

MJH EXECUTIVE HOMES LIMITED

LANGFORD, HORSEMERE GREEN LANE, CLIMPING

SUPPLEMENTARY GEOENVIRONMENTAL ASSESSMENT REPORT
(REVISION 1)

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1. INTRODUCTION

It is proposed to redevelop land south of Horsemere Green Lane, Climping for residential purposes. The site is currently occupied by a residential property and associated grounds. The proposed development comprises the construction of two-storey residential properties with associated garden areas, car parking facilities and access road.

Crossfield Consulting Limited undertook a ground investigation at the property in early 2020. The investigation did not identify any valid potential pollutant linkages with respect to the proposed development. Notwithstanding this, a “contamination” condition was placed on the planning consent, due to the presence of potentially contaminative off-site historical uses to the east and south of the site.

This report presents the information obtained from supplementary desk studies and ground investigation. A risk-based assessment of potential contamination, including off-site sources, is included in Section 7 of the report. This assessment makes reference to the desk study, phased ground investigation information and a Conceptual Site Model. It is considered that the report complies with National Planning Policy Framework and is in general accordance with guidance published by the Environment Agency. This report should be read in conjunction with the Site Investigation Report, as referenced.

It should be noted that a geotechnical assessment is outside the scope of this report.

2. THE SITE

2.1 Location

The site is located off Horsemere Green Lane, approximately 3 km west of Littlehampton town centre, as shown on Figure 1. The National Grid Reference for the site is SU 997 022. The site boundaries are formed by Horsemere Green Lane to the north, residential properties to the east and south and a private access lane to the west, as shown on Figure 2.

2.2 Site Description

The following site description is based on observations made at the time of the ground investigations in December 2019, March and September 2020.

The site is roughly rectangular in shape and narrows slightly within the southern section, with a total approximate area of 0.5 ha. The site is generally level with some minor variations.

At the time of the first two phases of investigation, a residential property occupied the northern part of the site. This property was a bungalow of traditional construction with an associated garage. The rest of the site predominantly consisted of a private garden. The site has now been cleared of all structures and most of the vegetation.

2.3 Site History

Information on the site history is presented in detail in the Site Investigation Report. Some additional anecdotal information has been obtained from the residents of an adjoining property, Forget-Me-Not-Cottage, and this is presented in Appendix I. In addition, anecdotal information has been obtained from a conversation with Mr Laurence Forster, the son of the former owner of the property associated with the potentially contaminative

off-site historical uses to the east and south of the site, and Mr Stuart Boxall, a former tenant of one of the units on the site.

In summary, up until the early twentieth century, the site and adjoining land was undeveloped and within a field, immediately to the south of Horsemere Green Lane.

From online resources, it is understood that the land to the north of Horsemere Green Lane was developed as an aerodrome in the First World War and then closed in 1920. The aerodrome reopened in 1930 for civil flying and then was used from 1937 until 1958 for military aviation. Civil aircraft continued to use the airfield until all flying finally ceased in 1980.

By the late 1930s, a detached property had been constructed on site. Residential properties had also been built to the east, west and south, now known respectively as *Forget-Me-Not-Cottage*, *Haven* and *Sherwood*.

It is understood that, after the Second World War, the land to the east of *Haven* and *Sherwood* was used as a chrysanthemum nursery and then as a mushroom farm. By the 1960s, a Works had been constructed, approximately 25 m to the east of the site, adjacent to *Haven* and *Sherwood*. It is understood that the majority of the grounds of *Haven* and *Sherwood* properties were lawns. A horticultural nursery had been developed to the east of the works by the 1970s.

Part of the former aerodrome, to the northeast of the site was redeveloped as the Rudford Industrial Estate in the 1980s. The 1984 plan shows that the Works area also contained a Scrap Yard and Foundry. It is understood that the works consisted of several units occupied by businesses run by the Forster family, which comprised a scrap yard, associated with the disassembly of motor vehicles, a small-scale aluminium smelting business (foundry), wooden fencing manufacture, including a saw mill, and furniture repair. Several units were let to tenants which included vehicle body repair companies (Boxall & Clinch, Arun Body Shop & John Reynolds), a fibre glass moulding company and a boat sail repairs company. It is understood that the works closed in the mid 1980s and the site was vacated.

By 1989, the area to the east of the site, formerly occupied by the Works, Scrap Yard and Foundry, had been redeveloped with housing either side of a new road identified as Apple Tree Walk.

No significant changes have occurred on site since the development of the detached property in the 1930s and in the surrounding area since the 1990s.

2.4 Desk Study Enquiries

Detailed desk study information is provided in the Site Investigation Report. Information pertinent to the assessment provided in this Supplementary Geoenvironmental Assessment Report is summarised below.

There are no active or historical landfills recorded within 500 m of the site. A former scrap yard is recorded approximately 50 m to the east.

Active Industrial features recorded within 100 m of the site are all located on the Rudford Industrial Estate to the northeast and include a vehicle repair business.

There is one pollution incident recorded that occurred in 2003 and was located 152 m to the northeast of the site. The pollutant is described as oils and fuels and wastes and is recorded to have had a minor impact on the land and water environment. There are no premises determined as Contaminated Land under Part 2A of the Environmental Protection Act (1990) within 500 m of the site.

Hydrogeological information indicates that the superficial deposits, beneath the site, are classified as a 'Secondary A' aquifer. The underlying chalk is classified as 'Principal' strata. The site is not located within a groundwater Source Protection Zone. There are no active groundwater abstraction licences recorded within 1 km of the site.

Hydrological information indicates that there are no surface water features located within 250 m of the site. The site is not located within a flood Zone 2 or Zone 3, as designated by the Environment Agency.

There are no environmentally sensitive land designations located within 500 m of the site.

The BRE Document *BR211 – Radon: Guidance on Protective Measures for New Buildings* (2015) and Groundsure geological database information indicates that the site is not within an area where radon precautions would be required in new buildings.

3. PUBLISHED GEOLOGY

Geological map data published by the British Geological Survey (BGS) online and in print, on 1:50,000 scale Sheet No. 317/332 Chichester and Bognor indicate that superficial River Terrace Deposits are present on site. The solid strata below the site are indicated to comprise undifferentiated Chalk of the Upper Cretaceous system.

4. GROUND CONDITIONS AND GEOLOGICAL MODEL

4.1 Ground Investigation

Details of the rationale and scope of the supplementary ground investigation and laboratory testing, together with exploratory hole logs, monitoring, in situ and laboratory test results, are given in Appendix I. The investigations have identified the presence of the following, below the site.

4.2 Buried Foundations and Services

Buried foundations and services were not encountered within the exploratory holes. Services and foundations will be present on site associated with the current residential property.

4.3 Strata Encountered

Topsoil/Made Ground

Topsoil was present across the site to depths of between 0.1 m and 0.45 m. The materials typically comprise sandy silts and silty clay/clayey silt with occasional fragments of brick, charcoal and concrete recorded. At the time of the September 2020 investigation, all of the topsoil had been removed from developable areas.

River Terrace Deposits

Underlying the topsoil are strata considered to be River Terrace Deposits, comprising sandy gravelly clays and silty sands. The River Terrace Deposits have been recorded to depths of between 3.4 m and in excess of 5.0 m.

Upper Cretaceous Chalk strata

Underlying the River Terrace Deposits weathered chalk strata are present to the maximum depth investigated of 5.0 m and comprising Grade Dc structureless chalk (as defined in CIRIA C574).

4.4 Groundwater

Groundwater strikes were recorded within the windowless sample boreholes at depths of between 2.5 m and 3.2 m and as seepages within trial pits between 1.4 m and 2.0 m depth. Subsequent groundwater monitoring data collected from standpipes installed within the boreholes has recorded water depths of between 1.0 m and 1.9 m.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

5. PROPOSED DEVELOPMENT

The proposed development, which is shown on Figure 3, comprises the following:

- Two-storey residential properties with associated private gardens
- Car parking areas and areas of hardstanding
- New access road

6. ASSESSMENT OF POTENTIAL CONTAMINATION AND GROUND GASES

6.1 Assessment Criteria

Assessment of potential contamination and ground gases has been undertaken using a risk assessment based approach, as recommended within the Environmental Protection Act (1990), CLR11 (2004), CLEA Model (2004-2009), BS 10175:2011+A2:2017, CIRIA C552 (2001) and NHBC R&D Report 66 (2008). This approach considers the likely source of contamination, given the history and location of the site, and the possible migration pathways by which these potentially hazardous substances may reach likely receptors, such as end users of the site, controlled waters or the wider environment, in the context of the proposed development.

Part IIA of the Environmental Protection Act (1990) states that:

“Contaminated Land is any 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) significant pollution of controlled waters is being caused or there is significant possibility of such pollution being caused;”

All risk assessments carried out as part of this investigation have been carried out with respect to the definition of “contaminated land” within Part IIA of the Environmental Protection Act (1990) and have considered the site both before and on completion of the development. The basis of the risk assessment is the Conceptual Site Model, which is derived from the desk study and initial information and identifies potential pollutant linkages that could affect receptors relevant to the site and the wider environment. The Conceptual Site Model is presented in Table 1.

Based on the model, no valid pollutant linkages have been identified. Notwithstanding this, a supplementary ground investigation was designed to inspect, sample and test shallow soils in the proposed garden areas closest to the former Works, scrap yard and foundry. The rationale for the sampling and the results of the analytical testing are presented in Appendix I and summarised in Table 2.

6.2 Potential Sources of Contamination

With reference to the site history, the site has previously only been used for residential purposes since the 1930s and prior to this was associated with agricultural land. With respect to potential sources of off-site contamination, no current industrial features or businesses associated with potentially mobile contaminants have been identified immediately adjacent to the site.

The land to the east of the site was used for agricultural/horticultural purposes up until the 1960s. Pesticides/herbicides and organic matter may have been used, but these all typically have a low residency time in soils and rapidly degrade. Hence, given the time elapsed are considered not to be a potential source of contamination.

Between the 1960s and the late 1980s, a works and a scrap yard were present to the east of the site (closest boundary 20 m from the site) and a foundry was present approximately 50 m to the southeast. It is understood that operations included fencing manufacture, the dismantling of motor vehicles, vehicle body repairs, fibre glass moulding and small-scale aluminium smelting. Potential contaminants associated with these operations include metals, polyaromatic hydrocarbons, petroleum hydrocarbons and volatile organic compounds (paints and solvents). The property associated with the works/scrap yard/foundry is shown to have been redeveloped into the existing housing associated with Apple Tree Walk by the late 1980s/early 1990s. Whilst it is understood that there is no record of any remediation works undertaken in relation to this development, it is likely that any grossly contaminated materials would have been removed from site during the redevelopment works. Any remaining potential contaminants are likely to be relatively immobile, such as metals or long carbon-chain hydrocarbons, as more mobile contaminants such as volatile organic compounds and other short carbon-chained hydrocarbons are likely to have volatilised/degraded significantly given that the potentially contaminative operations took place in excess of 30 year ago. On this basis it is considered that there is a negligible risk to the proposed development from any potential off-site contamination.

Shallow Made Ground was encountered at one location and there was no visual or olfactory evidence of potentially contaminating material within the Made Ground or the natural strata encountered. The results of analytical laboratory testing undertaken on shallow soil samples are summarised in Table 2. Based on the results, all concentrations of potential contamination are well below Generic Assessment Criteria (GAC) and/or Category 4 Screening Level (C4SL) for a residential with plant uptake land use. No asbestos containing materials (ACMs) have been detected in any of the samples tested.

Therefore it is considered that there are no sources of on-site contamination that could constrain development at this site and no remediation works should be required. It is also noted that there are no changes proposed to the site usage (i.e. the site is residential and will remain residential following development) such that the proposed development does not represent a more sensitive end use compared to the existing land use.

In the extremely unlikely event that, during the groundworks phase of construction, potentially contaminated ground or groundwater are encountered, the Site Manager should inform Crossfield Consulting and a suitably qualified geoenvironmental engineer will attend site to assess the ground, recover samples, if necessary, and issue an assessment, including the requirement for any remedial works. Any such discovery would be notified to Arun District Council and any resulting assessment and remedial works recommendation would be agreed prior to instigation. It is recommended that, following completion of the groundworks, the developer provides confirmation to Arun District Council that no potentially contaminated ground or groundwater was encountered during the works.

No putrescible material has been identified at the site and there are no recorded landfills within influencing distance. The site is not within an area where precautions against the ingress of radon gas are required in new

dwelling. Therefore, it is considered that there are no sources of hazardous ground gases at the site and ground gas protection is not required for the proposed development.

6.3 Pollutant Linkages – Solids and Liquids

Based on the Conceptual Site Model, consideration is given below to identified pollutant linkages and a risk evaluation is undertaken of each possible source-pathway-receptor linkage that may occur at the site. The risk evaluation considers the potential consequences and probability of occurrence in accordance with CIRIA C552 (2001). Where risks are identified as “negligible”, then by implication such risks are within normally accepted levels for the proposed development, and the further reduction of such risks by remediation works is considered unnecessary. Where risks are identified that are “low” as defined in CIRIA C552 (2001), or worse, then consideration is given to the management of the identified risks, with appropriate recommended actions that may include engineering solutions / remediation works as described in the following sections.

6.3.1 Durability of Buried Structures and Services

In view of the low potential sulphate and low soluble sulphate content and near-neutral soil conditions, there are no special precautions required for the protection of good quality buried foundation concrete. Based on guidance within *BRE Special Digest 1* (2005), the specified DC Class of concrete for buried structures and foundations should be suitable for an ACEC site classification of AC-1.

The site has not been associated with past fuel and/or chemical storage and there are no such storage facilities in close proximity. Therefore, the site would not be considered to be ‘brownfield’ under the definition provided by UKWIR (2010) with respect to the assessment of ground for water supply pipes. Based on the guidance provided by UKWIR, conventional plastic materials can be used for potable water supply pipes without any requirements for specific testing.

It should be noted that individual water companies may have in-house requirements for the assessment of ground conditions for potable water supply pipes and these requirements may be in addition to, or may contradict, the guidance provided by UKWIR. Therefore, it is recommended that the relevant water supply company be consulted prior to finalising the potable water supply design.

6.4 Potential Liabilities

On the basis of the above assessment, it is considered that the site does not present a significant risk of harm to end users or the wider environment and retention of the materials currently at the site should not be associated with any liability following completion of the development.

7. SUMMARY

It is proposed to redevelop land south of Horsemere Green Lane, Climping for residential purposes. The site is currently occupied by a residential property and associated grounds. The proposed development comprises the construction of two-storey residential properties with associated garden areas, car parking facilities and access road.

Ground conditions at the site comprised a layer of topsoil/Made Ground present across the whole site to depths of between 0.1 m and 0.5 m. The majority of these materials have now been stripped, in preparation for the development works. Below the topsoil/Made Ground, sandy clays and medium dense sands considered to be River Terrace Deposit strata have been proven to depths of between 3.4 m and 5.0 m. Upper Cretaceous Chalk

strata underlie the River Terrace Deposits and have been proven at two locations to 5.0 m depth. In addition, shallow groundwater has been recorded at the site.

Based on historical maps and information from regulatory authorities, a conceptual site model has been developed that has not identified valid potential pollutant linkages. The phased ground investigation has confirmed that there are no valid pollutant linkages relating to end users, construction workers or neighbours/the public. No unacceptable risks to controlled waters have been identified. It is evident that no viable source of ground gas emission is present and ground gas precautions should not be necessary for the proposed development. In the extremely unlikely event that, during the groundworks phase of construction, potentially contaminated ground or groundwater are encountered, the Site Manager should inform Crossfield Consulting and a suitably qualified geoenvironmental engineer will attend site to assess the ground, recover samples, if necessary, and issue an assessment, including the requirement for any remedial works.

REFERENCES

Site Specific

Crossfield Consulting Limited (September 2020) *Horsmere Green Lane, Climping – Site Investigation Report (Revision 1)* Ref No. CCL03279.CL23-R1

Technical

BRE (2005) *Special Digest 1 – Concrete in aggressive ground*, CRC Ltd

BRE (2015) *BR211 – Radon: Guidance on protective measures for new buildings* BRE Press

BSI (2020) *BS 5930:2015+A1:2020 Code of Practice for Ground Investigations* British Standards Institution

BSI (2017) *BS 10175:2011+A2:2017 Code of Practice for Investigation of Potentially Contaminated Sites* British Standards Institution

CIRIA (2001) *CIRIA C552 – Contaminated Land Risk Assessment: A Guide to Good Practice* Construction Industry Research Association

Environment Agency (2004) *Model Procedures for the Management of Land Contamination CLR11* EA

Environment Agency (2010) *Guiding Principles for Land Contamination – GPLC1 to 3* EA

Ministry of Housing, Communities and Local Government (2019) *National Planning Policy Framework*

UKWIR (2010) *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* Report Ref. No. 10/WM/03/21 UK Water Industry Research

GENERAL NOTES

1. This report is provided in the context of the stated development proposals and should not be used in a different context.
2. The accuracy of map extracts cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
3. Any borehole data from the British Geological Survey sources are included on the following basis: 'The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation.
4. Where any data supplied by the Client or by other external sources, including previous site investigation data, have been used it has been assumed that the information is correct unless otherwise stated. No responsibility can be accepted by Crossfield Consulting Limited for inaccuracies within the data supplied by others.
5. Exploratory hole locations provided in the report are generally established by tape measurement from existing features or boundaries. Hole locations are not accurately surveyed and ground levels at these locations are not obtained unless specifically requested.
6. Any assessments made in this report are based on the ground conditions indicated by the trial pits and/or boreholes, together with the results of any field or laboratory testing undertaken and, where appropriate, other relevant site data which may have been obtained for the site. Variations in ground conditions may occur between exploratory hole locations and there may be special conditions appertaining to the site which have not been revealed by the investigation and which have not been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available.
7. The report is provided for the sole use by the Client or its assignees and is confidential to the Client's professional advisers. No responsibility whatsoever for the contents of this report will be accepted to any person other than the Client or its assignees.
8. New information, improved practices and legislation may necessitate an alteration to the report in whole, or in part, after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to Crossfield Consulting Limited for re-assessment and, if necessary, re-appraisal.

TABLES

TABLE 1

CONCEPTUAL SITE MODEL

Potential Contaminant Source	Potential Pathway	Receptors and Assessed Pollutant Linkage
Solids <i>On-site:</i> <i>Toxic metals:</i> No realistic source identified <i>Phototoxic metals:</i> No realistic source identified <i>Polyaromatic Hydrocarbons:</i> No realistic source identified <i>Asbestos:</i> No realistic source identified <i>Off-site:</i> No realistic source identified Liquids No realistic liquid source identified within desk study information. <i>Off-site:</i> No realistic source identified Gases <i>Landfill gases:</i> No realistic potential source identified <i>Putrescible Material/Thick Made Ground:</i> No evidence to suggest that such materials should be expected at significant depth beneath the site <i>Radon:</i> The site is not located within a radon affected area.	Movement of Solids Not applicable (No source). Release into Liquid Phase Not applicable (No source). Release into Vapour Phase Not applicable (No source) Movement of Liquids Not applicable (No source). Movement of Gases Not applicable (No source).	Human Health <i>End Users:</i> No pollutant linkage <i>Construction Workers:</i> No pollutant linkage <i>Adjacent Properties:</i> No pollutant linkage Buried Structures & Services No pollutant linkage Landscape & Garden Areas No pollutant linkage Controlled Waters <i>Groundwater:</i> Principal Aquifer in solid strata - No pollutant linkage <i>Surface Water:</i> No pollutant linkage Human Health No pollutant linkage

NOTES

1. The above conceptual model is based on CIRIA C552 (2001) and BS 10175:2011+A2:2017.
2. The Conceptual Site Model is prepared from available desk study information. Where a site walkover or ground investigation identifies information that was not known at the desk study stage, such information is used to modify the Model.

TABLE 2
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SUMMARY OF ANALYTICAL TEST DATA: SOILS
RISKS TO HUMAN HEALTH

Determinand	Units	No of Tests	Concentration (mg/kg)		Generic Assessment Criteria (mg/kg) Residential With Plant Uptake		Category 4 Screening Level (mg/kg) Residential With Plant Uptake	
			Min	Max	Value	No>GAC	Value	No>C4SL
Arsenic	mg/kg	5	5.4	6.7	37 ¹	0	37 ⁴	0
Cadmium	mg/kg	5	<0.2	<0.2	11 ¹	0	26 ⁴	0
Chromium (Total) ⁵	mg/kg	5	20	25	910 ¹	0	-	-
Chromium (VI)	mg/kg	5	<4.0	<4.0	6 ¹	0	21 ⁴	0
Lead	mg/kg	5	21	47	120 ²	0	200 ⁴	0
Inorganic Mercury	mg/kg	5	<0.3	<0.3	40 ¹	0	-	-
Nickel	mg/kg	5	13	22	130 ¹	0	-	-
Selenium	mg/kg	5	<1.0	<1.0	250 ¹	0	-	-
Copper	mg/kg	5	13	24	2400 ¹	0	-	-
Zinc	mg/kg	5	57	140	3700 ¹	0	-	-
Boron	mg/kg	5	0.3	0.9	290 ¹	0	-	-
Phenols	mg/kg	5	<1.0	<1.0	120 ¹	0	-	-
pH	-	5	7.6	8.9	-	-	-	-
Total Organic Carbon	%	5	0.4	0.8	-	-	-	-
Petroleum Hydrocarbons								
Aliphatics C ₅ – C ₆	mg/kg	5	<0.001	<0.001	42 ¹	0	-	-
Aliphatics C ₆ – C ₈	mg/kg	5	<0.001	<0.001	100 ¹	0	-	-
Aliphatics C ₈ – C ₁₀	mg/kg	5	<0.001	<0.001	27 ¹	0	-	-
Aliphatics C ₁₀ – C ₁₂	mg/kg	5	<1.0	<1.0	130 ¹	0	-	-
Aliphatics C ₁₂ – C ₁₆	mg/kg	5	<2.0	<2.0	1100 ¹	0	-	-
Aliphatics C ₁₆ – C ₃₅	mg/kg	5	<16.0	<16.0	65,000 ¹	0	-	-
Aromatics C ₆ – C ₇	mg/kg	5	<0.001	<0.001	70 ¹	0	-	-
Aromatics C ₇ – C ₈	mg/kg	5	<0.001	<0.001	130 ¹	0	-	-
Aromatics C ₈ – C ₁₀	mg/kg	5	<0.001	<0.001	34 ¹	0	-	-
Aromatics C ₁₀ – C ₁₂	mg/kg	5	<1.0	<1.0	74 ¹	0	-	-
Aromatics C ₁₂ – C ₁₆	mg/kg	5	<2.0	4.6	140 ¹	0	-	-
Aromatics C ₁₆ – C ₂₁	mg/kg	5	<10.0	12	260 ¹	0	-	-
Aromatics C ₂₁ – C ₃₅	mg/kg	5	<10.0	41	1100 ¹	0	-	-
VOCs								
Benzene	mg/kg	5	<0.001	<0.001	0.087 ¹	0	0.2 ⁴	0
Toluene	mg/kg	5	<0.001	<0.001	130 ¹	0	-	-
Ethylbenzene	mg/kg	5	<0.001	<0.001	47 ¹	0	-	-
Xylene	mg/kg	5	<0.001	<0.001	56 ¹	0	-	-
MTBE	mg/kg	5	<0.001	<0.001	49 ³	0	-	-

TABLE 2
(Page 2 of 2)

Determinand	Units	No of Tests	Concentration (mg/kg)		Generic Assessment Criteria (mg/kg) Residential With Plant Uptake		Category 4 Screening Level (mg/kg) Residential With Plant Uptake	
			Min	Max	Value	No>GAC	Value	No>C4SL
PAHs								
Naphthalene	mg/kg	5	<0.05	<0.05	2.3 ¹	0	-	-
Acenaphthylene	mg/kg	5	<0.05	<0.05	170 ¹	0	-	-
Acenaphthene	mg/kg	5	<0.05	<0.05	210 ¹	0	-	-
Fluorene	mg/kg	5	<0.05	<0.05	170 ¹	0	-	-
Phenanthrene	mg/kg	5	<0.05	<0.05	95 ¹	0	-	-
Anthracene	mg/kg	5	<0.05	<0.05	2400 ¹	0	-	-
Fluoranthene	mg/kg	5	<0.05	<0.05	280 ¹	0	-	-
Pyrene	mg/kg	5	<0.05	<0.05	620 ¹	0	-	-
Benz(a)anthracene	mg/kg	5	<0.05	<0.05	7.2 ¹	0	-	-
Chrysene	mg/kg	5	<0.05	<0.05	15 ¹	0	-	-
Benzo(b)fluoranthene	mg/kg	5	<0.05	<0.05	2.6 ¹	0	-	-
Benzo(k)fluoranthene	mg/kg	5	<0.05	<0.05	99 ¹	0	-	-
Benzo(a)pyrene	mg/kg	5	<0.05	<0.05	2.2 ¹	0	5 ⁴	0
Indeno(123cd)pyrene	mg/kg	5	<0.05	<0.05	27 ¹	0	-	-
Dibenzo(ah)anthracene	mg/kg	5	<0.05	<0.05	0.24 ¹	0	-	-
Benzo(ghi)perylene	mg/kg	5	<0.05	<0.05	320 ¹	0	-	-

NOTES

1. Suitable for Use Level (S4UL) published by LQM/CIEH, 2015 – Residential With Plant Uptake landuse. S4UL assumptions comprise 1% soil organic matter, soil pH of 7 and sandy loam soil type. S4ULs are copyright © Land Quality Management Limited reproduced with permission; Publication Number S4UL3133.
2. Generic assessment criteria (GAC) for lead calculated using CLEA Software version 1.06 (Environment Agency, 2009) with a lead intake based on a target blood level of 3.5 µg/dL. Other model assumptions comprise 1% soil organic matter, soil pH of 7 and sandy loam soil type.
3. Soil GAC for Human Health Risk Assessment produced by CL:AIRE (2010) – Residential With Plant Uptake. Assumption of 1% soil organic matter.
4. Category 4 Screening Level (C4SL), Department for Environment Food and Rural Affairs (March 2014) – calculated for 1% SOM using the CLEA Model v1.071
5. In the absence of desk study or historical map evidence indicating a potential source of chromium (VI) usage at or in the near vicinity of the site (and confirmed by laboratory testing), total chromium concentrations have been compared to the GAC for chromium (III).

FIGURES

FIGURE 1



SITE LOCATION PLAN

Scale 1: 50,000

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FIGURE 2

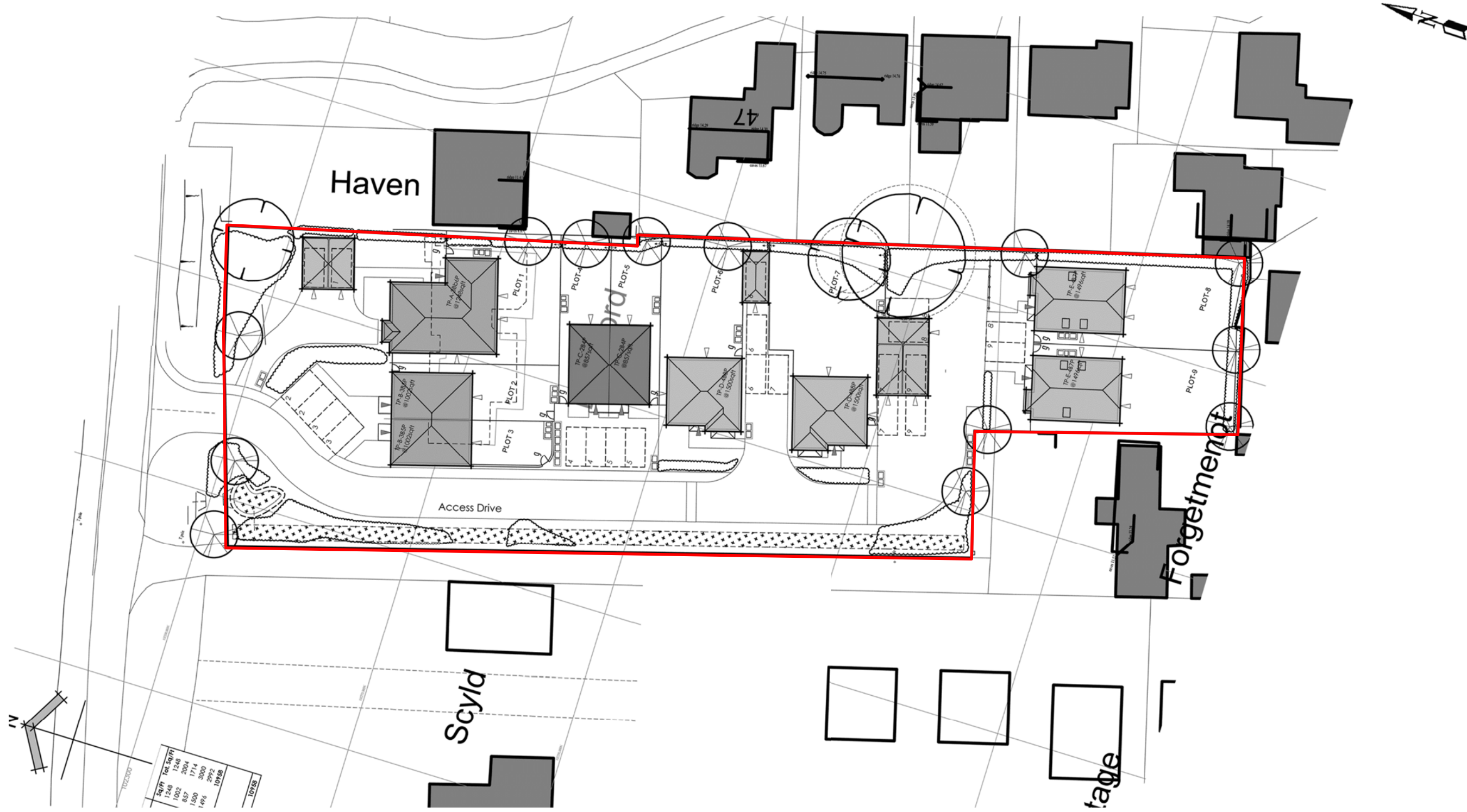


SITE PLAN

Scale 1:1,250

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FIGURE 3



PROPOSED DEVELOPMENT PLAN
Scale 1:500

Reproduced from the 1:500 scale Site Layout by Carlton Design Partnership dated 03/12/2019. Drg No. 190725/SL-01

APPENDIX I

Don & Pearl Tandy
Forget-Me-Not Cottage
Horsemere Green Lane
Climping
West Sussex
BN17 5QZ

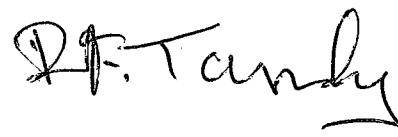
16th September 2020

Dear Sirs,

Following on from a request for MJH I can confirm myself and Pearl have lived in this cottage for 40 years and have been asked to give the history of the property that was known as 'Sherwood' which was immediately next door to us when we moved in. Sherwood was originally 2 semi-detached houses and converted by the owner Mr Vernon Forster during the 1960's. I have found the plan document in my old files giving approval. This was lived in by Mr Vernon Forster for 27 years, who was the local Mayor for a time, we found him to be a lovely neighbour over the period. I have seen a map which I have marked in green which shows the area that was a lawn area with trees and shrubs, and the brown line that shows Vernon's old driveway to his home. His home was sandwiched between Langford and the Old Works site shown on the plan. Langford was owned by the Rowland family since it was built in the 1920's, all the rear was garden area since we've been here and have also found Tim & Angela Rowland lovely neighbours and wish them well in their new home.

I have attached, if it's helpful from my old files planning permission for 'Newstead', then called 'Sherwood' for the building work in September 1959. I have also attached an old photo of my house if you find it helpful.

We have found MJH very helpful and co-operative and look forward to the new development with homes that are much needed. If I can be of anymore help please feel free to ask.




Planning Permission for Sherwood. Known
as "Newstead".

Private house &
gardens

F416308

ice

Application No. CU/3/59
Date received 1st September 1959

TOWN AND COUNTRY PLANNING ACT, 1947
TOWN AND COUNTRY PLANNING (General Development) ORDER, 1950
ADMINISTRATIVE COUNTY OF WEST SUSSEX
CHICHESTER RURAL DISTRICT COUNCIL

Permission for Development of Land

To Mr. J. Forster,
"Newstead"
Horseman Green Lane,
Climping.

Proposal Alterations and Extensions - "Narrowways" Horseman Green
Lane, Climping.

The Chichester Rural District Council, in pursuance of the powers delegated to them by the West Sussex County Council under the above Act and Order, hereby permit the development proposed by you in your application as quoted above, and shown on the plans submitted therewith.

This permission is granted subject to due compliance with the byelaws and general statutory provisions in force in the district, and to the proposed development being carried out strictly in accordance with the detailed drawings and written particulars approved by the Council and to any departure from the approved proposals being made the subject of a fresh application.

I return herewith your copy of the application.

Dated this 16th day of September 1959

ADMINISTRATIVE COUNTY OF WEST SUSSEX

TOWN AND COUNTRY PLANNING ACT, 1947 TO 1954
PUBLIC HEALTH ACT, 1936
AND BYE-LAWS FOR BUILDINGS AND NEW STREETS

Application for Permission to Develop Land and/or to carry out Building Works (3 Copies required)

For Official Use Only
Plan Register No. 2113/59
Date Received 11/9/59
Reference to Previous Decision _____
Date when Applicant Informed _____

PART I—APPLICATION (To be filled in by all Applicants)

I/WE hereby apply for permission to carry out the development described in this application and on the attached plans and drawings.
All notices under the above Acts affecting the property described herein may be served upon me at the following address until further notice.

(Signed) J. S. CURTIS
If signed by an Agent: Name of Agent Corporate Surveyor
Profession _____
Address Oregon, Hook Lane, Aldingbourne
Chichester

Tel. No. Eastergate 3070 Date 27th August 1959

PART II—GENERAL (To be filled in by all Applicants)

(In this part the word "land" includes any buildings thereon)

(1) Name and address of applicant in BLOCK LETTERS (i.e. the person for whom development will be carried out).

Surname (state whether Mr., Mrs., Miss) Mr. FORSTER

John

Other names _____

Postal Address _____

Newstead, Horseman Green Lane, Climping

Near Littlehampton

L'ton 413

Tel. No. _____

Address or location of the land to be developed. Please give enough detail for it to be easily identified (e.g. in the case of undeveloped land give name or classification number of adjoining roads and quote Ordnance field parcel number).

Narroways, Horseman Green Lane
Climping

Particulars of the applicant's interest in the land (e.g. owner, lessee, prospective purchaser, etc.).

Owner

Particulars of the proposed development, including purpose for which the land and/or buildings are to be used. If for more than one purpose, give details. See (a) below.

Alterations and Extensions to
modernise existing house

Area of the land to which the application relates.

.6 acre

Purpose for which the land and/or buildings are now used and if used for more than one purpose, give details.

Old house

Does the application involve any new access to a road or any alteration of an existing access?

No.

State the purpose for which it is required (e.g. 'vehicle access to new garage', 'pedestrian access' or 'New Development Junction').

(a) _____

(b) _____

Give the exact position at which new or altered works are required and short details of any works (e.g. 'crossing ditch', 'Crossing Footway', 'along grass margin'). N.B.—This must be shown on one of the plans.

N/A

**PART III—ADDITIONAL INFORMATION REQUIRED ONLY IF THE APPLICATION IS FOR THE
CONSTRUCTION OR ALTERATION OF A BUILDING OR STRUCTURE**
(3 Copies required)

(9) Is the site within an area of a layout plan for which permission has been granted by a Local Planning Authority? If so, state the plan number and date of permission.	No. Plan No.	Date
(10) Distance from the face of the building to centre of highway	80	Feet
Width of the existing Highway (See note (b) below).	14	Feet
(11) Open space at the rear and sides of building, exclusively belonging to the building.	Unlimited	
(a) Area of open space at the rear of the building	300	sq. ft.
(b) Distance from rear main wall to back boundary fence	5	ft.
(c) Distance between buildings and side boundary fence		ft.
(12) Level of lowest floor above or below crown of road.	Above Existing ins.	
	Below feet ins.	
(13) Damp-proof course—particulars of materials	Lead cored bituminous felt	
(14) External Walls—	11" hollow wall with brick and 4" breeze skins	
(a) Method of construction	Dark Red Stock	
(b) Type and colour of facing brick to be used	Cream	
(c) Colour of pointing	Remaining brickwork finished with emulsion paint	
(d) If rendered or rough-cast, state finish and colour.	White	
(15) Roof—	Plain clay tiles to match existing	
(a) Materials		
(b) Colour	Red	
(c) Gauge of tiles or slates	4"	
(d) Projection of eaves—distance of fascia from wall	12" inches	
(16) Drainage—	4"	
(a) Description and size of pipes	Stoneware	
(b) Materials	Best	
(c) Quality	Cement and sand	
(d) Method of jointing	Cesspool	
(e) Description of outlet of drains (sewer or cesspool)		
(f) If cesspool, state :—	9" Rendered brick or block side	
(i) Method of construction	6" concrete base	
(ii) Effective Capacity	2000 galls.	
(iii) Distance from nearest building or well	50	feet ins.
(g) Method of surface water drainage (e.g. soakaways or surface water sewer)	Soakaways	
Estimated Cost of Building Works (as required by the Statistics of Trade Act, 1947)	£	1200
Is any proposed building within 200 feet of any overhead electricity grid line, i.e. of 33,000 volts or higher.	(a)	No.
If so, have the South-Eastern Division of the British Electricity Authority, British Electricity House, Lower Ham Road, Kingston-upon-Thames, Surrey, been informed.	(b)	



old. Picture of my house, forgot-me-not.



emapsite™

Site Details:

Langford, Horsemere Green
Lane, Climping, BN17 5QZ

Client Ref: EMS_633242_842204
Report Ref: EMS-633242_842204
Grid Ref: 499756, 102245

Map Name: National Grid

Map date: 1984

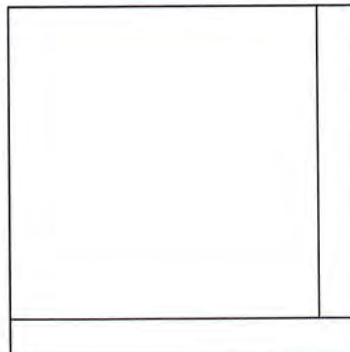
Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1975

Surveyed 1975
Revised 1984
Edition N/A
Copyright 1984
Levelled 1975



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Groundsure Insights
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sales@emapsite.com

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Production date: 11 September 2020

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

APPENDIX II

APPENDIX II – SUPPLEMENTARY GROUND INVESTIGATION

Introduction

The site operations were carried out on 14th September 2020 under the supervision of a geoenvironmental engineer from Crossfield Consulting Limited. The scope and rationale for the design of the investigation is presented in Table II-1.

Unless otherwise indicated, sampling and logging remained the responsibility of trained staff from Crossfield Consulting Limited and field records were prepared on site, during or immediately following sampling.

An exploratory hole location plan is presented as Figure II-1.

Trial Pits

Eight trial pits, denoted as TP101 to TP108, were excavated by hand digging. The trial pit records from the investigation are presented in this Appendix and these records include the descriptions and depths of the strata encountered, together with sample depths, groundwater observations and other pertinent comments.

Analytical Laboratory Testing

The rationale for the analytical testing is set out in Table II-2.

Selected samples of the soils encountered were submitted for screening analysis of the following determinands:

- | | |
|---------------------------------|------------------------------|
| • Arsenic (Total) | • Cadmium (Total) |
| • Chromium (Total) | • Copper (Total) |
| • Lead (Total) | • Mercury (Total) |
| • Nickel (Total) | • Zinc (Total) |
| • Selenium (Total) | • Boron (Water soluble) |
| • Cyanide (Total) | • Sulphide (Total) |
| • Sulphate (Water soluble) | • Phenols (Total-monohydric) |
| • pH | • Total Organic Carbon |
| • Asbestos (Fibre & ACM Screen) | |

Note: Total determinands are based on an aqua-regia extract.

Selected samples of the soils encountered were submitted for analysis of the following determinands:

- Total Petroleum Hydrocarbons – aromatic/aliphatic split and carbon number banding, using GC-FID techniques
- Polyaromatic Hydrocarbons – using GC-MS techniques

The analyses were carried out by i2 Analytical Limited, a UKAS accredited laboratory, and the results are presented in this Appendix.

TABLE II-1**RATIONALE FOR THE DESIGN OF THE GROUND INVESTIGATION**

The scope of the supplementary ground investigation was designed with reference to the published geology and ground conditions indicated in the desk study information.

In compliance with the guidance published in BS 10175:2011+A2:2017 and BS 5930:2015+A1:2020, the layout of the exploratory holes and sampling regime also considers the Conceptual Site Model and potential pollutant linkages, such that the spatial arrangement of the investigation provides the necessary information to support a risk assessment of the identified potential pollutant linkages.

Exploratory Hole and Technique	Rationale for Hole Location	Depth (m)	Sampling/In Situ Testing and Monitoring
TP101-TP108	Exploratory holes located within proposed garden areas and closest to the former Works, scrap yard and foundry	Up to 0.5 m	Representative samples recovered for analytical testing

Key

TP X Hand dug trial pit

TABLE II-2

RATIONALE FOR THE ANALYTICAL TESTING SUITE

Exploratory Hole and Samples	Selection Criteria	Analytical Tests
TP101 0.1-0.2 m TP102 0.1-0.3 m TP103 0.1-0.4 m TP104 0.1-0.5 m TP105 0.2-0.4 m	Representative soil samples to provide data on inorganic and organic potential contamination.	Screening tests for metals and metalloids, boron, cyanides, phenols (pH and total organic carbon also included to assist with risk assessments) Asbestos identification Petroleum hydrocarbons (including BTEX) – aliphatic and aromatic split with CWG carbon number banding Polyaromatic hydrocarbons (speciated 16 USEPA priority PAHs)

TRIAL PIT RECORDS

KEY

	J	Disturbed Jar Sample	}	Category B Samples
	G	Soil Sample in Glass Container		
	g	Soil Sample in Glass Vial		
	B	Disturbed Bulk Sample		
	C	"Undisturbed" CBR Mould Sample (denoted Category A: OS-TK/W in BS EN 22475-1:2006)		
	W	Water Sample		
FVT	{	c_{fv}	Undrained Shear Strength (from hand vane shear vane test)	
		c_{rv}	Undrained Remoulded Shear Strength (from hand vane shear vane test)	
		c_{fv}^*	Undrained Shear Strength from Hand Vane Shear Strength Test on block sample dug from pit by excavator	

Notes:

1. All measurement values on record sheets are uncorrected, unless otherwise indicated.
2. For corrected test values, refer to report.
3. Identification and classification of strata is based on the guidance published in the current edition of BS5930 together with BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004, BS EN ISO 14689-1:2003
4. Consistency (soft, firm, stiff etc.) relates to a manual test/inspection on site (in compliance with BS EN ISO 14688-1:2002 Section 5.14)
5. Undrained shear strength (low, medium, high etc.) relates to in situ or laboratory test data and the associated assessed strength of a stratum (in compliance with BS EN ISO 14688-2:2004 Section 5.3 and Table 5).
6. The density of coarse-grained soils is based on SPT N values (or equivalent Dynamic Probe test or CPT data) as outlined in BS5930 and BS EN ISO 14688-2:2004.
7. Rock strength (weak, strong etc.) is based on field identification (and/or strength test data), as outlined in BS EN ISO 14689-1:2003 Table 5.

Trial Pit Record Sheet

Hole Ref. **TP101**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates

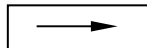
Trial Pit

A

Logged by TW

Logged on

Plan



B

Water

Dry whilst excavating

Checked by

AM

site during excavation

Depth	Face A	Face B	Face C	Depth
0.10		(1)		0.10
0.20		(2)		0.20
0.40		(3)		0.40
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.20	Gg J		1	0.00-0.10	Brown slightly clayey sand (MADE GROUND)
			2	0.10-0.20	Brown slightly clayey gravelly sand with occasional rootlets. Gravel comprises brick, concrete and slate fragments (MADE GROUND)
			3	0.20-0.40	Brown clayey SAND with rare rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP102**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

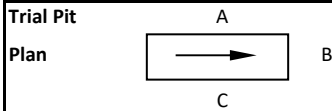
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation
Checked by *AW*

Depth	Face A	Face B	Face C	Depth
0.05		(1)		0.05
0.35		(2)		0.35
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.30	Gg J		1	0.00-0.05	Brown bark chippings (MADE GROUND)
			2	0.05-0.35	Brown clayey SAND (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP103**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

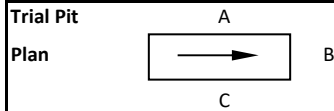
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation
Checked by *AWM*

Depth	Face A	Face B	Face C	Depth
0.40		(1)		0.40
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.40	Gg J		1	0.00-0.40	Brown clayey SAND with rare rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP104**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

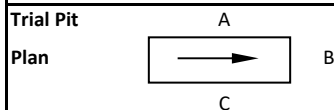
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation

Checked by *AM*

Depth	Face A	Face B	Face C	Depth
0.50		(1)		0.50
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.50	Gg J		1	0.00-0.50	Brown clayey SAND with occasional roots and rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP105**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

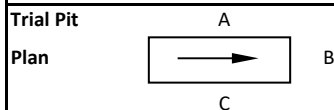
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation
Checked by *AW*

Depth	Face A	Face B	Face C	Depth
0.15		(1)		0.15
0.45		(2)		0.45
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.20-0.40	Gg J		1	0.00-0.15	Orangish brown clayey sand (MADE GROUND - REWORKED RIVER TERRACE DEPOSITS)
			2	0.15-0.45	Brown clayey SAND with roots and rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP106**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

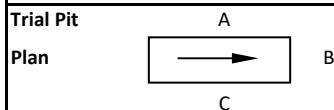
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation

Checked by *AM*

Depth	Face A	Face B	Face C	Depth
0.45		(1)		0.45
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.40	Gg J		1	0.00-0.45	Brown clayey SAND with rare roots and rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP107**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

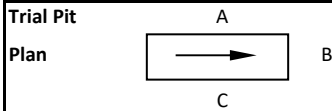
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation
Checked by *AW*

Depth	Face A	Face B	Face C	Depth
0.40		(1)		0.40
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.40			1	0.00-0.40	Stiff consistency brown silty CLAY with occasional roots and rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated

Trial Pit Record Sheet

Hole Ref. **TP108**

Project Langford, Horsemere Green Lane, Climping

Sheet 1 of 1

Date 15/09/2020

Job No. CCL03279

Bearing:

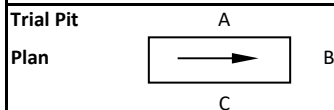
Shoring None used

Ground Level m OD

Plant Hand-dug

Stability Stable whilst excavating

Co-ordinates



Water Dry whilst excavating

Logged by TW Logged on site during excavation

Checked by *AM*

Depth	Face A	Face B	Face C	Depth
0.50		(1)		0.50
		Base of pit		

Sampling			Strata		
Sample/Test Depth	Type	Strength (kN/m ²)	Ref. No.	Strata Depth	Description
0.10-0.50	Gg J		1	0.00-0.50	Stiff consistency brown sandy clay with occasional rootlets (RIVER TERRACE DEPOSITS)

Remarks	Notes
	1. All logging and sampling in accordance with BS 5930:2015 2. Symbols and abbreviations are explained on the accompanying key 3. All linear dimensions are in metres unless otherwise stated



Thomas Warley
Crossfield Consulting Ltd
The Granary
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Warwickshire
CV47 9PU

i2 Analytical Ltd.
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Watford,
Herts,
WD18 8YS

e: TW@crossfield-consulting.co.uk

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-30004

Project / Site name:	Landford, Horsemere Green Lane, Climping, BN17 5QZ	Samples received on:	15/09/2020
Your job number:	CCL03279	Samples instructed on/ Analysis started on:	15/09/2020
Your order number:	PO11631	Analysis completed by:	18/09/2020
Report Issue Number:	1	Report issued on:	18/09/2020
Samples Analysed:	5 soil samples		

Signed: *Karolina Marek*

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



Analytical Report Number: 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

Your Order No: PO11631

Lab Sample Number				1620033	1620034	1620035	1620036
Sample Reference				TP101	TP102	TP103	TP104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10-0.20	0.10-0.30	0.10-0.40	0.10-0.50
Date Sampled				15/09/2020	15/09/2020	15/09/2020	15/09/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	9.8	6.7	6.8	11
Total mass of sample received	kg	0.001	NONE	1.5	1.4	1.3	1.5

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
------------------	------	-----	-----------	--------------	--------------	--------------	--------------

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.9	7.6	8.7	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	480	290	280	270
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.12	0.0057	0.0072	0.011
Sulphide	mg/kg	1	MCERTS	2.9	< 1.0	< 1.0	1.5
Total Sulphur	mg/kg	50	MCERTS	280	160	160	140
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.4	0.6	0.5	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.7	6	6	5.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.3	0.5	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	21	22	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	16	13	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	47	25	21	22
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	15	14	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	58	58	57	67

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The results included within the report relate only to the sample(s) submitted for testing.

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Analytical Report Number: 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

Your Order No: PO11631

Lab Sample Number				1620033	1620034	1620035	1620036
Sample Reference				TP101	TP102	TP103	TP104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10-0.20	0.10-0.30	0.10-0.40	0.10-0.50
Date Sampled				15/09/2020	15/09/2020	15/09/2020	15/09/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	4.6	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	12	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	41	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	57	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

Your Order No: PO11631

Lab Sample Number				1620037
Sample Reference				TP105
Sample Number				None Supplied
Depth (m)				0.20-0.40
Date Sampled				15/09/2020
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	N/A	NONE	10
Total mass of sample received	kg	0.001	NONE	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	260
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021
Sulphide	mg/kg	1	MCERTS	1.3
Total Sulphur	mg/kg	50	MCERTS	220
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.8

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.2
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	38
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140

Analytical Report Number: 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

Your Order No: PO11631

Lab Sample Number				1620037
Sample Reference				TP105
Sample Number				None Supplied
Depth (m)				0.20-0.40
Date Sampled				15/09/2020
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1620033	TP101	None Supplied	0.10-0.20	Brown loam and clay with gravel.
1620034	TP102	None Supplied	0.10-0.30	Brown loam and clay with gravel.
1620035	TP103	None Supplied	0.10-0.40	Brown loam and clay with gravel.
1620036	TP104	None Supplied	0.10-0.50	Brown loam and clay with gravel.
1620037	TP105	None Supplied	0.20-0.40	Brown loam and clay with gravel.



Analytical Report Number : 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS



Analytical Report Number : 20-30004

Project / Site name: Landford, Horsemere Green Lane, Climping, BN17 5QZ

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

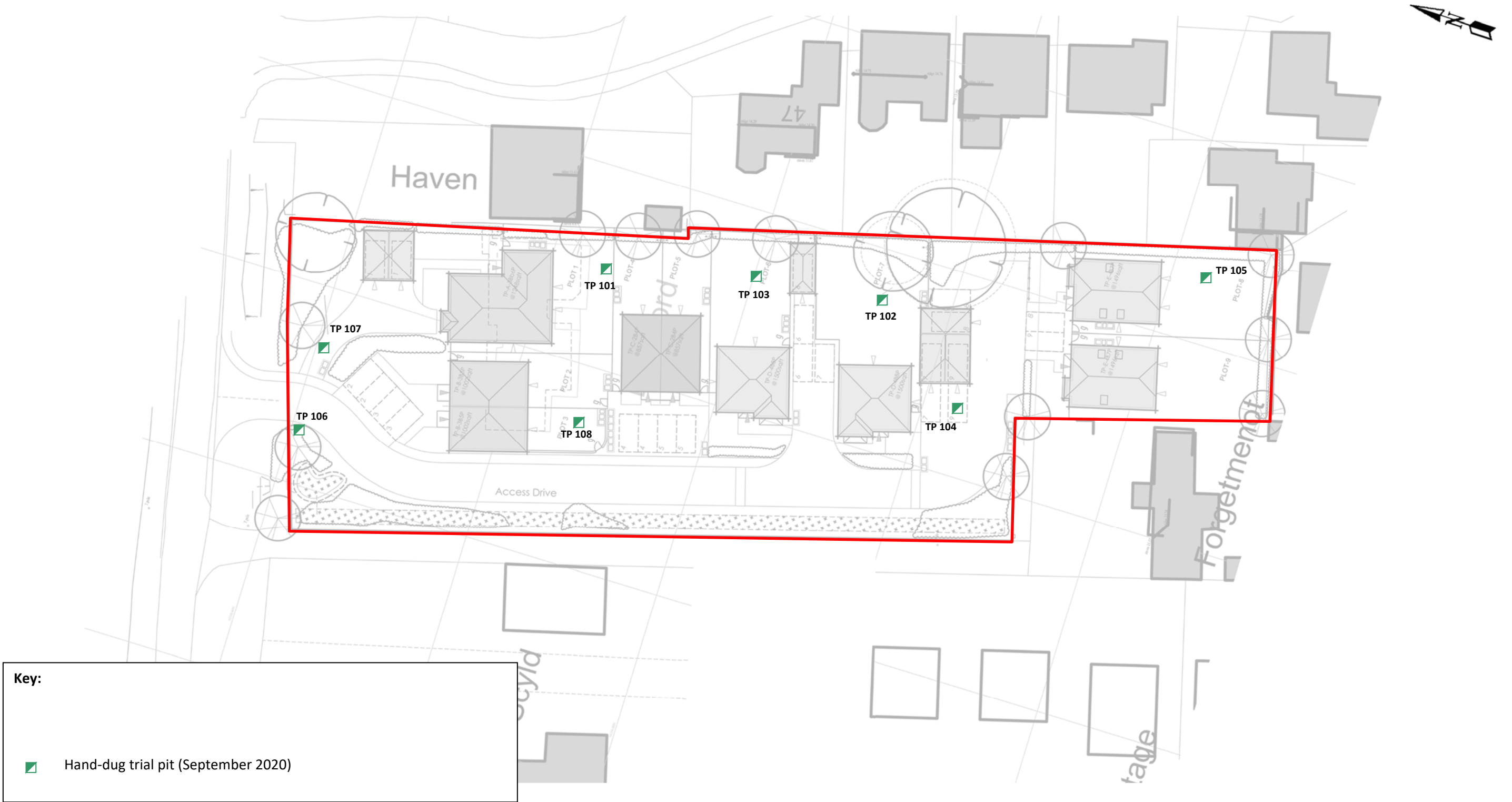
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

FIGURE II-1



EXPLORATORY HOLE LOCATION PLAN
Scale 1:500

Reproduced from the 1:500 scale Site Layout by Carlton Design Partnership dated 03/12/2019. Drg No. 190725/SL-01