases, limited to the presence of a registered landfill site, backfilled chalk pits and other potentially infilled land, six monitoring visits have been scheduled to be undertaken over a period of a three months, in accordance with current guidance.

As the monitoring is ongoing, the full programme of monitoring must be completed before final design is undertaken, including targeting periods of low and falling pressure. The

results will be reported as an addendum to this report. At the time of writing, two of the six monitoring visits have been undertaken. Results available at the time of reporting are provided in Appendix D.

Presently, a maximum carbon dioxide concentration of 6.2% has been recorded. No methane concentrations have been recorded above the Level of Detection (LoD) and no ground gas flow has been observed.

Due to the limited data, including no monitoring visits under falling atmospheric pressure conditions, no Gas Screening Value (GSV) has been calculated, and therefore no determination of the Characteristic Situation based on Table 2 of BS8485:2015 has been provided at this stage.

4.6.1 Radon

The site was not situated within an area where protection or risk assessment against the ingress of radon was required, with a maximum radon potential of 1 – 3% according to UK Health Security Agency (UKHSA) data. Radon protection measures will not be required within the proposed new development.

4.7 Generic Quantitative Risk Assessment

Quantitative risk assessments are undertaken for the soil, groundwater and ground gas. The CSM has been updated to take account of the assessments below and presented in Appendix C.1. The full laboratory chemical report is presented in Appendix C.2.

4.7.1 Soils

One of the samples tested showed concentrations in excess of the relevant C4SL for a residential land-use scenario. In WS04 at 0.20m bgl lead was recorded at a concentration of 542mg/kg against the residential end-use C4SL of 200mg/kg. Furthermore, arsenic was seen to exceed the relevant C4SL for the same sample, with a recorded concentration of 83mg/kg against the residential end-use of 37mg/kg. It is noted that, considering the Client-supplied proposal drawing (18177-PD011, included as Appendix E), the exceedance was in an area of proposed hardstanding vehicle and cycle parking, thus removing the direct contact pathway to the site user.

The Tier 1 Quantitative risk assessment therefore established that there was **no risk to the human health receptors** of construction workers or future end-users with relation to soil conditions, providing that renovations proceed in accordance with the proposed designs.

4.7.2 Groundwater

The analysis has established that the groundwater was not considered to be at risk based on the initial findings of the investigations. A final groundwater risk assessment will be undertaken once the monitoring regime has concluded.

4.7.3 Ground Gas

The Preliminary Investigation Report identified a Moderate/Low risk of ground gas

associated with an infilled pond 90m west of the site and an infilled chalk pit and landfill site approximately 150m north of the site.

The Made Ground encountered during the intrusive investigation was of limited average thickness (0.7m) and did not contain significant organic content.

Monitoring of the wells installed within WS01, WS03 and WS05 has been undertaken on two occasions. At the time of reporting four more visits were scheduled over a further two months and therefore the results of the ground gas risk assessment will be provided in an addendum once the regime is completed.

4.8 Recommendations

Soil chemical analysis recorded that there was impacted soils risk at one location (WS01). It is noted that the location of this sample was within areas of current and proposed bound macadam hardstanding. As a result, there would be no pollutant pathway to the future site occupiers, and therefore this exceedance poses no risk to future site users. All sampling undertaken within areas of proposed soft landscaping did not show any exceedances of the GAC for residential land-use homegrown produce.

A continuation of the ground gas and groundwater monitoring regime is required to provide a final assessment on the associated risks to human health and controlled waters.

4.9 Protection of Services

Contamination of the ground may pose a risk to human health by permeating potable water supply pipes. To fulfil their statutory obligations, UK water supply companies require robust evidence from developers to demonstrate either that the ground in which new plastic supply pipes will be laid is free from contaminants specified in UKWIR Report 10/WM/03/21 Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (UKWIR, 2010), or that the proposed remedial strategy will mitigate any existing risk.

4.10 Duty of Care

Groundworkers must maintain a good standard of personal hygiene including the wearing of overalls, boots, gloves and eye protectors and the use of dust masks during periods of dry weather.

4.11 Excavated Material

Excavated material as waste must be defined or classified prior to any disposal, transport, recycling or re-use at or by an appropriately licensed or exempt carrier and/or off-site disposal facility. The requirements inherent in both Duty of Care and Health and Safety must also be complied with. In order to determine what is to happen, what is suitable, appropriate and most effective in the disposal of wastes, especially those subject to CDM waste management plan requirements, several factors must be

considered, and competent advice must always be sought.

4.12 Re-use of Excavated Material On-site

The re-use of on-site soils may be undertaken either under the Environmental Permitting Regulations 2007 (EPR), in which case soils other than uncontaminated soils are classed as waste, or under the CL:AIRE Voluntary Code of Practice (CoP) which was published in September 2008 and is accepted as an alternative regime to the EPR.

4.13 Imported Material

Any soil, which is to be imported onto the site, must undergo chemical analysis to permit classification prior to its importation and placement in order to ascertain its status with specific regard to contamination, i.e. to prove that it is suitable for the purpose for which it is intended.

4.14 Discovery Strategy

There may be areas of contamination not identified during the course of the investigation. Such occurrences may also be discovered during the demolition and construction phases for the redevelopment of the site.

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Figure 1 – Site Location Map



Job Number
21511

Project
Littlefold Family Resource Centre, Linnet Close,
Waterlooville, Hampshire PO8 9UY

Client
PDP Architecture Limited

Date
August 2024



Figure 2 – Aerial Photograph

Project

Littlefold Family Resource Centre,
Linnet Close, Waterlooville,
Hampshire PO8 9UY

Client

PDP Architecture Limited

Date

August 2024

Job Number

21511





Figure 3 – Exploratory Hole Plan

Project	Littlefold Family Resource Centre, Linnet Close, Waterloooville, Hampshire PO8 9UY
Client	PDP Architecture Limited
Date	August 2024
Job Number	21511
Key:	Monitoring Installation



Appendix A Standards and Resources

The site works, soil descriptions and geotechnical testing was undertaken in accordance with the following standards were applicable:

BS 5930:2015 and BS EN ISO 22476-2 2005+A1:2011

BS 5930:2015 and BS EN ISO 22476-2&3:2005+A1:2011

BS 5930:2015 and BS EN ISO 22476-3:2005+A1:2011

BS EN ISO 14688-1:2018 - Geotechnical investigation and testing - Identification and description

BS EN ISO 14688-2:2018 - Geotechnical investigation and testing - Principles for a classification

BS 10175:2011+A2:2017 - Investigation of potentially contaminated sites

BS 8485:2015+A1:2019, Code of practice for the design of protective measures for Methane and Carbon Dioxide ground gases for new buildings

LCRM 2021 Environment Agency

SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination December 2014

Soil Guideline Value (SGV) (Environment Agency, 2009)

Suitable 4 Use Level (S4UL) (Nathanail et al, 2015)

Google Earth

British Geological Survey Website & iGeology App

Appendix B Field Work

Appendix B.1 Engineers Logs

Water Strike	Samples & In Situ Testing			Depth (m)	Level (mAOD)	Legend
	Depth	Type	Results			
				0.20		
				0.50		

Samples & In Situ Testing			Strata Details		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend
				0.07	
				0.25	
				(0.35)	
				0.60	
				(1.10)	
				1.70	
				(0.55)	
				2.25	
				(0.75)	
				3.00	

Samples & In Situ Testing			Strata Details		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend
				0.15	
				0.30	
				(0.40)	
				0.70	
				(0.30)	
				1.00	
				(0.50)	
				1.50	
				(1.30)	
				2.80	
3.00					

Samples & In Situ Testing			Strata Details		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend
				0.25	
				(0.30)	
				0.55	
				0.80	
				1.00	
				(1.00)	
				2.00	
				(1.00)	
				3.00	

Samples & In Situ Testing			Strata Details		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend
				0.15	
				0.40	
				0.60	
				(1.40)	
				2.00	
				(0.60)	
				2.60	
				(0.40)	
				3.00	

Samples & In Situ Testing			Strata Details		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend
				0.15	
				(0.30)	
				0.45	
				(0.55)	
				1.00	
				(1.00)	
				2.00	
				(1.00)	
				3.00	

Samples & In Situ Testing			Strata Details		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend
				0.10	
				(0.30)	
				0.40	
				(0.30)	
				0.70	
				(1.10)	
				1.80	
				(1.20)	
				3.00	

Appendix C Chemical Laboratory Analyses

Appendix C.1 Conceptual Site Model

Table C.1.1 CSMPre-ChemicalAnalyses

Source	Potential Contaminant	Exposure Pathway	Receptor	Initial Assessment from Preliminary Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
On Site Historic and Current Site Usage Roofing and insulation materials	Asbestos	Inhalation of dust	Site Workers/Site Maintenance	Medium	Likely	Moderate	The site issituated on the Lambeth Group with overlying superficial deposits ofHead -Clay and gravel, the site. The Children's home was built pre 2000 therefore has the potential to have asbestos.	Consult a Licenced Asbestos specialist before refurbishment.
			End Users	Medium	Likely	Moderate		
Offsite Historic and Current Site Usage Old Chalk pits (Backfilled)/ Residential Garages/ Registered Landfill site/ Waste Disposal Services/ Potentially Infilled Land (Non-Water)	Metals, Semi-metals and non-metals, PAHs, TPHs, PCBs	Inhalation of dust	Site Workers/Site Maintenance	Medium	Unlikely	Low	There are multiple former chalk pits and non-water infilled land notedin the surrounding area of the site, the nearest one was active until 1897 so there is potential for CO ₂ to be present as an end product, as well as PAH contaminants migrating down the hydraulic gradient in line with the overall topography.	Phase II ground investigation to confirm the ground conditions present and chemical testing prior to undertaking a generic quantitative risk assessment.
			End Users	Mild	Unlikely	Very Low		
	PAHs, TPHs, PCBs	Inhalation of Vapour/gases	Site Workers/Site Maintenance	Mild	Unlikely	Very Low		Well installation to monitor the groundwater/gas for further risk assessment
			End Users	Mild	Unlikely	Very Low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, PCBs	Ingestion and absorption via direct contact	Site Workers/Site Maintenance	Medium	Unlikely	Low		Construction workers to wear appropriate PPE
			End Users	Mild	Unlikely	Very Low		
		Direct contact with construction material	Buried Structures	Mild	Low	Low		
			Site Workers	Mild	Low	Low		
	PAHs, TPHs, ground gas	Migration of gases via permeable soils	Site Workers/Site Maintenance	Medium	Low	Moderate/low		
			End Users	Medium	Low	Moderate/low		
			Off-site Users	Medium	Low	Moderate/low		
			Building and Confined Spaces					

Table C.1.2 CSMRevised Post-ChemicalAnalyses

Source	Potential Contaminant	Exposure Pathway	Receptor	Initial Assessment from Desk Study and Contamination Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
On Site Historic and Current Site Usage Roofing and insulation materials	Asbestos	Inhalation of dust	Site Workers/Site Maintenance	Medium	Likely	Moderate	The Children's home was built pre 2000 therefore has the potential to have asbestos.	Consult a Licenced Asbestos specialist before refurbishment.
			End Users	Medium	Likely	Moderate		
Offsite Historic and Current Site Usage Old Chalk pits (Backfilled)/ Residential Garages/ Registered Landfill site/ Waste Disposal Services/ Potentially Infilled Land (Non-Water)	Metals, Semi-metals and non-metals, PAHs, TPHs, PCBs	Inhalation of dust	Site Workers/Site Maintenance	Medium	Unlikely	Low	Lead and arsenic exceedances seen in one location of proposed hardstanding with no direct contact pathway.	Waste classification (WAC) testing required if the contaminated Made Ground is to be removed from site. Recommendations in this report would be invalid if the actual surfacing deviates from the proposed drawings supplied by the Client.
			End Users	Mild	Unlikely	Very Low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, PCBs	Ingestion and absorption via direct contact	Site Workers/Site Maintenance	Medium	Unlikely	Low	NofurtherC4SL exceedances were noted for any of the organic or inorganic compounds tested.	Construction workers to wear appropriate PPE
			End Users	Mild	Unlikely	Very Low		
		Direct contact with construction material	Buried Structures	Mild	Unlikely	Very Low		
			Site Workers	Mild	Unlikely	Very Low		
	PAHs, TPHs, PCBs	Inhalation of Vapour/gases	Site Workers/Site Maintenance	Mild	Unlikely	Very Low		
			End Users	Mild	Unlikely	Very Low		
	Ground gas	Migration of gases via permeable soils	Site Workers/Site Maintenance	Medium	Low	Moderate/low	Ground gas monitoring is still ongoing at the time of writing. Initial gas readings have not been conducted under falling atmospheric pressure conditions and therefore cannot be used to estimate ground gas risk.	Completion of the ground gas monitoring regimefor a total of six monitoring visits over to course of three months.. A ground gas risk assessment report should be undertaken.
			End Users	Medium	Low	Moderate/low		
			Off-site Users	Medium	Low	Moderate/low		
		Migration via surface runoff	Building and confined spaces					

Appendix C.2 Chemical Laboratory Results



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Normec DETS Limited
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Rose Lane
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Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-08749

Site Reference: Littleford Family Resource Centre, Waterloooville

Project / Job Ref: 21511

Order No: 21511/S/JD

Sample Receipt Date: 01/08/2024

Sample Scheduled Date: 01/08/2024

Report Issue Number: 1

Reporting Date: 06/08/2024

Authorised by:



Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 24-08749	~ Date Sampled	30/07/24	30/07/24	30/07/24	30/07/24	
Soils Ltd	~ Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
~ Site Reference: Littleford Family Resource Centre, Waterloooville	~ TP / BH No	HP01	WS02	WS03	WS04	
~ Project / Job Ref: 21511	~ Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
~ Order No: 21511/S/JD	~ Depth (m)	0.40	0.20	0.30	0.20	
Reporting Date: 06/08/2024	DETS Sample No	730027	730028	730029	730030	

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.6	8.1	7.9	8.0
Organic Matter (SOM)	%	< 0.1	MCERTS	4.9	4.1	2.9	7.9
Arsenic (As)	mg/kg	< 2	MCERTS	10	5	7	83
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	3.5
Chromium (Cr)	mg/kg	< 2	MCERTS	19	11	20	8
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	20	7	10	13
Lead (Pb)	mg/kg	< 3	MCERTS	46	27	27	542
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	8	4	6	13
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	34	19	35	16
Zinc (Zn)	mg/kg	< 3	MCERTS	81	28	51	733
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

~Sample details provided by customer and can affect the validity of results



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-08749	~ Date Sampled	30/07/24	30/07/24	30/07/24	30/07/24	
Soils Ltd	~ Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
~ Site Reference: Littleford Family Resource Centre, Waterloooville	~ TP / BH No	HP01	WS02	WS03	WS04	
~ Project / Job Ref: 21511	~ Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
~ Order No: 21511/S/JD	~ Depth (m)	0.40	0.20	0.30	0.20	
Reporting Date: 06/08/2024	DETS Sample No	730027	730028	730029	730030	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.28	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.48	0.12	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	0.41	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	0.31	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.42	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.30	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.27	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.23	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	3.1	< 1.6	< 1.6	< 1.6

~Sample details provided by customer and can affect the validity of results



Normec DETS Limited
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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 24-08749	~ Date Sampled	30/07/24	30/07/24	30/07/24	30/07/24	
Soils Ltd	~ Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
~ Site Reference: Littleford Family Resource Centre, Waterloooville	~ TP / BH No	HP01	WS02	WS03	WS04	
~ Project / Job Ref: 21511	~ Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
~ Order No: 21511/S/JD	~ Depth (m)	0.40	0.20	0.30	0.20	
Reporting Date: 06/08/2024	DETS Sample No	730027	730028	730029	730030	

Determinand	Unit	RL	Accreditation				
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
EPH Texas (>C8 - C10) : EH 1D Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1
EPH Texas (>C10 - C12) : EH 1D Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1
EPH Texas (>C12 - C16) : EH 1D Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1
EPH Texas (>C16 - C21) : EH 1D Total	mg/kg	< 1	MCERTS	3	< 1	< 1	< 1
EPH Texas (>C21 - C40) : EH 1D Total	mg/kg	< 6	MCERTS	79	8	< 6	10
EPH Texas (C6 - C40) : HS 1D MS+EH 1D Total	mg/kg	< 6	NONE	83	8	< 6	10

~ Sample details provided by customer and can affect the validity of results



Normec DETS Limited
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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-08749	
Soils Ltd	
~Site Reference: Littleford Family Resource Centre, Waterloooville	
~Project / Job Ref: 21511	
~Order No: 21511/S/JD	
Reporting Date: 06/08/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
730027	HP01	None Supplied	0.40	8.7	Brown sandy clay with stones and vegetation
730028	WS02	None Supplied	0.20	6.5	Brown loamy sand with stones and vegetation
730029	WS03	None Supplied	0.30	16.2	Brown sandy clay with vegetation
730030	WS04	None Supplied	0.20	3.8	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{1/5}

~Sample details provided by customer and can affect the validity of results



Normec DETS Limited
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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-08749

Soils Ltd

~Site Reference: Littleford Family Resource Centre, Waterlooille

~Project / Job Ref: 21511

~Order No: 21511/S/JD

Reporting Date: 06/08/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCS	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received

~Sample details provided by customer and can affect the validity of results



Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



List of HWOL Acronyms and Operators	
DETS Report No: 24-08749	
Soils Ltd	
~Site Reference: Littleford Family Resource Centre, Waterloooville	
~Project / Job Ref: 21511	
~Order No: 21511/S/JD	
Reporting Date: 06/08/2024	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH 2D Total but with humics mathematically subtracted
#2	EH 2D Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS Total or EH CU+HS Total
~	Sample details provided by customer and can affect the validity of results

EPH Texas (C10 - C12) - EH 1D Total
EPH Texas (C12 - C16) - EH 1D Total
EPH Texas (C16 - C21) - EH 1D Total
EPH Texas (C21 - C40) - EH 1D Total
EPH Texas (C6 - C40) - HS 1D MS+EH 1D Total
EPH Texas (C6 - C8) - HS 1D MS Total
EPH Texas (C8 - C10) - EH 1D Total

Appendix C.3 General Assessment Criteria

HUMAN HEALTH RISK ASSESSMENT

Introduction

The statutory definition of contaminated land was initially defined in the Environmental Protection Act 1990, ref. 1.1, which was introduced by the Environment Act 1995, ref. 1.2, and retained in the Environment Act 2021, ref 1.3, as;

‘Land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) pollution of controlled waters is being, or is likely to be, caused.’

The UK guidance on the assessment of contaminated land has developed as a direct result of the introduction of these Acts. The technical guidance supporting the original legislation was summarised in a number of key documents collectively known as the Contaminated Land Reports (CLRs). These have since been replaced or superseded by Land Contamination Risk Management (LCRM) 2021, ref 1.4 produced and administrated by the Environment Agency online through the .GOV.uk website <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm> .

However, the basic definitions, methodology and guidance remain essentially the same utilizing the UK Contaminated Land Exposure Assessment Models (CLEA) as within the original CLR and planning guidance it replaces or supersedes.

In establishing whether a site fulfils the statutory definition of ‘contaminated land’ it remains necessary to identify, whether a pollutant linkage exists in respect of the land in question and whether the pollutant linkage:

- is resulting in significant harm being caused to the identified receptor in the pollutant linkage,
- presents a significant possibility of significant harm being caused to that receptor,
- is resulting in the pollution of the controlled waters which constitute the receptor, or
- is likely to result in such pollution.

A ‘pollutant linkage’ may therefore be defined as the confirmation of a link between a contaminant ‘source’ and a vulnerable at risk ‘receptor’ by means of a ‘pathway’ and that the risk is potentially significant. If there is no complete linkage, risk defaults to low to negligible and can never be potentially significant.

Assessment Methodology

A four-stage assessment process is followed for identifying potential pollutant linkages on a site. These stages are summarised in the table below:

No.	Process	Description
1	Hazard Identification	Establishing contaminant sources, pathways and receptors (the conceptual model).
2	Hazard Assessment	Analysing the potential for unacceptable risks (what linkages could be present, what could be the effects).
3	Risk Estimation	Trying to establish the magnitude and probability of the possible consequences (what degree of harm might result and to what receptors, and how likely is it).
4	Risk Evaluation	Deciding whether the risk is unacceptable in the context of existing and future proposals.

Stages 1 and 2 develop an initial '*conceptual model*' based upon information collated from desk-based available and existing site information and a walkover of the site as recommended in BS10175 and LCRM. The formation of any conceptual model is an iterative process and as such it should be updated and refined throughout each phase of the project to reflect any additional information obtained and unknowns being resolved and identify the potential contaminants of concern at the site, i.e. those with the potential to cause significant harm to identified receptors.

The extent of the desk studies and enquiries to be conducted should be in general accordance with BS10175 and other UK guidance to produce an initial conceptual model highlighting the known potential risks, remaining unknowns and contaminants of concern. The information from these enquiries is presented in a desk study or preliminary report with recommendations, if necessary, for further work based upon the conceptual model findings and any identified or unresolved unknowns.

If potential pollutant linkages or potentially significant unknowns are identified within the initial conceptual model, further site investigation and report will be recommended and usually required under planning. Such investigation should be based on and driven by the findings of the initial conceptual model and planned in general accordance with BS10175, LCRM and other current UK guidance where relevant. The number of exploratory holes and samples collected for analysis should be consistent with the size, extent and nature of the site, the identified contaminants of concern and the level of initial risk identified in the initial conceptual model. This will enable a contamination risk assessment to be conducted in accordance with current UK requirements, at which point the conceptual model can be updated and any relevant pollutant linkages can be further quantified and any remaining unknowns resolved. As previously this is an iterative process that may highlight or require additional investigation to resolve to the satisfaction of the regulator.

A two-stage investigation process may therefore be more appropriate where time constraints are less of an issue with the first intrusive investigation being conducted as an initial or screening assessment to confirm or validate the presence of potential sources on site identified in the initial conceptual model and to investigate if additional unknown sources not previously identified are present. This helps to define the scope, extent and requirements of a second more refined and targeted investigation to delineate wherever possible the extent of the identified contamination, contaminants of concern and/or remaining unknowns.

All site works should be undertaken in general accordance with the British Standards BS 10175, ref. 5, for environmental only investigations and BS 5930:2015, ref. 1.6, in the case of combined Geoenvironmental and/or Geotechnical investigations.

The results of analysis are compared initially against generic guidance values which are dependent on the proposed end-use of the development and which must ultimately be based on traceable, scientifically valid and justified exposure and chemical data using the UKCLEA methodology.

The end-use and therefore potential exposure pathways may be defined as one of the following under current UK guidance;

- Residential with homegrown produce i.e. typical low rise and low-density housing with gardens where vegetables and fruits may be grown for home consumption.
- Residential without homegrown produce i.e. low-density housing where no gardens are present where vegetables and fruits could be grown for home consumption.
- Allotments – i.e. areas where vegetables and fruits are grown for home consumption but are not specifically associated with a residential property.
- Public open space residential – i.e. grassed areas adjacent and/or directly related to high density housing and other common or communal open areas on which underlying soils could be exposed but on which vegetables and fruits are not grown for consumption.
- Public open space – i.e. areas such as parks, playing fields and other recreational areas to which public access is possible but otherwise to which there is no direct residential linkage.
- Commercial – i.e. industrial premises where there is limited exposure to soil and residents are not present on site.

Standard Land-use Scenarios

The standard land-use scenarios used to develop exposure models are further detailed in the following sections:

Residential with homegrown produce

Generic scenario assumes a house built on a ground bearing slab with a private garden having a lawn, flowerbeds and a small fruit and vegetable patch.

-
- Critical receptor is assumed to be a young female child (zero to six years old)
 - Exposure pathways include direct soil and indoor dust ingestion, consumption of home-grown produce and any adhering soil, skin contact with soils and indoor dust and inhalation of indoor and outdoor dust and vapours.
-

A sub-set of the Residential land-use is **Residential without Homegrown produce**. The generic scenario assumes low density housing with communal landscaped gardens where the consumption of homegrown vegetables will not occur and the pathways of direct ingestion and produce inputs are suitably moderated.

Allotments

Areas of open space commonly made available to local users but remote from residential properties, but on which tenants may grow fruit and vegetables for their own consumption. Typically, there are a number of plots to a site which may have a total area of up to 1 hectare. The tenants are assumed to be adults and that young children make only occasional accompanied visits.

Although some allotment holders may choose to keep animals on allotments, potential exposure to animal products is not currently considered within the CLEA model.

-
- Critical receptor is a young female child (zero to six years old)
 - Exposure pathways include direct soil ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and inhalation of outdoor dust and vapours but at reduced exposure levels reflecting non-residential status.
-

Commercial

This generic scenario assumes a typical commercial or light industrial property at which employees spend most time indoors and are involved in office-based or relatively light physical work.

-
- Critical receptor is a working female adult (aged 16 to 65 years old).
 - Exposure duration is over working lifetime
 - Exposure pathways include direct soil and indoor dust ingestion, skin contact with soils and dusts and inhalation of dust and vapours but exposure reduced to reflect non-residential nature and general lack of open spaces.
-

Public Open Space within Residential Area

This generic scenario refers to any grassed area up to 0.05 ha that is associated with residential properties but is not for their exclusive use and on which no fruit or vegetables are grown for home consumption.

-
- Grassed area of up to 0.05 ha and a considerable proportion of this (up to 50%) may be bare soil which can be interacted with directly
 - Predominantly used by children for play and/or access
 - Sufficiently close proximity to home for tracking back of soil to occur, thus indoor exposure pathways apply
-

-
- older children chosen as the critical receptor on basis that they will use site most frequently (age class 4-9 years)
-
- ingestion rate assumed to be 75 mg.day⁻¹
-

Public Open Space Park

This generic scenario refers to any public park or grassed space that is more than 0.5ha in area:

-
- Public park (>0.5 ha), predominantly grassed and may also contain children's play equipment and border areas of soil containing flowers or shrubs (75% assumed cover)
-
- Female child age classes 1-6
-
- Soil ingestion rate of 50 mg.day⁻¹
-
- Occupancy period outdoors = 2 hours.day⁻¹
-
- Exposure frequency of 170 days.year⁻¹ for age classes 2-18 and 85 days.year⁻¹ for age class 1
-
- Outdoor exposure pathways only (no tracking back of soils).
-

Human Health Generic Quantitative Risk Assessment (GQRA) involves the comparison of contaminant concentrations measured in soil at the site with Generic Assessment Criteria (GAC) generated using the CLEA model based on the exposure and land use scenario assumptions noted above.

GAC's are deliberately conservative values adopted to ensure that they are applicable to the majority of possible contaminated sites and below which there is considered a low to negligible risk to identified human health receptors, i.e. there can be no harm. These values may be published Contaminated Land Exposure Assessment Model (CLEA) derived GAC's derived by a competent third party or the Environment Agency / DEFRA. It is imperative to the risk assessor to understand the uncertainties and limitations associated with these GAC's to ensure that they are used appropriately.

Where the adoption of a GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses or the contaminant is susceptible to wide variation depending on factors such as form and bioavailability, then a Detailed Quantitative Risk Assessment (DQRA) may be undertaken to develop site specific or remediation values for relevant soil contaminants based on site and contaminant specific conditions.

In 2014, the publication of Category 4 Screening Levels (C4SL), refs 1.8 and 1.9, as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3) ref 1.7 used in the generation of SGVs. C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern. Where a C4SL has been published, Soils Limited has adopted them as GAC for these six substances.

For all other substances the soils will be compared to Suitable For Use Levels (S4ULs) published by LQM, ref. 1.10, which were developed for around 85 substances and are

intended to enable a screening assessment of the risks posed by soil quality on development sites. The updated LQM/CIEH GAC publication was developed to accommodate recent developments in the understanding of chemical, toxicological and routine exposure to soil-based contaminants.

Where no S4UL or C4SL is available, assessment criteria may be generated using the Contaminated Land Exposure Assessment (CLEA) Software Version 1.07, ref. 1.11, Toxicological and physico-chemical/fate and transport data used to generate the criteria has been derived from a hierarchy of data sources as follows:

1. Environment Agency or Department of Environment Food and Rural Affairs (DEFRA) documents;
2. Other documents produced by UK Government or state organisations;
3. European institution documents;
4. International organisation documents;
5. Foreign government institutions.

In the case of the majority of contaminants considered, the toxicological data has been drawn originally from the relevant CLR 9 TOX report, or updated toxicological data published by the Environment Agency (2009), where available. Where no TOX report is available reference has been made to appropriately determined health criteria values, derived from the above-noted hierarchy, as this is considered to represent appropriate peer reviewed data sources. Similarly, fate and transport data should also be determined by reference to appropriate sources and the CLEA model assumptions.

Chemical laboratory test results are processed as follows. A statistical analysis of the results is conducted, as detailed in CIEH and CL:AIRE 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', ref. 1.12. Individual concentrations are then compared to the selected guideline values to identify and isolate concentrations of contaminants that are in excess of the selected screening low or no risk criteria.

Where the risk estimation identifies significant concentrations of one or more contaminants, further risk evaluation needs to be undertaken often as a site specific DQRA in line with current guidance to determine and confirm if the identified exceedances are significant in the context of the proposed development or activity.

References

- 1.1 The Environmental Protection Act, Part IIA, Section 78, DoE 1990.
- 1.2 Environment Act 1995, Section 57, DoE 1995.
- 1.3 Environment Act 2021 OEP 2021.
- 1.4 Land Contamination Risk Management Gov.UK (EA) 2021
- 1.5 BS 10175: 2011+A2:2017 '*Investigation of potentially contaminated sites. Code of practice*', British Standards Institute, 2017
- 1.6 BS 5930: 2015+A1:2020 '*Code of practice for ground investigations*', British Standards Institute, 2015
- 1.7 Science Report SC050021/SR3 '*Updated technical background to the CLEA model*', Environment Agency, 2008
- 1.8 DEFRA SP1010: Development of Category 4 Screening Levels for the Assessment of Land Affected by Contamination, published March 2014.
- 1.9 Contaminated Land: Applications in Real Environment (CL:AIRE) (2014). '*Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*', Revision 2, DEFRA research project SP1010.
- 1.10 The LQM/S4ULs for Human Health Risk Assessment, Nathanail P, McCaffery C, Gillett A, Ogden R, and Nathanail J, Land Quality Press, Nottingham, published 2015.
- 1.11 CLEA '*Software Version 1.071*' (downloaded from the CL:AIRE website , <https://www.claire.co.uk/home/news/44-risk-assessment/178-soil-guideline-values>)
- 1.12 CIEH '*Guidance on Comparing Soil Contamination Data with a Critical Concentration*', Chartered Institute of Environmental Health (CIEH) and Contaminated Land: Applications in Real Environments (CL:AIRE), May 2008.

Land Use			Residential With or Without Plant Uptake									Public Open Space (POS)													
			With			Without			Allotments			Commercial			Residential						Park				
			SOM	1.0	2.5	6	1	2.5							6	1	2.5	6	1	2.5	6	1	2.5	6	1
Type	Contaminants	Species	Year																						
.....	Antimony		2010					550						7500								EIC/AGS/CL:AIRE	EIC/AGS/CL:AIRE	2010	
	Arsenic		2014			37		40			49		640		79		168				C4SL	DEFRA	2014		
			2015			37		40			40		640		79		170				S4U L	LQM/CIE H	2015		
	Barium		2010					1300					22000								EIC/AGS/CL:AIRE	EIC/AGS/CL:AIRE	2010		
	Beryllium		2015			1.7		1.7			35		12		2.2		63				S4U L	LQM/CIE H	2015		
	Boror		2015			290		11000			45		240000		21000		46000				S4UL	LQM/CIEH	2015		
	Cadmium		2015			11		85			1.9		190		120		532				S4U L	LQM/CIE H	2015		
			2014			26		149			4.9		410		220		880				C4SL	DEFRA	2014		
	Chromium	III	2015			910		910			18000		8600		1500		33000				S4UL	LQM/CIEH	2015		
		VI	2014			21		21			170		49		23		250				C4SL	DEFRA	2014		
		VI	2015			6		6			1.8		33		7.7		220				S4U L	LQM/CIE H	2015		
	Copper		2015			2400		7100			520		68000		12000		44000				S4UL	LQM/CIEH	2015		
	Lead		2014*			82-210		130-310			30-84		1100-6000		270-760		580-1400				C4SL	DEFRA	2014		
	Mercury	Elemental	2012			1.0		1.0			26		26								210	DEFRA	2012		
			2015			1.2		1.2			21		58		16		30				S4U L	LQM/CIE H	2015		
		Inorganic	2012			170		170			80		36000								SGV	DEFRA	2012		
			2015			40		56			19		1100		120		240				S4UL	LQM/CIEH	2015		
		Methyl	2012			11		11			8		410								SGV	DEFRA	2012		
			2015			11		15			6		320		40		68				S4U L	LQM/CIE H	2015		
	Molybdenum		2010					670					17000								EIC/AGS/CL:AIRE	EIC/AGS/CL:AIRE	2010		
	Nickel		2012			130		130			230		1800								SGV	DEFRA	2012		
			2015			130		180			53		980		230		800				S4U L	LQM/CIE H	2015		
	Selenium		2012			350		595			120		13000								SGV	DEFRA	2012		
			2015			250		430			88		12000		1100		1800				S4UL	LQM/CIEH	2015		
	Vanadium		2015			410		1200			91		9000		2000		5000				S4UL	LQM/CIEH	2015		
	Zinc		2015			3700		40000			620		730000		81000		170000				S4UL	LQM/CIEH	2015		
.....	Benzene		2012			0.33		0.33			0.07		95								SGV	DEFRA	2012		
			2014			0.87		3.3			0.18		98		140		230				C4SL	DEFRA	2014		
			2015	0.087	0.17	0.37	0.38	0.7	1.4	0.017	0.034	0.075	27	47	90	72	72	73	90	100	110	S4UL	LQM/CIEH	2015	
	Toluene		2012			610		610			120		4400								SGV	DEFRA	2012		
			2015	130	290	660	880	1900	3900	22	51	120	56000	110000	180000	56000	56000	56000	87000	95000	100000	S4U L	LQM/CIE H	2015	
	Ethylbenzene		2012			350		350			90		2800								SGV	DEFRA	2012		
			2015	47	110	260	83	190	440	16	39	91	5700	13000	27000	24000	24000	25000	17000	22000	27000	S4U L	LQM/CIE H	2015	
	Xylenes	o-xylene	2012			250		250			160		2600								SGV	DEFRA	2012		
			2015	60	140	330	88	210	480	28	67	160	6600	15000	33000	41000	42000	43000	17000	24000	33000	S4U L	LQM/CIE H	2015	
		m-xylene	2012			240		240			180		3500								SGV	DEFRA	2012		
			2015	59	140	320	82	190	450	31	74	170	6200	14000	31000	41000	42000	43000	17000	24000	32000	S4U L	LQM/CIE H	2015	
		p-xylene	2012			230		230			160		3200								SGV	DEFRA	2012		
.....			2015	56	130	310	79	180	430	29	69	160	5900	14000	30000	41000	42000	43000	17000	23000	31000	S4U L	LQM/CIE H	2015	
	Aliphatic >C5 - C6		2015	42	78	160	42	78	160	730	1700	3900	3200	5900	12000	570000	590000	600000	95000	5900	12000	S4UL	LQM/CIEH	2015	
	Aliphatic >C6 - C8		2015	100	230	530	100	230	530	2300	5600	13000	7800	17000	40000	600000	610000	620000	150000	17000	40000	S4UL	LQM/CIEH	2015	
	Aliphatic >C8 - C10		2015	27	65	150	27	65	150	320	770	1700	2000	4800	11000	13000	13000	13000	14000	4800	11000	S4UL	LQM/CIEH	2015	
	Aliphatic >C10 - C12		2015	130	330	760	130	330	770	2200	4400	7300	9700	23000	47000	13000	13000	13000	21000	23000	47000	S4UL	LQM/CIEH	2015	
	Aliphatic >C12 - C16		2015	1100	2400	4300	1100	2400	4400	11000	13000	13000	59000	82000	90000	13000	13000	13000	25000	82000	90000	S4UL	LQM/CIEH	2015	
	Aliphatic >C16 - C35		2015	65000	92000	110000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	450000	170000	180000	S4UL	LQM/CIEH	2015	
	Aliphatic >C35 - C44		2015	65000	92000	140000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	450000	170000	180000	S4UL	LQM/CIEH	2015	
	Aromatic >C5 - C7		2015	70	140	300	370	690	1400	13	27	57	26000	46000	86000	56000	56000	56000	76000	84000	92000	S4UL	LQM/CIEH	2015	
	Aromatic >C7 - C8		2015	130	290	660	860	1800	3900	22	51	120	56000	110000	180000	56000	56000	56000	87000	95000	100000	S4UL	LQM/CIEH	2015	

Land Use			Residential With or Without Plant Uptake									Public Open Space (POS)												
			With			Without			Allotments			Commercial			Residential			Park						
			SOM	1.0	2.5	6	1	2.5							6	1	2.5	6	1	2.5				6
Type	Contaminants	Species	Year																					
	Aromatic >C6 - C10		2015	34	83	190	47	110	270	8.6	21	51	3500	8100	17000	5000	5000	5000	7200	8500	9200	S4UL	LQM/CIEH	2015
	Aromatic >C10 - C12		2015	74	180	380	250	590	1200	13	31	74	16000	28000	34000	5000	5000	5000	9200	9700	10000	S4UL	LQM/CIEH	2015
	Aromatic >C12 - C16		2015	140	330	660	1800	2300	2500	23	57	130	36000	37000	38000	5100	5100	5000	10000	10000	10000	S4UL	LQM/CIEH	2015
	Aromatic >C16 - C21		2015	260	540	930	1900	1900	1900	46	110	260	28000	28000	28000	3800	3800	3800	7600	7700	7800	S4UL	LQM/CIEH	2015
	Aromatic >C21 - C35		2015	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
	Aromatic >C34 - C44		2015	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
	Aliphatic + Aromatic >C44 - C70			1600	1800	1900	1900	1900	1900	1200	2100	3000	28000	28000	28000	3800	28000	28000	7800	7800	7900	S4UL	LQM/CIEH	2015
	Acenaphthene		2015	210	510	1100	3000	4700	6000	34	85	200	84000	97000	100000	15000	15000	15000	29000	29000	29000	S4UL	LQM/CIEH	2015
	Acenaphthylene		2015	170	420	920	2900	4600	6000	28	69	160	83000	97000	100000	15000	15000	15000	29000	29000	29000	S4UL	LQM/CIEH	2015
	Anthracene		2015	2400	5400	11000	31000	35000	37000	380	950	2200	520000	54000	540000	74000	74000	74000	150000	150000	150000	S4UL	LQM/CIEH	2015
	Benzo(a)anthracene		2015	7.2	11	13	11	14	15	2.9	6.5	13	170	170	180	29	29	29	49	56	62	S4UL	LQM/CIEH	2015
	Benzo(a)pyrene		2014			5			5.3			5.7			76			10		21	C4SL	DEFRA	2014	
			2015	2.2	2.7	3	3.2	3.2	3.2	0.79	2	3.5	35	35	36	5.7	5.7	5.7	11	12	13	S4UL	LQM/CIEH	2015
	Benzo(b)fluoranthene		2015	2.6	3.3	3.7	3.9	4.0	4.0	0.99	2.1	3.9	44	44	45	7.1	7.2	7.2	13	15	16	S4UL	LQM/CIEH	2015
	Benzo(ghi)perylene		2015	320	340	350	360	360	360	290	470	640	3900	4000	4000	640	640	640	1400	1500	1600	S4UL	LQM/CIEH	2015
	Benzo(k)fluoranthene		2015	77	93	100	110	110	110	37	75	130	1200	1200	1200	190	190	190	370	410	440	S4UL	LQM/CIEH	2015
	Chrysene		2015	15	22	27	30	31	32	4.1	9.4	19	350	350	350	57	57	57	93	110	120	S4UL	LQM/CIEH	2015
	Dibenz(a,h)anthracene		2015	0.24	0.28	0.3	0.31	0.32	0.32	0.14	0.27	0.43	3.5	3.6	3.6	0.57	0.57	0.58	1.1	1.3	1.4	S4UL	LQM/CIEH	2015
	Fluoranthene		2015	280	560	890	1500	1600	1600	52	130	290	23000	23000	23000	3100	3100	3100	6300	6300	6400	S4UL	LQM/CIEH	2015
	Fluorene		2015	170	400	860	2800	3800	4500	27	67	160	63000	68000	71000	9900	9900	9900	20000	20000	20000	S4UL	LQM/CIEH	2015
	Indeno(1,2,3-cd)pyrene		2015	27	36	41	45	46	46	9.5	21	39	500	510	510	82	82	82	150	170	180	S4UL	LQM/CIEH	2015
	Naphthalene		2015	2.3	5.6	13	2.3	5.6	13	4.1	10	24	190	460	1100	4900	4900	4900	1200	1900	3000	S4UL	LQM/CIEH	2015
	Phenanthrene		2015	95	220	440	1300	1500	1500	15	38	90	22000	22000	23000	3100	3100	3100	6200	6200	6300	S4UL	LQM/CIEH	2015
	Pyrene		2015	620	1200	2000	3700	3800	3800	110	270	620	54000	54000	54000	7400	7400	7400	15000	15000	15000	S4UL	LQM/CIEH	2015
Coal Tar (Bap as surrogate matter)		2015	0.79	0.98	1.1	1.2	1.2	1.2	0.32	0.67	1.2	15	15	15	2.2	2.2	2.2	4.4	4.7	4.8	S4UL	LQM/CIEH	2015	
	1,2 Dichloroethane		2015	0.0071	0.011	0.019	0.0092	0.013	0.023	0.0046	0.0083	0.016	0.67	0.97	1.7	29	29	29	21	24	28	S4UL	LQM/CIEH	2015
	1,1,1 Trichloroethane		2015	8.8	18	39	9	18	40	48	110	240	660	1300	3000	140000	140000	140000	57000	76000	100000	S4UL	LQM/CIEH	2015
	1,1,2,2 Tetrachloroethane		2015	1.6	3.4	7.5	3.9	8	17	0.41	0.89	2	270	550	1100	1400	1400	1400	1800	2100	2300	S4UL	LQM/CIEH	2015
	1,1,1,2 Tetrachloroethane		2015	1.2	2.8	6.4	1.5	3.5	8.2	0.79	1.9	4.4	110	250	560	1400	1400	1400	1500	1800	2100	S4UL	LQM/CIEH	2015
	Tetrachloroethene (PCE)		2015	0.18	0.39	0.9	0.18	0.4	0.92	0.65	1.5	3.6	19	42	95	1400	1400	1400	810	1100	1500	S4UL	LQM/CIEH	2015
			2021	0.31	0.7	1.6	0.32	0.71	1.6	2	4.8	11	24	55	130	3200	3300	3400	1400	1900	2500	C4SL	CLAIRE	2021
	Tetrachloromethane (Carbon Tetrachloride)		2015	0.026	0.056	0.13	0.026	0.056	0.13	0.45	1	2.4	2.9	6.3	14	890	920	950	190	270	400	S4UL	LQM/CIEH	2015
	Trichloroethene (TCE)		2015	0.016	0.034	0.075	0.017	0.036	0.08	0.041	0.091	0.21	1.2	2.6	5.7	120	120	120	70	91	120	S4UL	LQM/CIEH	2015
			2021	0.0093	0.02	0.043	0.0097	0.02	0.045	0.032	0.072	0.16	0.73	1.5	3.4	76	78	79	41	54	69	C4SL	CLAIRE	2021
	Trichloromethane (Chloroform)		2015	0.91	1.7	3.4	1.2	2.1	4.2	0.42	0.83	1.7	99	170	350	2500	2500	2500	2600	2800	3100	S4UL	LQM/CIEH	2015
Vinyl Chloride (Chloroethene)		2015	0.00064	0.00087	0.0014	0.00077	0.001	0.0015	0.00055	0.001	0.0018	0.059	0.077	0.12	3.5	3.5	3.5	4.8	5	5.4	S4UL	LQM/CIEH	2015	
		2021	0.0064	0.01	0.017	0.015	0.019	0.029	0.0017	0.0031	0.0058	1.1	1.4	2.2	7.8	7.8	7.8	18	19	19	C4SL	CLAIRE	2021	
	2,4,6 Trinitrotoluen		2015	1.6	3.7	8.1	65	66	66	0.24	0.58	1.4	1000	1000	1000	130	130	130	260	270	270	S4UL	LQM/CIEH	2015
	RDX (Hexogen/Cyclonite/1,3,5-trinitro-1,3,5-triazacyclohexane)		2015	120	250	540	13000	13000	13000	17	38	85	210000	210000	210000	26000	26000	27000	49000	51000	53000	S4UL	LQM/CIEH	2015
	HMX (Octogen/1,3,5,7-tetrenitro-1,3,5,7-tetrazacyclo-octane)		2015	5.7	13	26	6700	6700	6700	0.86	1.9	3.9	110000	110000	110000	13000	13000	13000	23000	23000	24000	S4UL	LQM/CIEH	2015
	Aldrin		2015	5.7	6.6	7.1	7.3	7.4	7.5	3.2	6.1	9.6	170	170	170	18	18	18	30	31	31	S4UL	LQM/CIEH	2015
	Dieldrin		2015	0.97	2	3.5	7	7.3	7.4	0.17	0.41	0.96	170	170	170	18	18	18	30	30	31	S4UL	LQM/CIEH	2015

Land Use			Residential With or Without Plant Uptake									Allotments			Commercial			Public Open Space (POS)											
			With home-grown produce			Without home-grown produce			Residential									Park											
			SOM	1.0	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6								
Type	Contaminants	Species	Year																										
Residential	Chlorobenzene		2015	0.46	1	2.4	0.46	1	2.4	5.9	14	32	56	130	290	11000	13000	14000	1300	2000	2900	S4UL	LQM/CIEH	2015					
	1,2-Dichlorobenzene		2015	23	55	130	24	57	130	94	230	540	2000	4800	11000	90000	95000	98000	24000	36000	51000	S4UL	LQM/CIEH	2015					
	1,3-Dichlorobenzene		2015	0.4	1	2.3	0.44	1.1	2.5	0.25	0.6	1.5	30	73	170	300	300	300	390	440	470	S4UL	LQM/CIEH	2015					
	1,4-Dichlorobenzene		2015	61	150	350	61	150	350	15	37	88	4400	10000	25000	17000	17000	1700	36000	36000	36000	S4UL	LQM/CIEH	2015					
	1,2,3,-Trichlorobenzene		2015	1.5	3.6	8.6	1.5	3.7	8.8	4.7	12	28	102	250	590	1800	1800	1800	770	1100	1600	S4UL	LQM/CIEH	2015					
	1,2,4,-Trichlorobenzene		2015	2.6	6.4	15	2.6	6.4	15	55	140	320	220	530	1300	15000	17000	19000	1700	2600	4000	S4UL	LQM/CIEH	2015					
	1,3,5,-Trichlorobenzene		2015	0.33	0.81	1.9	0.33	0.81	1.9	4.7	12	28	23	55	130	1700	1700	1800	380	580	860	S4UL	LQM/CIEH	2015					
	1,2,3,4,-Tetrachlorobenzene		2015	15	36	78	24	56	120	4.4	11	26	1700	3080	4400	830	830	830	1500	1600	1600	S4UL	LQM/CIEH	2015					
	1,2,3,5,- Tetrachlobenzene		2015	0.66	1.6	3.7	0.75	1.9	4.3	0.38	0.9	2.2	49	120	240	78	79	79	110	120	130	S4UL	LQM/CIEH	2015					
	1,2,4, 5,- Tetrachlobenzene		2015	0.33	0.77	1.6	0.73	1.7	3.5	0.06	0.16	0.37	42	72	96	13	13	13	25	26	26	S4UL	LQM/CIEH	2015					
	Pentachlorobenzene		2015	5.8	12	22	19	30	38	1.2	3.1	7	640	770	830	100	100	100	190	190	190	S4UL	LQM/CIEH	2015					
	Hexachlorobenzene		2015	1.8	3.3	4.9	4.1	5.7	6.7	0.47	1.1	2.5	110	120	120	16	16	16	30	30	30	S4UL	LQM/CIEH	2015					
Commercial	Phenols		2012	420			420			280			3200									SGV	DEFRA	2012					
			2015	120	200	380	440	690	1200	23	42	83	440	690	1300	440	690	1300	440	690	1300	S4UL	LQM/CIEH	2015					
	Chlorophenols (4 Congeners)		2015	0.87	2	4.5	94	150	210	0.13	0.3	0.7	3500	4000	4300	620	620	620	1100	1100	1100	S4UL	LQM/CIEH	2015					
	Pentachlorophenols		2015	0.22	0.52	1.2	27	29	31	0.03	0.08	0.19	400	400	400	60	60	60	110	120	120	S4UL	LQM/CIEH	2015					
Public Open Space (POS)	Carbon Disulphide		2015	0.14	0.29	0.62	0.14	0.29	0.62	4.8	10	23	11	22	47	11000	11000	12000	1300	1900	2700	S4UL	LQM/CIEH	2015					
	Hexachloro-1,3-Butadiene		2015	0.29	0.7	1.6	0.32	0.78	1.8	0.25	0.61	1.4	31	66	120	25	25	25	48	50	51	S4UL	LQM/CIEH	2015					
	Sum of PCDDs, PCDFs and dioxin-like PCB's.		2012	8			8			8			240									SGV	DEFRA	2012					
NOTE																													
	Priority		Guideline (mg kg ⁻¹)																										
	1		Site Specific Assessment Criteria (SSAC) (Soils Limited)																										
	2		2014: Category 4 Screening Level (C4SL) (Contaminated Land: Application in Real Environment (CL:ARE), 2014 and 2021) * Use upper range value for Lead unless otherwise indicated																										
	3		2012: Soil Guideline Value (SGV) (Environment Agency, 2009)																										
	4		2015: Suitable 4 Use Level (S4UL) (Nathanail et al, 2015)																										
For Generic Risk Assessment, the values in Bold should have priority unless site specific, Client or regulatory requirements dictate otherwise – which must be justified																													
Table reviewed January 2024																													

Appendix D Initial Gas Monitoring Readings

Job Number:	21511
Site Name:	Littlefold Family Resource Centre
BH/WS ID:	WS01
Date:	19/07/2024
Start Time:	09:59:43

Weather	* Delete as appropriate			
Wind		Light		
Cloud Cover	None			
Precipitation	Dry			
Ground Conditions	Dry			

Gas Monitor:*	Gas Data GFM 435 11555	or	
PID:*		or	Tiger
Dip meter:*		or	Single Phase

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
1.29	2.91

Step 1			
Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05	0.0	0
	00:00:30	0.0	0
	00:01:00	0.0	0
	00:02:00		
	00:03:00		
	00:04:00		
	00:05:00		
	00:06:00		
	00:07:00		
	00:08:00		
	00:09:00		
	00:10:00		
	00:11:00		

Step 2									
Monitoring interval	CH ₄ % v/v	CO ₂ % v/v	O ₂ % v/v	LEL CH ₄ %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (°C)
Atmosphere	0.0	0	20.3	0.0	0	0	1007	0	25
Borehole measurement	00:00:05	0.0	0.1	20.1	0	0		0	
	00:00:30	0.0	2.0	18.6	0	0		0	
	00:01:00	0.0	3.2	16.4	0	0		0	
	00:02:00	0.0	3.5	16.1	0	0		0	
	00:03:00	0.0	3.5	16.1	0	0		0	
	00:04:00								
	00:05:00								
	00:06:00								
	00:07:00								
	00:08:00								
	00:09:00								
	00:10:00								

Samples		Notes;

Job Number:	21511
Site Name:	Littlefold Family Resource Centre
BH/WS ID:	WS1
Date:	05/08/2024
Start Time:	14:44:00

Weather	* Delete as appropriate			
Wind		Light		
Cloud Cover			Cloudy	
Precipitation	Dry			
Ground Conditions	Dry			

Gas Monitor:*	Gas Data GFM 435 11555	or	
PID:*	Watchgas Poli	or	
Dip meter:*		or	Single Phase

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
1.43	2.90

Step 1			
Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05	0.0	0
	00:00:30	0.0	0
	00:01:00	0.0	0
	00:02:00		
	00:03:00		
	00:04:00		
	00:05:00		
	00:06:00		
	00:07:00		
	00:08:00		
	00:09:00		
	00:10:00		
	00:11:00		

Step 2									
Monitoring interval	CH ₄ % v/v	CO ₂ % v/v	O ₂ % v/v	LEL CH ₄ %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (°C)
Atmosphere	0.0	0	20.5	0.0	0	0	1004	0	25
Borehole measurement	00:00:05	0.0	0.0	11.0	0	0	1004	0	
	00:00:30	0.0	6.2	10.2	0	0	1004	0	
	00:01:00	0.0	6.2	10.2	0	0	1004	0	
	00:02:00	0.0	6.2	10.2	0	0		0	
	00:03:00	0.0	6.2	10.2	0	0		0	
	00:04:00	0.0	6.2	10.2	0	0		0	
	00:05:00								
	00:06:00								
	00:07:00								
	00:08:00								
	00:09:00								
	00:10:00								

Samples		Notes;
1 Litre Plastic		
1 Litre Glass		
40ml Vial		
Gas sample (Tedlar bag		

Job Number:	21511
Site Name:	Littlefold Family Resource Centre
BH/WS ID:	WS03
Date:	19/07/2024
Start Time:	10:18:25

Weather	* Delete as appropriate			
Wind		Light		
Cloud Cover	None			
Precipitation	Dry			
Ground Conditions	Dry			

Gas Monitor:*	Gas Data GFM 435 11555	or	
PID:*		or	Tiger
Dip meter:*		or	Single Phase

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
Dry	2.85

Step 1			
Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05	0.0	
	00:00:30	0.0	
	00:01:00	0.0	
	00:02:00		
	00:03:00		
	00:04:00		
	00:05:00		
	00:06:00		
	00:07:00		
	00:08:00		
	00:09:00		
	00:10:00		
	00:11:00		

Step 2									
Monitoring interval	CH ₄ % v/v	CO ₂ % v/v	O ₂ % v/v	LEL CH ₄ %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (°C)
Atmosphere	0.0	0	20.3	0.0	0	0	1007	0	25
Borehole measurement	00:00:05	0.0	0.1	20.0	0	0		0	
	00:00:30	0.0	3.2	16.5	0	0		0	
	00:01:00	0.0	3.4	16.1	0	0		1	
	00:02:00	0.0	3.4	16.1	0	0		1	
	00:03:00								
	00:04:00								
	00:05:00								
	00:06:00								
	00:07:00								
	00:08:00								
	00:09:00								
	00:10:00								

Samples		Notes;

Job Number:	21511
Site Name:	Littlefold Family Resource Centre
BH/WS ID:	WS3
Date:	05/08/2024
Start Time:	14:34:00

Weather	* Delete as appropriate			
Wind	Still			
Cloud Cover			Cloudy	
Precipitation	Dry			
Ground Conditions	Dry			

Gas Monitor:*	Gas Data GFM 435 11555	or	
PID:*	Watchgas Poli	or	
Dip meter:*		or	Single Phase

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
dry	2.84

Step 1			
Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05	0.0	0
	00:00:30	0.0	0
	00:01:00	0.0	0
	00:02:00		
	00:03:00		
	00:04:00		
	00:05:00		
	00:06:00		
	00:07:00		
	00:08:00		
	00:09:00		
	00:10:00		
	00:11:00		

Step 2									
Monitoring interval	CH ₄ % v/v	CO ₂ % v/v	O ₂ % v/v	LEL CH ₄ %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (°C)
Atmosphere	0.0	0	20.5	0.0	0	0	1004	0	25
Borehole measurement	00:00:05	0.0	0.5	19.9	0.0	0	1004	0	
	00:00:30	0.0	3.9	18.0	0.0	0	1004	0	
	00:01:00	0.0	3.9	18.0	0.0	0	1004	0	
	00:02:00	0.0	3.9	18.0	0.0	0		0	
	00:03:00	0.0	3.9	18.0	0.0	0		0	
	00:04:00	0.0	3.8	18.0	0.0	0		0	
	00:05:00								
	00:06:00								
	00:07:00								
	00:08:00								
	00:09:00								
	00:10:00								

Samples		Notes;
1 Litre Plastic		
1 Litre Glass		
40ml Vial		
Gas sample (Tedlar bag)		

Job Number:	21511
Site Name:	Littlefold Family Resource Centre
BH/WS ID:	WS05
Date:	19/07/2024
Start Time:	

Weather	* Delete as appropriate			
Wind		Light		
Cloud Cover	None			
Precipitation	Dry			
Ground Conditions	Dry			

Gas Monitor:*	Gas Data GFM 435 11555	or	
PID:*		or	Tiger
Dip meter:*		or	Single Phase

Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
Dry	2.97

Step 1			
Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05	0.0	
	00:00:30	0.0	
	00:01:00	0.0	
	00:02:00		
	00:03:00		
	00:04:00		
	00:05:00		
	00:06:00		
	00:07:00		
	00:08:00		
	00:09:00		
	00:10:00		
	00:11:00		

Step 2									
Monitoring interval	CH ₄ % v/v	CO ₂ % v/v	O ₂ % v/v	LEL CH ₄ %	H2S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (°C)
Atmosphere	0.0	0	20.3	0.0	0	0	1007	0	25
Borehole measurement	00:00:05	0.0	0.1	20.1	0	0		0	
	00:00:30	0.0	2.0	17.3	0	0		0	
	00:01:00	0.0	2.1	16.9	0	0		0	
	00:02:00	0.0	2.1	16.8	0	0		0	
	00:03:00	0.0	2.1	16.8	0	0		0	
	00:04:00								
	00:05:00								
	00:06:00								
	00:07:00								
	00:08:00								
	00:09:00								
	00:10:00								

Samples		Notes;

Job Number:	21511
Site Name:	Littlefold Family Resource Centre
BH/WS ID:	WS5
Date:	05/08/2024
Start Time:	14:22:00

Weather	* Delete as appropriate			
Wind	Still			
Cloud Cover			Cloudy	
Precipitation	Dry			
Ground Conditions	Dry			

Gas Monitor:*	Gas Data GFM 435 11555	or	
PID:*	Watchgas Poli	or	
Dip meter:*		or	Single Phase

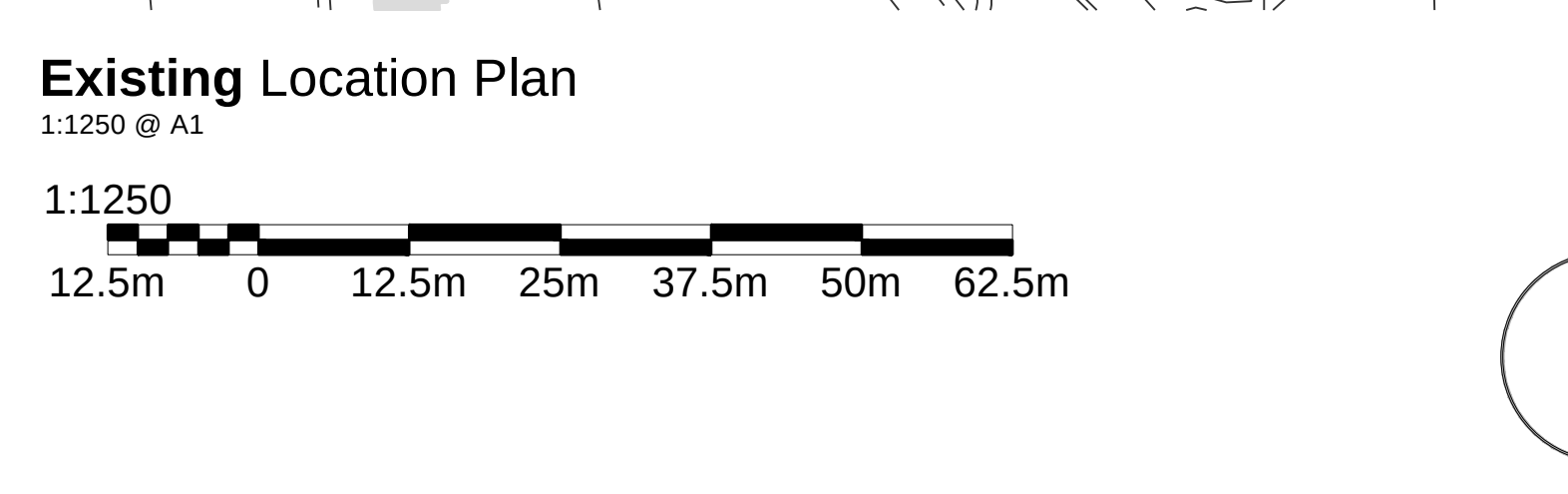
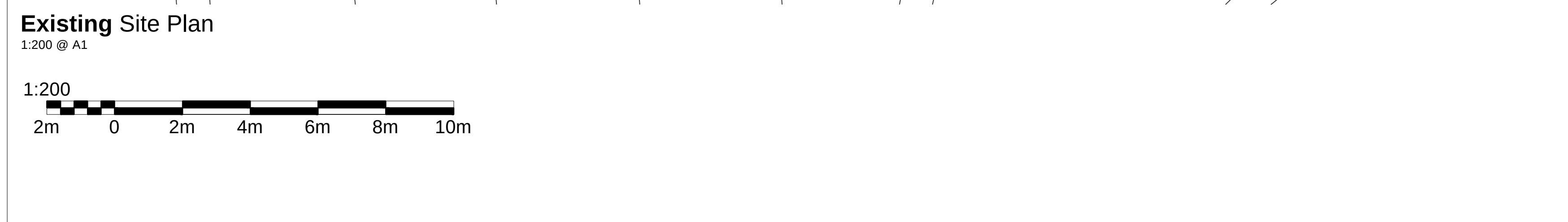
Step 3	
Depth to Water (m bgl)	Base of Hole (m bgl)
dry	2.95

Step 1			
Monitoring interval	Flow L/hr	Dp Pa	SP mB
Borehole measurement	00:00:05	0.0	0
	00:00:30	0.0	0
	00:01:00	0.0	0
	00:02:00		
	00:03:00		
	00:04:00		
	00:05:00		
	00:06:00		
	00:07:00		
	00:08:00		
	00:09:00		
	00:10:00		
	00:11:00		

Step 2									
Monitoring interval	CH ₄ % v/v	CO ₂ % v/v	O ₂ % v/v	LEL CH ₄ %	H ₂ S ppm	Co ppm	Ap mB	VOC (PPM)	Temp (°C)
Atmosphere	0.0	0	20.6	0.0	0	0	1005	0	25
Borehole measurement	00:00:05	0.0	0.0	19.7	0	0	1005	0	
	00:00:30	0.0	2.8	18.4	0	0	1005	0	
	00:01:00	0.0	2.8	18.4	0	0	1005	0	
	00:02:00	0.0	2.8	18.4	0	0		0	
	00:03:00	0.0	2.8	18.4	0	0		0	
	00:04:00	0.0	2.8	18.4	0	0		0	
	00:05:00								
	00:06:00								
	00:07:00								
	00:08:00								
	00:09:00								
	00:10:00								

Samples		Notes;
1 Litre Plastic		
1 Litre Glass		
40ml Vial		
Gas sample (Tedlar bag)		

Appendix E Client Supplied Information



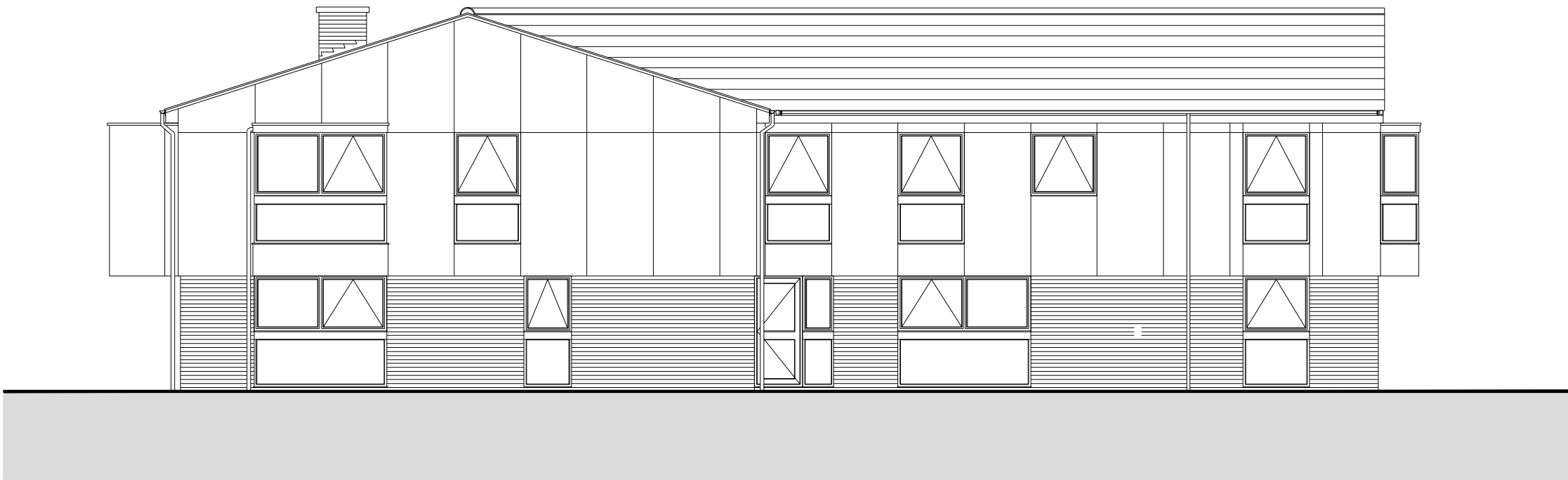
project	Former Link's Children's Centre, Linnet Close Waterlooville		
detail	Existing Site & Location Plan		
drawn	MP	checked	HM
date	Jun '24	status	Planning
a1 scale	a3 scale	18177-PD001	rev
1:200	1:400		



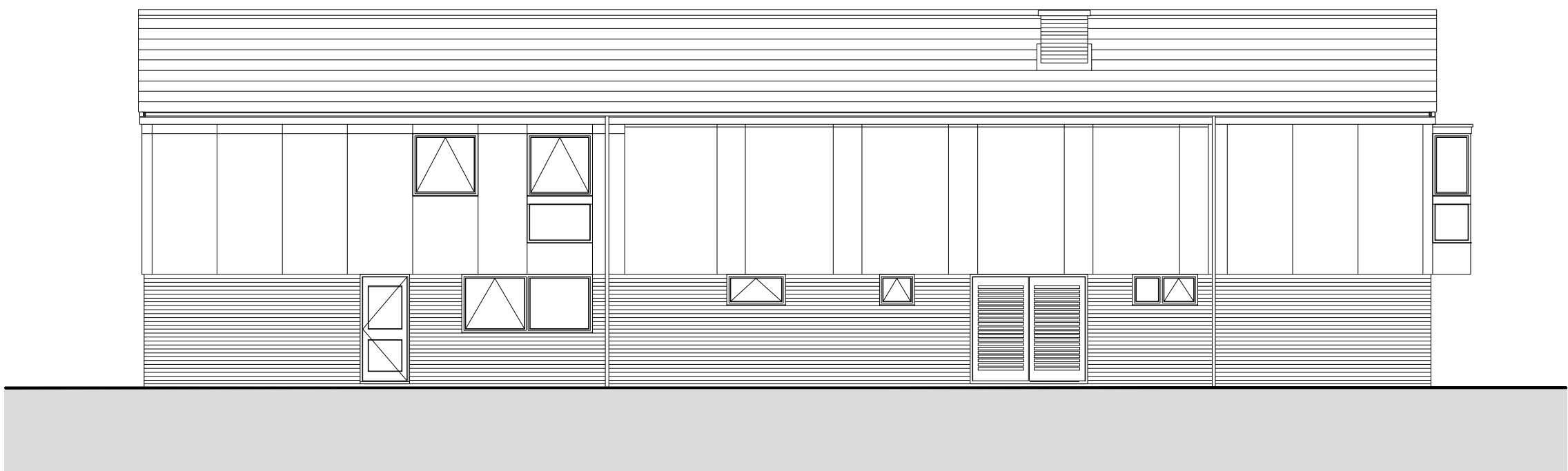
Proposed South Elevation



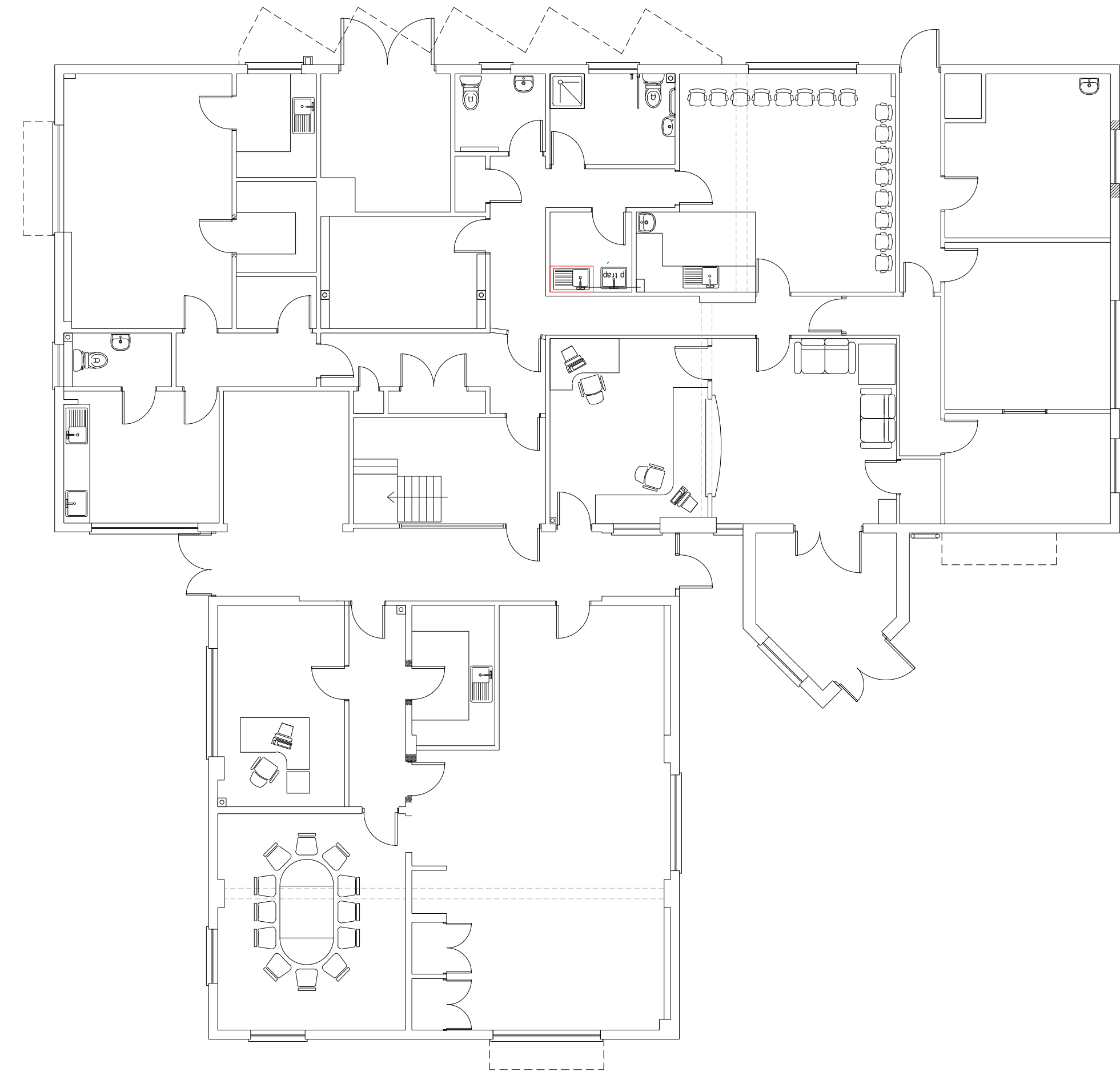
Proposed West Elevation



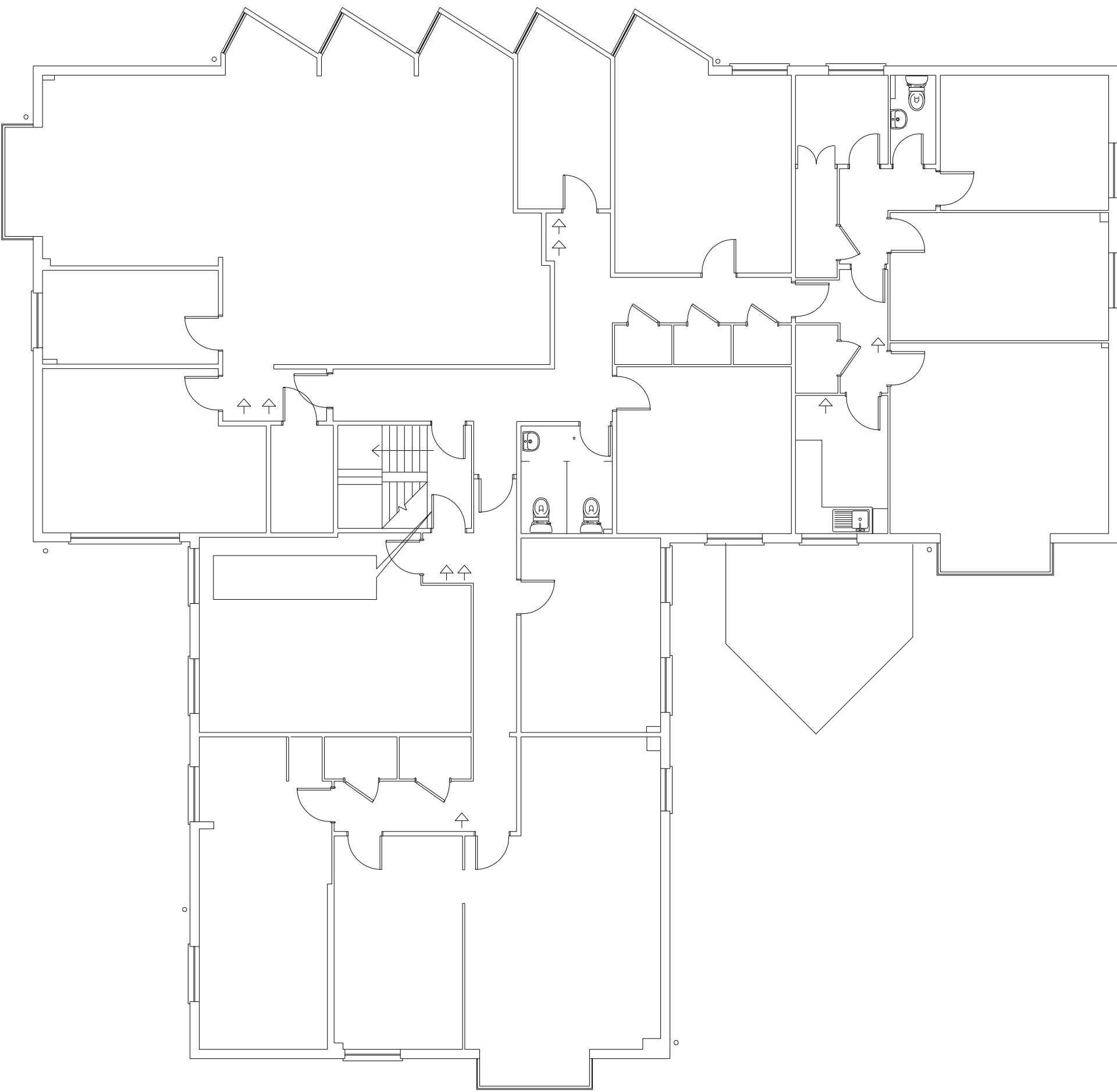
Proposed West Elevation



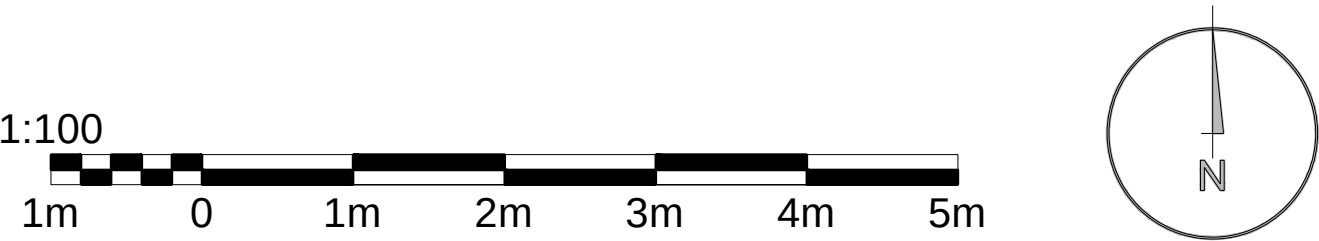
Proposed North Elevation



Ground Floor Plan



First Floor Plan



notes

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all dimensions to be checked on site prior to commencement of construction works and the architect notified of any discrepancy.

figured dimensions are to be used in preference to scaled dimensions.

no deviation from this drawing will be permitted without prior consent of the architect.

all drawings are prepared subject to a full measured and structural survey of the buildings and site.

all structural work is subject to the appointment of a structural engineer to confirm and agree the structural proposals.

os promap licence no. 100020449.

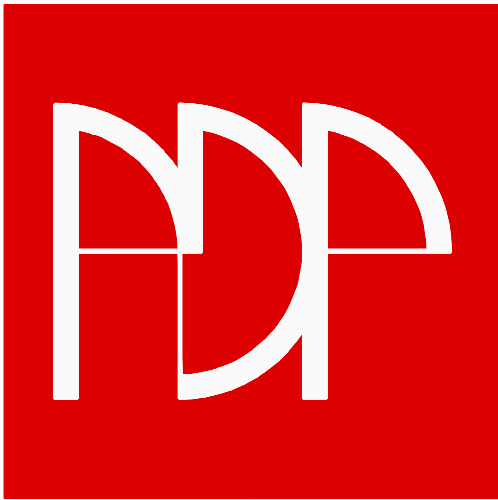
health & safety:
exceptional risks involving specific methods of construction or exceptional maintenance issues can be found within the designers risk assessment.

scale width 50 mm @ a1 - 25 mm @ a3

revision	notes	date	drawn	checked



PRELIMINARY



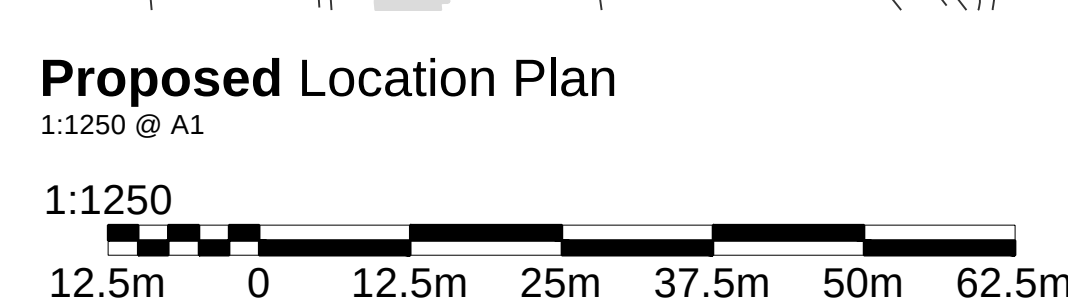
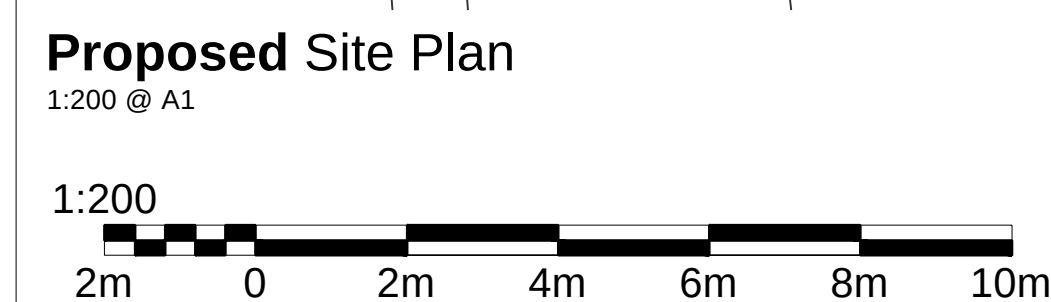
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project	Former Link's Children's Centre, Linnet Close Waterloooville		
detail	Existing Plans & Elevations		
drawn	MP	checked	HM
date	Jun '24	status	Planning
a1 scale	a3 scale		rev
1:100	1:200	18177-PD002	



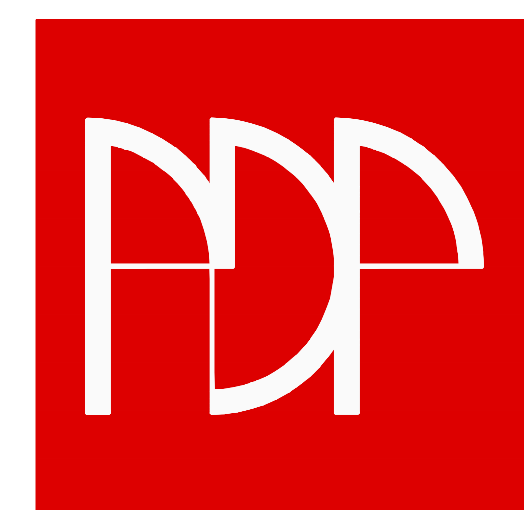
16 no. secure cycle spaces
4 no. short stay cycle spaces
TOTAL: 20 no. cycle spaces

revision	notes	date	drawn	checked
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Havant
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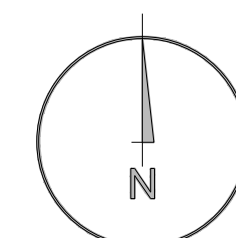
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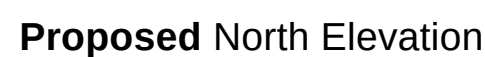
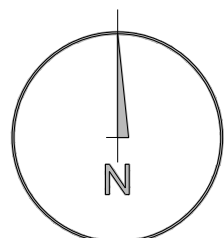
detail	Proposed Site & Location Plan
--------	----------------------------------

drawn	checked
MP	HM

date	status
Jun '24	Planning

	Jun '24	Planning
a1 scale	a3 scale	





10no. Residential Units

No.	Capacity	Area
1	1B1P	48.8 m ²
2	1B1P	49.7 m ²
3	2B4P	70.7 m ²
4	2B4P	70.5 m ²
5	2B4P	74.1 m ²
6	1B1P	48.8 m ²
7	1B1P	49.7 m ²
8	2B4P	74.3 m ²
9	2B4P	82.1 m ²
10	2B4P	71.3 m ²
	Total Area	640m ²
	4 x 1B1P 6 x 2B4P	

Elevation Key

1		Facing Brickwork, existing openings infilled with brickwork to match existing in tone and mortar colour
2		Millboard Composite Cladding: Envello; colour TBC
3		Existing Concrete interlocking roof tiles
4		Fascias/Soffits/Barge Boards; colour TBC
5		Existing openings infilled
6		Rainwater goods, UPVC; colour TBC
7		UPVC panel below window, proposed bay windows to match existing, colour TBC

Plan Key

	Retained External Wall
	Proposed External Wall
	Retained Internal Wall
	Proposed Internal Wall
	Removed

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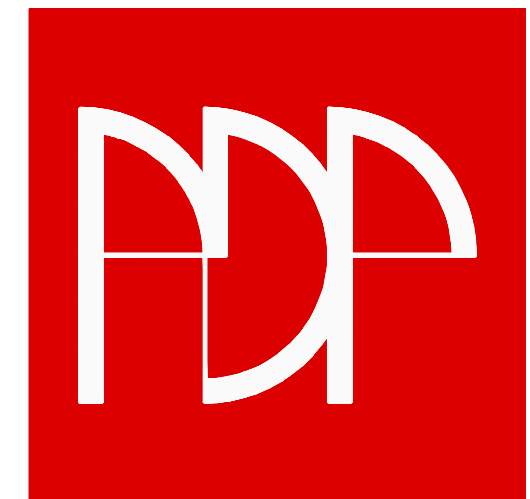
health & safety:
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		scale width 50 mm @ a1 - 25 mm @ a3			
revision	notes	date	drawn	checked	

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drawn	MP	checked	HM
date	Jun '24	status	Planning
a1 scale	a3 scale		rev
1:100	1:200	18177-PD012	

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