building & project consultants

Phase 2

Site Investigation Report

Longcross Film Studios, Chobham Lane, Longcross, Chertsey, KT16 0EE

A REPORT PREPARED

FOR AND ON BEHALF OF ARK DATA CENTRES

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EXECUTIVE SUMMARY

KEY INVESTIGATION FINDINGS

1. The site is located at Longcross Film Studios, Chobham Lane, Longcross, Chertsey, KT16 0EE (Figure 1, Appendix 1). The site is approximately 3.5Ha in size and comprises an exposed concrete slab in the centre, a shallow gradient slope in the northern part of the site with an exposed concrete slab and buildings, a car park in the eastern part of the site, canteen and associated parking in the southern part, and a steep slope with office units in the west. The steep slope was formed of 3 stepped levels with 2 steep slopes between. A car park was present at the top (off site), a building was present on the middle level (on site) and the exposed slab was found at the lowest level (on site). Following the completion of a Phase 1 Assessment by Paragon in April 2019, a ground investigation was recommended due to the identification of potential pollutant linkages associated with the proposed development from the historical use of the site. The intention is to redevelop the site to provide a new data centre as per Figure 2, Appendix 1.

2. This report has been prepared to present the findings of a preliminary investigation at the site and is not anticipated to be used for final design purposes. At the time of writing we have seen concept drawings for the proposed development, but we do not have design information such as loadings, floor design or retaining wall design. An additional investigation is therefore required once these have been designed. This report has however assessed chemical quality of shallow soils across the site, completed a provisional round of gas monitoring and completed initial geotechnical laboratory testing to highlight the key risks and constraints that will be encountered as part of the development. This information is deemed to be adequate to qualify potential liability risks and abnormal development risks prior to the acquisition of the site.

3. The Phase 1 Report presented a conceptual site model for the site which highlighted moderate risks from contaminated Made Ground to future site users and low to moderate risk to offsite residents. Made Ground was also highlighted as potential source of ground gas. Key receptors include future site users, surface water features, groundwater, infrastructure and construction workers and all contamination pathways with exception of vegetable ingestion are active (ingestion, inhalation, dermal contact, surface runoff, infiltration and throughflow). An investigation was proposed to assess the potential risk associated with these pollutant linkages as well as determining the nature of the underlying strata to inform the structural design of the new development.

4. The Phase 2 Site Investigation included seventeen intrusive locations, including eleven windowless boreholes and six hand excavated pits completed between 0.30m and 4.00m bgl. A subsequent ground gas and groundwater monitoring visit was completed on 7 June 2019.

5. The relevant British Geological Survey (BGS) online mapping information indicates the site is underlain by River Terrace Deposits over the Windlesham Formation (silt, clay and sand) and Bagshot Formation (sand). A review of ground conditions within the boreholes advanced at the site found a surface covering of concrete to a depth of 0.15m or topsoil to 0.30m or bituminous surfacing to 0.1m. The site investigation identified variable Made Ground to a maximum depth of 1.10m bgl within WS3 on the top of a slope, at the base of the slope the thickness of Made Ground was less at around 0.3mbgl. The Made Ground in the slope encountered comprised greyish brown, gravelly, medium and with flint, bituminous material, and concrete. At the base of the slope on the hardstanding, Made Ground was much shallower and was found to be

	below approximately 0.15-0.20m concrete, and comprised brown and red, slightly clayey, gravelly, fine to medium sand with coarse angular to sub-angular brick and flint. The windowless sample boreholes refused on natural sand and were terminated at shallow depths in some cases. Groundwater was not encountered during the works or subsequent monitoring round.
6.	A preliminary Geotechnical Risk Assessment was carried out based on the results from the in-situ Standard Penetration Test (SPT) testing and laboratory analysis. A formal design will need to be undertaken at a later stage, however, an early indication of geotechnical risks are outlined below. Reference to BRE Special Digest 1 and the sulphate test results indicates the results from the Windlesham Formation fall within Design Sulphate Class DS-1 and assuming a static groundwater the ACEC class would be AC-1s, in addition, an indication of the sulphate design class for the Made Ground is DS-2 based on the highest measured sulphate content, and, assuming a static groundwater table, the ACEC class is AC-1s, although additional testing would be required to confirm this. Due to inherent variability of the Made Ground a CBR value of 2% is recommended for preliminary design purposes and initial CRB of 3-4% should be used for preliminary design for the silty, clayey sand based on TRRL guidance. Based on the presence of granular strata, the soils are likely to be suitable for soakaway drainage, however, further assessment would be required to confirm this.
7.	Shallow foundations are likely to be suitable based on the dense sand and gravel identified below 1m. Foundations should not be founded on Made Ground and as such, local deepening may be required, however Made Ground was typically <1m in the area of the exposed slab. For preliminary design purposes it is considered that traditional shallow pad foundations are likely to represent the most economical foundation solution. In order to formulate a suitable final design, it is recommended that additional investigations are completed and the advice of a structural engineer be sought. It is understood that a retaining wall will be incorporated in the final development although the location and loadings are currently unknown. A structural engineer should be contacted to aid design. There may also be an opportunity to reuse the concrete slab by crushing and compaction to improve the density of the underlying Made Ground.
8.	A Geoenvironmental Risk Assessment was carried out on the chemical laboratory test data and a revised Conceptual Site Model was presented. Chemical test data showed asbestos was present within the soils in the form of insulation board and as such an assessment in the form of CAR-SOIL will need to be undertaken. The remaining contaminants that were tested within the soils passed the Generic Assessment Criteria assessment for a commercial land use. No groundwater samples were collected as the monitoring wells were dry. However, based on the low levels of contaminants identified within the soils, it is unlikely that grossly contaminated groundwater would be identified. The findings of this assessment have determined the preliminary risk to future site users, construction workers and Controlled Waters. Currently asbestos has been identified in a single location, and there is the potential for further asbestos to be present. As such, additional testing is required. Consequently, there is a moderate risk to human health and a low risk to Controlled Waters.
9.	Crest Nicholson's site investigation contractor completed an investigation across the site and Paragon have reviewed the factual information. The chemical test results showed the presence of asbestos board and fibres within the soft landscaped area to the north of the canteen. This presents an unacceptable risk to human health and remedial action is required. Based on the presence of fibres, it is anticipated that Made Ground soils will need to be removed from site.

10. A single round of gas monitoring was completed and the results identified low concentrations of methane and carbon dioxide within the Made Ground and a preliminary assessment of the results based on BS 8485:2015+A1:2019 '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*' puts the site within Characteristic Situation 1 (CS1), low risk, whereby gas protection measures are not required. However, only a single round of monitoring has been undertaken and further rounds will be required to make a formal assessment. However, based on the current information known about the Made Ground, significant gas risks are considered unlikely.

11. **Recommendations**

1. This assessment was constrained by a number of services running through the slope, a large marquee in the southern part of the hardstanding, thick concrete and buildings. As such, an additional investigation will be required to fill in the data gaps when the buildings have been demolished and services removed.
2. An additional investigation is also required to provide parameters for foundation design once the final design for the building has been prepared. This investigation is likely to require deeper boreholes using a cable percussion drilling rig, further environmental and geotechnical testing and additional rounds of gas monitoring. This exercise is likely to cost in the order of £30,000-£40,000 and will take 6-8 weeks to complete.
3. Based on the identification of Asbestos Insulation Board (AIB) within WS5 (located on the slope) and asbestos fibres in the soft landscaping north of the canteen an unacceptable risk to human health is present. As such, it is anticipated that the Made Ground should be removed and visible asbestos fragments be hand-picked and removed from site. It is understood that Crest Nicholson are to remediate any areas of known contamination as a condition of purchase. A Remediation Strategy for Known Contamination has been prepared by Paragon to outline the works required to reduce the risk. It should be noted that the strategy is not a Remediation Method Statement, as this would be prepared by the remediation contractor. The strategy should be read in conjunction with this report.
4. The proposed development is understood to have areas of soft landscaping. To reduce the potential exposure to AIB, asbestos fibres or previously unidentified contamination by future site users, a capping system is likely to be required and should comprise a minimum of 450mm imported subsoil and topsoil that meets the requirements of BS3882 and Table 7, over a membrane. This may need to be deepened in areas for tree and shrub pits, for example.
5. An ecological assessment is required to assess the potential impact on of demolition and construction on vegetation, bats, badgers and reptiles.
6. During construction works, a visual and olfactory appraisal (watching brief) of the underlying soils should be undertaken. This strategy is outlined within the separate Discovery Strategy report by Paragon. If during construction works any material is identified to show visual and/or olfactory signs of contamination an environmental consultant should be contacted to supervise/guide further works. This material should be stockpiled separately and tested prior to its appropriate removal off site or re-use as necessary.
7. Further site investigation of the site is recommended for design purposes and so these recommendations are preliminary in their nature.

CONTENTS

PHASE 2 SITE INVESTIGATION REPORT

CLIENT NAME: Ark Data Centres

PROPERTY ADDRESS: Longcross Film Studios
Chobham Lane, Longcross, Chertsey

INSPECTION DATE: 29 May 2019

1.0 INSTRUCTIONS

1.1	Paragon Building Consultancy Limited were instructed by Ark Data Centres on 29 May 2019 to complete a Phase 2 Site Investigation on a site referred to as Longcross Film Studios, Chobham Lane, Longcross, Chertsey, KT16 0EE. The investigation included an intrusive investigation, laboratory analysis and risk assessment. It is proposed that the site is to be developed with steel framed warehouses and associated hardstanding for use as a data centre.
1.2	This report has been prepared in accordance with the scope of the Paragon appointment with the client and is subject to the terms of that appointment. It is addressed to and for the sole use and reliance of Ark Data Centres. We accept no liability for any use of this report other than by our client. No person other than Ark Datacentres may copy, use or rely on the contents of this report.

2.0 AIMS AND OBJECTIVES

2.1	The aims of this report are to: • To provide preliminary information on the geotechnical and environmental quality of the ground present onsite to highlight potential risks and abnormal development constraints prior to acquisition of the site. • To assess the potential health and environmental risks to the proposed development and other significant receptors from onsite sources. • To assess the potential offsite sources of contamination and their impact on the proposed development.

2.2	The objectives of this report are to provide ground conditions information and recommendations to enable safe redevelopment of the site, support a planning permission or for condition. • Characterise the contamination onsite by completing an intrusive site investigation to characterise the site. • Determine the quality of the ground for geotechnical design by completing a ground investigation. • To suggest a potential remediation methodology should contamination be identified.

3.0 SCOPE OF WORKS

3.1	The site investigation was undertaken in general accordance with the Code of Practice for Site Investigation British Standard BS5930 (2015), Code of Practice for the Investigation of Potentially Contaminated Sites BS10175:2011+A2:2017, the DEFRA/Environmental Agency Report CLR11 "Model Procedures for the Management of Land Contamination" and Land Contamination: Risk Management (LCRM) 2019. Due regard is also made to the environmental requirements of the national Planning Policy Framework (NPPF).
3.2	This report outlines a two-stage process: A Phase 1 Desk Study and a Phase 2 Site Investigation. • An earlier Phase 1 Desk Study Report was previously prepared by Paragon (19.0415/CK/JMS, 25 April 2019) and as such this report presents a summary of the findings of that report. It has outlined the potential health and environmental risks identified from desk-based searches including online searches of the historical maps, geological maps, planning records and review of data on the Environment Agency website. A site walkover was completed and an initial Conceptual Site Model (CSM) was presented. • A Phase 2 Site Investigation was undertaken to quantify the risks highlighted within the Phase 1. This comprised the intrusive investigation (drilling, trial pitting etc), laboratory testing of soils, groundwater and gas, onsite monitoring and environmental and geotechnical risk assessment.

4.0 INTRODUCTION

4.1	**Site Location**
4.1.1	A Phase 1 has been reported separately by Paragon BC Ltd, report reference: 19.0415/CK/JMS, issued: 25 April 2019. The original Phase 1 should be read in conjunction with this report; the following is a summary.
4.1.2	The site is centred approximately at National Grid Reference: 497740, 165682. and extends to 3.5Ha. The approximate elevation of the site is 54m Above Ordnance Datum (mAOD). Site information gathered during the preliminary report is summarised below and a Site Location Plan is provided in Appendix 1.

4.2	**Proposed Development**
4.2.1	It is our understanding that a Phase 2 Site Investigation Report is required as part of due diligence for an acquisition of the site. The site investigation has been progressed to provide preliminary data on existing contamination, ground gas and geotechnical conditions at the site.
4.2.2	The proposed development will comprise 5 units including 4 data centres, a switch room block, and 2 additional buildings for a reception and external generators and substation. The development will also include a retaining wall on the western boundary, landscaped area on the eastern and southern boundary and access roads and parking. A number of buildings and service lines are still present onsite which will need to be inspected and demolished/removed prior to main works taking place. Proposed development plans have been provided by the client and are included as Figure 2 and 3 in Appendix 1.
4.2.3	It is understood that Crest Nicholson are developing the north-eastern part of the wider Longcross Film Studios (Phase 1), with two additional phases in the centre (Phase 2) and western (Phase 3) parts of the wider Longcross Studios. The subject site is located in the southwest part of the wider Longcross Studios, approximately 200m southwest of the nearest new house. There are several planning applications (mostly amendments) for the development. The earliest is RU.13/0856 which was later amended to RU.16/0584 (Hybrid planning permission for the demolition of existing buildings and redevelopment of the site including mixed uses, accesses, landscaping, infrastructure and utility works)
4.3	**Planning Conditions**
4.3.1	At the time of writing, the site has not been acquired and no formal planning application has been made. It is anticipated that as the Crest Nicholson development (which includes the site) had a number of conditions related to Contaminated Land, similar conditions will be imposed on the development of the Data Centre.
4.4	**General Description and Current Site Use**
4.4.1	The site comprises an exposed concrete slab in the centre, a shallow gradient slope in the northern part of the site with an exposed concrete slab and buildings, a car park in the eastern part of the site, canteen and associated parking in the southern part, and a steep slope with office units in the west. The site is immediately surrounded by commercial properties relating to the wider Longcross Studios with Chobham lane to the south. Crest Nicholson are currently constructing residential properties 350m northeast of the site.
4.4.2	Some demolition has taken place within the site boundary, mainly Building 99 where the large slab in the centre of the site is present. At the time of the investigation the hardstanding area was being used by the film studios with temporary marquee structures in place. A steep incline / slope is present along the western boundary, which falls eastwards to the hardstanding. The profile of the slope is stepped with a car park present at the top, building on the middle level and hardstanding at the base.
4.4.3	Based on our original site inspection, completed 11 April 2019, no visual evidence of significant ground contamination was noted.

4.4.4	The surface of the site was mainly formed of a concrete slab with areas of bituminous surfacing and some soft landscaping. Drainage channels were present. Vegetation was present along the slope, in the northern part of the site and along the eastern and southern boundaries.
4.5	**History**
4.5.1	Historical mapping indicated that the site was open, undeveloped woodland / scrubland for most of its history until structures were recorded on site on mapping editions from 2002 onwards. It is known from online research that the site was a military site long before this used for research and experiment relating to vehicles and tanks. Between 1941 and 2005 the site was used by various government military agencies until it became the Defence Evaluation & Research Agency site (DERA) and finally the Defence Logistics Organisation (DLO) Chertsey. The most recent use of the site was for the testing, evaluation and certification of the full range of British Army vehicles. It is understood that the site was later sold off and was then used by Longcross Film Studios.
4.5.2	The surrounding area (within 250m) also showed a number of changes through the historical maps. The site was largely surrounded by undeveloped land / green belt and Chobham Common to the west. Longcross Station and railway were evident to the north. Immediately to the east of the site were further buildings and land used by DERA for military use historically; there were also barracks buildings to the south.
4.6	**Geology**
4.6.1	From a review of the British Geological Survey the geology of the subject site comprises River Terrace Deposits (Sand and Gravel) in the western part of the site and no superficial deposits are shown in the east. The River Terrace Deposits are underlain by the Windlesham Formation (Sand, Silt and Clay) and Bagshot Formation (Sand).
4.6.2	A number of borehole records have been obtained from BGS that are situated within 50m of the site. The records indicate the ground conditions comprise Made Ground to 3m bgl over Sand, described as 'peaty, black with layers of brown/green silty sand and stones and roots', over the Bagshot Beds, described as 'orange-brown, grey-green silty and clayey with stones', to the base of the borehole at 15m. Groundwater was not encountered.
4.7	**Hydrogeology**
4.7.1	The River Terrace Deposits, Windlesham Formation and Bagshot Formation are classified as Secondary (A) Aquifers.
4.7.2	The site is not situated within a Groundwater Source Protection Zone (SPZ).
4.7.3	No groundwater abstraction licences have been identified within 1km.
4.8	**Hydrology**
4.8.1	The nearest surface water feature is an unnamed drainage ditch that is located some 250m west of the site. There are no active surface water abstraction points located within a 1km radius of the site.
4.8.2	There are no discharge consents within 250m of the site.

4.9	**Flooding**
4.9.1	The Environment Agency website indicates that the flood risk at the site is less than 1 in 1,000 chance of flooding in any year. The site has marginal areas shown to be susceptible to surface water flooding, however this is limited to external areas. The site is shown to be susceptible to groundwater flooding, however the BGS confidence rating in the result is low.
4.10	**Regulatory Enquiries**
4.10.1	The Local Authority has not been contacted at this time. However, it is considered unlikely that the site is currently designated as contaminated land under the provisions of the EPA 1990 Part 2A.
4.10.2	The Environment Agency has not been contacted as part of this assessment as the risk of contamination originating from the site and impacting Controlled Waters is considered to be low. Furthermore, development proposals are unlikely to impact upon groundwater quality.
4.11	**Environmental Database Information**
4.11.1	The southwest part of the site is located within a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Special Protection Area (SPA).
4.11.2	A landfill has been identified 450m northwest of the site. The record indicates that the landfill received industrial, commercial and household waste between 1960 and 1978. There is potential for ground gas to migrate onto site and as such, a gas risk assessment has been recommended as part of the Phase 2 investigation.
4.12	**Ground Stability Hazards:**
4.12.1	Records indicate that the area in general has a low risk of subsidence hazards.
4.12.2	A slope is present in the western part of the site. The steep slope was formed of 3 stepped levels with 2 steep slopes between. A car park was present at the top (off site), a building was present on the middle level (on site) and the exposed slab was found at the lowest level (on site). Recommendations have been made for further investigation on the slope as part of the Phase 2 Investigation.
4.12.3	The site is not located in a coal affected area.
4.13	**Unexploded Ordnance (UXO)**
4.13.1	The site was formerly owned by the Ministry of Defence (MOD) and historical uses of the site include military use, including manufacture and testing of military tanks. The risk of UXO has been assessed using the Zetica Maps, which indicate a moderate risk onsite, although no strategic targets have been identified by Zetica within 1km of the site.
4.13.2	In addition, a Land Quality Assessment was completed by Entec in 1999 on behalf of the MOD to assess the presence of contamination. The report indicated that the majority of the site is 'free from contamination' and 'only limited and localised areas of significant contamination are present'. The areas identified as contaminated do not cross within the site boundary.

4.13.3	During the decommissioning and divestment of a military site, the MOD has an obligation to surrender the site in a suitably safe condition. No surrender information has been provided but it is considered unlikely that UXO from their activities would have been left on site.
4.13.4	Anecdotal evidence suggests that a mine store was present in the southern part of the site at the rear of the canteen. As such, there is the potential for mines and ammunition to still be present in this area. Paragon were therefore unable to investigate this area due to the time constraints, however it was understood that Crest Nicholson were to investigate this area and data be provided to Paragon.
4.13.5	As such, since the site has been subject to significant post-war development with no obvious evidence of bomb damage on the site, the overall risk of identifying UXO on site has been assessed as low however the area in the southern part of the site was not investigated due to a localised elevated risk.
4.14	**Radon**
4.14.1	The site is not located within a radon affected area.
4.15	**Previous Reports**
4.15.1	We have been provided with an earlier environmental report for review: Entec UK Limited (1999). DERA Chertsey Land Quality Assessment. Dated 4 October 1999. Although Paragon cannot be held responsible for the accuracy of the work of others, the following key points and extracts have been noted: • This report completed an assessment across the wider Longcross Film Studios. • The report identified significant concentrations of petroleum hydrocarbons, PCBs, faecal coliforms, areas of landfilling and cadmium and nickel within groundwater. • Recommendations were made for remediation. • No evidence has been seen by Paragon to confirm whether the remedial measures were implemented onsite.

4.15.2 We have also been provided with the factual data from a site investigation by Wilson Bailey Geotechnical and Environmental. Dated August 2019, Reference: J19010. The key points of the report are:

- A total of 36 boreholes were drilled across the site
- Although Paragon have not seen the UXO assessment, it is understood that a UXO engineer supervised the works in the southern part of the site.
- This included 5 boreholes which were drilled on the slope and found Made Ground to a maximum depth of 1.2m bgl.
- Of these 36 boreholes, 2 were drilled in the soft landscaped area north of the canteen and Asbestos was identified in one.
- Following the identification of asbestos in the soft landscaping, a further 28 hand pits were excavated in this area to delineate the extent of asbestos.
- The laboratory test results completed by Wilson Bailey identified asbestos fibres (amosite and chrysotile with quantifications between <0.001% and 0.002%) and asbestos sheeting/board debris (amosite with a quantification of 2.600%).
- The remaining chemical analysis did not identify significant concentrations of contaminants.

5.0 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 Conceptual Site Model (CSM)

5.1.1 Based on the risks identified within the Phase 1 Investigation a Preliminary Conceptual Site Model has been produced.

Table 1. Preliminary Conceptual Site Model

Receptor	Potential sources	Pathways	Risk	Justification
Human Heath				
Construction and maintenance workers / Users of the site	Organic and metal contamination	Direct contact, ingestion, and inhalation via outdoor soils or translocated soil and dust indoors.	M	Moderate risk: Ingestion, inhalation and dermal contact with contaminated soils and vapours cannot be discounted due to the presence of residual contamination in Made Ground and the potential for these contaminants to remain exposed in soft landscaped areas.
	Ground gas and vapours	Inhalation, Migration through granular and fractured soils into confined spaces.	M	Moderate risk: Migration of vapours along service pipes into the building fabric or permeation of contaminants to pipework materials cannot be discounted.
Future site users	Organic and metal contamination in soils and groundwater	Direct contact, ingestion, and inhalation of outdoor soils or translocated soil and dust indoors.	M	Moderate risk: Ingestion, inhalation and dermal contact with contaminated soils and vapours cannot be discounted due to the presence of residual contamination in Made Ground and the potential for these contaminants to remain exposed in soft landscaped areas.
	Ground gas and vapour	Inhalation, migration through granular and fractured soils into	M	Moderate risk: Migration of vapours along service pipes into the building fabric or permeation of contaminants to pipework materials cannot be

		confined spaces.		discounted.
Offsite Residents	Organic and metal contamination in soils, groundwater and gas	Direct contact, ingestion, and inhalation of outdoor soils or translocated soil and dust indoors.	M	Moderate risk: Ingestion, inhalation and dermal contact with contaminated soils and vapours cannot be discounted due to the presence of residual contamination in Made Ground and the potential for these contaminants to remain exposed in soft landscaped areas.
Property				
Site structures and services	TPH in site soils	Direct contact between soil and structures or services.	L M	Low to Moderate Risk: Direct contact of building materials including foundations and buried services with contaminated soils and groundwater is low to moderate based on the potential for contaminated soils and groundwater to exist.
	Ground gas and vapour	Migration through granular and fractured soils into confined spaces.	L M	Low to Moderate Risk: Potential sources of ground gases were identified from the presence of Made Ground.
Plants /Landscaping	Metals and organic contamination in soils	Root contact and uptake	L M	Low to Moderate Risk: The risk from root uptake of phytotoxic contaminants within the underlying soils is low to moderate.
Adjacent Property				
Residential properties	Metals and organic contamination in soils	Soil leaching and migration and translocation as dust of soil contamination.	L M	Low to Moderate Risk: Adjacent land uses are unlikely to be exposed to contaminants in sufficient quantity to be of significance. The surrounding area is likely to comprise Made Ground based on its historical development, therefore the site is unlikely to pose a risk of ground gas.
Groundwater				
Secondary (A) Aquifer	Metals and organic contamination in soils	Soil leaching and migration of potential soil contamination.	M	Moderate Risk: Leaching of mobile contaminants through soil pore space to the shallow water table
Surface Waters				
Drainage Ditch (250m northwest)	Leachable metals and organic contamination	Soil leaching and migration into drains and sewers which discharge into the ditch.	M	Moderate Risk: Direct discharge or surface run off of contaminants to surface water features cannot be discounted based on the presence of a river along the western boundary.

5.2 Key Risks Requiring Further Investigation

5.2.1 Further investigations are required in order to determine the risk of environmental liability from potential soil and groundwater contamination and to facilitate the design of the proposed structures. It is anticipated that the ground investigation will comprise of shallow boreholes to inform foundation design, allow soil samples to be collected for chemical analysis, and allow the installation of monitoring wells for gas monitoring and subsequent risk assessment.

6.0 GEOTECHNICAL RISK ASSESSMENT

6.1	The Phase 1 assessment identified potential geotechnical hazards, which are discussed below by way of a rationale for the geotechnical objectives of the site investigation.
6.2	It has been highlighted that there is potentially a significant thickness of Made Ground onsite, which presents a geotechnical constraint owing to the potential for deepening of foundations if the made Ground is found to be particularly deep. In addition, the presence of Made Ground introduces a risk of obstructions to piling and excavating for foundations.

7.0 SITE INVESTIGATION

7.1	**Investigation Rationale**
7.1.1	The objectives for the investigation were to identify and characterise the ground conditions, the sources, pathways and receptors (in accordance with the Environmental Protection 1990 Part 2A), to reduce uncertainties and to provide an overview of site conditions. Details of the site methods are presented in Appendix 3.
7.1.2	The intrusive investigation was completed between 29 and 31 May 2019 and comprised a total of seventeen exploratory holes, located to provide a general representative coverage of the site, including some targeted locations. This included: • Eleven Windowless Sampler (WS1, WS3-WS10, WS12) boreholes to refusal, with monitoring wells for groundwater and ground gas; • Six Hand Excavated Trial Pits; • Geotechnical laboratory testing; • Geoenvironmental laboratory testing commensurate with the findings of the Phase 1 report including two Waste Acceptance Criteria (WAC) tests; and • One return groundwater and ground gas monitoring visit.
7.1.3	A site plan showing the locations of each exploratory hole is provided in Appendix 1.

7.2 Monitoring Wells

7.2.1 Combined ground gas and groundwater wells were installed in the boreholes as outlined below. Full details of the installations are also provided on the borehole logs presented in Appendix 3.

Table 2. Monitoring Well Installation Details.

	Plain Well Section (m)	Slotted Well Section (m)	Bentonite Seal (m)
WS1	0.00 – 1.20	1.20 – 2.62	0.00 – 1.20
WS3	0.00 – 1.20	1.20 – 4.00	0.00 – 1.20
WS4	0.00 – 1.00	1.00 – 2.00	0.00 – 1.00
WS5	No monitoring well installed		
WS5a	No monitoring well installed		
WS6	0.00 – 1.00	1.00 – 2.00	0.00 – 1.00
WS7	No monitoring well installed		
WS7a	0.00 – 1.00	1.00 – 3.00	0.00 – 1.00
WS8	0.00 – 1.00	1.00 – 3.00	0.00 – 1.00
WS9	0.00 – 1.00	1.00 – 3.57	0.00 – 1.00
WS10	0.00 – 1.00	1.00 – 2.00	0.00 – 1.00
WS12	No monitoring well installed		

7.2.2 No response zones were placed in the Made Ground as it was found to be a maximum of <1.00m thick at the top of the slope. Typically, the Made Ground beneath the slab was <0.30m thick and comprised a gravelly sand which is likely to be the sub-base for the concrete slab.

7.3 Sampling and Testing Strategy

7.3.1 Soil samples were collected from across the site to provide an even coverage of both the Made Ground and natural strata. Samples were submitted for geotechnical testing in accordance with relevant versions of BSEN ISO 17892-6:2017, BSEN ISO 14688-1:2002, and BSEN 1997-2:2007. Environmental samples were submitted under controlled conditions with a Chain of Custody to Derwentside Environmental Testing Services (DETS) a UKAS and MCerts accredited facility.

7.3.2 Geotechnical testing included:

- Atterberg testing with natural moisture content;
- Particle Size Distribution; and
- Sulphates and pH.

7.3.3 The results of the geotechnical testing are presented in Appendix 6.

7.3.4	Environmental soil samples were tested for a suite of testing considered commensurate with the risks identified in the Phase 1 report: • Heavy metals including; arsenic, cadmium, chromium (total and VI), copper, lead, mercury, nickel, selenium, and zinc; • Cyanide; • Phenols; • Petroleum Hydrocarbons (PHC) – Total Petroleum Hydrocarbons Criteria Working Group (TPH-CWG); • Benzene, Toluene, Ethylbenzene and Xylene (BTEX); • Polyaromatic Hydrocarbons (PAH) – Speciated 16; • Asbestos screen and identification; and • Total Organic Carbon (TOC), Sulphates and pH.
7.3.5	Groundwater was not encountered and as such no groundwater testing was undertaken.
7.3.6	The results of the environmental laboratory testing are provided in Appendix 4.

8.0 GROUND CONDITIONS

8.1	**General**
8.1.1	The ground conditions are described in detail in the logs that are presented within Appendix 3. A summary of the ground conditions is also presented in Table 3.

8.1.2 ***Table 3. Summary of Ground Conditions.***

Depth From (min/max) (m)	Depth To (min/max) (m)	Soil Type	Description
Ground level	0.10 / 0.18	Hardstanding	Concrete
Ground level	0.20 / 0.30	Topsoil	TOPSOIL. Grass over brown gravelly Sand. Sand is fine, gravel is fine to medium, angular flint.
Ground level / 0.25	0.48 / 1.10	MADE GROUND	MADE GROUND. Comprising sandy Gravel of fine to coarse, angular to sub-angular ash, brick and clinker. Included potential asbestos in WS05.
0.10 / 0.22	1.45 / 4.00	CLAY, SILT and SAND	Interbedded dense, orange mottled, light grey, clayey, silty, SAND. Sand is fine to medium. (WINDLESHAM FORMATION – Parent unit: BRACKLESHAM GROUP)
1.45	2.45 / 3.45	SAND	Dense, light grey mottled and orange SAND. Sand is fine. (BAGSHOT FORMATION)

8.1.3 The geology was found to very beneath the Made Ground and comprised clay, sand and silt of the Windlesham Formation. Gravelly bands were encountered which are thought to be the minor bands within the Windlesham Formation and the Bagshot Formation was thought to be identified within one borehole (WS10).

8.1.4 Based on a review of BGS geology and nearby boreholes the geology encountered is typical of the area. A nearby borehole, approximately 200m east of the site encountered the Bagshot Formation at 4.55m below the Windlesham Formation, which suggests that the Bagshot Beds are likely to be encountered at depths beyond those identified within this investigation.

8.2 Olfactory and Visible Evidence of Contamination

8.2.1 A fragment of suspected asbestos was encountered within the Made Ground within WS5. This sample was submitted for laboratory testing for confirmation.

8.3 Groundwater

8.3.1 Groundwater was not identified during the investigation or subsequent monitoring visit and based on the permeability of the sand it is likely that groundwater is found at depths within the Bagshot Formation, below 4m.

8.4 Constraints

8.3.2 The investigation was restricted by the angle of the slope, buildings, ecological exclusion areas, UXO, utility services and vegetation.

8.3.3	In the area of the slope, a trial pitting exercise would have ideally been undertaken to assess the condition of the slope (composition and integrity), however due to very dense vegetation, the presence of numerous utilities and potential for undermining buildings at the top of the slope, this was not possible. Therefore, boreholes were located in areas of flat ground where the drilling rig would be stable and away from the edge of the slope and vegetation. This was supplemented, where possible in safe locations, with shallow hand pits. It is anticipated that further investigation would be required in this area once demolition and removal of services have been completed.
8.3.4	Although Paragon did not investigate the southern part of the site due to anecdotal evidence of UXO, the report prepared by Wilson Bailey has not identified significant concentrations of contaminants.

9.0 GEOTECHNICAL APPRAISAL

9.1 Ground Conditions Discussion

9.1.1 The site investigation identified Made Ground, over Gravel, over silt, clay and sand over sand. The geotechnical site and laboratory testing are presented in Table 4. All geotechnical laboratory certificates are presented in Appendix 6.

9.1.2 ***Table 4. Summary of Geotechnical Testing.***

Geotechnical Testing	Geology		
	Made Ground	**Silt, Clay and Sand** **Windlesham Formation**	**Sand** **Bagshot Formation**
Standard Penetration Test (SPT) – N Value	N/A	12 – 50	23 – 50
Moisture Content (%)	N/A	16.0 – 20.2	N/A
Liquid Limit (%)	N/A	29 – 39	N/A
Plastic Limit (%)	N/A	21 – 25	N/A
Plasticity Index (%)	N/A	8 – 14	N/A
Sulphate (mg/l)	N/A	32 – 33	N/A
pH		7.9	
Particle Size Distribution (%)	N/A	Very coarse: 0 Gravel: 11 – 31 Sand: 45 – 68 Fines (<0.063mm): 21 – 24	Very coarse: 0 Gravel: 0 Sand: 74 Fines (<0.063mm): 26

9.1.3	***Boreholes***
9.1.4	The topography of the site is variable and boreholes on site have been drilled at different levels. The site slopes from west to east and the borehole at the highest elevation is WS3 and WS5 at approximately 59mAOD on the top of the slope.
9.1.5	The slope has three stepped levels and an upper and lower slope between them. In addition, the slab level has been cut into a more gradual slope which is shown in the northern part of the site. This is thought to be the original ground level. Borehole WS10 was drilled in the upper part of the gradual slope and WS9 was drilled in the lower part of the slope, with a difference in elevation of approximately 4m.
9.1.6	HP5 and HP4c were excavated on the middle step of the slope, HP4b on the lower slope and HP4a on the base of the slope.
9.1.7	WS4, WS7, WS7a, WS8, and WS12 were drilled on the base of the slope at approximately 54m AOD.
9.1.8	WS1 and WS6 were drilled within the car park in the eastern part of the site at approximately 48mAOD. HP1 was excavated in a vegetated bank adjacent to the car park at a slightly higher elevation.
9.2	**Made Ground**
9.2.1	Made Ground is highly variable and can settle at different rates when loaded which typically makes this unsuitable as a bearing stratum. In addition, Made Ground can contain physical and chemical contaminants which will need to be taken into consideration during the proposed development. It can also be a source of ground gas, which is discussed further in Section 12.
9.2.2	The Made Ground onsite was found to a maximum depth of 1.10mbgl and comprised sandy, clayey Gravel with abundant brick, ash, concrete.
9.3	**Windlesham Formation**
9.3.1	The composition of the Windlesham Formation was variable and comprised lenses of silt, sand and clay. The deposits were encountered to the base of the majority of the boreholes, with the exception of WS7a and WS10 where it terminated at 1.45m. SPT-N values were between 12 and 50 (refusal).
9.3.2	Particle Size Distribution testing was undertaken on the Windlesham Formation which identified a sandy gravel with moderate fines content.
9.3.3	Water soluble sulphate testing was completed which identified results of 32-33mg/l.
9.4	**Bagshot Formation**
9.4.1	The Bagshot Formation was recovered as a Sand from approximately 1.45m to 3.45m. SPT-N values ranged from 23 to 50 (refusal).

9.4.2	The sand is likely to be the upper boundary of the Bagshot Formation as it was found in a nearby BGS borehole at 4.55m below ground level.
9.4.3	Particle Size Distribution testing was undertaken on the Bagshot Formation which identified a predominantly sandy composition with a moderate fines content.

10.0 GEOTECHNICAL RISK ASSESSMENT

10.1	**Development**
10.1.1	The development proposal is for a Data Centre comprising 5 warehouse style buildings, likely to be built with steel columns on pad foundations. Potential risks have been identified relating to Made Ground, stability of the slope in the western part of the site and aggressive conditions for concrete. The following section outlines the geotechnical parameters of the soil based on the results of this investigation. The recommendations outlined below are for preliminary design purposes only.
10.2	**Volume Change Potential**
10.2.1	Two samples recovered from Clay lenses within the Windlesham Formation were submitted for determination of their Plasticity Index.
10.2.2	Plasticity Indices indicate a Volume Change Potential as low should be used for preliminary design purposes. As such, NHBC recommend a minimum foundation depth of 0.75m.
10.2.3	Foundations may require deepening near trees in accordance with NHBC Chapter 4.2.
10.3	**Sulphates**
10.3.1	Four samples of the Natural Sand and 10 samples of the Made Ground were submitted for assessment of water-soluble sulphate, total sulphate, pH value and total sulphur concentrations.
10.3.2	Sulphate results from the natural soils ranged between 28mg/l – 59mg/l and pH ranged between 7.8 and 9.6. As such, an early indication of the sulphate design class is DS-1 based on the highest measured sulphate content, and, assuming a static groundwater table, the ACEC class is AC-1s.
10.3.3	Sulphate results from the Made Ground ranged between <10mg/l – 1230mg/l and pH ranged between 5.1 and 9.6. As such, an early indication of the sulphate design class is DS-2 based on the highest measured sulphate content, and, assuming a static groundwater table, the ACEC class is AC-1s.
10.4	**Foundations**
10.4.1	At this stage Paragon have not seen final designs for the proposed development and therefore loadings and floor design are unknown. The following is recommended for preliminary design purposes until further information is available.

10.4.2	The base of foundations should be constructed to depths below Made Ground. The Made Ground is not considered suitable for the construction of shallow foundations due to the risk of unacceptable total and differential settlement occurring under moderately light surface loading.
10.4.3	The proposed development is likely to impose bearing pressures of 100kPa, based on the preliminary investigation, it is anticipated that shallow foundations are suitable, however a full assessment should be made during detailed design.
10.4.4	Foundation excavations should be inspected by a suitably qualified engineer prior to pouring concrete to ensure competent soils, in this case the medium dense silty, clayey sands are encountered at formation level.
10.5	**Floor Slabs**
10.5.1	An early indication suggests that a ground bearing slab may be suitable, however deep cable percussion boreholes are required to fully assess the likely settlement beneath the floor slab. In addition, the Made Ground will need to be fully excavated and recompacted to an appropriate engineering specification. The slab that is present onsite could be crushed and used to improve density. Further assessment is required to provide additional information for design.
10.6	**Pavement and Roads**
10.6.1	CBR testing was beyond the scope of this investigation. However, as a preliminary guide, due to inherent variability of the Made Ground a CBR value of 2% is recommended for preliminary design purposes and initial CRB of 3-4% should be used for preliminary design for the silty, clayey sand based on TRRL guidance.
10.6.2	Due to the highly variable nature of the Made Ground some softer clay areas may require ground improvement which could include compaction by proof rolling or thicker road design.
10.7	**Excavations**
10.7.1	Based on the granular nature of the deposits, excavations are likely to be unstable and may collapse. As such, shoring should be considered, and precautions should be taken if construction workers are required to enter the excavation.
10.7.2	Groundwater was not encountered during drilling, and long-term groundwater monitoring would be required to fully assess the groundwater regime. The investigation was undertaken during the summer and therefore may be seasonal, as such groundwater may be shallower in winter months and water ingress may occur and require control.
10.7.3	**Soakage Potential**
10.7.4	Soakage testing was beyond the scope of the investigation. However, the geology of the site is granular and therefore may be appropriate for soakaways onsite. Soakage testing would be required to provide soakage rates and drainage design and would require approval that this is an acceptable approach to drainage given the SSSI status / environmental sensitivity locally.

11.0 GEOENVIRONMENTAL APPRAISAL

11.1	**Assessment Criteria (Soils)**
11.1.1	The site investigation has identified pollutant linkages relating to exposure of potential contaminants within the Made Ground to future users onsite. This also includes a potential gas risk from Made Ground. The CSM has identified the risks to humans and groundwater as low to moderate. The risks from offsite receptors were also identified as low to moderate.
11.1.2	Following the geochemical laboratory testing, the results have been compared to industry accepted standards to determine the risks to human health known as Generic Assessment Criteria (GAC). The human health risk assessment uses Category 4 Screening Levels and Suitable 4 Use Levels (C4SLs and S4ULs). The GAC selected is based on a commercial end use due to the proposed development. A detailed methodology for the assessment is presented in Appendix 6.
11.2	**Assessment Criteria (Groundwater)**
11.2.1	Although groundwater was not identified within the investigation, an indication of the impact on controlled waters has been assessed by using data from WAC testing. Two WAC tests have been carried out and the leachate results have been used to assess the impact to Controlled Water by comparing with Environmental Quality Standards (EQS) where available. The results indicate leachable concentrations of metals are below the limit of detection with exception of zinc and molybdenum which have low detections. These concentrations are below the EQS.
11.3	**Analytical Test Results – Soils: Made Ground**
11.3.1	The results of the environmental testing of the soil samples retrieved from the investigation have been subjected to statistical analysis and the results from these assessments presented in a screening table in Appendix 5 and summarised below. The laboratory test certificates are provided in Appendix 5.
11.3.2	The results identified amosite asbestos board within WS5 at 0.30mbgl. Currently, there is no GAC for asbestos in soil. Industry guidance produced by CIRIA C7335 (2014) '*Asbestos in soil and made ground: a guide to understanding and managing risks*' states that "in the case of asbestos in soil, there is no published Soil Guideline Value (SGV) or C4SL. Indeed, agreement has yet to be reached in the UK on an appropriate toxicological criterion on which such a GAC could be based".
11.3.3	No other exceedances, above acceptable thresholds for a commercial land use, were identified of the contaminants tested as part of this investigation.
11.4	**Gas Monitoring Results**
11.4.1	Pollutant linkages associated with risks from ground gas and vapour to the property and to human health have been assed using BS 8485:2015+A1:2019 '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*.

11.4.2 A single gas monitoring visit was undertaken as a result of the short timescales of the investigation for indicative purposes. A summary of the results from the gas monitoring have been presented in Table 5. The gas monitoring records are presented in Appendix 7.

Table 5. Summary of Gas Monitoring Results.

BH No.	Peak Methane (% v/v)	Peak Carbon Dioxide (% v/v)	Minimum Oxygen (% v/v)	Peak Flow Rate (l/hr)	Volatile Organic Compounds (ppm)	Atmospheric Pressure Range (m bars)
WS1	0.2	1.8	18.2	0.1	0.0	1000 – 1000
WS3	0.2	2.1	17.8	0.1	0.1	1000 – 1000
WS4	0.1	1.2	16.2	0.2	0.0	1000 – 1000
WS6	0.2	2.4	18.0	0.1	0.0	1000 – 1000
WS7a	0.1	1.2	19.7	0.1	0.0	1000 – 1000
WS8	0.2	0.9	20.1	0.1	0.0	1000 – 1000
WS9	0.2	4.2	17.7	0.3	0.0	1000 – 1000
WS10	0.1	4.2	18.3	0.1	0.0	1000 – 1000

11.4.3 Carbon monoxide concentrations ranged between 1 and 4 parts per million by volume (ppmv), which may be attributed to combustible materials in the Made Ground. In addition, hydrogen sulphide was monitored, however concentrations were below the limit of detection. These concentrations are not considered significant.

11.4.4 Based on the landfill located 450m northwest of the site and potential for discrete infilling that may have caused slightly elevated CO_2 levels, additional gas monitoring is recommended and additional boreholes in the most northerly boundary may be required.

11.5 Waste Classification

11.5.1 Chemical analysis of the Made Ground and waste assessment have been completed as part of the works. In addition, two Waste Acceptance Criteria (WAC) tests have also been carried out. The laboratory certificates are presented in Appendix 4 and the Waste Assessment is presented in Appendix 5.

11.5.2 Based on a preliminary waste classification assessment, the tested soils onsite (Made Ground and Natural Soil) appear to be Non-Hazardous in nature. The laboratory certificates, waste classification outputs and drilling logs, provided in the appendices, should be provided to the waste receivers to confirm their ability to accept waste arisings from the site. It is the waste producer's responsibility to classify and appropriately manage waste under duty of care (section 34 of the Environmental Protection Act 1990).

11.5.3	Currently no quantification has been completed for the asbestos identified by Paragon in the slope. It is anticipated that waste will be formally assessed during groundworks. As an early indication, following the hand picking of asbestos fragments, asbestos waste will be bagged and placed in skips for removal from site. Free fibres were not identified by Paragon however additional testing of waste soils would be required to confirm this. The results from Wilson Bailey identified asbestos board and cement. Laboratory testing completed by Wilson Bailey identified asbestos fibres (amosite and chrysotile with quantifications between <0.001% and 0.002%) and asbestos sheeting/board debris (amosite with a quantification of 2.600%). The quantification of 2.6% is greater than the hazardous waste threshold meaning it would require disposal at a suitable facility registered for receiving hazardous waste with free fibres. As such additional testing is recommended once stockpiles of Made Ground (as waste) are formed and awaiting disposal and stockpiles should be damped down / covered.

12.0 GEOENVIRONMENTAL RISK ASSESSMENT

12.1	**Introduction**
12.1.1	The preliminary conceptual model has been further developed during the investigation, primarily by the identification and partial quantification of contamination sources within the site and the assessment of potential exposure patterns of current and future site users.
12.1.2	The key receptors that have been identified for this site are the current site users, construction workers during the redevelopment, future site users, controlled waters and infrastructure and property.
12.1.3	The following section discusses the chemical laboratory test results and provides a refined conceptual site model.
12.2	**Human Health**
12.2.1	Made Ground was encountered in all boreholes across the site to a maximum depth of 1.10m bgl.
12.2.2	Chemical testing identified asbestos insulation board within the Made Ground. This would pose an unacceptable risk to site users if in areas of soft landscaping or at the surface. There is currently no GAC for risks posed to human health from asbestos, therefore, the most common approach to mitigate risks at development sites are to either excavate and dispose of the impacted soils off-site, hand pick the fragments or to install capping layers (hard cover or engineered soft landscaping) to encapsulate or contain the risk. Currently asbestos fibres have not been detected.
12.2.3	Construction workers are likely to be at risk of exposure to asbestos as they would come into contact with soils during groundworks and excavations via inhalation pathways. It is anticipated that areas of Made Ground may be required during groundworks and excavation of foundations as part of the construction process. In areas of soft landscaping it would be recommended to remove Made Ground to facilitate the installation of capping layers.

12.2.4	In addition, appropriate Risk Assessments and Method Statements are likely to be required outlining the specific health and safety standards to be followed in accordance with current legislation Control of Asbestos Regulations 2012: Asbestos in Soil (CAR-SOIL). This should include, but not be limited to, an outline for requirements for Personal Protective Equipment and Respiratory Protective Equipment, damping down of excavations and controlled removal of Made Ground arisings to suitably licensed waste receivers.
12.3	**Controlled Waters**
12.3.1	The site is underlain by the Windlesham Formation and Bagshot Formation which are classified as Secondary (A) Aquifers. The site is not situated within a Source Protection Zone and there are no groundwater abstractions within 1km of the site.
12.3.2	The boreholes encountered permeable sands, silts and gravel with some less permeable clay. As such, it is likely that groundwater is likely to permeate through the geology. Groundwater was not encountered during the investigation and therefore no groundwater samples were recovered for laboratory analysis.
12.3.3	No significant surface watercourses have been identified within close proximity of the subject site although a drainage ditch has been identified some 250m northwest of the site.
12.3.4	Two leachate tests suggest that the leachable content of metals within the soils are below the EQS and based on the low sensitivity of the area, absence of groundwater abstractions and surface water features, it is considered that the data indicates there is a low risk to Controlled Waters.
12.4	**Property and Infrastructure**
12.4.1	Existing vegetation appeared healthy and no significant phytotoxic contamination (copper and zinc) was identified during the recent site investigation.
12.4.2	No significant recorded concentrations of soil contamination have been identified at the site as confirmed by the visual and olfactory evidence, field works and laboratory analysis results. Therefore, there is unlikely to have been a significant impact on the adjacent residential properties.
12.4.3	Sulphate testing was undertaken to assess the risks from aggressive ground on concrete. Sulphate results from the Made Ground ranged between <10mg/l – 1230mg/l and pH ranged between 5.1 and 9.6. As such, an early indication of the sulphate design class is DS-2 based on the highest measured sulphate content, and, assuming a static groundwater table, the ACEC class is AC-1s. Sulphate results from the natural soils however, ranged between 28mg/l – 59mg/l and pH ranged between 7.8 and 9.6. As such, an early indication of the sulphate design class is DS-1 based on the highest measured sulphate content, and, assuming a static groundwater table, the ACEC class is AC-1s.
12.4.4	From a preliminary risk assessment of the results to thresholds set in the UK Water Industry Research (2010) '*Guidance for the selection of water supply pipes to be used in brownfield sites*', it is likely that barrier water pipes will be required for drinking water supply pipework. This is based on the contaminant concentrations recorded (in particular TPH aromatic C10– C40). Organic contaminants can degrade polymeric materials from which traditional PE pipework is often made. Barrier pipe comprises an aluminium barrier layer within a PE pipe, which makes it more suitable for use on brownfield sites where residual contamination has been found.

12.5	**Ecological Assessment**
12.5.1	This investigation has not included a detailed ecological assessment. However, an ecological constraints assessment was previously completed for Crest Nicholson by Ecological Planning and Research in 2019. The information received includes Conservation Designations and constraints relating to bats, badgers, grassland and reptiles. This information is summarised in Figures 5 to 9 of Appendix 1.
12.5.2	In addition, the site is located within 250m of a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Special Protection Area (SPA).
12.5.3	The information provided by Crest Nicholson on bat constraints suggests two buildings onsite were found to previously have bat roosts (Figure 6), and an up to date survey and licence would be required prior to demolition. In addition, the record shows buildings with no up to date information. As such, an additional survey is required prior to demolition.
12.5.4	The badger constraints plan (Figure 7) shows an outlier sett south east of the site (off site) from a survey in 2016. It is recommended that a survey is required in the southern part of the site in the area of woodland.
12.5.5	The grassland plan (Figure 8) shows areas of amenity grassland onsite.
12.5.6	The reptile constraints plan (Figure 9) shows an area of reptile refugia locations in the southwest part of the site and the northern part of the site. Further assessment is therefore required.
12.5.7	In addition, an area of hardstanding was fenced off with herras with a warning sign for ecological protection. Additional surveys would be required to identify what this is for and whether it could be safely removed.
12.5.8	Based on the information above, an ecological survey should be undertaken prior to demolition and redevelopment. This should include but not be limited to; vegetation, bats, badgers, and reptiles.
12.6	**Gas Risk Assessment**
12.6.1	The Gas Risk Assessment has been carried out in accordance with 8485:2015+A1:2019 whereby the Characteristic Situation (CS) of the site has been identified. The Characteristic Situation ranges are between 1-6 and determine the gas risk to the property and the level of protection required. The process calculates a Gas Screening Value (GSV) based on gas monitoring which was undertaken based on boreholes within the Made Ground only.

12.6.2 The GSV for the site has been calculated based on the concentration of methane and carbon dioxide monitored and the flow rate recorded in the boreholes using the equation:

$$GAC = q\left(\frac{Chg}{100}\right)$$

Where:

- Chg = Concentration of a specific hazardous gas expressed as a percentage of total gas volume (%v/v)
- q = Total gas flow from a borehole in litres per hour (l/hr)
- Qhg = Calculated flow rate of a specific hazardous gas from a borehole reading

The results are then compared to tables set out in the guidance for assessment.

12.6.3 Based on the preliminary test results of the gas monitoring for carbon dioxide the site falls within CS1 where gas protection is not considered to be required. However, based on the landfill located 450m northwest of the site and potential for discrete infilling that may have caused slightly elevated CO_2 levels, additional gas monitoring is recommended and additional boreholes in the most northerly boundary may be required.

12.6.4 The Phase 1 investigation identified that the property is not located within a Radon Affected Area and as such, radon gas protection is not considered to be required.

12.7 Risk Evaluation

12.7.1 Following the implementation of the Phase 2 site investigation, the pollutant linkages identified during the Phase 1 Desk Study have been re-evaluated and re-classified in relation to the additional information obtained. The risk of harm to human health is **moderate** based on the presence of asbestos within Made Ground and the risk of harm to controlled waters has been assessed as **low** based on leachable concentrations within the WAC testing being below the Environmental Quality Standard threshold. The results of the reassessment are summarised below.

12.8 Revised Assessment of Potential Pollutant Linkages

Table 6. Revised Conceptual Site Model.

Receptor	Potential sources	Pathways	Risk	Justification
Human Heath				
Construction and maintenance workers / Users of the site	Organic and metal contamination	Direct contact, ingestion, and inhalation via outdoor soils or translocated soil and dust indoors.	M	Moderate risk: Initial test results have identified concentrations of contaminants are low, however asbestos has been identified onsite. As such, some remediation will be required to reduce the risk.
	Ground gas and vapours	Inhalation, migration through granular and fractured soils into confined spaces.	L M	Low to Moderate Risk: Initial gas monitoring has not identified a significant risk, however further monitoring is required to verify the assessment.
Future site users	Organic and metal contamination in soils and groundwater	Direct contact, ingestion, and inhalation of outdoor soils or translocated soil and dust indoors.	M	Moderate risk: Initial test results have identified concentrations of contaminants are low, however asbestos has been identified onsite. As such, some remediation will be required to reduce the risk.

	Ground gas and vapour	Inhalation, migration through granular and fractured soils into confined spaces.	L M	Low to Moderate Risk: Initial gas monitoring has not identified a significant risk, however further monitoring is required to verify the assessment.
Offsite Residents	Organic and metal contamination in soils, groundwater and gas	Direct contact, ingestion, and inhalation of outdoor soils or translocated soil and dust indoors.	L M	Low to Moderate Risk: Although initial test results have not identified any gross contamination, additional testing of the groundwater and gas is required to verify the assessment.
Property				
Site structures and services	Sulphates and TPH in site soils	Direct contact between soil and structures or services.	L M	Low to Moderate Risk: initial test results have identified sulphate design class and potential requirement for barrier pipework.
	Ground gas and vapour	Migration through granular and fractured soils into confined spaces.	L M	Low to Moderate Risk: Initial gas monitoring has not identified a significant risk, however further monitoring is required to verify the assessment.
Plants /Landscaping	Metals and organic contamination in soils	Root contact and uptake	L M	Low to Moderate Risk: Imported soil is to meet the British Standard to ensure risks to plants and landscaping are reduced.
Adjacent Property				
Residential properties	Metals and organic contamination in soils	Soil leaching and migration and translocation as dust of soil contamination.	L	Low Risk: initial testing has not identified gross contamination and as such, impacts to offsite properties are low.
Groundwater				
Secondary (A) Aquifer	Metals and organic contamination in soils	Soil leaching and migration of potential soil contamination.	L	Low Risk: initial leachate test results indicates there is a negligible impact to the underlying aquifer.
Surface Waters				
Drainage Ditch (250m northwest)	Leachable metals and organic contamination	Soil leaching and migration into drains and sewers which discharge into the ditch.	L	Low Risk: initial leachate test results indicates there is a negligible impact to the drainage ditch.

12.9 Waste

12.9.1 The chemical analysis of the Made Ground has identified low levels of contaminants below the relevant acceptance criteria. The Made Ground can therefore remain onsite. However, based on the thickness of Made Ground in the slope, it may be necessary to remove some Made Ground from site as waste. In addition, in areas of soft landscaping, it is anticipated that imported subsoil and topsoil would be used. As such, there may be the potential for surplus soil requiring off-site disposal.

12.9.2 Chemical analysis of the Made Ground, and waste assessment have been completed as part of the works and two Waste Acceptance Criteria (WAC) tests have also been carried out. The laboratory certificates are presented in Appendix 4 and the Waste Assessment is presented in Appendix 5. These documents should be provided to a waste receiver to confirm an acceptable end point for disposal of surplus materials.

12.9.3 Based on a preliminary waste classification assessment, the tested soils onsite (Made Ground and Natural Soil) appear to be Non-Hazardous in nature however, the amosite sheeting/board debris within the soft landscaped area north of the canteen was found with a quantification above the waste threshold meaning it would be hazardous. The laboratory certificates, waste classification outputs and drilling logs, provided in the appendices, should be provided to the waste receivers to confirm their ability to accept waste arisings from the site. It is the waste producer's responsibility to classify and appropriately manage waste under duty of care (section 34 of the Environmental Protection Act 1990).

12.9.4 Currently no quantification has been completed for the asbestos identified by Paragon. Laboratory testing completed by Wilson Bailey identified asbestos fibres (amosite and chrysotile with quantifications between <0.001% and 0.002%) and asbestos sheeting/board debris (amosite with a quantification of 2.600%). It is anticipated that waste will be formally assessed during groundworks. As an early indication, following the hand picking of asbestos fragments, asbestos waste will be bagged and placed in skips for removal from site. Free fibres were not identified in the samples tested however additional testing of waste soils would be required to confirm this. Any material that is stockpiled awaiting removal, that is known to include asbestos fibres, should be damped down.

12.9.5 **Topsoil Requirement Import Criteria**

12.9.6 Where available, DEFRA's Category 4 Screening Levels (C4SLs) and LQM Suitable 4 Use Levels (S4ULs) have been used to produce import criteria for Topsoil and Subsoil within areas of Public Open Space (Park). There are currently no published assessment criteria for asbestos in soil. As such, the criteria for imported topsoil/subsoil to be used within areas of public open space should be that No Asbestos is Detected (NAD).

12.9.7 In addition, the Topsoil and Subsoil are to meet the requirements of BS3882, Specification for Topsoil. The supplier should be able to provide a test certificate prior to purchase. It is then recommended to test the soils once they arrive onsite to ensure they meet the standard.

12.9.8 ***Table 7. Imported Criteria.***

Contaminant	**Reuse Criteria (1% SOM mg/kg)**	**Source**
Metals		
Arsenic	168	C4SL
Cadmium	880	S4UL
Chromium	33000	S4UL
Hexavalent Chromium	168	C4SL
Copper	100	BS3882
Lead	1300	C4SL
Mercury (inorganic)	240	S4UL
Nickel	60	BS3882

Selenium	1800	S4UL
Zinc	<200	BS3882
Asbestos	NAD	LOD
Polyaromatic Hydrocarbons		
Naphthalene	1200	S4UL
Acenaphthylene	29000	S4UL
Acenaphthene	29000	S4UL
Fluorene	20000	S4UL
Phenanthrene	6200	S4UL
Anthracene	150000	S4UL
Fluoranthene	6300	S4UL
Pyrene	15000	S4UL
Benzo(a)pyrene	21	C4SL

13.0 CONCLUSION

13.1 The site has been investigated following a Phase 1 investigation to determine if the underlying Made Ground present onsite pose a risk to the proposed development. The intrusive investigation comprised seventeen exploratory holes including eleven windowless sample boreholes and six hand excavated pits. Soils were collected, and geochemical and geotechnical testing was undertaken at dedicated laboratories. The results of the testing identified asbestos within the Made Ground and groundwater was not present so no groundwater testing was completed.

13.2 Reference to BRE Special Digest 1 and the sulphate test results indicates the results from the Windlesham Formation fall within Design Sulphate Class DS-1 and assuming a static groundwater the ACEC class would be AC-1s, in addition, an indication of the sulphate design class for the Made Ground is DS-2 based on the highest measured sulphate content, and, assuming a static groundwater table, the ACEC class is AC-1s, although additional testing would be required to confirm this.

13.3 Shallow pad foundations are considered to be suitable for the proposed development, however deepening may be required to transfer loads beneath the Made Ground.

13.4 A risk assessment was carried out and the presence of asbestos within the Made Ground was highlighted as a moderate risk in areas of soft landscaping / public open space. An options appraisal was completed to determine the most effective solution. Based on the presence of asbestos insulation board and no free fibres (at this stage), a hand-picking exercise is recommended to remove the asbestos from these locations. Surplus Made Ground from these areas would need to be removed and replacement with a clean cover system are likely to be required.

13.5 In addition, although no groundwater was identified onsite, based on the low concentrations of contaminants within the soils, and low leachate results from the WAC testing, the likelihood of a significant impact on the Controlled Water environment is low.

13.6	The results from an initial gas monitoring visit indicate the site falls within Characteristic Situation 1 (low risk) whereby no protective measures are considered to be required. However, additional gas monitoring is required to confirm this.
13.7	Waste soils are likely to be produced as part of the building works. The test results indicate the majority of the soils would be Potentially Hazardous and would therefore require additional testing. It is the duty of the waste producer, to ensure that all waste is disposed of correctly and under duty of care. Where soils are to be reused onsite then CL:AIRE Code of Practice for Re-use of Soils (DoWCoP) may be appropriate, although owing to the small-scale nature of the development, it is unlikely that there will be much scope to re-use materials on site.

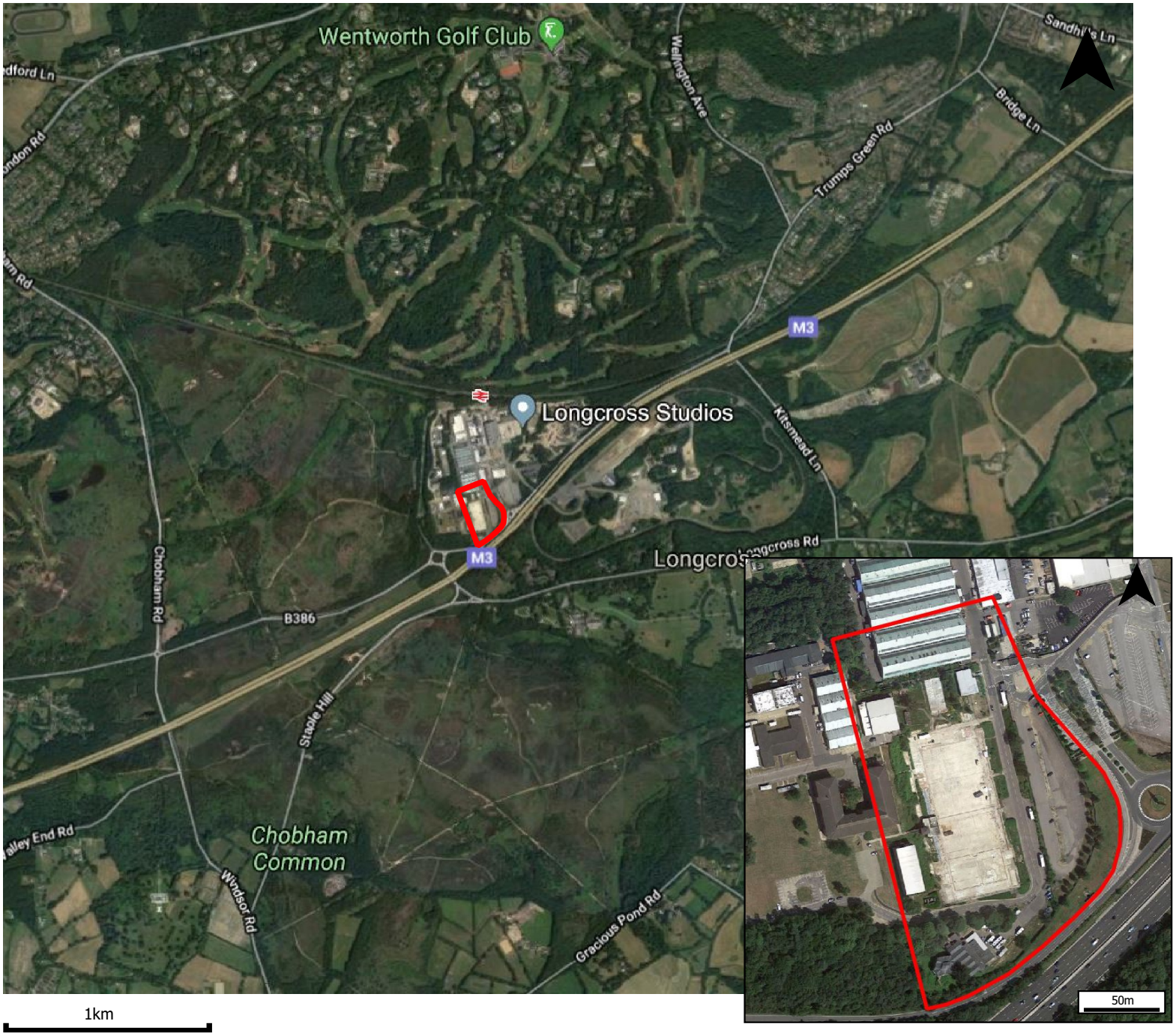
14.0 RECOMMENDATIONS

14.1	**Health and Safety**
14.1.1	As asbestos insulation board has been identified within the Made Ground, construction workers have the potential to come into direct contact with it during groundworks. Based on the findings of the investigation, it is anticipated that the risk to construction workers can be mitigated by: • Employing high standards of personal hygiene by providing welfare /decontamination for facilities handwashing and changing clothes; • Providing Personal Protective Equipment (including that suitable for asbestos in accordance with CAR-SOIL); • Air monitoring if deemed appropriate by the Main Contractor's risk assessment; • Regular cleaning of highways and minting site security to restrict third-party access into the site; and • Dust suppression measures including, but not limited to, damping down of soils and covering materials being transported off site.
14.2	**Contamination and Remediation**
14.2.1	Asbestos containing soils are not to be retained onsite in areas of soft landscaping / public open space as there would be a pathway between the source of harm (asbestos) and site users through ground disturbance. Therefore, asbestos picking is required to reduce the risk. In addition, a capping layer should be installed, as described below. In addition, Made Ground removed during excavations should be monitored through a 'watching brief' and removed from site if it is surplus to requirements. Made Ground that is awaiting removal from site should undergo chemical testing to confirm if asbestos is present and its waste classification. Should unforeseen contamination be identified during groundworks, works are to cease, and an environmental consultant should be sought to test and confirm its presence and determine the containment and removal strategy.

14.2.2	At this stage an allowance should be made for dampening down of stockpiles, covering stockpiles with sheeting and potential for air monitoring to confirm there are no risks from asbestos to third parties. Care should also be taken to ensure any stockpiles confirmed to contain asbestos are not cross contaminated with 'clean', asbestos free soils. Appropriate Risk Assessments and Method Statements should be prepared for construction work involving excavations into the Made Ground.
14.2.3	In areas of soft landscaping, a cover system of subsoil and topsoil should be placed. Capping layers are not required within areas of proposed hardstanding (e.g. beneath buildings, pavements and/or car parking). Owing to the commercial nature of the proposed development, it is not anticipated that site users would come into prolonged / direct contact with soils in the soft landscaped areas or use them for significant recreation. Therefore, they may better be considered as public open spaces. As such, a capping layer thickness of 450mm is considered to be suitable. This should be engineered as follows: • Fresh, imported topsoil – 150mm; • Cohesive subsoil – 300mm; • Terram 100 geotextile membrane (or similar).
14.2.4	The capping layer may be required to be deepened locally for shrub and tree pits to be excavated; BS:3882:2015 '*Specification for topsoil*' should be reviewed for specific requirements. Any subsoil/topsoil imported onsite, should be chemically tested for a generic suite of contaminants (including asbestos) and verified prior to placement to check that they are suitable for the intended use in accordance with BS3882. It is anticipated that the C4SLs and S4ULs for public open space would provide suitable thresholds for comparison of the imported materials for verification purposes.
14.2.5	A minimum of three verification samples of the imported topsoil and subsoil should be taken followed by a frequency of every 1 per 300m^3. Provenance data of the imported materials should be provided to a suitably qualified environmental consultant to review the suitability of the material prior to it being imported to site.
14.2.6	Based on a preliminary waste classification assessment, the tested soils onsite (Made Ground and Natural Soil) appear to be Non-Hazardous in nature. The laboratory certificates, waste classification outputs and drilling logs, provided in the appendices, should be provided to the waste receivers to confirm their ability to accept waste arisings from the site. It is the waste producer's responsibility to classify and appropriately manage waste under duty of care (section 34 of the Environmental Protection Act 1990).
14.3	**Management of Materials**
14.3.1	All materials must be transported in compliance with the Duty of Care Regulations by authorising movements with Carrier's individually numbered Duty of Care conveyance notes, complete with the appropriate LoW Codes. All relevant dockets will need to be kept providing evidence of the removal of materials from site, as these may be required as part of a verification report.
14.3.2	The chemical data and WAC testing presented as part of this report can be provided to a waste receiver to check its suitability for disposal. Quantification analysis of soils impacted by asbestos fibres may be required by the waste receivers and so excavated Made Ground should be stockpiled under controlled conditions, damped down and sampled / tested prior to its movement off site.

14.4	**Buried Services and Property**
14.4.1	Based on the results from the contamination analysis of the soils on site and a comparison to guidance set by UKWIR, it is envisaged that standard barrier pipework will be required for the proposed development. However, the results and logs contained within this report should be submitted to the local water authority to confirm their specific requirements.
14.4.2	The earlier geotechnical recommendations should be referred to regarding the appropriate grade of concrete to adopt to resist degradation from aggressive ground conditions.
14.5	**Ecology**
14.5.1	Reference should be made, during demolition and construction, to the Ecological Planning and Research (EPR – 2019) Conservation Designations and constraints plan. Further surveys are likely to be required as per the recommendations of EPR.
14.6	**Discovery Strategy**
14.6.1	During construction works, visual and olfactory appraisal of the underlying soils should be made. If during construction works any material is noted to show visual and/or olfactory signs of contamination (e.g. colours or odours) an environmental consultant should be contacted to supervise or guide further works. This material should be stockpiled separately and tested prior to its appropriate removal off site or re-use as necessary.
14.6.2	A separate Discovery Strategy report has been prepared by Paragon and should be read in conjunction to this report. That strategy report sets out the process for managing unexpected contamination that may be identified during construction.
14.7	**Verification**
14.7.1	Based on the foregoing, it will be necessary to draft a Remediation Method Statement and complete verification works, during implementation of the remediation measures which include asbestos removal. A Verification Report will be required, which should include information on: • Site inspections including logs / records, photographs and laboratory certificates from relevant testing such as imported materials; • Source data and pre-importation provenance laboratory data of imported materials; • Watching brief information including photographs of the formation level and details / testing of any unexpected contamination that was encountered; • Duty of Care records for the management and disposal of surplus soils; and • Specification of drinking water supply pipework.

APPENDIX 1: FIGURES



building & project consultants

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020 7125 0112
www.paragonbc.co.uk

Key

Site Boundary (Approx)

Notes

Rev	Description	Date

Project: Longcross Studios	Scale: not to scale
	Drawn by: CB
	Approved By: CK
Title: Site Location Plan	Drawing Number: 1
	Date: 10 June 2019

Illustrative masterplan

Figure 2

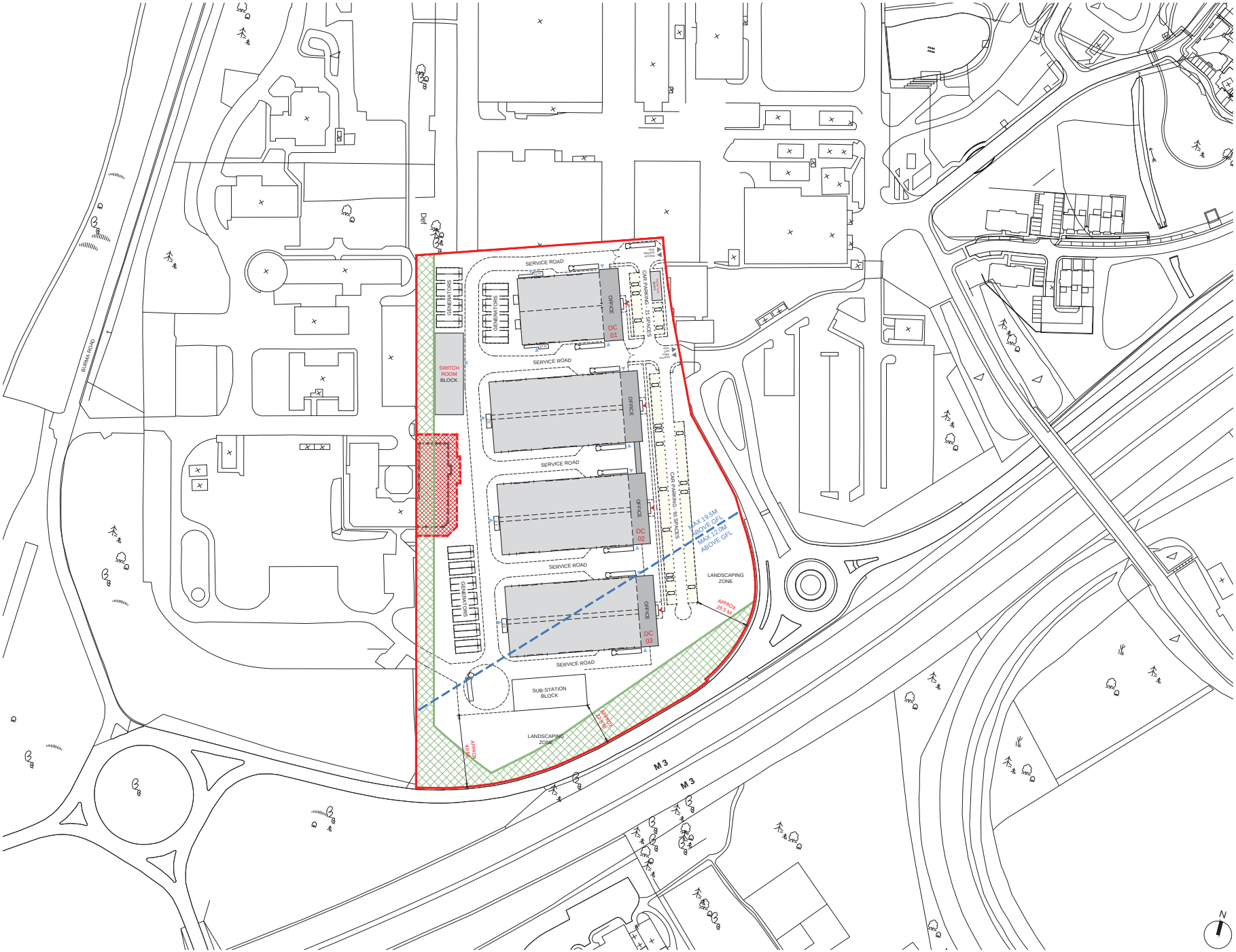

Figure 3

Disclaimer:
Subject to survey.

Notes:

KEY:

SITE BOUNDARY LINE
(45,375 M² / 4,53 HA / 11,21 ACRES)
BOUNDARY TAKEN FROM DWG. No. 14610 DR-401-447 REVISION 2 BY SCOTT BROWNRIGG DATED 28 JAN 2019

MAXIMUM BUILDING HEIGHT BOUNDARY
ASSUMED GROUND FLOOR LEVEL +50.0 M (AOD)
+69.5 M (AOD) - MAX BUILDING HEIGHT 19.5 M
+62.0 M (AOD) - MAX BUILDING HEIGHT 12.0 M

EXISTING BUILDING AREA TO BE RETAINED FOR TIME PERIOD TO BE CONFIRMED

GENERAL AMENITY / STRUCTURAL LANDSCAPING ZONE AS SHOWN ON PARAMETER PLAN 1 PREPARED BY SCOTT BROWNRIGG, DWG. No. 14610 DR-411-302 REV P00

DATA CENTRE 01 (DC 01):

4.5 MW (0.75 MW PER HALL - 2 HALLS PER FLOOR)
3 FLOOR LEVELS + OPEN SCREENED ROOF PLANT

MAX HEIGHT:	+64.45 (AOD)	(14.45 M ABOVE GFL)
FOOTPRINT:	2,076.5 M²	22,350 FT²
GEA:	6,229.5 M²	67,050 FT²

CALCULATED AREAS EXCLUDE EXTERNAL ENTRANCE CANOPY AREAS, EXTERNAL FIRE ESCAPE STAIR AREAS AND ROOF PLANT AREAS

DATA CENTRE 02 (DC 02):

18.0 MW (1.5 MW PER HALL - 4 HALLS PER FLOOR)
3 FLOOR LEVELS + OPEN SCREENED ROOF PLANT

MAX HEIGHT:	+64.45 (AOD)	(14.45 M ABOVE GFL)
FOOTPRINT:	6,460.5 M²	69,435 FT²
GEA:	19,351.5 M²	208,300 FT²

CALCULATED AREAS EXCLUDE EXTERNAL ENTRANCE CANOPY AREAS, EXTERNAL FIRE ESCAPE STAIR AREAS AND ROOF PLANT AREAS

DATA CENTRE 03 (DC 03):

9.0 MW (1.5 MW PER HALL - 2 HALLS PER FLOOR)
3 FLOOR LEVELS + OPEN SCREENED ROOF PLANT

MAX HEIGHT:	+64.45 (AOD)	(14.45 M ABOVE GFL)
FOOTPRINT:	3,199.0 M²	34,435 FT²
GEA:	9,597.5 M²	103,305 FT²

CALCULATED AREAS EXCLUDE EXTERNAL ENTRANCE CANOPY AREAS, EXTERNAL FIRE ESCAPE STAIR AREAS AND ROOF PLANT AREAS

RECEPTION BLOCK:

1 FLOOR LEVEL

MAX HEIGHT:	+53.90 (AOD)	(3.90 M ABOVE GFL)
FOOTPRINT / GEA:	88.5 M²	950 FT²

SWITCH ROOM BLOCK:

SINGLE STOREY STRUCTURE

MAX HEIGHT:	+58.00 (AOD)	(8.00 M ABOVE GFL)
FOOTPRINT/ GEA:	707.5 M²	7,615 FT²

EXTERNAL GENERATOR AREAS:

SINGLE STOREY STRUCTURES

FOOTPRINT / GEA:	2,040.5 M²	21,965 FT²

EXTERNAL SUB-STATION:

SINGLE STOREY STRUCTURE

FOOTPRINT / GEA:	699.5 M²	7,530 FT²

TOTAL AREAS:

FOOTPRINT:	12,522.0 M²	134,785 FT²
GEA:	35,974.5 M²	387,225 FT²

CALCULATED AREAS EXCLUDE EXTERNAL SUB-STATION BLOCK AREA AND EXTERNAL GENERATOR AREAS

PROPOSED CAR PARKING:

SHOWN AS 112 STANDARD CAR PARKING SPACES (5.5 M x 2.5 M)

LAYOUT BASED ON RECOMMENDATIONS FROM DATA CENTRE - DESIGN CODE DOCUMENT FOR DERA NORTH SITE, LONGCROSS PREPARED BY SCOTT BROWNRIGG DATED OCTOBER 2012 (DOCUMENT REFERENCE 14610-RT-410-104 REV04)

Rev:	Notes:	Date:	Dwn:	Iss:
02	Technical Details	10.05.19	MM	MM
01	Minor Amendments	10.05.19	MM	MM
00	First Issue for Comments (Progress)	09.05.19	MM	MM

SCALE
0 25m 50m

Client:
ARK DATA CENTRES

hale
ARCHITECTURE
22c Leathermarket Street, London, SE1 3HP

Project:
Longcross

Drawing Title:
Proposed Site Plan
Data Centre Layout
31.5 MW Option

Project No:	Scale @ A1/A3:
19063	1:1000/1:2000

Drawing No:	Revision:
SK1014	02

building & project consultants
paragon
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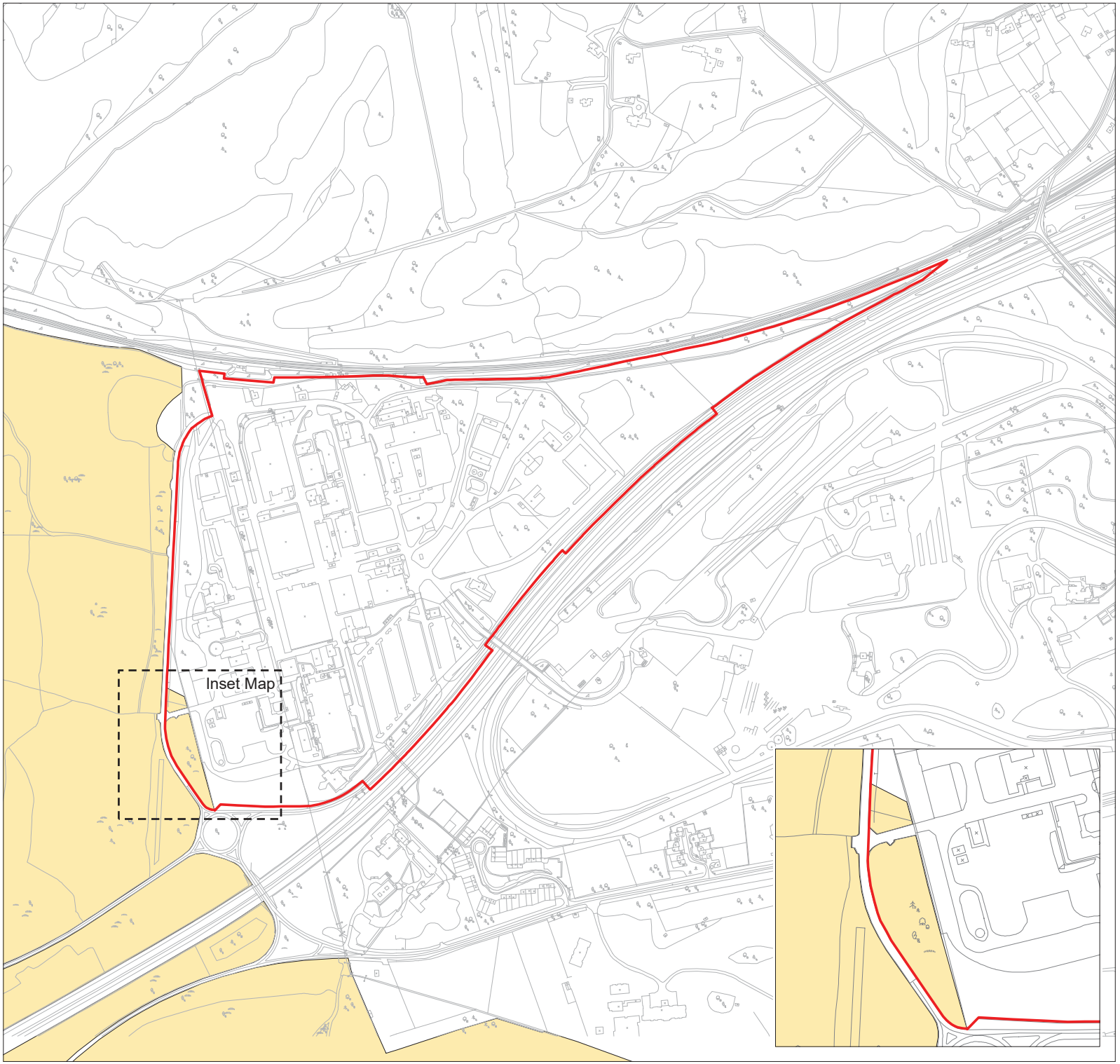
Key

- WS (Windowless Sample Borehole)
- HP (Hand Excavated Pit)

Notes

Rev	Description	Date

Project: Longcross Studios	Scale: not to scale
	Drawn by: CB
	Approved By: CK
Title: Borehole Location Plan	Drawing Number: 4
	Date: 3 July 2019



MAP 1 Site Location & Nature Conservation Designations

KEY

Longcross North ownership boundary

Thames Basin Heaths SPA
Thursley, Ash, Pirbright & Chobham SAC
Chobham Common SSSI

Figure 5

SCALE: 1:6,000 at A3

N

0 100 200 300 400 Metres

EPR

Ecological Planning & Research

CLIENT: Crest Nicholson Operations Limited & CGNU Life Assurance Limited

PROJECT: DERA N

DATE: 14 May 2019

Y:\DERA_North\GIS\Constraints Note\Map1_Site_Local_Designations_P1705_140519.mxd

P17/05

MAP 2 Bat Constraints

KEY

- Longcross North ownership boundary
- Building with no up-to-date survey data
- Two emergence surveys 2017
- Single emergence survey 2018
- Negligible roost suitability 2018 (no bat survey required)
- Bat roost. Up-to-date survey information and licence required prior to demolition
- Building demolished under safe working method statement to facilitate phase 1 residential
- Roost building demolished under bat licence to facilitate phase 1 residential
- Building demolished to facilitate Phase 1 residential
- Bat commuting routes
- Bat foraging areas

Figure 6

SCALE: 1:2,500 at A3

0 25 50 75 100 Metres

N

Ecological Planning & Research

CLIENT: Crest Nicholson Operations Limited & CGNU Life Assurance Limited

PROJECT: DERA N

DATE: 14 May 2019

Y:\DERA_North\GIS\Constraints Note\Map2_Bat_Constraints_P1705_140519.mxd

P17/05

MAP 3 Badger Constraints

KEY

Longcross North ownership boundary

2012

Main sett

Outlier sett

Disused sett

2013

Main sett

Outlier sett

Disused sett

2016

Main sett

Outlier sett

Disused sett

2018

Disused Outlier sett (removed under ecological supervision as part of Phase 2a enabling works)

30m buffer from setts which have not previously been recorded as disused

Figure 7

SCALE: 1:4,500 at A3

0 50 100 150 200 Metres

N

Ecological Planning & Research

CLIENT: Crest Nicholson Operations Limited & CGNU Life Assurance Limited

PROJECT: DERA N

DATE: 15 May 2019

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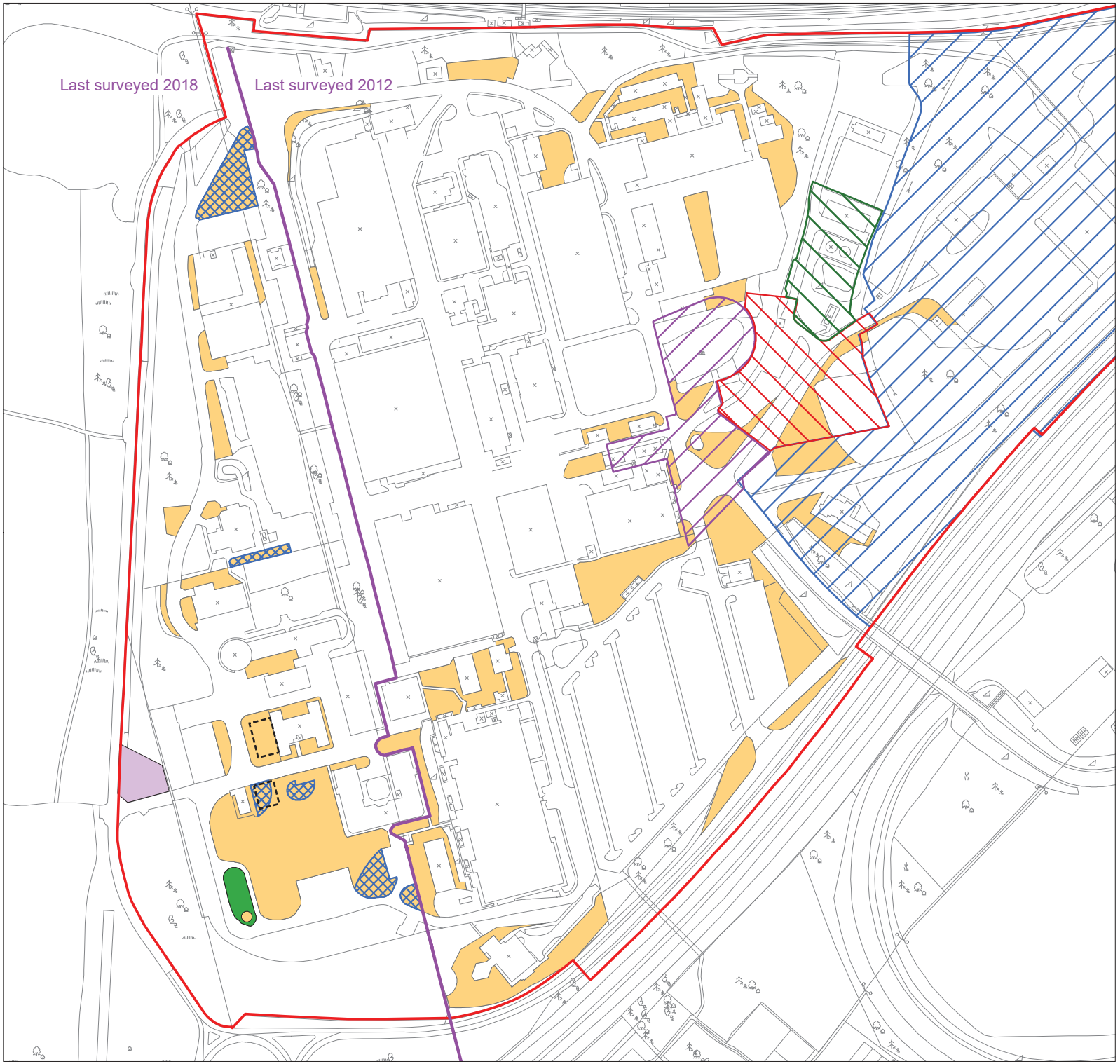
P17/05



MAP 4 Grassland Constraints

KEY

- Longcross North ownership boundary
- Phase 1 residential site boundary
- Phase 2 Residential Site RMA Boundary
- Phase 2a boundary
- Focal building site boundary
- Areas referable to S41 habitat. Lowland dry acid grassland
- Species assemblage of amenity grassland
- Unmanaged grassland lawns and verges
- Temporary tent
- Deptford Pink present 2019

Figure 8

SCALE: 1:2,600 at A3

0 25 50 75 100 Metres

N

EPR

Ecological Planning & Research

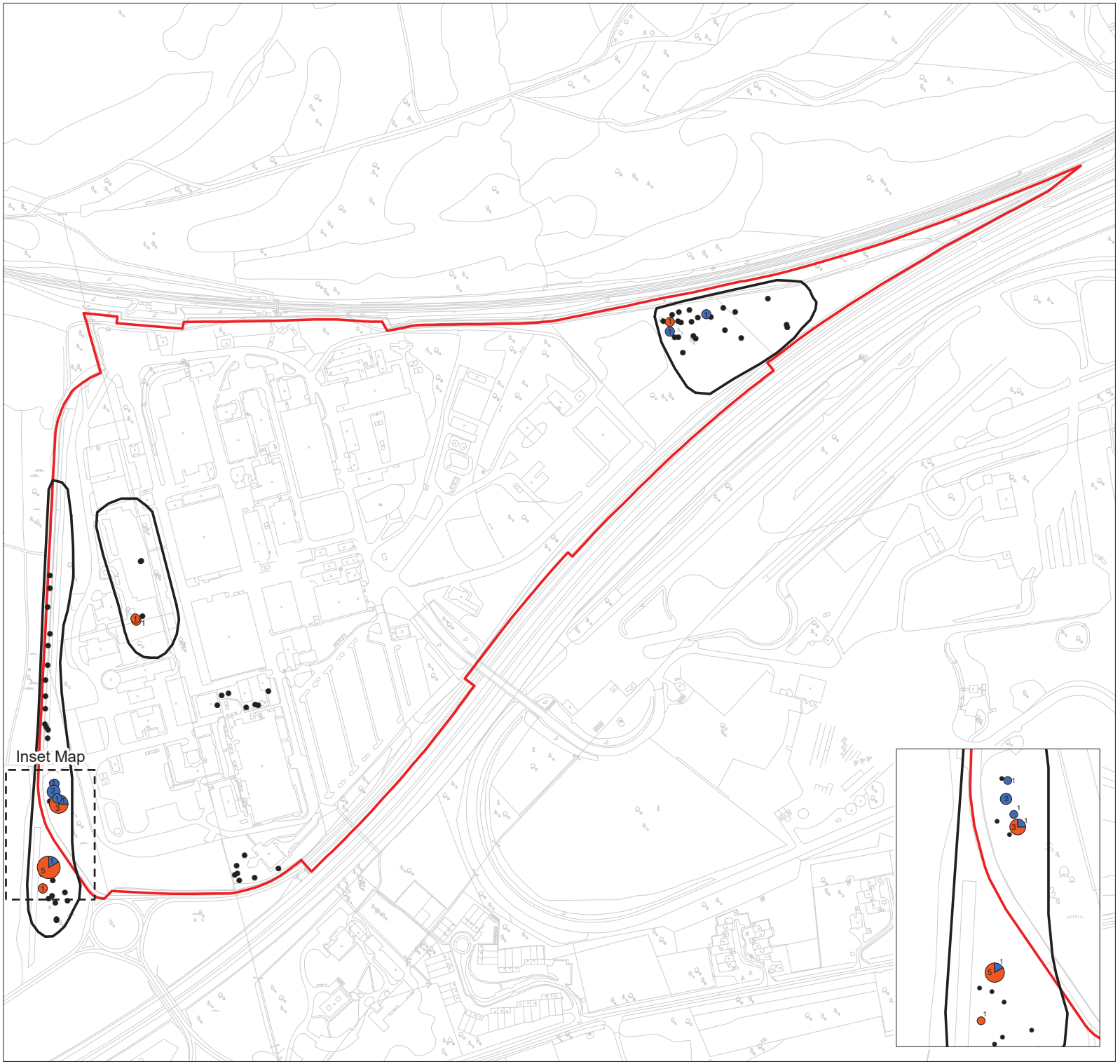
CLIENT: Crest Nicholson Operations Limited & CGNU Life Assurance Limited

PROJECT: DERA N

DATE: 14 May 2019

Y:\DERA_North\GIS\Constraints Note\Map4_Grassland_Constraints_P1705_140519.mxd

P17/05



MAP 5 Reptile Constraints

KEY

Longcross North ownership boundary

Slow-worm (2018)

Common Lizard (2018)

Total number of reptiles per refugia (2018)

0

6

Reptiles present (2018) – mitigation strategy needed of habitat affected

Reptile refugia Location

Figure 9

SCALE: 1:4,500 at A3

0 50 100 150 200 Metres

N

EPR

Ecological Planning & Research

CLIENT: Crest Nicholson Operations Limited & CGNU Life Assurance Limited

PROJECT: DERA N

DATE: 15 May 2019

Y:\DERA_North\GIS\Constraints Note\Map5_Reptile_Constraints_P0975_140519.mxd

P17/05

APPENDIX 2: FIELD METHODS

1.0 FIELD METHODS

1.1 Design of Investigation

1.1.1 The site investigation was broadly undertaken in general accordance and with reference, where relevant to the following documents:

- Specification for Ground Investigation, Site Investigation Steering Group, Thomas Telford, 1994
- British Standard BS10175:2011+A2:2017 Investigation of potentially contaminated sites – code of practice, as amended;
- Eurocode 7: Geotechnical Design BS EN 1997;
- Environment Agency (2000) Secondary model procedures for the development of appropriate soil sampling strategies for land contamination. Technical Report P5-066/TR
- The Model Procedures for the Management of Land Contamination, CLR 11; and
- BS IS0 5667-22:2010 Water quality. Sampling. Guidance on the design and installation of groundwater monitoring points

1.1.2 The works were progressed on site by a subcontractor who have been scrutinised by Paragon and are on Paragon's approved sub-contractor list. The investigation was designed to provide a preliminary assessment of the ground conditions at the subject site. Prior to the progression of the site investigation holes all areas were checked for services.

1.2 Onsite Methods

1.2.1 Boreholes were drilled using a Cable Percussion and Windowless Sample methods. Cable Percussion boreholes started in 8'' reducing with depth. A water flush was added throughout drilling.

1.2.2 The Hand Pits were excavated using a hand digging tools and a hand auger.

1.2.3 Soils were logged by a qualified engineering geologist in accordance with BS 5930: 1999+A2:2010 and BS EN ISO 14688 Pt 1&2.

1.2.4 The sampler and the drive rods were lowered to the bottom of the borehole and then the hammer assembly added. The initial penetration was recorded. The sampler was then penetrated over an initial or seating drive of 150 mm applying the 63,5 kg hammer free falling 760 mm and the number of blows N_0 were recorded. Then the sampler in the same manner was driven over a test drive of 300 mm in at least 2 increments of 150 mm. The number of blows needed, was recorded during each of these increments (N_n). If a total of 50 blows for the test drive was reached, the test was finished (N = 50). In soft rocks it can be increased to 100 blows (N = 100). The total number of blows required for the 300 mm penetration after the seating drive is termed the penetration resistance of that soil layer ($N = N_n + N_{n+1}$). In hard soils or in soft rocks where the penetration resistance is very high, the penetration for a certain number of blows may be recorded. If the sampler advances below the bottom of the borehole under the static weight of the drive rods and hammer assembly on top, the corresponding penetration shall not be included, as seating drive and this information should be reported. In no case shall any material reach the level of the non-return valve.

1.2.5	In situ Dynamic Cone Penetrometer (DCP) testing was undertaken to determine a California Bearing Ratio (CBR) value for road and pavement design. This was undertaken using an Impact TRL Dynamic Cone Penetrometer in accordance with SL970, TRL Road Note 8, 60^{o} cone.
1.3	**Constraints**
1.3.1	The ground conditions reported relate only to the point of excavation and do not necessarily guarantee a continuation of the ground conditions throughout the non-inspected area of the site. Whilst such exploratory holes would usually provide a reasonable indication as to the general ground conditions these cannot be determined with complete certainty.
1.4	**Monitoring Well Installation**
1.4.1	Upon completion of the borehole a monitoring well was installed with 50mm HDPE well pipe to depths presented on the borehole logs. A slotted section of well pipe was surrounded by gravel to provide a 'response zone'. A plain section of pipe was surrounded by bentonite to produce a seal.
1.4.2	Groundwater levels within the gas monitoring wells were recorded during each visit using an electronic dip/interface meter.
1.5	**Sampling and Testing Strategy**
1.5.1	All the exploratory holes were logged and sampled by a site engineer. Testing and sampling at the site was undertaken to investigate the ground conditions present.
1.5.2	Soil samples were collected from across the site laterally and at different depths within each trail position to provide an even coverage of the site.
1.5.3	Geotechnical bulk disturbed samples were obtained from the strata encountered and were subjected to careful examination.
1.5.4	Environmental soil samples representative of the underlying conditions were collected and submitted for a suite of determinants based on the risks identified in the Phase 1 report and the specific ground conditions identified during the intrusive investigation. The soil samples were transported to an appointed United Kingdom Accreditation Service (UKAS) accredited laboratory.
1.6	**Quality Control**
1.6.1	The samples were despatched under a chain of custody procedure to Derwentside Environmental Testing Services (DETS), who are UKAS accredited laboratory, for subsequent chemical analysis. Geotechnical bulk samples were delivered directly to Professional Soils Laboratory (PSL) who are a UKAS accredited laboratory. Where appropriate, samples were stored within cool boxes containing ice packs. A Chain of Custody is included with all sample consignments.

1.7	**Gas Monitoring**
1.7.1	The wells were monitored for methane, carbon dioxide, oxygen and hydrogen sulphide using a multi-gas analyser (GA5000/GFM436).
1.7.2	The wells screened for the presence of Volatile Organic Compounds using a Photo Ionisation Detector (PID).
1.7.3	Ground gas monitoring was carried out in accordance with the guidelines presented in CIRIA C665 'Assessing risk posed by hazard ground gases to buildings'. Flow was monitored for a period of two minutes where possible; maximum flow was recorded. Ground gases, including concentrations of methane, carbon dioxide, hydrogen sulphide and carbon monoxide were monitored for up to five minutes. During monitoring, ground gas readings were logged every thirty seconds.
1.7.4	Following gas monitoring, water levels are checked using an interface meter, which is also capable of detecting the presence of free product. If groundwater is present, then water samples are retrieved using a methodology appropriate to the conditions and conceptual model. Groundwater wells are developed directly after the ground investigation to remove 10 times the well volume (or as close as is practical) to remove drilling debris and encourage groundwater into the well through the gravel filter around the response zone. Prior to groundwater sampling, up to three times the well volume is purged to remove stagnant / rain water. In this scenario, disposable bailers were adopted for sampling.
1.8	**Health and Safety**
1.8.1	A site-specific Risk Assessment and Method Statement (RAMS) was produced prior to the works beginning on site; works were completed in accordance with the methodology set up in this assessment. No incidents occurred during this investigation.

APPENDIX 3: BOREHOLE LOGS

YourGeotechnical WS01

Borehole Log

Borehole No. **WS01** Sheet 1 of 1

Project Name:	Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location:	Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client:	Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C					MADE GROUND: Dark grey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular of ash, brick, clinker and mixed lithology. *PID Reading = 0.1*
					0.40			MADE GROUND: Greyish brown clayey, sandy GRAVEL. Sand is fine to medium. Gravel is fine to medium, angular to sub-angular of concrete, brick and mixed lithology. *PID Reading = 0.0*
		1.00 - 2.00	C					*PID Reading = 0.0*
		1.20	C	N=14 (1,2/3,3,4,4)	1.10			Dense orange mottled light grey becoming light greyish brown clayey SAND becoming less clayey with depth. Sand is fine to medium.
		2.00	C	N=32 (2,5/7,8,8,9)				*PID Reading = 0.0*
					2.62			End of Borehole at 2.62m

1 2 3 4 5

Remarks

Terminated at 2.62m due to abrupt refusal.
No groundwater encountered.
Installation noted to 2.62m.

AGS

YourGeotechnical WS03

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	ES		0.20			TOPSOIL: Grass over brown gravelly SAND. Sand is fine. Gravel is fine to medium of angular flint.
		0.30	ES		0.25			MADE GROUND: Black Tarmacadam. Possible relic roadway.
					0.40			*PID Reading = 0.3*
		0.50	ES					MADE GROUND: Light grey Concrete containing large rounded flints with a primed upper surface and an irregular bottom surface. No rebar noted.
		0.70	ES					MADE GROUND: Greyish brown gravelly SAND. Sand is fine to medium. Gravel is coarse of angular flint, bituminous material and concrete.
								PID Reading = 0.0
		1.00	ES					*PID Reading = 0.0*
					1.10			
		1.20	C	N=14 (2,2/3,3,4,4)	1.20			Medium dense dark grey slightly gravelly SAND. Sand is fine. Gravel is occasional, fine to medium of mixed lithology.
								Medium dense light greenish grey mottled orange and brown SAND. Sand is fine.
					1.50			Medium dense orangish brown clayey, gravelly SAND. Sand is fine to medium. Gravel is fine to coarse, sub-angular to sub-rounded of mixed lithology.
		2.00	C	N=19 (3,5/4,4,5,6)				*PID Reading = 0.0*
					2.30			Soft green mottled light brown sandy, gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse, sub-angular to rounded of mixed lithology.
		3.00	C	N=18 (3,5/4,4,5,5)				*PID Reading = 0.0*
					4.00			End of Borehole at 4.00m

Remarks

Terminated at 4.00m.
Minor water seepage noted, borehole collapsed.
Installation noted to 4.00m.

AGS

YourGeotechnical WS04

Borehole Log

Borehole No. **WS04**

Sheet 1 of 1

Project Name:	Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location:	Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client:	Paragon.		Dates: 31/05/2019	Logged By RG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	C		0.10			MADE GROUND: Bituminous material.
								Light grey occasionally mottled orange slightly sandy SILT. Sand is fine.
								PID Reading = 0.0
		1.00 - 1.43	C					*PID Reading = 0.0*
		1.20	C	N=22 (3,4/4,3,5,10)				
					2.00			End of Borehole at 2.00m

1 2 3 4 5

Remarks

Terminated at 2.00m due to abrupt refusal.
No groundwater encountered.
Installation noted to 2.00m.

AGS

YourGeotechnical WS05

Borehole Log

Borehole No. **WS05**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30	D ES		0.30			MADE GROUND: Grass over dark brown gravelly SAND. Sand is fine. Gravel is coarse of flint, metal and potential asbestos containing materials. End of Borehole at 0.30m

1
2
3
4
5

Remarks

Terminated at 0.30m due to asbestos, second hole attempted nearby, asbestos encountered again.

AGS

YourGeotechnical WS05a

Borehole Log

Borehole No. **WS05a**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30	D ES		0.30			MADE GROUND: Grass over dark brown gravelly SAND. Sand is fine. Gravel is coarse of flint, metal and potential asbestos containing materials. End of Borehole at 0.30m

1
2
3
4
5

Remarks

Terminated at 0.30m due to asbestos.
Location is approximately 2.00m to the south of WS05.

AGS

YourGeotechnical WS06

Borehole Log

Borehole No. **WS06**

Sheet 1 of 1

Project Name:	Longcross.	Project No. YE7150	Co-ords:
Location:	Longcross Studios, KT16 0EE.		Level:
Client:	Paragon.		Dates: 30/05/2019

Hole Type: WS | Scale: 1:25 | Logged By: MG

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C		0.20			TOPSOIL: Brown gravelly SAND. Sand is fine to medium. Gravel is fine of mixed lithology.
		1.00 - 2.00	C					Medium dense becoming dense light grey mottled orange slightly clayey SAND. Sand is fine. *PID Reading = 0.1* *PID Reading = 0.0*
		1.20	C	N=19 (2,3/5,5,4,5)				
		2.00	C	N=52 (6,8/10,12,15,15)				*PID Reading = 0.0*
					2.45			End of Borehole at 2.45m

Remarks

Terminated at 2.45m due to abrupt refusal.
No groundwater encountered.

AGS

YourGeotechnical WS07

Borehole Log

Borehole No. **WS07**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	ES					MADE GROUND: Greyish Brown gravelly SAND. Sand is medium to coarse. Gravel is fine to coarse and angular of concrete, brick and flint. Potential drain at 0.36mbgl.
		0.36	ES		0.36			End of Borehole at 0.36m

1
2
3
4
5

Remarks

Terminated at 0.36m due to clay pipe encountered.

AGS

YourGeotechnical WS07a

Borehole Log

Borehole No. **WS07a**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 31/05/2019	Logged By RG

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C					CONCRETE: Light grey, primed upper surface, nominal 25mm sub-angular to rounded aggregate. Approximately 2% excess voidage in upper levels, with an irregular bottom surface. No rebar noted.
					0.22			Light grey occasionally mottled orange slightly sandy SILT. Sand is fine.
								PID Reading = 0.0
		1.00 - 2.00	C					*PID Reading = 0.0*
		1.20	C	N=23 (5,7/6,6,5,6)				
					1.45			Medium dense becoming dense light grey and orange SAND. Sand is fine to medium.
		2.00 - 3.00	C					*PID Reading = 0.0*
		2.00	C	N=23 (6,7/6,6,6,5)				
		3.00	C	N=52 (6,7/8,12,14,18)				*PID Reading = 0.0*
					3.45			End of Borehole at 3.45m

1 2 3 4 5

Remarks

Terminated at 3.45m due to abrupt refusal.
No groundwater encountered.
Installation noted to 3.00m.

AGS

YourGeotechnical WS08

Borehole Log

Borehole No. **WS08**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 29/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 1.00	C		0.18			CONCRETE: Light grey, primed upper surface, nominal 25mm sub-angular to rounded aggregate. Approximately 2% excess voidage in upper levels, with an irregular bottom surface. Rebar noted at 0.14m 5mm in diameter.
					0.48			MADE GROUND: Brown and red slightly clayey, gravelly SAND. Sand is fine to medium. Gravel is fine to coarse, angular to sub-angular of brick and mixed lithology.
								PID Reading = 0.1
								Medium dense becoming dense orange mottled light grey clayey SAND. Sand is fine.
		1.00 - 2.00	C					*PID Reading = 0.0*
		1.20	C	N=12 (2,3/3,3,2,4)				
		2.00 - 3.00	C					*PID Reading = 0.0*
		2.00	C	N=30 (4,6/7,7,8,8)				
		3.00	C	N=50 (6,7/11,11,13,15)				*PID Reading = 0.0*
					3.45			End of Borehole at 3.45m

Remarks

Terminated at 3.45m due to abrupt refusal.
No groundwater encountered.
Installation noted to 3.00m.

AGS

YourGeotechnical WS09

Borehole Log

Borehole No. **WS09**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.15	ES		0.15			MADE GROUND: Dark brown gravelly SAND. Sand is fine. Gravel is coarse of angular flint and brick fragments.
		0.30	ES					MADE GROUND: Brown gravelly clayey SAND. Sand is fine to medium. Gravel is medium to coarse of rounded flint. Occasional metal fragments noted.
		0.50	ES					*PID Reading = 0.0*
								PID Reading = 0.0
		1.00	ES		1.00			Medium dense light brown mottled light grey and orange clayey SAND. Sand is fine.
		1.20	C	N=20 (12 for 80mm/5,5,5,5)				*PID Reading = 0.0*
		2.00	C	N=19 (4,3/4,5,5,5)				*PID Reading = 0.0*
		3.00	C	N=38 (8,7/6,9,10,13)				*PID Reading = 0.0*
					3.57			End of Borehole at 3.57m

1 2 3 4 5

Remarks

Terminated at 3.57m.
No groundwater encountered.
Installation noted to 3.57m.

AGS

YourGeotechnical WS10

Borehole Log

Borehole No. **WS10**

Sheet 1 of 1

Project Name:	Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location:	Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client:	Paragon.		Dates: 29/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.30			TOPSOIL: Dark brown sandy CLAY. Sand is fine.
		0.30	ES					*PID Reading = 0.0*
					0.40			Light brown gravelly sandy CLAY. Sand is fine to medium. Gravel is fine of rounded flint.
								Dark brown sandy CLAY.
								PID Reading = 0.0
					0.70			Stiff brown sandy CLAY.
								PID Reading = 0.0
		1.20	ES					
		1.20	C	N=17 (2,3/3,5,5,4)				
					1.45			Dense light grey mottled orange SAND. Sand is fine.
		1.50	ES					
		2.00	C	N=50 (5,8/9,9,12,20)				*PID Reading = 0.0*
					2.50			End of Borehole at 2.50m

Remarks

Terminated at 2.50m due to abrupt refusal.
No groundwater encountered.
Installation noted to 2.00m.

AGS

YourGeotechnical WS12

Borehole Log

Borehole No. **WS12**

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords:	Hole Type WS
Location: Longcross Studios, KT16 0EE.		Level:	Scale 1:25
Client: Paragon.		Dates: 31/05/2019	Logged By RG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	ES		0.15			TOPSOIL: Brown gravelly sandy CLAY. Sand is fine. Gravel is fine of brick and flint.
		0.30	ES					Dense grey clayey SAND. Occasional bands of yellow sands noted.
		0.50	ES					
		0.70	ES					
		1.00	ES					*PID Reading = 0.0*
		1.00	C	N=65 (12,13/18,17,18,12)				
					1.45			End of Borehole at 1.45m

Remarks

Terminated at 1.45m due to abrupt refusal.
No groundwater encountered.

AGS

HP01

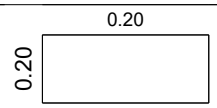
YourGeotechnical

Trial Pit Log

TrialPit No HP01

Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords: - Level:	Date 31/05/2019
Location: Longcross Studios, KT16 0EE.		Dimensions (m): Depth 1.00	Scale 1:25
Client: Paragon.			Logged RG



Water Strike	Samples & In Situ Testing Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.15	ES		0.25			TOPSOIL: Brown sandy, gravelly CLAY. Sand is fine. Gravel is fine to medium of brick, glass, clinker and flint.
	0.30	ES					MADEGROUND: Yellowish brown clayey, gravelly SAND. Sand is fine to medium. Gravel is fine to medium of flint, clinker, brick and mixed lithology. Wood fragments noted.
	0.50	ES					
	0.50 - 0.70	ES					
	0.70 - 1.00	ES		0.90			
				1.00			Brown mottled green clayey, gravelly SAND. Sand is fine. Gravel is fine to medium of mixed lithology. End of Pit at 1.00m

Remarks:

Stability:

AGS

HP02	Trial Pit Log	TrialPit No HP02 Sheet 1 of 1
YourGeotechnical		

Project Name: Longcross.	Project No. YE7150	Co-ords: - Level:	Date 30/05/2019
Location: Longcross Studios, KT16 0EE.		Dimensions (m): Depth 0.50 (0.20 × 0.20)	Scale 1:25
Client: Paragon.			Logged MG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.15	ES		0.20			MADEGROUND: Brown gravelly SAND. Sand is fine. Gravel is fine to medium of concrete, flint and potential asbestos containing cement.
	0.30	ES		0.30			Dense sandy COBBLES. Sand is fine. Cobbles are of rounded, sub-spherical flints.
	0.50	ES		0.50			Light brown clayey SAND. Sand is fine.
							End of Pit at 0.50m

Remarks:

Stability:

HP04a

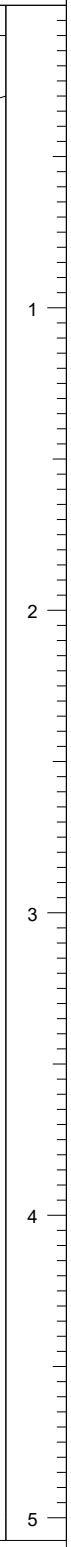
YourGeotechnical

Trial Pit Log

TrialPit No
HP04a
Sheet 1 of 1

Project Name: Longcross.	Project No. YE7150	Co-ords: - Level:	Date 30/05/2019
Location: Longcross Studios, KT16 0EE.		Dimensions (m): Depth 0.30 — 0.20 × 0.20	Scale 1:25
Client: Paragon.			Logged MG

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.10			TOPSOIL: Dark brown clayey SAND. Sand is fine.
				0.30			MADEGROUND: Greyish-brown gravelly SAND. Sand is fine to medium. Gravel is fine, angular of concrete and brick fragments.
							End of Pit at 0.30m



Remarks:

Stability:

AGS

HP04b	Trial Pit Log	TrialPit No HP04b Sheet 1 of 1
YourGeotechnical		

Project Name: Longcross.	Project No. YE7150	Co-ords: - Level:	Date 30/05/2019
Location: Longcross Studios, KT16 0EE.		Dimensions (m): Depth 0.50 (0.20 × 0.20)	Scale 1:25
Client: Paragon.			Logged MG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.10			TOPSOIL: Dark brown clayey SAND. Sand is fine.
							MADE GROUND: Light brown clayey SAND. Sand is fine. (POSSIBLE REWORKED MATERIAL).
				0.50			End of Pit at 0.50m

Remarks:

Stability:

AGS

YourGeotechnical HP04c

Borehole Log

Borehole No. **HP04c**

Sheet 1 of 1

Project Name:	Longcross.	Project No. YE7150	Co-ords:	Hole Type TP
Location:	Longcross Studios, KT16 0EE.		Level:	Scale 1:50
Client:	Paragon.		Dates: 30/05/2019	Logged By MG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			TOPSOIL: Dark brown clayey SAND. Sand is fine. Frequent rootlets noted.
					0.50			MADE GROUND: Brown SAND. Sand is fine. Frequent fragments of black plastic noted.
		0.80	ES					MADE GROUND: Light brown clayey SAND. Sand is fine.
					0.90			MADE GROUND: Light brown clayey SAND. Frequent brown glass fragments noted.
					1.00			End of Borehole at 1.00m

Remarks

AGS

HP05	Trial Pit Log	TrialPit No HP05 Sheet 1 of 1
YourGeotechnical		

Project Name: Longcross.	Project No. YE7150	Co-ords: - Level:	Date 30/05/2019
Location: Longcross Studios, KT16 0EE.		Dimensions (m): Depth 0.50 (0.20 × 0.20)	Scale 1:25
Client: Paragon.			Logged MG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.05			TOPSOIL: Grass overlying brown SAND. Sand is fine.
	0.15	ES					MADEGROUND: Light brown gravelly SAND. Sand is fine to medium. Gravel is coarse of rounded flints, angular concrete and bituminous material.
	0.30	ES		0.30			MADEGROUND: Complete bricks encountered.
				0.40			Dense gravelly SAND. Sand is fine to coarse. Gravel is coarse, angular of flint and concrete.
	0.50	ES		0.50			End of Pit at 0.50m

Remarks:

Stability:

AGS

APPENDIX 4: ENVIRONMENTAL LABORATORY TESTING

Longcross Film Studios

building & project consultants

			Date Sampled	31/05/19	30/05/19	30/05/19	30/05/19	30/05/19	30/05/19	29/05/19	30/05/19	30/05/19	31/05/19	29/05/19	29/05/19
			TP / BH No	HP01	HP02	HP04b	HP04c	WS03	WS05	WS10	WS01	WS06	WS07a	WS08	WS09
			Depth (m)	0.50	0.15	0.20	0.80	0.70	0.30	0.30	0.50	0.30	0.30	0.30	1.00
			DETS Reporting Date	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019
			DETS Lab Ref	19-08042	19-08042	19-08042	19-08042	19-08042	19-08042	19-08042	19-08088	19-08088	19-08088	19-08088	19-08088
			DETS Sample No	413106	413107	413108	413109	413111	413112	413118	413333	413334	413335	413336	413337
Determinand	**Unit**	**RL**	**GAC**												
Asbestos Screen [5]	N/A	N/A	N/A	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix [5]	Material Type	N/A	N/A						Amosite present in microscopic AIB						
Asbestos Type [5]	PLM Result	N/A	N/A						Amosite						
pH	pH Units	N/A	N/A	8	6.4	5.2	6.3	7.6	7.5	5.3	9.6	7.8	9.6	8.4	5.1
Total Cyanide	mg/kg	< 2	LOD	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	N/A	46	< 10	< 10	< 10	32	< 10	11	51	28	59	1230	83
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	N/A	0.05	< 0.01	< 0.01	< 0.01	0.03	< 0.01	0.01	0.05	0.03	0.06	1.23	0.08
Organic Matter	%	< 0.1	N/A	1	2.3	0.8	2	1.1	2.9	2.2	0.8	1.3	0.2	0.6	0.5
Arsenic (As)	mg/kg	< 2	640	7	5	7	4	3	7	5	8	9	< 2	9	8
Cadmium (Cd)	mg/kg	< 0.2	410	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	8600	15	10	36	12	7	17	20	13	16	4	18	15
Chromium (hexavalent)	mg/kg	< 2	640	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	68000	25	7	< 4	6	9	18	5	7	9	< 4	11	5
Lead (Pb)	mg/kg	< 3	2330	45	21	10	21	55	47	9	10	17	8	27	8
Mercury (Hg)	mg/kg	< 1	1100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	980	7	4	8	4	6	6	5	7	11	< 3	9	5
Selenium (Se)	mg/kg	< 3	12000	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	730000	64	36	30	63	27	103	25	26	34	5	849	34
Total Phenols (monohydric)	mg/kg	< 2	N/A	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Naphthalene	mg/kg	< 0.1	460	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.22	< 0.1
Acenaphthylene	mg/kg	< 0.1	97000	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	97000	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.31	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	68000	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.31	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	22000	0.55	0.31	< 0.1	0.51	0.56	0.55	< 0.1	2.46	< 0.1	0.14	0.39	< 0.1
Anthracene	mg/kg	< 0.1	540000	0.16	< 0.1	< 0.1	0.12	0.12	< 0.1	< 0.1	0.71	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	23000	1.91	1.01	< 0.1	1.1	0.8	0.97	< 0.1	5.78	0.11	0.19	0.92	< 0.1
Pyrene	mg/kg	< 0.1	22000	1.66	0.92	< 0.1	0.93	0.74	0.82	0.17	4.24	< 0.1	0.14	0.81	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	N/A	1.17	0.72	< 0.1	0.65	0.56	0.51	< 0.1	2.63	< 0.1	< 0.1	0.5	< 0.1
Chrysene	mg/kg	< 0.1	N/A	1.03	0.5	< 0.1	0.45	0.35	0.44	< 0.1	2.38	< 0.1	< 0.1	0.56	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	N/A	1.76	0.82	< 0.1	0.71	0.64	0.68	0.21	3.32	0.2	< 0.1	0.73	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	N/A	0.6	0.33	< 0.1	0.3	0.29	0.28	< 0.1	1.08	< 0.1	< 0.1	0.24	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	76	1.35	0.67	< 0.1	0.59	0.53	0.54	0.19	2.33	0.11	< 0.1	0.49	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	N/A	1.08	0.55	< 0.1	0.44	0.44	0.4	< 0.1	1.57	0.12	< 0.1	0.31	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	N/A	0.18	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.34	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	N/A	0.91	0.44	< 0.1	0.32	0.32	0.3	< 0.1	1.4	0.13	< 0.1	0.28	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	N/A	12.4	6.3	< 1.6	6.1	5.4	5.5	< 1.6	28.9	< 1.6	< 1.6	5.5	< 1.6
Aliphatic >C5 - C6	mg/kg	< 0.01	5900	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	17000	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	4800	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	23000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	82000	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	1700000	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	1700000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	339	86	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	N/A	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	342	86	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	46000	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	110000	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	8100	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	28000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	37000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	28000	9	4	< 3	7	8	5	< 3	14	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	28000	70	34	< 10	63	38	29	< 10	64	105	13	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	N/A	79	39	< 21	70	45	33	< 21	79	105	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	N/A	79	< 42	< 42	70	45	< 42	< 42	79	447	99	< 42	< 42
Benzene	ug/kg	< 2	98	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	110000	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	13000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	14000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	15000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	N/A	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Matt Griffiths
Your Environment
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DETS Ltd
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Lenham Heath
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DETS Report No: 19-08042

Site Reference:	Longcross
Project / Job Ref:	YE7150
Order No:	None Supplied
Sample Receipt Date:	06/06/2019
Sample Scheduled Date:	06/06/2019
Report Issue Number:	1
Reporting Date:	13/06/2019

Authorised by:

Dave Ashworth
Deputy Quality Manager

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Soil Analysis Certificate						
DETS Report No: 19-08042	**Date Sampled**	31/05/19	30/05/19	30/05/19	30/05/19	30/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	HP01	HP02	HP04b	HP04c	WS03
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.15	0.20	0.80	0.70
Reporting Date: 13/06/2019	**DETS Sample No**	413106	413107	413108	413109	413111

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	**ISO17025**					
pH	pH Units	N/a	**MCERTS**	8.0	6.4	5.2	6.3	7.6
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	46	< 10	< 10	< 10	32
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.05	< 0.01	< 0.01	< 0.01	0.03
Organic Matter	%	< 0.1	**MCERTS**	1	2.3	0.8	2	1.1
Arsenic (As)	mg/kg	< 2	**MCERTS**	7	5	7	4	3
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	**MCERTS**	15	10	36	12	7
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	25	7	< 4	6	9
Lead (Pb)	mg/kg	< 3	**MCERTS**	45	21	10	21	55
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	7	4	8	4	6
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	**MCERTS**	64	36	30	63	27
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 19-08042	**Date Sampled**	30/05/19	29/05/19			
Your Environment	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Longcross	**TP / BH No**	WS05	WS10			
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied			
Order No: None Supplied	**Depth (m)**	0.30	0.30			
Reporting Date: 13/06/2019	**DETS Sample No**	413112	413118			

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Detected	Not Detected			
Sample Matrix (S)	Material Type	N/a	NONE	Amosite present in microscopic AIB				
Asbestos Type (S)	PLM Result	N/a	**ISO17025**	Amosite				
pH	pH Units	N/a	**MCERTS**	7.5	5.3			
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2			
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	< 10	11			
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	< 0.01	0.01			
Organic Matter	%	< 0.1	**MCERTS**	2.9	2.2			
Arsenic (As)	mg/kg	< 2	**MCERTS**	7	5			
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2			
Chromium (Cr)	mg/kg	< 2	**MCERTS**	17	20			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	**MCERTS**	18	5			
Lead (Pb)	mg/kg	< 3	**MCERTS**	47	9			
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	**MCERTS**	6	5			
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3			
Zinc (Zn)	mg/kg	< 3	**MCERTS**	103	25			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-08042	**Date Sampled**	31/05/19	30/05/19	30/05/19	30/05/19	30/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	HP01	HP02	HP04b	HP04c	WS03
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.15	0.20	0.80	0.70
Reporting Date: 13/06/2019	**DETS Sample No**	413106	413107	413108	413109	413111

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.55	0.31	< 0.1	0.51	0.56
Anthracene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	< 0.1	0.12	0.12
Fluoranthene	mg/kg	< 0.1	MCERTS	1.91	1.01	< 0.1	1.10	0.80
Pyrene	mg/kg	< 0.1	MCERTS	1.66	0.92	< 0.1	0.93	0.74
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.17	0.72	< 0.1	0.65	0.56
Chrysene	mg/kg	< 0.1	MCERTS	1.03	0.50	< 0.1	0.45	0.35
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.76	0.82	< 0.1	0.71	0.64
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.60	0.33	< 0.1	0.30	0.29
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.35	0.67	< 0.1	0.59	0.53
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.08	0.55	< 0.1	0.44	0.44
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.91	0.44	< 0.1	0.32	0.32
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	12.4	6.3	< 1.6	6.1	5.4

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-08042	**Date Sampled**	30/05/19	29/05/19			
Your Environment	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Longcross	**TP / BH No**	WS05	WS10			
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied			
Order No: None Supplied	**Depth (m)**	0.30	0.30			
Reporting Date: 13/06/2019	**DETS Sample No**	413112	413118			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	0.55	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	0.97	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	0.82	0.17			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.51	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	0.44	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.68	0.21			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.28	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.54	0.19			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.40	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.30	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	5.5	< 1.6			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 19-08042	**Date Sampled**	31/05/19	30/05/19	30/05/19	30/05/19	30/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	HP01	HP02	HP04b	HP04c	WS03
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.15	0.20	0.80	0.70
Reporting Date: 13/06/2019	**DETS Sample No**	413106	413107	413108	413109	413111

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	9	4	< 3	7	8
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	70	34	< 10	63	38
Aromatic (C5 - C35)	mg/kg	< 21	NONE	79	39	< 21	70	45
Total >C5 - C35	mg/kg	< 42	NONE	79	< 42	< 42	70	45

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 19-08042	**Date Sampled**	30/05/19	29/05/19			
Your Environment	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Longcross	**TP / BH No**	WS05	WS10			
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied			
Order No: None Supplied	**Depth (m)**	0.30	0.30			
Reporting Date: 13/06/2019	**DETS Sample No**	413112	413118			

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10			
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	5	< 3			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	29	< 10			
Aromatic (C5 - C35)	mg/kg	< 21	NONE	33	< 21			
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-08042	**Date Sampled**	31/05/19	30/05/19	30/05/19	30/05/19	30/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	HP01	HP02	HP04b	HP04c	WS03
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.15	0.20	0.80	0.70
Reporting Date: 13/06/2019	**DETS Sample No**	413106	413107	413108	413109	413111

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

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Maidstone
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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-08042	**Date Sampled**	30/05/19	29/05/19			
Your Environment	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Longcross	**TP / BH No**	WS05	WS10			
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied			
Order No: None Supplied	**Depth (m)**	0.30	0.30			
Reporting Date: 13/06/2019	**DETS Sample No**	413112	413118			

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2			
Toluene	ug/kg	< 5	MCERTS	< 5	< 5			
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2			
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2			
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2			
MTBE	ug/kg	< 5	MCERTS	< 5	< 5			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 19-08042		**Date Sampled**	30/05/19			**Landfill Waste Acceptance Criteria Limits**		
Your Environment		**Time Sampled**	None Supplied			**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Site Reference: Longcross		**TP / BH No**	HP04b					
Project / Job Ref: YE7150		**Additional Refs**	None Supplied					
Order No: None Supplied		**Depth (m)**	0.20					
Reporting Date: 13/06/2019		**DETS Sample No**	413108					
Determinand	**Unit**	**MDL**						
TOC[MU]	%	< 0.1	0.5			3%	5%	6%
Loss on Ignition	%	< 0.01	2.50			--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05			6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1			1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10			500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7			100	--	--
pH[MU]	pH Units	N/a	5.2			--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1			--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	< 0.02	< 0.02		< 0.1	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.005	< 0.005		< 0.01	0.01	0.2	2
Molybdenum[U]	0.001	< 0.001		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	< 0.006	< 0.006		< 0.06	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.1	0.1	0.5	7
Zinc[U]	< 0.005	< 0.005		< 0.2	4	50	200
Chloride[U]	2	2		19	800	15000	25000
Fluoride[U]	< 0.5	< 0.5		< 1	10	150	500
Sulphate[U]	2	1		< 20	1000	20000	50000
TDS	22	20		201	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	12.3	7		73.7	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.20						
Dry Matter (%)	87.1						
Moisture (%)	14.8						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.13						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 19-08042		**Date Sampled**	29/05/19			**Landfill Waste Acceptance Criteria Limits**		
Your Environment		**Time Sampled**	None Supplied			**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Site Reference: Longcross		**TP / BH No**	WS10					
Project / Job Ref: YE7150		**Additional Refs**	None Supplied					
Order No: None Supplied		**Depth (m)**	0.30					
Reporting Date: 13/06/2019		**DETS Sample No**	413118					
Determinand	**Unit**	**MDL**						
TOC[MU]	%	< 0.1	1.3			3%	5%	6%
Loss on Ignition	%	< 0.01	2.70			--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05			6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1			1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10			500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7			100	--	--
pH[MU]	pH Units	N/a	5.3			--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1			--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	< 0.02	< 0.02		< 0.1	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.005	< 0.005		< 0.01	0.01	0.2	2
Molybdenum[U]	< 0.001	< 0.001		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	< 0.006	< 0.006		< 0.06	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.1	0.1	0.5	7
Zinc[U]	0.006	< 0.005		< 0.2	4	50	200
Chloride[U]	3	1		< 12	800	15000	25000
Fluoride[U]	< 0.5	< 0.5		< 1	10	150	500
Sulphate[U]	3	< 1		< 20	1000	20000	50000
TDS	26	29		288	4000	60000	100000
Phenol Index	0.02	< 0.01		< 0.5	1	-	-
DOC	10.7	11.1		111	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.19						
Dry Matter (%)	90.6						
Moisture (%)	10.4						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.11						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
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Bulk Analysis Certificate						
DETS Report No: 19-08042	**Date Sampled**	30/05/19				
Your Environment	**Time Sampled**	None Supplied				
Site Reference: Longcross	**TP / BH No**	WS05 - ACM				
Project / Job Ref: YE7150	**Additional Refs**	None Supplied				
Order No: None Supplied	**Depth (m)**	0.30				
Reporting Date: 13/06/2019	**DETS Sample No**	413113				

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Type (S)	PLM Result	N/a	**ISO17025**	Chrysotile/Amosite				
Sample Matrix (S)	Material Type	N/a	NONE	Board				

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification) that is in accordance with the Health and Safety Executive HSG 248 Appendix 2.

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

RL: Reporting Limit

Subcontracted analysis (S)

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-08042	
Your Environment	
Site Reference: Longcross	
Project / Job Ref: YE7150	
Order No: None Supplied	
Reporting Date: 13/06/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
413106	HP01	None Supplied	0.50	12	Brown loamy sand with stones
413107	HP02	None Supplied	0.15	6.1	Brown loamy sand with stones and vegetation
413108	HP04b	None Supplied	0.20	12.9	Brown loamy sand
413109	HP04c	None Supplied	0.80	6.5	Brown loamy sand with stones and vegetation
413111	WS03	None Supplied	0.70	3.6	Brown loamy sand with stones and concrete
413112	WS05	None Supplied	0.30	5.6	Brown loamy sand with stones and vegetation
413118	WS10	None Supplied	0.30	9.4	Brown loamy sand with vegetation and brick

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-08042
Your Environment
Site Reference: Longcross
Project / Job Ref: YE7150
Order No: None Supplied
Reporting Date: 13/06/2019

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	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

Matt Griffiths
Your Environment
Chilgrove Business Centre
Chilgrove Park Road
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PO18 9HU

DETS Ltd
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DETS Report No: 19-08088

Site Reference:	Longcross
Project / Job Ref:	YE7150
Order No:	None Supplied
Sample Receipt Date:	07/06/2019
Sample Scheduled Date:	07/06/2019
Report Issue Number:	1
Reporting Date:	13/06/2019

Authorised by:

Dave Ashworth
Deputy Quality Manager

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Soil Analysis Certificate						
DETS Report No: 19-08088	**Date Sampled**	30/05/19	30/05/19	31/05/19	29/05/19	29/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	WS01	WS06	WS07a	WS08	WS09
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.30	0.30	0.30	1.00
Reporting Date: 13/06/2019	**DETS Sample No**	413333	413334	413335	413336	413337

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	9.6	7.8	9.6	8.4	5.1
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	51	28	59	1230	83
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.05	0.03	0.06	1.23	0.08
Organic Matter	%	< 0.1	MCERTS	0.8	1.3	0.2	0.6	0.5
Arsenic (As)	mg/kg	< 2	MCERTS	8	9	< 2	9	8
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	13	16	4	18	15
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	7	9	< 4	11	5
Lead (Pb)	mg/kg	< 3	MCERTS	10	17	8	27	8
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	7	11	< 3	9	5
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	26	34	5	849	34
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-08088	**Date Sampled**	30/05/19	30/05/19	31/05/19	29/05/19	29/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	WS01	WS06	WS07a	WS08	WS09
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.30	0.30	0.30	1.00
Reporting Date: 13/06/2019	**DETS Sample No**	413333	413334	413335	413336	413337

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.22	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	0.31	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.31	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	2.46	< 0.1	0.14	0.39	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.71	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	5.78	0.11	0.19	0.92	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	4.24	< 0.1	0.14	0.81	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	2.63	< 0.1	< 0.1	0.50	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	2.38	< 0.1	< 0.1	0.56	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	3.32	0.20	< 0.1	0.73	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	1.08	< 0.1	< 0.1	0.24	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	2.33	0.11	< 0.1	0.49	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.57	0.12	< 0.1	0.31	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.34	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	1.40	0.13	< 0.1	0.28	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	28.9	< 1.6	< 1.6	5.5	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 19-08088	**Date Sampled**	30/05/19	30/05/19	31/05/19	29/05/19	29/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	WS01	WS06	WS07a	WS08	WS09
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.30	0.30	0.30	1.00
Reporting Date: 13/06/2019	**DETS Sample No**	413333	413334	413335	413336	413337

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	339	86	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	342	86	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	14	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	64	105	13	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	79	105	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	79	447	99	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

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

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-08088	**Date Sampled**	30/05/19	30/05/19	31/05/19	29/05/19	29/05/19
Your Environment	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Longcross	**TP / BH No**	WS01	WS06	WS07a	WS08	WS09
Project / Job Ref: YE7150	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.50	0.30	0.30	0.30	1.00
Reporting Date: 13/06/2019	**DETS Sample No**	413333	413334	413335	413336	413337

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

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Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-08088	
Your Environment	
Site Reference: Longcross	
Project / Job Ref: YE7150	
Order No: None Supplied	
Reporting Date: 13/06/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
413333	WS01	None Supplied	0.50	7.2	Brown loamy sand with stones and concrete
413334	WS06	None Supplied	0.30	6.5	Brown loamy sand with stones and concrete
413335	WS07a	None Supplied	0.30	14.6	Beige sandy clay
413336	WS08	None Supplied	0.30	8.7	Brown loamy sand with brick and concrete
413337	WS09	None Supplied	1.00	7.1	Brown loamy sand with stones

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-08088
Your Environment
Site Reference: Longcross
Project / Job Ref: YE7150
Order No: None Supplied
Reporting Date: 13/06/2019

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	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

APPENDIX 5: HAZ-WASTE ASSESSMENT

Waste Classification Report

N5VQS-QYUCS-KMZKC

Job name

YE7150

Description/Comments

Project

YE7150

Site

Longcross

Related Documents

#	Name	Description
None		

Waste Stream Template

QTS Poplar

Classified by

Name:
Mathew Griffiths
Date:
04 Jul 2019 13:23 GMT
Telephone:
01243 787150

Company:
YourEnvironment

Report

Created by: Mathew Griffiths
Created date: 04 Jul 2019 13:23 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01	0.5	Non Hazardous		3
2	WS06	0.3	Non Hazardous		6
3	WS07a	0.3	Non Hazardous		9
4	WS08	0.3	Non Hazardous		12
5	WS09	1	Non Hazardous		14
6	HP01	0.5	Non Hazardous		16
7	HP02	0.15	Non Hazardous		19
8	HP04b	0.2	Non Hazardous		21
9	HP04c	0.8	Non Hazardous		23
10	WS03	0.7	Non Hazardous		26
11	WS05	0.3	Non Hazardous		29

Classification of sample: WS01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS01
Sample Depth:
0.5 m
Moisture content:
7.2%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		9.6 pH		9.6 pH	9.6 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	9.853 mg/kg	0.000985 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		13 mg/kg	1.462	17.724 mg/kg	0.00177 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.352 mg/kg	0.000735 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	14.551 mg/kg	0.000933 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		7 mg/kg	1.579	10.314 mg/kg	0.00103 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		26 mg/kg	2.469	59.89 mg/kg	0.00599 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		79	mg/kg		73.694	mg/kg	0.00737 %	✓	
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16	●	acenaphthene				0.31	mg/kg		0.289	mg/kg	0.0000289 %	✓	
			201-469-6	83-32-9									
17	●	fluorene				0.31	mg/kg		0.289	mg/kg	0.0000289 %	✓	
			201-695-5	86-73-7									
18	●	phenanthrene				2.46	mg/kg		2.295	mg/kg	0.000229 %	✓	
			201-581-5	85-01-8									
19	●	anthracene				0.71	mg/kg		0.662	mg/kg	0.0000662 %	✓	
			204-371-1	120-12-7									
20	●	fluoranthene				5.78	mg/kg		5.392	mg/kg	0.000539 %	✓	
			205-912-4	206-44-0									
21	●	pyrene				4.24	mg/kg		3.955	mg/kg	0.000396 %	✓	
			204-927-3	129-00-0									
22		benzo[a]anthracene				2.63	mg/kg		2.453	mg/kg	0.000245 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				2.38	mg/kg		2.22	mg/kg	0.000222 %	✓	
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				3.32	mg/kg		3.097	mg/kg	0.00031 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				1.08	mg/kg		1.007	mg/kg	0.000101 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				2.33	mg/kg		2.174	mg/kg	0.000217 %	✓	
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				1.57	mg/kg		1.465	mg/kg	0.000146 %	✓	
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.34	mg/kg		0.317	mg/kg	0.0000317 %	✓	
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				1.4	mg/kg		1.306	mg/kg	0.000131 %	✓	
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32	●	ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0241 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Lack free phase in soils

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00737%)

Classification of sample: WS06

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS06
Sample Depth:
0.3 m
Moisture content:
6.5%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.5% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.8	pH		7.8	pH	7.8 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9	mg/kg	1.32	11.158	mg/kg	0.00112 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		16	mg/kg	1.462	21.958	mg/kg	0.0022 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9	mg/kg	1.126	9.515	mg/kg	0.000951 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	17	mg/kg	1.56	24.898	mg/kg	0.0016 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		11	mg/kg	1.579	16.314	mg/kg	0.00163 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		34	mg/kg	2.469	78.832	mg/kg	0.00788 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		TPH (C6 to C40) petroleum group		TPH		447	mg/kg		419.718	mg/kg	0.042 %	✓	
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
19		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
20		fluoranthene				0.11	mg/kg		0.103	mg/kg	0.0000103 %	✓	
			205-912-4	206-44-0									
21		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
22		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.2	mg/kg		0.188	mg/kg	0.0000188 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.11	mg/kg		0.103	mg/kg	0.0000103 %	✓	
		601-032-00-3	200-028-5	50-32-8									
27		indeno[123-cd]pyrene				0.12	mg/kg		0.113	mg/kg	0.0000113 %	✓	
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
29		benzo[ghi]perylene				0.13	mg/kg		0.122	mg/kg	0.0000122 %	✓	
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32		ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0601 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Lack free phase in soils

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.042%)

Classification of sample: WS07a

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS07a
Sample Depth:
0.3 m
Moisture content:
14.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		9.6 pH		9.6 pH	9.6 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<**LOD**
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		4 mg/kg	1.462	5.101 mg/kg	0.00051 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		<4 mg/kg	1.126	<4.504 mg/kg	<0.00045 %		<**LOD**
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8 mg/kg	1.56	10.889 mg/kg	0.000698 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		<3 mg/kg	1.579	<4.738 mg/kg	<0.000474 %		<**LOD**
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		5 mg/kg	2.469	10.774 mg/kg	0.00108 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		99	mg/kg		86.387	mg/kg	0.00864 %	✓	
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16	●	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17	●	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18	●	phenanthrene				0.14	mg/kg		0.122	mg/kg	0.0000122 %	✓	
			201-581-5	85-01-8									
19	●	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
20	●	fluoranthene				0.19	mg/kg		0.166	mg/kg	0.0000166 %	✓	
			205-912-4	206-44-0									
21	●	pyrene				0.14	mg/kg		0.122	mg/kg	0.0000122 %	✓	
			204-927-3	129-00-0									
22		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32	●	ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0149 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Lack free phase in soils

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00864%)

Classification of sample: WS08

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS08
Sample Depth:
0.3 m
Moisture content:
8.7%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4 pH		8.4 pH	8.4 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	10.932 mg/kg	0.00109 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	24.202 mg/kg	0.00242 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	11.394 mg/kg	0.00114 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	27 mg/kg	1.56	38.744 mg/kg	0.00248 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		9 mg/kg	1.579	13.078 mg/kg	0.00131 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		849 mg/kg	2.469	1928.641 mg/kg	0.193 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		naphthalene				0.22	mg/kg		0.202	mg/kg	0.0000202 %	✓	
		601-052-00-2	202-049-5	91-20-3									
15	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16	●	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17	●	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18	●	phenanthrene				0.39	mg/kg		0.359	mg/kg	0.0000359 %	✓	
			201-581-5	85-01-8									
19	●	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
20	●	fluoranthene				0.92	mg/kg		0.846	mg/kg	0.0000846 %	✓	
			205-912-4	206-44-0									
21	●	pyrene				0.81	mg/kg		0.745	mg/kg	0.0000745 %	✓	
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.5	mg/kg		0.46	mg/kg	0.000046 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.56	mg/kg		0.515	mg/kg	0.0000515 %	✓	
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.73	mg/kg		0.672	mg/kg	0.0000672 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.24	mg/kg		0.221	mg/kg	0.0000221 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.49	mg/kg		0.451	mg/kg	0.0000451 %	✓	
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.31	mg/kg		0.285	mg/kg	0.0000285 %	✓	
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.28	mg/kg		0.258	mg/kg	0.0000258 %	✓	
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32	●	ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.209 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS09

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS09
Sample Depth:
1 m
Moisture content:
7.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		5.1 pH		5.1 pH	5.1 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	9.862 mg/kg	0.000986 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	20.47 mg/kg	0.00205 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5 mg/kg	1.126	5.256 mg/kg	0.000526 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8 mg/kg	1.56	11.651 mg/kg	0.000747 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		5 mg/kg	1.579	7.374 mg/kg	0.000737 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		34 mg/kg	2.469	78.39 mg/kg	0.00784 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		TPH (C6 to C40) petroleum group		TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
19		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
20		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
21		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
22		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
27		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
29		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32		ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0198 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HP01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
HP01
Sample Depth:
0.5 m
Moisture content:
12%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8	pH		8	pH	8pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7	mg/kg	1.32	8.252	mg/kg	0.000825 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		15	mg/kg	1.462	19.574	mg/kg	0.00196 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		25	mg/kg	1.126	25.131	mg/kg	0.00251 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	45	mg/kg	1.56	62.671	mg/kg	0.00402 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		7	mg/kg	1.579	9.872	mg/kg	0.000987 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		64	mg/kg	2.469	141.103	mg/kg	0.0141 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		TPH (C6 to C40) petroleum group		TPH		79	mg/kg		70.536	mg/kg	0.00705 %	✓	
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18		phenanthrene				0.55	mg/kg		0.491	mg/kg	0.0000491 %	✓	
			201-581-5	85-01-8									
19		anthracene				0.16	mg/kg		0.143	mg/kg	0.0000143 %	✓	
			204-371-1	120-12-7									
20		fluoranthene				1.91	mg/kg		1.705	mg/kg	0.000171 %	✓	
			205-912-4	206-44-0									
21		pyrene				1.66	mg/kg		1.482	mg/kg	0.000148 %	✓	
			204-927-3	129-00-0									
22		benzo[a]anthracene				1.17	mg/kg		1.045	mg/kg	0.000104 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				1.03	mg/kg		0.92	mg/kg	0.000092 %	✓	
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				1.76	mg/kg		1.571	mg/kg	0.000157 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.6	mg/kg		0.536	mg/kg	0.0000536 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				1.35	mg/kg		1.205	mg/kg	0.000121 %	✓	
		601-032-00-3	200-028-5	50-32-8									
27		indeno[123-cd]pyrene				1.08	mg/kg		0.964	mg/kg	0.0000964 %	✓	
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				0.18	mg/kg		0.161	mg/kg	0.0000161 %	✓	
		601-041-00-2	200-181-8	53-70-3									
29		benzo[ghi]perylene				0.91	mg/kg		0.813	mg/kg	0.0000812 %	✓	
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32		ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0352 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Lack free phase in soils

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00705%)

Classification of sample: HP02

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
HP02
Sample Depth:
0.15 m
Moisture content:
6.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	pH PH		6.4 pH		6.4 pH	6.4 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide } 033-003-00-0 / 215-481-4 / 1327-53-3		5 mg/kg	1.32	6.222 mg/kg	0.000622 %	✓	
4	cadmium { cadmium sulfide } 048-010-00-4 / 215-147-8 / 1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide } 215-160-9 / 1308-38-9		10 mg/kg	1.462	13.775 mg/kg	0.00138 %	✓	
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X / 215-270-7 / 1317-39-1		7 mg/kg	1.126	7.428 mg/kg	0.000743 %	✓	
7	lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	21 mg/kg	1.56	30.873 mg/kg	0.00198 %	✓	
8	mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide } 028-008-00-X / 235-008-5 [1] 234-348-1 [2] / 12054-48-7 [1] 11113-74-9 [2]		4 mg/kg	1.579	5.955 mg/kg	0.000595 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate } 030-006-00-9 / 231-793-3 [1] 231-793-3 [2] / 7446-19-7 [1] 7733-02-0 [2]		36 mg/kg	2.469	83.784 mg/kg	0.00838 %	✓	
12	phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		naphthalene											
		601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15	●	acenaphthylene											
			205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16	●	acenaphthene											
			201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
17	●	fluorene											
			201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18	●	phenanthrene											
			201-581-5	85-01-8		0.31	mg/kg		0.292	mg/kg	0.0000292 %	✓	
19	●	anthracene											
			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20	●	fluoranthene											
			205-912-4	206-44-0		1.01	mg/kg		0.952	mg/kg	0.0000952 %	✓	
21	●	pyrene											
			204-927-3	129-00-0		0.92	mg/kg		0.867	mg/kg	0.0000867 %	✓	
22		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		0.72	mg/kg		0.679	mg/kg	0.0000679 %	✓	
23		chrysene											
		601-048-00-0	205-923-4	218-01-9		0.5	mg/kg		0.471	mg/kg	0.0000471 %	✓	
24		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		0.82	mg/kg		0.773	mg/kg	0.0000773 %	✓	
25		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		0.33	mg/kg		0.311	mg/kg	0.0000311 %	✓	
26		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		0.67	mg/kg		0.631	mg/kg	0.0000631 %	✓	
27	●	indeno[123-cd]pyrene											
			205-893-2	193-39-5		0.55	mg/kg		0.518	mg/kg	0.0000518 %	✓	
28		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	●	benzo[ghi]perylene											
			205-883-8	191-24-2		0.44	mg/kg		0.415	mg/kg	0.0000415 %	✓	
30		benzene											
		601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
31		toluene											
		601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
32	●	ethylbenzene											
		601-023-00-4	202-849-4	100-41-4		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
33		xylene											
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
										Total:	0.0211 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HP04b

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
HP04b
Sample Depth:
0.2 m
Moisture content:
12.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.9% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		5.2	pH		5.2	pH	5.2 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7	mg/kg	1.32	8.186	mg/kg	0.000819 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		36	mg/kg	1.462	46.604	mg/kg	0.00466 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		<4	mg/kg	1.126	<4.504	mg/kg	<0.00045 %		<**LOD**
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10	mg/kg	1.56	13.816	mg/kg	0.000886 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		8	mg/kg	1.579	11.192	mg/kg	0.00112 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		30	mg/kg	2.469	65.615	mg/kg	0.00656 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		naphthalene											
		601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15	●	acenaphthylene											
			205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16	●	acenaphthene											
			201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
17	●	fluorene											
			201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18	●	phenanthrene											
			201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
19	●	anthracene											
			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20	●	fluoranthene											
			205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21	●	pyrene											
			204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		chrysene											
		601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	●	indeno[123-cd]pyrene											
			205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	●	benzo[ghi]perylene											
			205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzene											
		601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
31		toluene											
		601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
32	●	ethylbenzene											
		601-023-00-4	202-849-4	100-41-4		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
33		xylene											
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
										Total:	0.0215 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HP04c

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
HP04c
Sample Depth:
0.8 m
Moisture content:
6.5%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.5% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		6.3	pH		6.3	pH	6.3 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4	mg/kg	1.32	4.959	mg/kg	0.000496 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		12	mg/kg	1.462	16.468	mg/kg	0.00165 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6	mg/kg	1.126	6.343	mg/kg	0.000634 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21	mg/kg	1.56	30.757	mg/kg	0.00197 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		4	mg/kg	1.579	5.932	mg/kg	0.000593 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		63	mg/kg	2.469	146.071	mg/kg	0.0146 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		70	mg/kg		65.728	mg/kg	0.00657 %	✓	
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15	●	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16	●	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17	●	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18	●	phenanthrene				0.51	mg/kg		0.479	mg/kg	0.0000479 %	✓	
			201-581-5	85-01-8									
19	●	anthracene				0.12	mg/kg		0.113	mg/kg	0.0000113 %	✓	
			204-371-1	120-12-7									
20	●	fluoranthene				1.1	mg/kg		1.033	mg/kg	0.000103 %	✓	
			205-912-4	206-44-0									
21	●	pyrene				0.93	mg/kg		0.873	mg/kg	0.0000873 %	✓	
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.65	mg/kg		0.61	mg/kg	0.000061 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.45	mg/kg		0.423	mg/kg	0.0000423 %	✓	
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.71	mg/kg		0.667	mg/kg	0.0000667 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.3	mg/kg		0.282	mg/kg	0.0000282 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.59	mg/kg		0.554	mg/kg	0.0000554 %	✓	
		601-032-00-3	200-028-5	50-32-8									
27	●	indeno[123-cd]pyrene				0.44	mg/kg		0.413	mg/kg	0.0000413 %	✓	
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
29	●	benzo[ghi]perylene				0.32	mg/kg		0.3	mg/kg	0.00003 %	✓	
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32	●	ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0297 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Lack free phase in soils

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00657%)

Classification of sample: WS03

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS03
Sample Depth:
0.7 m
Moisture content:
3.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.6 pH		7.6 pH	7.6 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3 mg/kg	1.32	3.823 mg/kg	0.000382 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		7 mg/kg	1.462	9.875 mg/kg	0.000988 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	9.781 mg/kg	0.000978 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	55 mg/kg	1.56	82.809 mg/kg	0.00531 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		6 mg/kg	1.579	9.148 mg/kg	0.000915 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		27 mg/kg	2.469	64.354 mg/kg	0.00644 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		TPH (C6 to C40) petroleum group		TPH		45	mg/kg		43.436	mg/kg	0.00434 %	✓	
14		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
15		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
16		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
17		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
18		phenanthrene				0.56	mg/kg		0.541	mg/kg	0.0000541 %	✓	
			201-581-5	85-01-8									
19		anthracene				0.12	mg/kg		0.116	mg/kg	0.0000116 %	✓	
			204-371-1	120-12-7									
20		fluoranthene				0.8	mg/kg		0.772	mg/kg	0.0000772 %	✓	
			205-912-4	206-44-0									
21		pyrene				0.74	mg/kg		0.714	mg/kg	0.0000714 %	✓	
			204-927-3	129-00-0									
22		benzo[a]anthracene				0.56	mg/kg		0.541	mg/kg	0.0000541 %	✓	
		601-033-00-9	200-280-6	56-55-3									
23		chrysene				0.35	mg/kg		0.338	mg/kg	0.0000338 %	✓	
		601-048-00-0	205-923-4	218-01-9									
24		benzo[b]fluoranthene				0.64	mg/kg		0.618	mg/kg	0.0000618 %	✓	
		601-034-00-4	205-911-9	205-99-2									
25		benzo[k]fluoranthene				0.29	mg/kg		0.28	mg/kg	0.000028 %	✓	
		601-036-00-5	205-916-6	207-08-9									
26		benzo[a]pyrene; benzo[def]chrysene				0.53	mg/kg		0.512	mg/kg	0.0000512 %	✓	
		601-032-00-3	200-028-5	50-32-8									
27		indeno[123-cd]pyrene				0.44	mg/kg		0.425	mg/kg	0.0000425 %	✓	
			205-893-2	193-39-5									
28		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
29		benzo[ghi]perylene				0.32	mg/kg		0.309	mg/kg	0.0000309 %	✓	
			205-883-8	191-24-2									
30		benzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
31		toluene				<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
32		ethylbenzene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
33		xylene				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0225 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Lack free phase in soils

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00434%)

Classification of sample: WS05

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS05
Sample Depth:
0.3 m
Moisture content:
5.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		7.5 pH		7.5 pH	7.5 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	8.752 mg/kg	0.000875 %	✓	
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		17 mg/kg	1.462	23.529 mg/kg	0.00235 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	19.191 mg/kg	0.00192 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	47 mg/kg	1.56	69.424 mg/kg	0.00445 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		6 mg/kg	1.579	8.974 mg/kg	0.000897 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		103 mg/kg	2.469	240.85 mg/kg	0.0241 %	✓	
12	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		naphthalene											
		601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15	●	acenaphthylene											
			205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16	●	acenaphthene											
			201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
17	●	fluorene											
			201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18	●	phenanthrene											
			201-581-5	85-01-8		0.55	mg/kg		0.521	mg/kg	0.0000521 %	✓	
19	●	anthracene											
			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20	●	fluoranthene											
			205-912-4	206-44-0		0.97	mg/kg		0.919	mg/kg	0.0000919 %	✓	
21	●	pyrene											
			204-927-3	129-00-0		0.82	mg/kg		0.777	mg/kg	0.0000777 %	✓	
22		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		0.51	mg/kg		0.483	mg/kg	0.0000483 %	✓	
23		chrysene											
		601-048-00-0	205-923-4	218-01-9		0.44	mg/kg		0.417	mg/kg	0.0000417 %	✓	
24		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		0.68	mg/kg		0.644	mg/kg	0.0000644 %	✓	
25		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		0.28	mg/kg		0.265	mg/kg	0.0000265 %	✓	
26		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		0.54	mg/kg		0.511	mg/kg	0.0000511 %	✓	
27	●	indeno[123-cd]pyrene											
			205-893-2	193-39-5		0.4	mg/kg		0.379	mg/kg	0.0000379 %	✓	
28		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	●	benzo[ghi]perylene											
			205-883-8	191-24-2		0.3	mg/kg		0.284	mg/kg	0.0000284 %	✓	
30		benzene											
		601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
31		toluene											
		601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
32	●	ethylbenzene											
		601-023-00-4	202-849-4	100-41-4		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
33		xylene											
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
										Total:	0.042 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS10
Sample Depth:
0.3 m
Moisture content:
9.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	pH PH		5.3 pH		5.3 pH	5.3 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<**LOD**
3	arsenic { arsenic trioxide } 033-003-00-0 / 215-481-4 / 1327-53-3		5 mg/kg	1.32	6.034 mg/kg	0.000603 %	✓	
4	cadmium { cadmium sulfide } 048-010-00-4 / 215-147-8 / 1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
5	chromium { chromium(III) oxide } 215-160-9 / 1308-38-9		20 mg/kg	1.462	26.719 mg/kg	0.00267 %	✓	
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X / 215-270-7 / 1317-39-1		5 mg/kg	1.126	5.146 mg/kg	0.000515 %	✓	
7	lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	9 mg/kg	1.56	12.832 mg/kg	0.000823 %	✓	
8	mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
9	nickel { nickel dihydroxide } 028-008-00-X / 235-008-5 [1] 234-348-1 [2] / 12054-48-7 [1] 11113-74-9 [2]		5 mg/kg	1.579	7.219 mg/kg	0.000722 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**
11	zinc { zinc sulphate } 030-006-00-9 / 231-793-3 [1] 231-793-3 [2] / 7446-19-7 [1] 7733-02-0 [2]		25 mg/kg	2.469	56.428 mg/kg	0.00564 %	✓	
12	phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13	●	TPH (C6 to C40) petroleum group		TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		naphthalene											
		601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15	●	acenaphthylene											
			205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16	●	acenaphthene											
			201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
17	●	fluorene											
			201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18	●	phenanthrene											
			201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
19	●	anthracene											
			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20	●	fluoranthene											
			205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21	●	pyrene											
			204-927-3	129-00-0		0.17	mg/kg		0.155	mg/kg	0.0000155 %	✓	
22		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		chrysene											
		601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		0.21	mg/kg		0.192	mg/kg	0.0000192 %	✓	
25		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		0.19	mg/kg		0.174	mg/kg	0.0000174 %	✓	
27	●	indeno[123-cd]pyrene											
			205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	●	benzo[ghi]perylene											
			205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzene											
		601-020-00-8	200-753-7	71-43-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
31		toluene											
		601-021-00-3	203-625-9	108-88-3		<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
32	●	ethylbenzene											
		601-023-00-4	202-849-4	100-41-4		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
33		xylene											
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
										Total:	0.018 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

- **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

Appendix B: Rationale for selection of metal species

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(III) oxide}

Correct species

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead chromate}

Worst case species based on risk phrases

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on risk phrases

zinc {zinc sulphate}

Lack of chromium in other samples

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.182.3894.7916 (01 Jul 2019)
HazWasteOnline Database: 2019.182.3894.7916 (01 Jul 2019)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

APPENDIX 6: GEOTECHNICAL LABORATORY TESTING

Environmental
Geotechnical
Specialists

LABORATORY REPORT

job number: J4765/19/L	client ref: (YE7150)
site address: Longcross Studios	client address: Unit 8 to 10 Brockholes Business Park Brockholes, Holmfirth HD9 7BN
consultant:	
date scheduled: 26/06/2019	date issued: 28/06/2019
issued by: C J Norcliffe	job title: Laboratory Manager

Rogers Geotechnical Services Ltd Telephone **01484 607 977**
Email **jude.norcliffe@rogersgeotech.co.uk** www.**rogersgeotech.co.uk**
Offices 1 & 2, Barncliffe Business Park, Near Bank, Shelley,
Huddersfield, West Yorkshire HD8 8LU.

GEOTECHNICAL ENVIRONMENTAL

Schedule of UKAS Accredited Laboratory Tests

		Accredited (A)	Unaccredited (U)
1. CLASSIFICATION OF SOIL	**BS 1377-2:1990**		
1.1 Moisture content determination			
i) Oven drying	Pt 2 : 3.2	**A**	
ii) Saturation m/c of chalk	Pt 2 : 3.3		U
1.2 Index Properties			
i) Liquid limit – cone penetrometer	Pt 2 : 4.3	**A**	
ii) Plastic limit	Pt 2 : 5.3	**A**	
iii) Shrinkage limit	Pt 2 : 6.3		U
iv) Linear shrinkage	Pt 2 : 6.5	**A**	
1.3 Particle Density			
i) Gas jar	Pt 2 : 8.2		U
ii) Large pyknometer	Pt 2 : 8.3		U
iii) Small pyknometer	Pt 2 : 8.4		U
1.4 Density Tests			
i) Linear measurement	Pt 2 : 7.2	**A**	
ii) Immersion in water	Pt 2 : 7.3		U
iii) Water displacement	Pt 2 : 7.4		U
iv) Sand replacement	Pt 9 : 2.1, 2.2		U
v) Core cutter	Pt 9 : 2.4		U
1.5 Particle Size Distribution			
i) Dry Sieve	Pt 2 : 9.2	**A**	
ii) Wet Sieve	Pt 2 : 9.3	**A**	
iii) Sedimentation by pipette	Pt 2 : 9.4	**A**	
iv) Sedimentation by hydrometer	Pt 2 : 9.5		U
2. CHEMICAL TESTS	**BS 1377-3:2018**		
ii) Mass loss on ignition	Pt 3 : 4		U
3. COMPACTION RELATED TESTS	**BS 1377-4:1990**		
3.1 Dry density/moisture relationship			
i) 2.5kg rammer – 1 litre mould	Pt 4 : 3		U
- CBR mould	Pt 4 : 3		U
ii) 4.5kg rammer – 1 litre mould	Pt 4 : 3		U
- CBR mould	Pt 4 : 3		U
3.2 Moisture Condition Value			
i) Single point test	Pt 4 : 5.4		U
ii) MCV/moisture content relationship	Pt 4 : 5.5		U
3.3 California Bearing Ratio			
i) Undisturbed sample	Pt 5 : 7		U
ii) Recompacted sample	Pt 5 : 7		U
iii) Soaked, inc measurement of swell	Pt 5 : 7		U
4. COMPRESSIBILITY OF SOIL	**BS 1377-5:1990**		
i) One dimensional consolidation	Pt 5 : 3		U
ii) Swelling pressure test	Pt 5 : 3		U
5. SHEAR STRENGTH OF SOIL	**BS 1377-7:1990**		
i) Hand shear vane	Makers instructions		U
ii) Shear box (100mm square sample)	BS 1377 : Pt 7 : 4		U
iii) Triaxial – quick undrained	BS 1377 : Pt 7 : 8, 9		U
6. PERMEABILITY			
i) Falling head	K. H. Head Vol 2		U
ii) Constant head	BS 1377 : Pt 6 : 6		U
iii) Triaxial cell	BS 1377 : Pt 6 : 6		U
7. ROCK TESTS			
7.1 Classification Tests			
i) Natural moisture content	-		U
ii) Saturated moisture content	-		U
iii) Natural density	-		U
iv) Porosity	-		U
7.2 Strength Tests			
i) Point load index	ISRM '85		U
ii) Uniaxial compression test	ISRM '81		U

GEOTECHNICAL ENVIRONMENTAL

Rogers Geotechnical Services Ltd
Office 1 & 2 Barncliffe Business Park,
Near Bank, Shelley, Huddersfield, HD8 8LU

Telephone 0843 50 666 87
Fax 0843 51 599 30
Company No: 5130864

Environmental
Geotechnical
Specialists

RGS

GEOTECHNICAL LAB RESULTS

GEOTECHNICAL
ENVIRONMENTAL

Blank Page

Rogers Geotechnical Services Ltd
Office 1 & 2 Barncliffe Business Park,
Near Bank, Shelley, Huddersfield, HD8 8LU

Telephone 01484 607977
Company No: 5130864

Summary of Classification Test Results

Project No.: J4765/19/L

Project Name: Longcross Studios (YE7150)

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type	Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
WS01	1	1.20		D	Orangeish mottled greenish grey silty very sandy CLAY			16.0	99	29	21	8		
WS03	2	3.00		D	Brown very sandy silty CLAY			20.0	100	39	25	14		
WS04	1	1.00		D	Light grey SILT			22.0						
WS07a	1	0.30		D	Light grey SILT			26.0						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test | Liquid Limit | Particle density

Linear measurement unless : | 4pt cone unless : | sp - small pyknometer

wd - water displacement | cas - Casagrande method | gj - gas jar

wi - immersion in water | 1pt - single point test

Date Printed: 28/06/2019

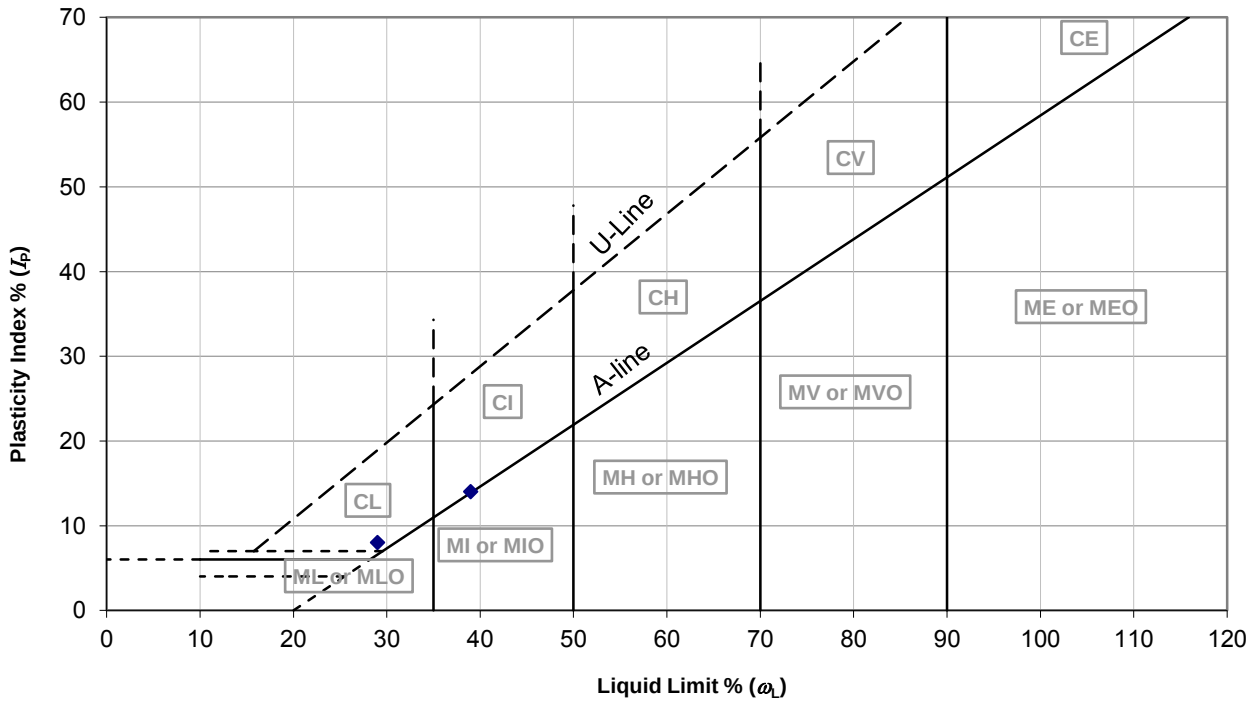
Approved By: Harry

Table 1

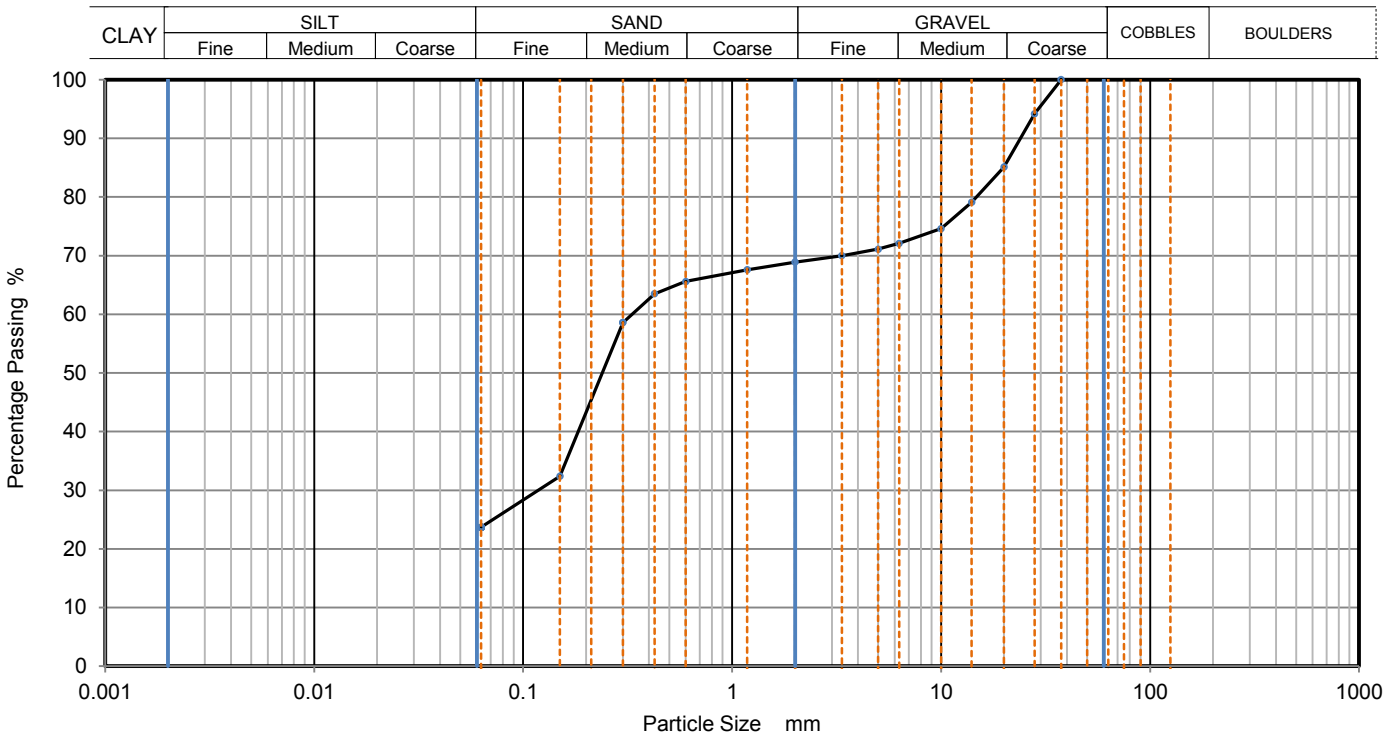
sheet 1

Rogers Geotechnical Services Ltd. Offices 1&2, Barncliffe Business Park, Near Bank, Shelley, Huddersfield, HD8 8LU	**Classification of Index Properties**	**YE7150**
Project Name: Longcross Studios	**B.S 1377: Part 2: 1990: 3.2, 4 and 5**	Fig. 2 / Sheet. 1
Location:		Input By: Harry
Client: Your Environment		Check By: Naf

Location	Depth (m)	Moisture Content (w) (%)	Liquid Limit (wL) (%)	Plastic Limit (wP) (%)	Plasticity Index (IP) (%)	Retained by 425mm (%)	Modified (w) (w') (%)	Modified (IP) (IP') (%)	Liquidity/ Consistency (IL) (%)	Liquidity/ Consistency (IC) (%)	Casagrande Class	N.H.B.C Class (%)
WS01	1.20	16	29	21	8	1	16	8	-0.6	1.6	C L	*
WS03	3.00	20	39	25	14	0	20	14	-0.4	1.4	C I	LOW



	PARTICLE SIZE DISTRIBUTION			Job Ref	J4765/19/L
				Borehole/Pit No.	WS03
Site Name	Longcross Studios (YE7150)			Sample No.	1
Soil Description	Light brown slighty gravelly SAND			Depth, m	2.00
Specimen Reference	D1	Specimen Depth	2 m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	RGS_201906261



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
37.5	100		
28	94		
20	85		
14	79		
10	75		
6.3	72		
5	71		
3.35	70		
2	69		
1.18	68		
0.6	66		
0.425	64		
0.3	59		
0.15	32		
0.063	24		

Dry Mass of sample, g	1219

Sample Proportions	% dry mass
Very coarse	0
Gravel	31
Sand	45
Fines <0.063mm	24

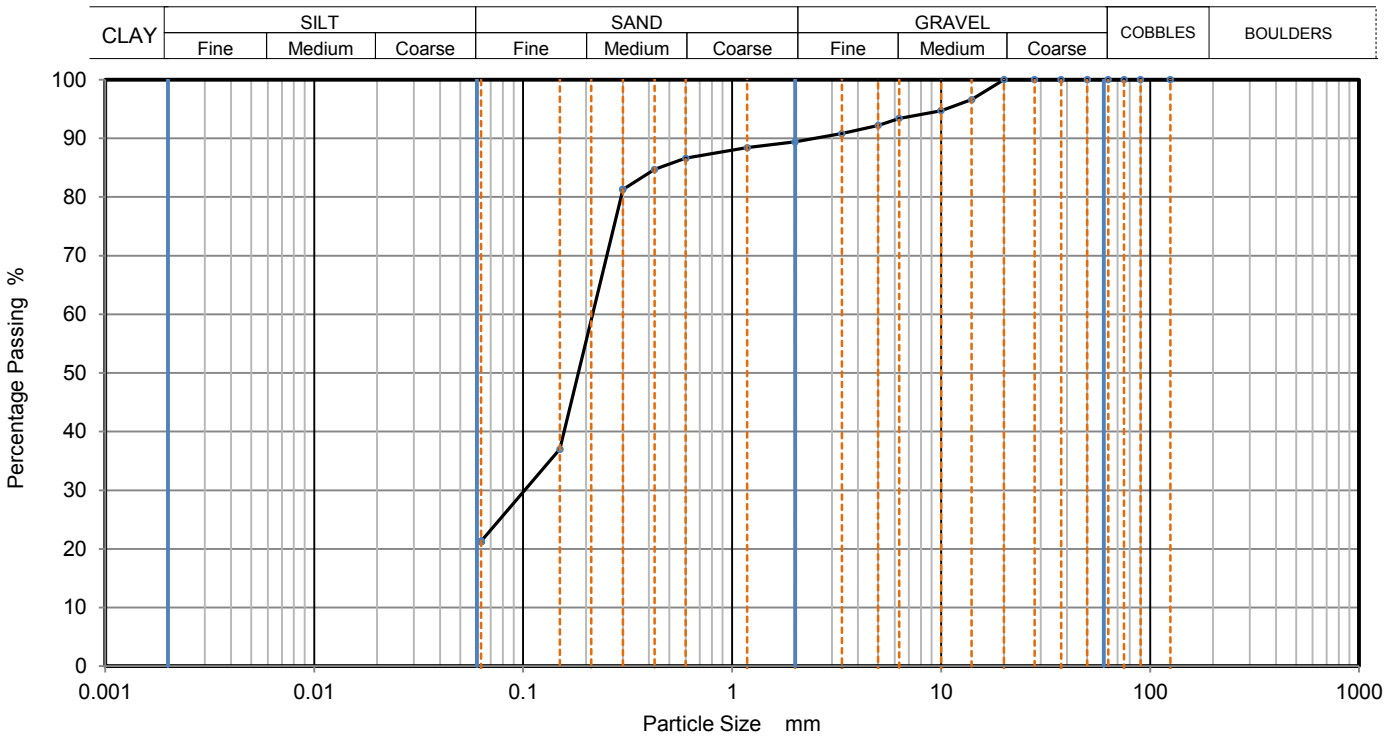
Grading Analysis		
D100	mm	37.5
D60	mm	0.332
D30	mm	0.118
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 3
Harry	Naf	Harry	28/06/2019	Sheet 1

	PARTICLE SIZE DISTRIBUTION				Job Ref	J4765/19/L
					Borehole/Pit No.	WS06
Site Name	Longcross Studios (YE7150)				Sample No.	1
Soil Description	Greenish grey silty clayey SAND				Depth, m	1.00
Specimen Reference	D1	Specimen Depth	1	m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2				KeyLAB ID	RGS_201906264



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	95		
6.3	93		
5	92		
3.35	91		
2	89		
1.18	88		
0.6	87		
0.425	85		
0.3	81		
0.15	37		
0.063	21		

Dry Mass of sample, g: 923

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	68
Fines <0.063mm	21

Grading Analysis		
D100	mm	
D60	mm	0.215
D30	mm	0.102
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

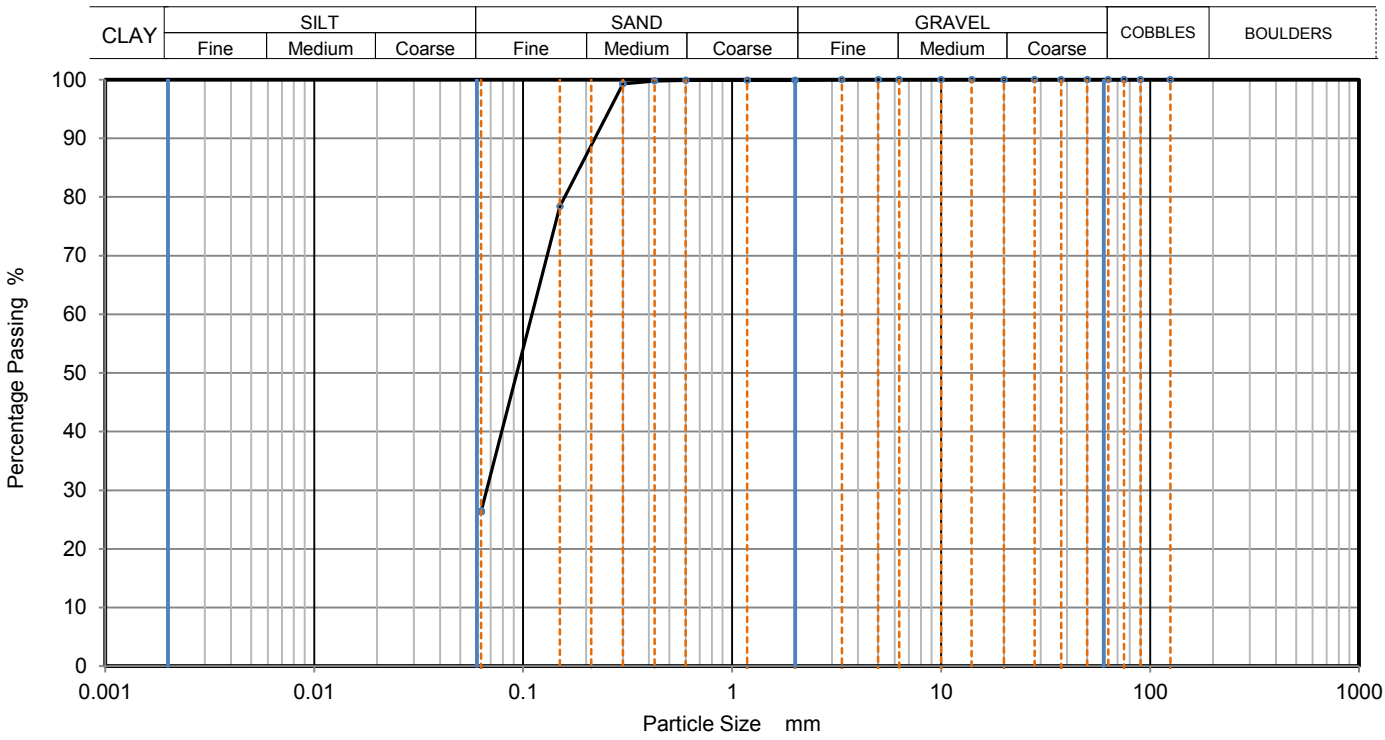
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 3
Harry	Naf	Harry	28/06/2019	Sheet 2

PARTICLE SIZE DISTRIBUTION

				Job Ref	**J4765/19/L**
				Borehole/Pit No.	WS08
Site Name	Longcross Studios (YE7150)			Sample No.	1
Soil Description	Light yellowish brown SAND			Depth, m	1.50
Specimen Reference	D1	Specimen Depth	1.5 m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	RGS_201906266



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.15	78		
0.063	26		

Dry Mass of sample, g: 875

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	74
Fines <0.063mm	26

Grading Analysis		
D100	mm	
D60	mm	0.11
D30	mm	0.0669
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 3
Harry	Naf	Harry	28/06/2019	Sheet 3

End of Report

Rogers Geotechnical Services Ltd
Office 1 & 2 Barncliffe Business Park,
Near Bank, Shelley, Huddersfield, HD8 8LU

Telephone 01484 607977
Company No: 5130864

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ANALYTICAL TEST REPORT

Contract no: 79640

Contract name: Longcross Studios

Client reference: YE7150

Clients name: YourGeotechnical

Clients address: Unit 8-10 Brockholes Business Park
Brockholes
Holmfirth
HD9 7BN

Samples received: 27 June 2019

Analysis started: 27 June 2019

Analysis completed: 02 July 2019

Report issued: 02 July 2019

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:

Dave Bowerbank
Customer Support Hero

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
79640-1	WS04	0.80	Silty Sand	-	-	19.5
79640-2	WS07a	1.00	Silty Sand	-	-	20.2

Chemtech Environmental Limited

SOILS

Lab number			79640-1	79640-2
Sample id			WS04	WS07a
Depth (m)			0.80	1.00
Date sampled			24/06/2019	24/06/2019
Test	**Method**	**Units**		
pH	CE004 M	units	7.9	7.9
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	32	33
Sulphate (2:1 water soluble)	CE061 M	g/l SO_4	0.03	0.03
Sulphate (total)	CE062 M	mg/kg SO_4	<100	<100
Sulphate (total)	CE062 M	% w/w SO_4	<0.01	<0.01
Sulphur (total)	CE127	% w/w S	<0.01	<0.01

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO_4
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	0.01	g/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	0.01	% w/w SO_4
CE127	Sulphur (total)	Aqua regia digest, ICP-MS	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
79640-1	WS04	0.80	N	
79640-2	WS07a	1.00	N	

APPENDIX 7: MONITORING RESULTS

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Paragon
Site: Longcross Studios
Date: 07.06.2019

Job No: YE7150
Visit No: 1 **of** 1
Operator: Nick Hammond **Project Manager:**

	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Worst-credible GSVs		WELL AND WATER DATA					Comments
Monitoring Point	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Reduced level (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
WS1	0.2	0.2	0.0	0.0	1.8	1.8	2	0	0	0	18.2	18.2	0.0		0.1	0.1			0.0002	0.0018	dry	2.65				
WS3	0.2	0.1	0.0	0.0	2.1	2.1	4	1	0	0	17.8	17.8	0.1		0.1	0.1			0.0002	0.0021	dry	4.01				
WS4	0.1	0.1	0.0	0.0	1.2	1.2	1	0	0	0	16.2	16.2	0.0		0.2	0.2			0.0002	0.0024	dry	1.45				
WS6	0.2	0.1	0.0	0.0	2.4	2.4	2	1	0	0	18.0	18.0	0.0		0.1	0.1			0.0002	0.0024	dry	1.87				
WS7a	0.1	0.1	0.0	0.0	1.2	1.2	2	0	0	0	19.7	19.7	0.0		0.1	0.1			0.0001	0.0012	dry	3.07				
WS8	0.2	0.1	0.0	0.0	0.9	0.9	1	0	0	0	20.1	20.1	0.0		0.1	0.1			0.0002	0.0009	dry	3.07				
WS9	0.2	0.2	0.0	0.0	4.2	4.2	2	0	0	0	17.7	17.7	0.0		0.3	0.3			0.0006	0.0126	dry	0.93				
WS10	0.1	0.1	0.0	0.0	4.2	4.2	1	1	0	0	18.3	18.3	0.0		0.1	0.1			0.0001	0.0042	dry	2.63				
																			0	0						
																			0	0						
																			0	0						
																			0	0						
																			0	0						
Max	**0.2**	**0.2**	**0.0**	**0.0**	**4.2**	**4.2**	**4**	**1**	**0**	**0**	**20.1**	**20.1**	**0.1**	**ND**	**0.3**	**0.3**	**ND**	**NA**	**0.0006**	**0.0126**	**DRY**	**4.01**	**NR**	**NR**		
Min	**0.1**	**0.1**	**0.0**	**0.0**	**0.9**	**0.9**	**1**	**0**	**0**	**0**	**16.2**	**16.2**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0**	**0.0000**	**0.0000**	**DRY**	**0.93**	**0.00**	**0.00**		

Worst-possible GSVs	
0.0006	**0.0126**

ND - Not detected
NR - Not recorded
NA - Non applicable

MG - Made ground
NAT - Natural
C - Cohesive
G - Granular

NB: Where no flow (ND) recorded, GSVs are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of GSVs.

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist	x	Wet		Snow		Frozen
Wind:		Calm		Light	x	Moderate		Strong		
Cloud cover:		None		Slight		Cloudy	x	Overcast		
Precipitation:		None		Slight	x	Moderate		Heavy		
Time monitoring performed:			07:50	Start			09:30	End		
Barometric pressure (mbar):			1000	Start			1000	End		
Pressure trend (Daily):			x	Falling		Steady		Rising		
Source:	Wundergound									
Air Temperature (Deg. C):			14	Before			13	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA5000
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +/-
Differential Pressure: +/- 500mbar
Date of last calibration:
Date of next calibration:

APPENDIX 8: ENVIRONMENTAL RISK ASSESSMENT

1.0 GENERIC ENVIRONMENTAL RISK ASSESSMENT

1.1 Introduction

1.1.1 The appendix provides additional background information on certain approaches and methods used by Paragon in the preparation of this report.

1.1.2 This report uses the term 'geoenvironmental' to describe aspect relating to ground related environmental issues, such as contamination. The term 'geotechnical' is used to describe aspects relating to the physical nature of the site, such as foundation requirements.

1.1.3 A two-staged approach is used to classify land:

- The first stage is referred to as a Phase 1 Investigation, comprising a desk study and walkover. A preliminary conceptual site model (CSM) is developed during the process whereby any geotechnical and geoenvironmental hazards are identified and an associated risk is presented. These risks are qualitative and use professional judgement of the consultant to identify possible contaminant linkages between a source-pathway-receptor. Possible contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment.
- The second stage is referred to as Phase 2 Site Investigation, which comprises the intrusive ground investigation, and generic risk assessment geoenvironmental and geotechnical risks. This would include some degree of fieldwork, laboratory testing and professional reporting.

1.1.4 The Geoenvironmental Phase 1 and Phase 2 Investigations have been completed in accordance with BS10175:2011+A1:2017.

1.1.5 The Geotechnical aspects of the report have been broadly written in general accordance with Eurocode 7 (BS EN 1997-2:2007) and are written with the intention of fulfilling the general requirements of a Ground Investigation Report (GIR) outlined in Section 6.

1.2 Phase 1 Investigation

1.2.1 The preliminary risk assessment is made of both geotechnical and geoenvironmental hazards identified at the desk study stage. This is then updated based on the findings of the Phase 2 Investigation. The risk associated with hazards uses a matrix of probability of occurrence vs the consequence. Geotechnical risks are assessed using a ground model.

1.2.2 In the context of geoenvironmental risks, in order for there to be a risk there must be a viable pollutant linkage, which means there must be a source of contaminations, a potential receptor and a pathway linking the two. The purpose of the Preliminary Conceptual Site Model is to identify all of the potential contaminant linkages and qualitatively assess the potential risks associated with these linkages. Contaminant linkages are potentially unacceptable risks in terms of current contaminated land regime legal framework and require either further assessment through the ground investigation. Should one of the three linkages be absent then there is no linkage and no further action is required.

1.2.3 Geoenvironmental risks are also outlined within Environmental Protection Act 1990, Part 2A which uses the term 'significant harm or significant possibility of significant harm (SPOSH)', where the term 'harm' is significant.

1.2.4 Paragon has adopted a classification level based on definitions within CIRIA Report C552 and professional judgement. Paragon's Rationale for Risk Ratings is presented in Table 1. The classification for the probability of harm is presented in Table 2.

1.2.5 *Table 1. Rationale for Risk Ratings*

Risk Rating	Risk Rating	Rationale	Examples
High	H	Contaminants very likely or known to represent an unacceptable risk, SPOSH. Equivalent to EA Category 1 pollution incident including persistent and/or extensive detrimental effects on water quality, closure of a potable abstraction point. Site not suitable for proposed use Enforcement action possible Urgent action required	Significant short-term effects to humans is defined as serious injury, defects or death. Die-back of plants in landscaped areas. Short term pollution of controlled waters, major fish kill. Elevated contaminants close to potable abstraction. Major damage to buildings i.e. explosion
Medium to High	M H	Contaminants likely or known to represent an unacceptable risk Action required.	Possible short-term effects and likely long-term effects to humans is defined as serious injury, defects or death. Buildings unsafe to occupy. Ingress of contaminants through plastic pipes. Stress or dead plants in landscaped areas. Pollution of sensitive water resources
Medium	M	Contaminants likely to exceed assessment criteria and may to represent an unacceptable risk. Some damage to property (crops, buildings etc). Some action required.	Significant long-term effects to humans is defined as serious injury, defects or death. Buildings unsafe to occupy. Potential ingress of contaminants through plastic pipes. Stress or dead plants in landscaped areas. Pollution of sensitive water resources
Low to Medium	L M	Contaminants may exceed assessment criteria but no harm as no unacceptable intake or contact. Minor or short-lived damage to property, ecosystems. Site likely to be suitable for proposed use Action unlikely whilst in current use	Harm not significant, pollutant linkage broken. Minor damage to plants in landscaped areas. Minor damage to buildings.
Low	L	Contaminants likely or known to have no risk of harm. Site likely to be suitable for proposed use Repairable effects to damage to property etc. No further action required	No measurable effects. No significant impact to property, plants, ecosystems.

1.2.6 *Table 2. Classification of Probability of Geoenvironmental Risks*

Classification	Risk Rating
High Likelihood	There is a contaminant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a contaminant linkage and all the elements are present, which means that it is probable that an event will occur.
Low Likelihood	There is a contaminant linkage and circumstances are possible under which an event could occur. However, it is no means certain that even over a longer period such event could take place and is less likely in the shorter term.
Unlikely	There is a contaminant linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

1.2.7 *Table 3. Probability / Consequence Graphic*

		Consequence				
		High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**
Probability	**High Likelihood**	Very High Risk	High Risk	Moderate Risk	Low / Moderate Risk	Low Risk
	Likely	High Risk	Moderate Risk	Low / Moderate Risk	Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Low / Moderate Risk	Low Risk	Low Risk	Very Low Risk
	Unlikely	Low / Moderate Risk	Low Risk	Very Low Risk	Very Low Risk	Very Low Risk
	No Linkage	No Risk				

1.3 Contaminant Analysis

1.3.1 The procedures set out in CLR 11, ISO 10381-5:2005 Soil Quality – Sampling and the DoE Industry Profiles provide good summaries of priority pollutants for UK sites. These have been used during the Phase 1 assessment to scope the analysis of chemicals of concern.

1.4	**Generic Tier 1 Human Health Risk Assessment**
1.4.1	Generic Assessment Criteria (GAC) are used as the limit at which exceedances would cause harm. GAC are developed based on assumptions of characteristics and behaviours or sources, pathways and receptors. These are largely conservative and are calculated using the Contaminated Land Exposure Assessment (CLEA) model, which uses exposure to the receptor and toxicology data of the contaminant in the assessment. Published and industry recognised GACs have been produced for a range of environments: • Residential with homegrown produce • Residential without homegrown produce • Commercial • Allotments • Public Open Space – Park (POS_{park}) • Public Open Space – Residential (POS_{Resi}).
1.4.2	The results of the chemical laboratory testing were screened using GACs based on a range of sources: • Atkins ATRISK SOIL SSV Values (2011) • Category 4 Screening Levels (C4SLs) including cadmium, Benzo(a)pyrene, benzene, arsenic, lead and chromium VI, produced by LQM CIEH. • Suitable 4 Use Levels (S4UL) produced by LQM CIEH (2015).
1.4.3	Category 4 Screening Levels were developed to screen out land affected by contamination under Part 2A of the EPA 1990. They represent a low level of risk whilst still being protective of human health.
1.4.4	In accordance with Health Protection Agency (HPA) guidance for the risk assessment approaches for Polycyclic Aromatic Hydrocarbons (PAH), 2010, benzo(a)pyrene has been used as a surrogate marker for carcinogenic PAHs. The threshold PAHs have been assessed individually.
1.4.5	Statistical analysis has been carried out on populations of greater than six results. Where the population is less than six, statistical analysis has been deemed inappropriate. Therefore, the maximum concentration of each contaminant has been recorded. The Upper Confidence Level or U_{95} has been calculated to present the level at which we would be 95% confident that the true mean is less than the GAC. All non-detect values have been treated as being equal to half the limit of detection.
1.4.6	These results have been used to carry out a Level 1: Quantitative Human Health Assessment for the ground contamination present against standards for the proposed residential use of the property. These results can also be used for a preliminary assessment for off-site disposal classification.

1.5 Controlled Waters Risk Assessment

1.5.1 The Environment Agency Groundwater Protection Policy (GP3) outlines the legal framework, detailed policies, technical background and the tools to be used in the protection of groundwater. The Water Framework Directive (2000/60/EC) set out the protocol for controlling water quality of the whole water environment. During Groundwater Risk Assessments the impact on controlled waters is outlined. Controlled waters include groundwater, surface water, coastal waters, inland waters and reservoirs.

1.5.2 Aquifers are classified based on their sensitivity. The following aquifer definitions are adopted.

- Principal Aquifers - These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
- Secondary Aquifers - These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:
    - Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers; and
    - Secondary B - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- Secondary Undifferentiated - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
- Unproductive Strata - These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

1.5.3 To determine the impact of contaminants on groundwater and surface water Environmental Quality Standards (EQS) and Drinking Water Standards (DWS) are used as screening criteria.

1.6 Gas Risk Assessment

1.6.1 The pragmatic approach to ground gas risk assessment by Card et al 2012 has been followed to determine the gas risk of the site. This method compares the Total Organic Content (TOC) of the Made Ground, and the age and depth of the fill to provide a basis to determine the Characteristic Situation of the site.

1.6.2 The risks associated with methane and carbon dioxide are assessed using BS8485:2015 and guidelines from CIRIA (Wilson et al 2007), the NHBC (Boyle and Witherington 2007) and CL:AIRE RB17 (Card et al 2012).

1.6.3 These methods use the gas monitoring results to produce a Gas Screening Value, which is compared to Tables set out within the guidance. Information on the proposed development is then used to determine the level of gas protection required via a scoring system. Each gas protection measure is assigned a score and combinations of the measures are used to meet the score required.

1.7 Property – Water Supply Pipes

1.7.1 Standard Water Supply Pipe Assessment has been undertaken in accordance with UK Water Industry Research (UKWIR) Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites. Ref 10/WM/03/21, published 2010. The results of soil testing have been used to identify which pipes should be used, from options including, ductile iron, steel, polyethylene (PE), PE barrier, PVC and copper.

1.7.2 *Table 4. Thresholds for pipe material*

Test Group	Testing Required	PE (mg/kg)	PVC (mg/kg)	Barrier Pipe (PE-Al-PE) (mg/kg)	Wrapped Steel	Wrapped Ductile Iron	Copper
Total VOCs	Where Preliminary Risk ssessment (PRA) has identified land potentially affected by contamination	0.5	0.125	Pass	Pass	Pass	Pass
Total BTEX & MTBE		0.1	0.03	Pass	Pass	Pass	Pass
Total SVOCs		2	1.4	Pass	Pass	Pass	Pass
EC5–EC10 aliphatic and aromatic hydrocarbons		2	1.4	Pass	Pass	Pass	Pass
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	Pass	Pass	Pass	Pass
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	Pass	Pass	Pass	Pass
Phenols		2	0.4	Pass	Pass	Pass	Pass
Creosols and chlorinated phenols		2	0.04				
Ethers	Only where identified	0.5	1	Pass	Pass	Pass	Pass
Nitrobenzene		0.5	0.4	Pass	Pass	Pass	Pass
Ketones		0.5	0.02	Pass	Pass	Pass	Pass
Aldehydes		0.5	0.02	Pass	Pass	Pass	Pass
Amines		Fail	Pass	Pass	Pass	Pass	Pass
Corrosive	Conductivity Redox pH	Pass	Pass	Pass	*Corrosive if pH <7 and conductivity >400us/cm*	*Corrosive if pH<5, Eh not neutral and conductivity >400us/cm*	*Corrosive if pH<5 or >8 and Eh positive*

APPENDIX 9: EXTENT OF SURVEY LIMITATIONS AND DEFINITIONS

EXTENT OF SURVEY AND LIMITATIONS

This report is for your sole use, and consequently no responsibility whatsoever is undertaken or accepted to any third party for the whole or any part of its contents. Paragon accept no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned or a third party with whom an agreement has not been executed. Should any third party which to use or rely upon the contents of the report, written approval must be sought from Paragon, a charge may be levied against such approval.

The report has been designed to address potential source, pathway and receptor pollutant linkages associated with the proposed development, by means of intrusive investigation. The content and findings of the report are based on data obtained by employing site assessment methods and techniques, considered appropriate to the site as far as can be interpreted from desk-based materials and a visual walkover of the site. Such techniques and methods are subject to limitations and constraints set out in the report. The findings and opinions are relevant at the time of writing, and should not be relied upon at a substantially later date as site conditions can changes. For example, seasonal groundwater levels, natural degradation of contaminants etc.

No liability can be accepted for the conditions that have not been revealed by the exploratory hole locations, or those which occur between each location. Whilst every effort will be made to interpolate the conditions between exploratory locations, such information is only indicative and liability cannot be accepted for its accuracy. By their nature, exploratory holes provide a relatively small and localised snapshot of the ground conditions relative to the size of the site.

Specific comment is made regarding the site's status under Part 2A of the Environmental Protection Act (EPA) 1990, which provides a statutory definition of Contaminated Land and as revised under The Contaminated Land (England) (Amendment) Regulations 2012. Unless specifically stated as relating to this definition, references to 'contamination' and 'contaminants' relate in general terms to the presence of potentially hazardous substances in, on or under the site.

The opinions given within this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. If additional information or data becomes available which may affect the opinions expressed in this report, Paragon reserves the right to review such information and, if warranted, to modify the opinions accordingly. Paragon reserves the right to charge additional fees for; un-anticipated second opinion reviewing of previous reports.

Paragon has prepared this report with reasonable skill, care and diligence. The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources. We cannot provide guarantees or warranties for the accuracy of third-party data, which is reviewed in good faith and assumed to be representative and accurate.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. No liability can be accepted for the effects of any future changes to such guidelines and legislation. In the event that guidance / legislation changes it may be necessary for Paragon to update or modify reports. The risk assessment is completed in line with the relevant land use agreed for the site and the time of completing the works. Changes to site conditions or land use may require a reassessment.

DEFINITIONS

For the avoidance of doubt, Paragon Building Consultancy Limited (Paragon) has prepared the following alphabetical list of definitions and reservations to aid the client in understanding the content of our advice and or written reports(s):

Accuracy	Level of agreement between true value and observed value.
ACM's	Asbestos Containing Materials
Conceptual site model	Textual and or schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the base of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process. **Note 1:** The conceptual exposure model is initially derived from the information obtained by the preliminary investigation. This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of the field investigation can provide additional data that can be used to further refine the conceptual model.
Contamination	Presence of a substance which is in, on or under land, and which has the potential to cause significant harm or to cause significant pollution of controlled water. **Note 1:** There is no assumption in this definition that harm results from the presence of the contamination. **Note 2:** Naturally enhanced concentrations of harmful substances can fall within this definition of contamination. **Note 3:** Contamination may relate to soils, groundwater or ground gas.
Controlled water	Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three-mile limit of territorial waters. **Note 1:** See Section 104 of The Water Resources Act 1991.
Enquiries	Any enquiries undertaken by Paragon of local authorities and statutory undertakers are made verbally in respect of environmental issues. Local searches are not undertaken and no responsibility is accepted for any inaccurate information provided.
Harm	It is further assumed unless otherwise stated that all necessary licences, permits etc either run with the property or are transferable to a new occupier as appropriate. Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case humans, including property.
Hazard	Inherently dangerous quality of a substance, procedure or event.
Pathway	Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.
Precision	Level of agreement within a series of measurements of a parameter.
Receptor	Persons, living organisms, ecological systems, controlled water, atmosphere, structures and utilities that could be adversely affected by the contaminant(s).

Risk	Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.
Risk assessment	Process of establishing, to the extent possible, the existence, nature and significance of risk.
Sampling	Methods and techniques used to obtain a representative sample of the material under investigation.
Soil	Upper layer of the earth's crust composed of mineral parts, organic substance, water, air and living matter. **Note 1:** In accordance with BS 10175:2001 the term soil has the meaning ascribed to it through general use in civil engineering and includes topsoil and subsoil; deposits such as clays, silt, sand, gravel, cobbles, boulders and organic deposits such as peat; and material of natural or human origin (e.g. fills and deposited wastes). The term embraces all components of soil, including mineral matter, organic matter, soil gas and moisture, and living organisms.
Source	Location from which contamination is, or was, derived. **Note 1:** This could be the location of the highest soil or groundwater concentration of the contaminant(s).
Uncertainty	Parameter, associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement.