



**FORMER TETROSYL WORKS,
BEVIS GREEN, BURY**

**REMEDIATION EARTHWORKS
INTERIM COMPLETION REPORT –
PHASE 2 NORTH (HS10, HS11 & HS13)**

For: Urban Regen Ltd.

May 2021

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Interim Remediation Earthworks Completion Report – Phase 2
North (HS10, HS11 & HS13)

Client: Urban Regen Ltd

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1. Introduction

- 1.1. Urban Regen Ltd. (URL) was instructed by Barratt Homes Manchester (BH) to carry out remediation and preparatory earthworks in accordance with the approved Outline Remediation Strategy (report ref. R2174-R01-v2) to prepare a parcel of land off Mill Road, Bury, Greater Manchester for residential redevelopment with private gardens, associated infrastructure and public open space.
- 1.2. SGP has been instructed by URL to produce individual Completion Reports following phased completion of the earthworks. This report refers to the part of the Phase 2 area located in the north of the site as detailed on Drawing 001 & 002. For the avoidance of doubt, this report only refers to this specific part Phase 2 area only, referred to as HS10, HS11 & HS13, the extent of which is indicated on the attached Drawings. Site details are:

Table 1.1: Site Details

Address	Former Tetrosyl Works, Mill Road, Bury, BL9 6RE
National Grid Reference	380950, 413950
Local Authority	Bury Metropolitan Borough Council (BMBC)
Site Area	Total ~104,000m ² / development area ~72,000m ²
Previous Site Use	Office, warehouse, and packaging operations for chemical products used in vehicle maintenance
Planning Reference	63533
Proposed Use	Residential development with private gardens, associated infrastructure, and public open space.

Figure 1.1 Site Location



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- 1.3. Planning Permission for redevelopment of the site has been granted by BMBC (ref. 63533). The Planning Conditions relevant to land contamination issues are reproduced below:

Table 1.2: Planning Conditions relating to Contaminated Land

4	No development, other than site clearance, demolition, or works relating to site investigation remediation or ground works, shall commence unless and until: - • A contaminated land Preliminary Risk Assessment report to assess the actual/potential contamination and/or ground gas/landfill gas risks at the site shall be submitted to, and approved in writing by, the Local Planning Authority. • Where actual/potential contamination and/or ground gas/landfill gas risks have been identified, detailed site investigation and suitable risk assessment shall be submitted to and approved in writing by the Local Planning Authority. • Where remediation/protection measures is/are required, a detailed Remediation Strategy shall be submitted to, and approved in writing by, the Local Planning Authority.
5	Following the provisions of Condition 4 of this planning permission, where remediation is required, the approved Remediation Strategy must be carried out to the satisfaction of the Local Planning Authority within agreed timescales; and A Site Verification Report detailing the actions taken and conclusions at each stage of the remediation works, including substantiating evidence, shall be submitted to, and approved in writing by the Local Planning Authority prior to the development being brought into use.

- 1.4. An Outline Remediation Strategy (ORS) for the whole Tetrosyl development site, was prepared by SGP (ref: R2174-R01-v2; May 2019). The general provisions of the ORS were approved by both BMBC (ref: CL584.240719.1; July 2019) and the Environment Agency (EA) (February 2020) provided that further targeted site investigation and risk assessment was carried out to confirm risks from ground gas and vapours and to pollution of controlled waters, with subsequent Detailed Remediation Strategies (DRS), including revised Remediation Criteria produced if such risks were identified.
- 1.5. SGP has since produced a Phase 2 Supplementary Site Investigation (report ref: R2174C-R02-v1; June 2020) which included targeted soil sampling in the majority of potential hotspots within Phase 2. 3 of these areas, located in the north of the Phase were identified in the original site investigations and Remediation Strategy as containing potentially significant secondary soil sources:

HS10 – Solvent Filling Room and Above Ground Storage Tanks (AST);

HS11 – Main bulk solvent ASTs, solvent recovery plant;

HS13 – Waste Sludge Recovery Plant.

Figure 1.2: HS10 Areas during site operations (2017: before BH acquisition of site – ASTs were removed before BH gained vacant position, decommissioning and removal carried out by others.



Figure 1.3: HS11 Areas during site operations (2017: before BH acquisition of site – ASTs were removed before BH gained vacant position, decommissioning and removal carried out by others.



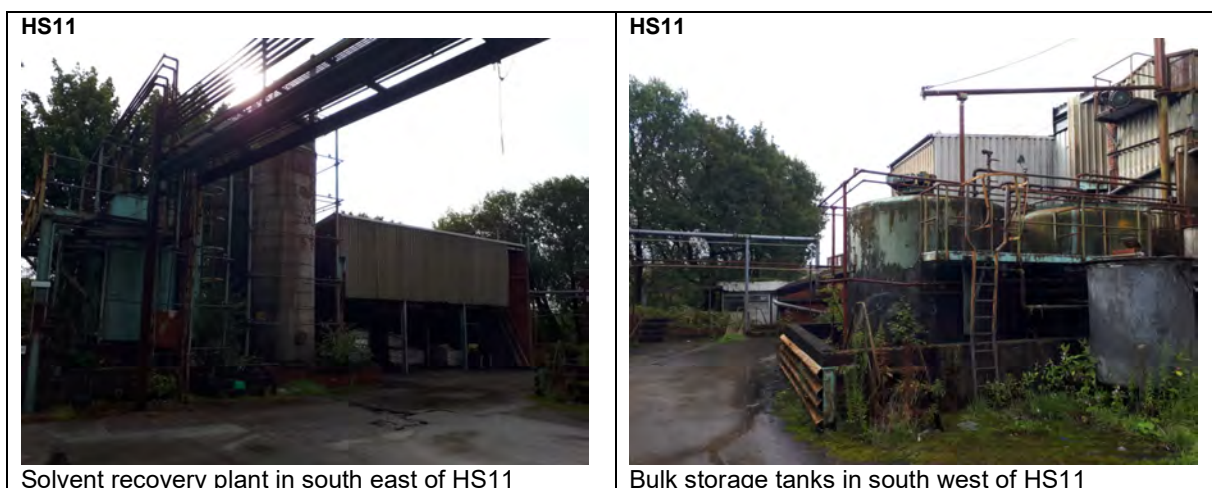


Figure 1.4: HS13 Areas during site operations (2017: before BH acquisition of site – ASTs were removed before BH gained vacant position, decommissioning and removal carried out by others.



- 1.6. The more recent SGP investigations tested the various soil media present for a comprehensive range of organic contaminants. Although low concentrations of some substituted compounds were detected, nearly all of the substances detected, and all those present at elevated concentrations, were aromatic or aliphatic hydrocarbons. The site investigation confirmed the presence of soil hydrocarbon contamination at the locations of suspected hotspots 'HS10', 'HS11' and "HS13" in Phase.
- 1.7. Based on the findings of the investigations, it was determined that that the provisions of the existing ORS could be utilised to reduce the secondary soil sources present in this area, but that groundwater and soil vapour / ground gas monitoring and Detailed Quantitative Risk Assessment (DQRA) would be required to fully determine residual risks once the soils are removed for treatment.

1.8. SGP carried out site inspections contemporaneously with the remediation earthworks and observed excavations to remove impacted soils from the three contamination hotspots area and collected verification samples from residual soils and from recovered materials in accordance with the Verification Plan.

1.9. This Completion / Verification Report contains the following information / records:

- details of completed remediation activities;
- a summary of SGP's inspection records and notes;
- validation data;
- conclusions as to the adequacy of the works completed, and;

2. Outline Remediation Strategy

2.1. Contamination Sources

- 2.1.1. The characterisation of potential contamination sources HS10, HS11 & HS 13 is discussed in detail in SGP report R2174-R06-V1, dated 28.04.2021, but are summarised below.

HS10 -High concentrations of hydrocarbons and low concentrations of other contaminants, PID readings >1,000ppm- significant source requiring removal secondary soil sources;

HS11 -High concentrations of hydrocarbons and low concentrations of other contaminants recorded high Toluene Ethylbenzene & Xylenes (TEX) including perched in groundwater samples, PID readings >1,000ppm- significant source requiring removal secondary soil sources;

HS13 -High concentrations of hydrocarbons but with a greater range of other substances present - significant source requiring removal secondary soil sources

2.2. Assessment of Ground Gas / VOC Risks

- 2.2.1. No gas or VOC vapour monitoring has been carried out in the area to date; this will be completed as part of future monitoring to confirm risks from ground gas & VOC vapours.

2.3. Assessment of Groundwater Pollution Risks

- 2.3.1. A groundwater monitoring and sampling programme has recently been complete in the area; this will be reported separately in conjunction with controlled water risk assessment.

2.4. Remediation Objectives

- 2.4.1. The remediation objectives and implementation plan for the preparatory-stage earthworks were designed to address any potential contamination that may persist on site and could present a risk to human health receptors and built development following redevelopment of the site to a residential use. Key remediation objectives were therefore:

- break significant or potentially significant future pollutant linkages resulting from the change of land use;
- remove / remediate significant pollution sources if identified during the works that pose a risk to man and/or the environment;
- respond appropriately to contingencies, in particularly the discovery of currently uncharacterised contamination;
- removal of obstructions, relict services and other deleterious materials identified during the preparatory works;
- recover materials with the potential for re-use within the development (i.e. aggregates);
- manage all emissions to controlled waters and the atmosphere (i.e. dust) during the remediation works to protect local residents, and;
- allow appropriate additional protection measures to be implemented during construction.

2.5. This report presents the factual data obtained during the implemented verification programme, concentrations are compared to the screening criteria set out in the ORS, however further assessment of the results will be carried out once the supplementary monitoring programmes and DQRA has been completed. The ORS screening criteria are set out below:

Table 6.1: Hydrocarbon screening criteria (residential use)

Contaminant	Tier 1 Assessment criteria (mg/kg unless stated)
Aliphatic C5-C6	42 (S4UL)
Aliphatic C6-C8	100 (S4UL)
Aliphatic C8-C10	27 (S4UL)
Aliphatic C10-C12	130 (S4UL)
Aliphatic C12-C16	1,100 (S4UL)
Aliphatic C16-C21	65,000 (S4UL)
Aliphatic C21-C35	65,000 (S4UL)
Aromatic C6-C7	70 (S4UL)
Aromatic C7-C8	130 (S4UL)
Aromatic C8-C10	34 (S4UL)
Aromatic C10-C12	74 (S4UL)
Aromatic C12-C16	140 (S4UL)
Aromatic C16-C21	260 (S4UL)
Aromatic C21-C35	1,100 (S4UL)

S4UL: LQM/CIEH Suitable for Use Levels (S4ULs), residential with homegrown produce land use, (at 1% SOM, 6% SOM for metals). Copyright Land Quality Management Ltd. Reproduced with permission publication number S4UL 3102. All rights reserved

2.6. Scope of Remediation Earthworks

2.6.1. Enabling works included:

- demolition of existing buildings following asbestos strip;
- establishment of security fencing, site offices and welfare facilities;
- vegetation clearance, and;
- removal of surface waste deposits.

2.6.2. Remediation earthworks included:

- removal of ground floor slabs, roads, relict foundations, and other sub-structures;.
- excavation of made ground materials to allow inspection of ground conditions and facilitate the removal of obstructions, relict structures, and voids,
- excavation of impacted materials from the 'HS10', HS11 and HS13 hydrocarbon hotspots and removal of the arisings to an area within the wider development for either treatment or disposal;

- filling / regrading of the site to specified levels for foundation, road, and sewer construction, and to permit the subsequent formation of the agreed clean soil cover in private gardens by the developer.
- 2.7. The Strategy specified that an independent contaminated land consultant would attend site to inspect the works throughout the preparatory earthworks programme to allow inspection of the ground conditions, oversee excavation of the hydrocarbon hotspots, and to confirm the presence / absence of any previously unidentified contamination. It was also specified that records of the inspections and the results of all verification and validation testing be submitted to the Regulatory Authority within a Completion Report.

3. Description of Works

3.1. General Approach

- 3.1.1. The Phase 2 North preparatory and remediation earthworks were carried out over a 3-week period from the 03rd and the 18th of February 2021. A record of SGP's inspections of the works is provided in Section 4 with information provided by URL used to supplement SGP's observations of the works, as summarised below.
- 3.1.2. All ASTs and pipework had been removed before BH took vacant position of the site and URL mobilisation. Following the demolition works and removal of surface wastes and vegetation, relict surface slabs / hardstanding and foundations were broken out and excavated and the recovered materials were transferred to a feedstock stockpile in the wider Phase 2 area to the south.
- 3.1.3. Excavation and replacement of made ground soils then commenced in HS11. Made ground was excavated down to natural ground which was encountered at shallow depths (<2m) in all areas, comprising glacial till. Where significant contamination indicators were present within the natural strata, the excavation continued to the weathered upper surface of the underlying Rough Rock sandstone formation.
- 3.1.4. An area was excavated which could be accessed by the available plant (20-30t 360° tracked excavators, with an approximate 5m reach and PID readings and observations by the full time attending consultant determined whether the material appeared to be unacceptable contaminated.
- 3.1.5. Materials assessed as likely to be unacceptably contaminated by virtue of elevated PID readings (<50ppm) were removed to a quarantine area pending further assessment to determine treatment options and materials deemed to be clean overburden were initially placed in a temporary stockpile adjacent to the excavation. Once the maximum extent of the plant had been reached and verification samples collected from the base of the excavation, the clean overburden was replaced before the next excavation commenced in the adjacent ground.
- 3.1.6. This continued as long as time allowed, with the overlapping excavations forming a single "Cell" of the maximum size that could be completed in a working day, or of dimensions determined by the footprint of the hotspot area or the lateral extent of the contamination where this extended outside the footprint of the relevant feature. At this point the replaced materials were supplemented by clean fill from other parts of the site to approximate final formation levels and the cell deemed to have been completed.
- 3.1.7. The cell was given a unique reference number before another cell was then started in the ground immediately adjacent, again overlapping slightly to ensure all potentially contaminated soils were exposed for assessment and removal where appropriate. Some parts of HS10 and HS11 were remediated in this manner simultaneously and all three of the areas described were effectively

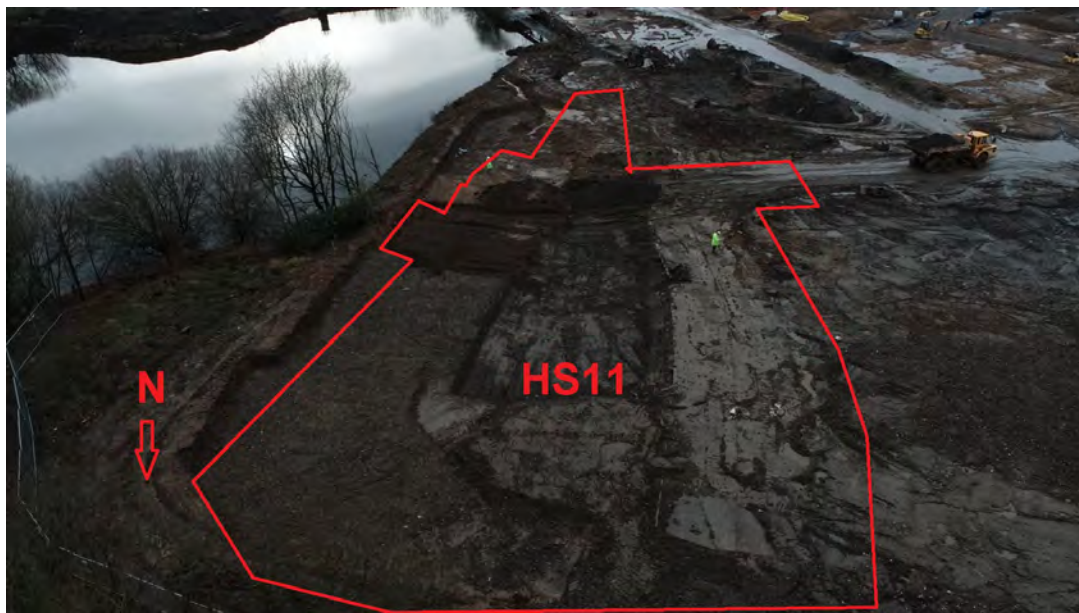
merged into a single large remediation excavation, although the individual hotspot names and cell numbers have been maintained to allow easy identification of verification sample location points. A drawing showing the location and extent of the remediation cells overlain onto the original site survey showing the various hotspot features is provided in Drawing 001.

- 3.1.8. The following aerial photographs were taken part way through the works on the 4th of February and show the approximate location of the remediation excavations relative to the Phase 1 boundary and other features.

Figure 3.1: Locations Hotspots 10, 11 (from south) & 13



Figure 3.1: Locations Hotspot 11 (from north)



- 3.1.9. The site was then regraded to development formation levels allowing for the provision of 600mm soil cover in future garden areas which is to be placed by the developer. Over nearly all of Phase 1, this involved a 'cut' into natural soils, and rockhead, although made ground was placed to some limited areas.

3.2. Materials Management

- 3.2.1. Waste materials removed from the area prior to the commencement of earthworks included scrap metal, wood, and general waste (plastics etc.). URL has provided a Waste & Disposal Log and records of the scrap metal removed offsite which will be provided in the Main Phase 2 completion reporting. Detailed documentation relating to the transfer of materials from the site is held by URL which is available upon request.

- 3.2.2. Processing of the hardstanding / masonry recovered during the preparatory earthworks from the area will be carried out when the other parts of Phase 2 are remediated, a total of approximately 200m³ of recycled aggregate recovered from Phase 1 was used as replacement fill materials or in temporary works to provide stable running surfaces throughout the area to enable access for plant. This material was part of the surplus generated in Phase 1 and the materials compliance testing was detailed in the Phase 1 Remediation Earthworks Completion Report.

- 3.2.3. A total of 1,800m³ material deemed to be potentially unacceptably contaminated was excavated and removed to a secure quarantine stockpile elsewhere in Phase 2. The material has been placed on a bunded, lined area on an intact relict slab. It is anticipated that further assessment of the soil concentrations will be carried out once site-specific remediation targets have been derived, and if appropriate a suitable soils treatment programme will be implemented to reduce concentrations to acceptable levels.

3.3. Unforeseen Contamination

- 3.3.1. No previously uncharacterised contamination was encountered during the works. Exposed made ground soils were consistent with the previous site characterisation, although a small amount of floating product was observed in groundwater ingress to an excavation of HS11. Assessment of groundwater conditions in the area following the completion of the works is scheduled and will be reported separately.

3.4. Constraints and Limitations

- 3.4.1. The only constraints to the remediation earthworks completed within the working area was the eastern boundary which extended into the slope down to the adjacent reservoir. In advance of the works a bund was formed along this area to preclude any runoff into the reservoir, excavations were only extended up to the toe of this bund. Excavations to the north were constrained by an ecology barrier demarking the protection zone associated with a badger sett. Excavation to the west and south could be continued without constraint, although an access road to the west of Cell 10 was left in-situ.

- 3.4.2. All excavations were continued down to competent sandstone; this was at relatively shallow depth, varying from 1.5m to 3.5m from contemporary ground levels. In most of the entries groundwater ingress only occurred at the base of the excavations coinciding with the sandstone. Exceptions to this were water ingress from an old clay pipe drain which ran from north to south close to the eastern extent of the area (which was stanked at the upgradient end and partially removed) and water perched within a number of brick structures in the west of HS10 (which were fully removed).

4. Inspections and Testing

4.1. Site Attendance and Testing

- 4.1.1. SGP attended site 11 times during the Phase 1 preparatory earthworks over a 3-week period (03.02.2021-18.02.2021). A photographic and written record of the works has been made and representative images are presented in Appendix A.
- 4.1.2. Where samples were collected for chemical analysis, appropriate containers were used, the samples were stored in a chilled cool box and were couriered to accredited laboratories (Element Material Technology, Deeside and Chemtest Ltd, Newmarket) within 48 hours of collection. SGP retains chain of custody documentation and laboratory analysis certificates are provided in Appendix B.
- 4.1.3. Photo-Ionisation Detectors (PIDs) were deployed to measure volatile organic carbon (VOC) concentrations within excavated soils by introducing the air inlet into fissures, holes or the headspace of containers. The instruments are calibrated against isobutylene which requires a tolerably small correction factor against most of the individual contaminants identified. Although applying these to a complex mixture of hydrocarbons is not possible it is solely used as a screening tool with sample analysis used to determine the actual soil concentrations. Calibration certificates for the equipment are provided in Appendix C.
- 4.1.4. A summary of the dates and records of inspections undertaken by SGP within the subject area is presented below:

Table 4.1 Summary of inspection records

Date	Description of works	SGP activities	Records
03.02.21	HS11-Cell 1 & HS10-Cell 1 completed, HS10-Cell 2 ceased due to fire hazard.	Observe, record and photograph excavations, screen for VOC vapours using PID, advise on status of residual soils, collect verification samples.	HS11-Cell 1 HS10-Cell 1 HS10-Cell 2 21/1453 21/1589
04.02.21	HS11-Cells 3, 4 & 5 completed		HS11-Cell 3 HS11-Cell 4 HS11-Cell 5 21/1589
05.02.21	HS11 Cells 5 & 6 Completed		HS11-Cell 5 HS11-Cell 6 21/1589
08.02.21	HS10 Cell 3 and HS11 Cells 7 & 8 completed		HS11-Cell 7 HS11-Cell 8 HS10-Cell 3 21/1773
09.02.21	HS10 Cell 4 and HS11 Cell 9 Completed		HS11-Cell 9 HS10-Cell 4 21/1772

Date	Description of works	SGP activities	Records
10.02.21	HS11-Cell 10 commenced, HS11Cell 11 commenced	Observe, record and photograph excavations, screen for VOC vapours using PID, advise on status of residual soils, collect verification samples.	HS11-Cell 10 HS11-Cell 11 21/1883
11.02.21	HS11-Cell 11 Completed		HS11-Cell 11 21/1883
15.02.21	HS10 Cell 5 commenced		HS10-Cell 5 21/2151
16.02.21	HS10-Cell 5 completed		HS10-Cell 5 21/2151
17.02.21	HS11-Cell 12 completed		HS11-Cell 12 21/2280
18.02.21	HS13-Cells 1-3 completed		HS13-Cell 1 HS13-Cell 2 HS13-Cell 3 21/2280

4.2. 'HS11' Hydrocarbon Hotspot Removal

4.2.1. SGP attended site on 03.02.2021-17.02.2021 to oversee and validate the removal of impacted soils associated with the 'HS11' hydrocarbon hotspot. The works involved the excavation and side-cast of soils exhibiting contamination indicators such as: hydrocarbon odours, staining and/or significantly elevated readings of volatile organic compounds (VOCs) above 50ppm when screened with a photoionization detector (PID), as per the requirements of the SGP Outline Remediation Strategy / E3P Remediation & Enabling Works Strategy.

4.2.2. Made ground conditions in HS11 were generally represented by a veneer of made ground of less than 1m comprising granular stone (sub-base to the former slabs and tank bases) with residual concrete slabs only present along the western access road. This was left in-situ until the final excavations (Cell12) to enable continued access.

4.2.3. In the extreme west of HS11 made ground comprising generally cohesive fill deepened to 2.5m and extended to competing rockhead within the historic quarry. In the extreme east of HS11 a linear backfilled trench containing a 300mm diameter clay pipe was associated with another local deepening of the cohesive fill. Elsewhere natural superficial cohesive Glacial Till boulder present at depth between 0.5-1.0m, extending to rockhead at 2.5m to 3.5m. The upper 0.5m of the Rough rock was generally heavily weathered and recovered as sand, gravel and cobbles of sandstone.

4.2.4. Moderate to strong hydrocarbon odours were sporadically encountered in the made ground and Till, however very strong hydrocarbon odours and PID readings in excess of 1,000ppm were more widely distributed in the upper weathered Rough Rock strata. Therefore, the excavations extended to the full depth of the made ground and superficial strata and included the weathered upper part of the Rough Rock formation to competent sandstone strata.

- 4.2.5. The total area of the excavation is irregularly shaped and extends to approximately 1,880m². Approximately 1,000 m³ of impacted soils removed and subsequently placed on an impermeable surface in the central part of Phase 2. The location of the 'HS11' hotspot area and the excavation extents and locations of the validation samples are shown on Drawing D01
- 4.2.6. Apart from local ingress of perched water from the eastern trench and drain, which were blocked off, water ingress did not occur above the top of the Rough Rock sandstone unit. Based on previous monitoring data this is considered to be 'true' groundwater rather than a perched water body. A thin sheen or occasional globules of product were noted in the central and central eastern Cells 4, 5, 6 & 7; however, a discreet layer of floating product was only noted in the central part of Cell 1. This was observed to be laterally limited, however a sample was obtained for analysis, reference HS11-Cell 1-P1.

Figure 4.1: 'HS11' Photograph showing localised product with groundwater ingress



- 4.2.7. A copy of the laboratory report (Element ref. 21/1453) is provided in Appendix B, indicating the material is predominantly (>76%) C6-C10 aromatic hydrocarbons with lower proportions of around 15% aliphatic hydrocarbons in the same range and around 10% mixed aliphatic and aromatic hydrocarbons in the C10-C12 range. Benzene was not detected with toluene and xylenes the dominant individual compounds positively identified. As with the source characterisation testing,

only traces of substituted hydrocarbons were present and interpretation of the chromatography confirm the substance is degraded gasoline.

4.2.8. 76 soil samples were collected by SGP from the sidewalls and base of the excavation which were submitted for banded hydrocarbon analysis. The results are compared to the screening criteria presented in Table 6.1 of the SGP Outline Remediation Strategy and are summarised in Table 4.2 below. Copies of the laboratory report certificates are provided in Appendix B.

Table 4.2 'HS11' Hydrocarbon Hotspot Removal Validation Samples Results

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated) *	Exceedances: number & sample(s)
Aliphatic TPH >C5-C6	76	<0.1-10	42	None
Aliphatic TPH >C6-C8	76	<0.1-465	100	14 Cell 1-SS7, Cell 4-SS2, SS3 & SS4, Cell 5 SS3 & SS4, Cell 6 SS3 & SS4, Cell 7 SS2, Cell 9 SS2 & SS4, Cell 10 SS3 & SS7, Cell 11 SS4
Aliphatic TPH >C8-C10	76	<0.1-1719	27	21 Cell 1-SS7, Cell 4-SS2, SS3 & SS4, Cell 5 SS3 & SS4, Cell 6 SS3 & SS4, Cell 7 SS2, SS3, SS4 & SS5, Cell 8 SS3 & SS4, Cell 9 SS2 & SS4, Cell 10 SS3 & SS7, Cell 11 SS2, SS4 & SS12
Aliphatic TPH >C10-C12	76	<0.1-3105	130	18 Cell 1-SS7, Cell 4-SS2, SS3 & SS4, Cell 5 SS3 & SS4, SS3 & SS4, Cell 7 SS2, Cell 9 SS2, Cell 10 SS3, SS5 & SS7, Cell 11 SS2, SS3, SS4 & SS12
Aliphatic TPH >C12-C16	76	<4-821	1,100	None
Aliphatic TPH >C16-C21	76	<7-264	65,000	None
Aliphatic TPH >C21-C35	76	<7-1330	65,000	None
Aromatic TPH >C5-C7	76	<0.1-12	70	None
Aromatic TPH >C7-C8	76	<0.1-2120	130	14 Cell 1-SS7, Cell 4-SS2, SS3 & SS4, Cell 5 SS3 & SS4, Cell 6 SS3 & SS4, Cell 7 SS2 & SS4, Cell 9 SS4, Cell 10 SS3 & SS7, Cell 11 SS3
Aromatic TPH >C8-C10	76	<0.1-2625	34	22 Cell 1-SS7 & SS8, Cell 3 SS3, Cell 4-SS2, SS3 & SS4, Cell 5 SS3 & SS4, Cell 6 SS3 & SS4, Cell 7 SS2, SS3, SS4 & SS5, Cell 8 SS2, SS3 & SS4, Cell 9 SS2 & SS4, Cell 10 SS2 & SS7, Cell 11 SS4

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated) *	Exceedances: number & sample(s)
Aromatic TPH >C10-C12	76	<0.1-534	74	20 Cell 1-SS7, Cell 4-SS2, SS3 & SS4, Cell 5 SS2, SS3 & SS4, Cell 6 SS4, Cell 7 SS2, SS3, SS4 & SS5, Cell 9 SS2 & SS4, Cell 10 SS3, SS5 & SS7, Cell 11 SS3 & SS12
Aromatic TPH >C12-C16	76	<0.4-147	140	None
Aromatic TPH >C16-C21	76	<7-205	260	None
Aromatic TPH >C21-C35	76	<7-594	1,100	None

4.2.9. It is noted that dilution of over 100x would have been required to achieve the calibration range for GRO (C5-C10) range in a number of samples. For the purposes of this assessment, the results that are outside the calibration range are considered to be true exceedances of the screening criteria, requiring further consideration in respect of both risks to controlled waters through migration to groundwater and human health through vapour inhalation.

4.2.10. A summary table of the results showing the exceedances is presented in Appendix B. A drawing showing the locations of the exceedances is presented in Drawing 002.

4.3. 'HS10' Hydrocarbon Hotspot Removal

4.3.1. SGP attended site on 03.02.2021-16.02.2021 to oversee and validate the removal of impacted soils associated with the 'HS10' hydrocarbon hotspot. The works involved the excavation and side-cast of soils exhibiting contamination indicators such as: hydrocarbon odours, staining and/or significantly elevated readings of volatile organic compounds (VOCs) above 50ppm when screened with a photoionization detector (PID), as per the requirements of the SGP Outline Remediation Strategy / E3P Remediation & Enabling Works Strategy.

4.3.2. Made ground conditions in HS1 were variable; in the eastern half of the area, a generally thin veneer of made ground (<1m) was present directly above natural cohesive superficial deposits of Glacial Till. In the western half, relict brick foundations and concrete beams were present creating a series of chambers of voids loosely backfilled with brick, concrete, stonemasonry with variable quantities of timber, slate, and scrap metal, probably representative of historical construction and demolition arisings, these deposits extended to variable depth of between 1.5 and 3.0m depth. Rockhead was encountered in all Cells below the made ground/Glacial Till at 2.5m to 3.5m. The upper 0.5m of the Rough rock was generally heavily weathered and recovered as sand, gravel and cobbles of sandstone.

4.3.3. Moderate to strong hydrocarbon odours were sporadically encountered in the made ground and clay, however very strong hydrocarbon odours and PID readings in excess of 1,000ppm were more

widely distributed in the upper weathered Rough Rock strata but confined to the northern parts of the area. Therefore, the excavations extended to the full depth of the made ground and superficial strata and included the weathered upper part of the Rough Rock formation to competent sandstone strata.

- 4.3.4. Whilst excavating the start of Cell 2 at the northern end of HS10, the machine bucket teeth scraping on the rough rock sandstone caused sparking which ignited vapour accumulated in the pore space of the loose excavated soils accumulated at the rear of the excavation. A series of small flames were visible for a period of several minutes before the fire was extinguished by placement of additional soils on top of the material. The lower explosive limit of white spirit in air is around 0.6% so the recorded PID readings of above 1,000 ppm in the excavated soils were of the same order of magnitude, and greater concentrations would be expected within undisturbed soil in source zones.
- 4.3.5. The area of the excavation is approximately rectangular shaped and extends to approximately 700m². Approximately 600 m³ of impacted soils removed and subsequently placed on an impermeable surface in the central part of Phase 2. The location of the 'HS10' hotspot area and the excavation extents and locations of the validation samples are shown on Drawing D01.
- 4.3.6. Perched water was present within the granular fill materials encountered in the west of the HS10 area and within a number of pipes and drains which initially flooded excavations with a dark silty water, occasionally exhibiting a hydrocarbon sheen. However, the water appeared contained within the relict foundation structures present and significant recharge did not occur. In the south of HS10 ingress or up flow occurred at depths below 2.5m in the natural strata at the top of the Rough Rock sandstone unit. Based on previous monitoring data this is considered to be 'true' groundwater rather than a perched water body; this water had no visible sheen or globules or layers of floating product.
- 4.3.7. 76 soil samples were collected by SGP from the sidewalls and base of the excavation which were submitted for banded hydrocarbon analysis. The results are compared to the screening criteria presented in Table 6.1 of the SGP Outline Remediation Strategy and are summarised in Table 4.2 below. Copies of the laboratory report certificates are provided in Appendix B.

Table 4.2 'HS10' Hydrocarbon Hotspot Removal Validation Samples Results

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated) *	Exceedances: number & sample(s)
Aliphatic TPH >C5-C6	33	<0.1-33	42	None
Aliphatic TPH >C6-C8	33	<0.1-1067	100	11 Cell 3-SS3, Cell 4 -SS1, SS4, SS5, SS6, SS7, SS8 & SS9, Cell 5 -SS3,

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated) *	Exceedances: number & sample(s)
				SS4 & SS5
Aliphatic TPH >C8-C10	33	<0.1-605	27	11 Cell 3-SS3, Cell 4-SS1, SS4, SS5, SS6, SS7, SS8 & SS9, Cell 5 SS3, SS4 & SS5
Aliphatic TPH >C10-C12	33	<0.2-2160	130	9 Cell 3-SS3, Cell 4- SS4, SS5, SS6, SS7 & SS8, Cell 5 SS1, SS2, SS3, SS4, SS5 & SS8
Aliphatic TPH >C12-C16	33	<4-925	1,100	None
Aliphatic TPH >C16-C21	33	<7-925	65,000	None
Aliphatic TPH >C21-C35	33	<7-481	65,000	None
Aromatic TPH >C5-C7	33	<0.1-1	70	None
Aromatic TPH >C7-C8	33	<0.1-902	130	8 Cell 3-SS3, Cell 4 -SS1, SS4, SS5, SS7 & SS8, Cell 5 -SS4 & SS5
Aromatic TPH >C8-C10	33	<0.1-1074	34	9 Cell 3-SS3, Cell 4 -SS1, SS4, SS5, SS7 & SS8, Cell 5 -SS3, SS4 & SS5
Aromatic TPH >C10-C12	33	<0.2-594	74	8 Cell 3-SS3, Cell 4- SS4, SS5, SS6, SS7 & SS8, Cell 5 SS2 & SS8
Aromatic TPH >C12-C16	33	<4-505	140	2 Cell 5 SS2 & SS8
Aromatic TPH >C16-C21	33	<7-1098	260	3 Cell 4-SS10, Cell 5 SS2 & SS8
Aromatic TPH >C21-C35	33	<7-1393	1,100	None

4.3.8. It is noted that dilution of over 100x would have been required to achieve the calibration range for GRO (C5-C10) range in a number of samples. For the purposes of this assessment, the results that are outside the calibration range are considered to be true exceedances of the screening criteria, requiring further consideration in respect of both risks to controlled waters through migration to groundwater and human health through vapour inhalation.

4.3.9. A summary table of the results showing the exceedances is presented in Appendix B. A drawing showing the locations of the exceedances is presented in Drawing 002.

4.4. 'HS13' Hydrocarbon Hotspot Removal

4.4.1. SGP attended site on 18.02.2021 oversee and validate the removal of impacted soils associated with the 'HS13' hydrocarbon hotspot. The works involved the excavation and side-cast of soils exhibiting contamination indicators such as: hydrocarbon odours, staining and/or significantly

elevated readings of volatile organic compounds (VOCs) above 50ppm when screened with a photoionization detector (PID), as per the requirements of the SGP Outline Remediation Strategy / E3P Remediation & Enabling Works Strategy.

- 4.4.2. Made conditions in HS13 were generally represented by a veneer of made ground of less than 1.5m comprising granular stone (sub-base to the former concrete access ramp). Some visual indicators of contamination such as dark staining and mild chemical/hydrocarbon odours were present so the made ground was removed.
- 4.4.3. No hydrocarbon odours were recorded in the made ground and clay, and PID readings peaked at 20ppm. excavations extended to the full depth of the made ground and superficial strata and included the weathered upper part of the Rough Rock formation to competent sandstone strata.
- 4.4.4. The total area of the excavation is approximately square shaped and extends to approximately 180m². Approximately 200 m³ of impacted soils removed and subsequently placed on an impermeable surface in the central part of Phase 2. The location of the 'HS13' hotspot area and the excavation extents and locations of the validation samples are shown on Drawing D01.
- 4.4.5. Apart from local ingress of perched water from the former historical quarry to the north below depths of 2m no water ingress occurred.
- 4.4.6. 3 soil samples were collected by SGP from the sidewalls and base of the excavation which were submitted for banded hydrocarbon analysis. The results are compared to the screening criteria presented in Table 6.1 of the SGP Outline Remediation Strategy and are summarised in Table 4.2 below. Copies of the laboratory report certificates are provided in Appendix B.

Table 4.2 'HS13' Hydrocarbon Hotspot Removal Validation Samples Results

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated) *	Exceedances: number & sample(s)
Aliphatic TPH >C5-C6	3	<0.1	42	None
Aliphatic TPH >C6-C8	3	<0.1-1	100	None
Aliphatic TPH >C8-C10	3	<0.1-2.2	27	None
Aliphatic TPH >C10-C12	3	<0.2-432.2	130	1 Cell 1-SS3
Aliphatic TPH >C12-C16	3	<4-972	1,100	None
Aliphatic TPH >C16-C21	3	<7-1032	65,000	None
Aliphatic TPH >C21-C35	3	<7-397	65,000	None
Aromatic TPH >C5-C7	3	<0.1	70	None
Aromatic TPH >C7-C8	3	<0.1	130	None
Aromatic TPH >C8-C10	3	<0.1-2	34	None
Aromatic TPH >C10-C12	3	<0.2-150	74	1 Cell 1-SS3

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated) *	Exceedances: number & sample(s)
Aromatic TPH >C12-C16	3	<4-532	140	1 Cell 1-SS3
Aromatic TPH >C16-C21	3	<7—612	260	1 Cell 1-SS3
Aromatic TPH >C21-C35		<7-306	1,100	None

4.4.7. A summary table of the results showing the exceedances is presented in Appendix B. A drawing showing the locations of the exceedances is presented in Drawing 002.

5. Conclusions

- 5.1. URL has carried out the Phase 1 preparatory and remediation earthworks at the former Tetrosyl Works, Mill Road, Bury site and SGP has undertaken independent inspections and testing of materials in accordance with the approved Outline Remediation Strategy (ORS). This involved the removal of secondary soil contamination sources down to competent bedrock, the level of which broadly intersects with the local groundwater levels.
- 5.2. The ground conditions and types of soil contamination encountered were consistent with those described in the previous reporting and no revisions to the agreed Strategy have been required as a result of the inspections, investigations and assessments carried out contemporaneously with the remediation earthworks. While removal of the hydrocarbon impacted soils for HS10, HS11 & HS15 was deemed an appropriate remediation objective, further assessment of risks from ground gas & vapours, and to controlled waters via leaching to groundwater are required.
- 5.3. It is concluded that the preparatory remediation earthworks within the specific area under consideration have been completed in accordance with the ORS, but that remaining remediation and mitigation measures to manage residual risks will be determined by further investigation and risk assessment.

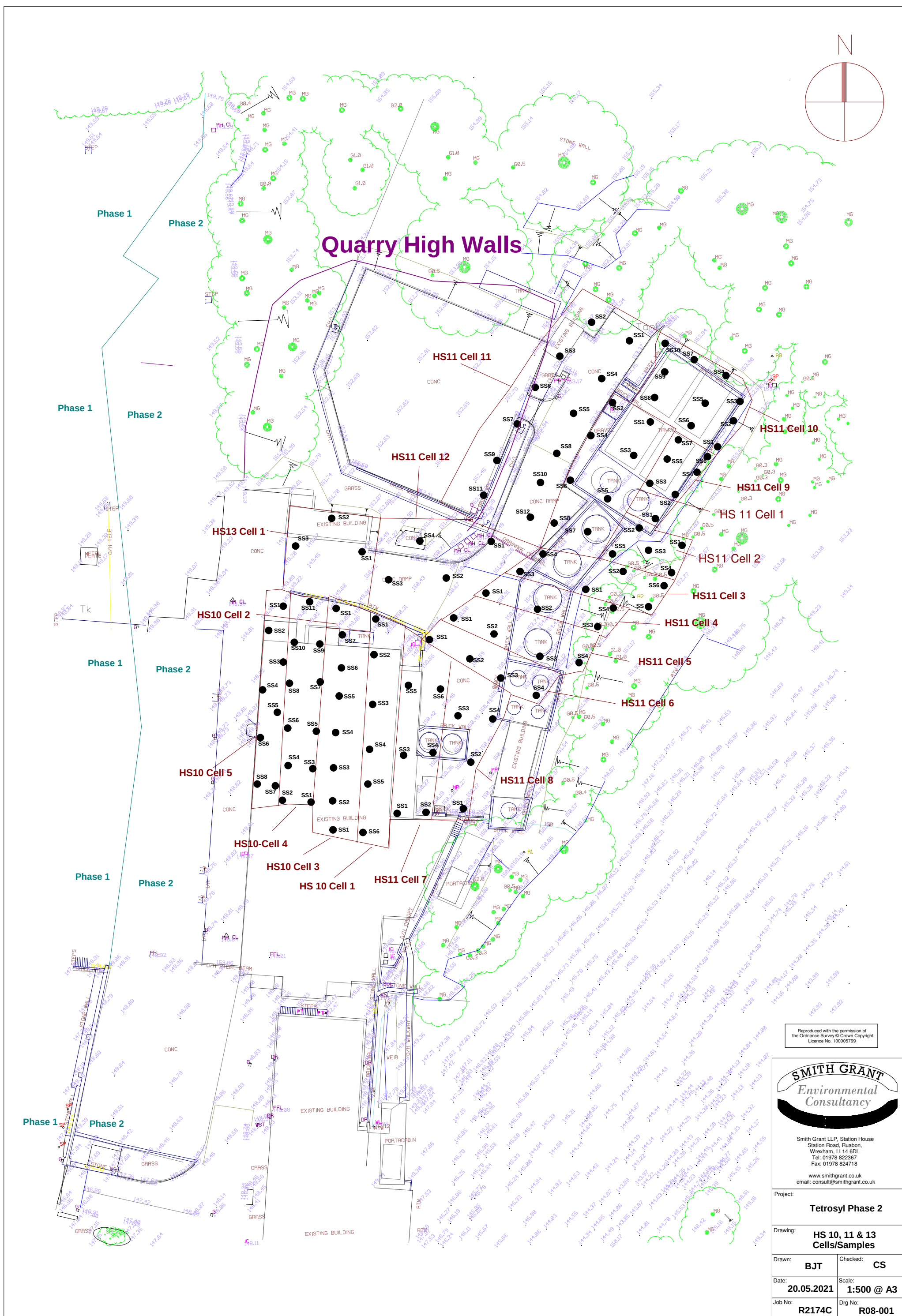
6. Recommendations

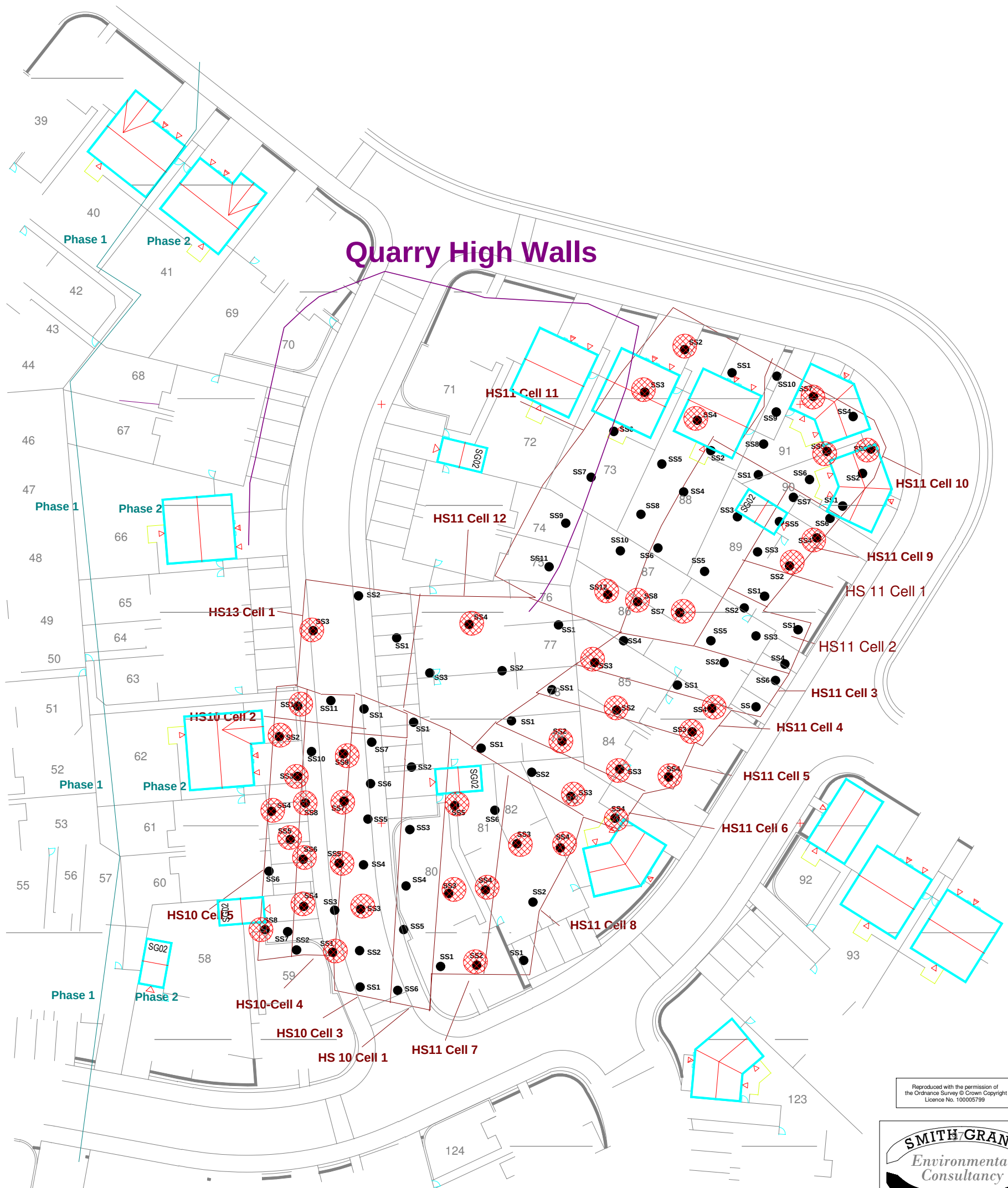
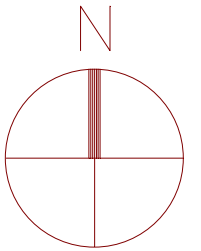
- 6.1. In accordance with the recommendations contained within the SGP Outline Remediation Strategy, the developer is required to place a soil cover system in all gardens / landscaped areas and install gas protection measures. Although further assessment of ground gas & vapour will be carried out, it can be anticipated that dedicated VOC vapour protection measures will be required throughout the area described in this report.
- 6.2. Further assessment of the significance of the residual concentrations of contaminants at the base of the excavations is required, in respect of the pollution of controlled waters, specifically the aquifer in the Rough Rock and downgradient receptors. A programme of groundwater monitoring and sampling is currently underway within the area, and downgradient of, HS10, HS11 & HS13, and the results will be used to inform a site-specific quantitative risk assessment and the generation of remediation criteria against which the significance of the residual concentrations noted in this report can be assessed.

Limitations

- 6.3. SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines, and responses by the statutory and regulatory authorities.
- 6.4. This report has been prepared by Smith Grant LLP, for the sole and exclusive use of Urban Regen Ltd and Barratt Homes Manchester, the benefit of this report may not be assigned to any third party without the prior agreement in writing of Smith Grant LLP.
- 6.5. Reasonable skill, care and diligence has been exercised within the timescale and budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.

DRAWINGS





Residual Concentrations Exceed Tier 1 (Resideitnial Human Health) Screening Criteria

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Project:	
Tetrosyl Phase 2	
Drawing:	
HS 10, 11 & 13 Tier 1 Exceedances	
Drawn:	Checked:
BJT	CS
Date:	Scale:
20.05.2021	1:500 @ A3
Job No:	Drg No:
R2174C	R08-002

APPENDIX A

Remediation Excavation Records

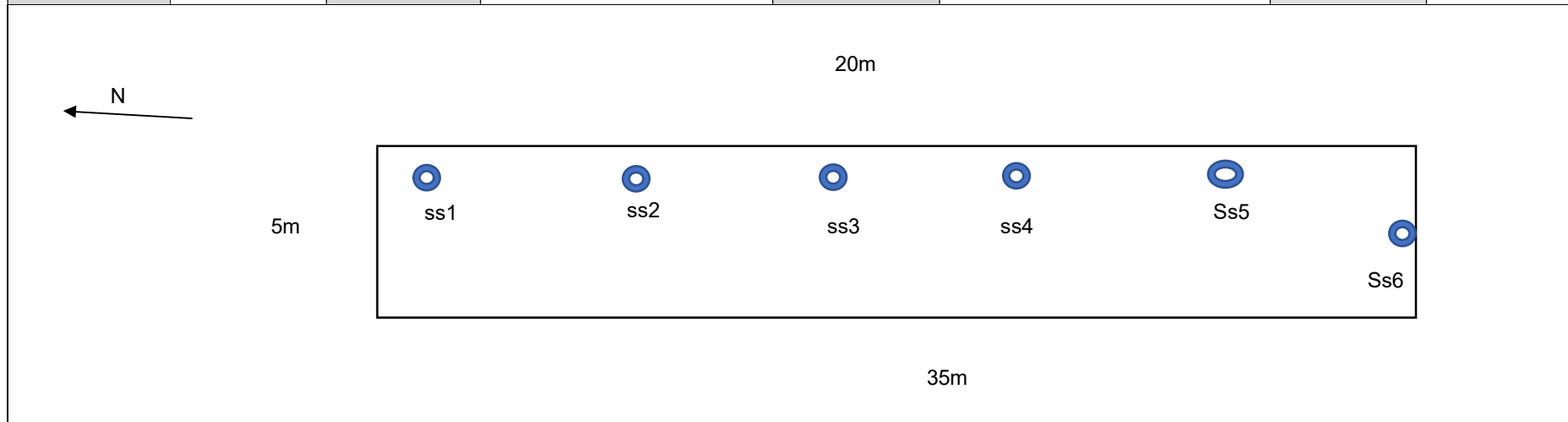
HS10 Cell 1

Job number	R2174c	Date	03.02.21	Cell No.	HS10 Cell 1	Compiled by	BJT
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 General view south over Cell during excavation	 Eastern boundary (with HS11) Cell excavated to competent rockhead in rough rock – ingress groundwater at rockhead – no product	 Sample location ss1 at base of excavation in north
	 Sample location ss2	No Photo

HS10 Cell 1

Approx. turnover volume:	175m ³	Depth made ground:	1-2.5m	Base of Cell Depth:	1.5m-2.5m	Source replacement Fill:	Replaced materials Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete. Thin weathered coal at rockhead in one location, rest weathered Rough Rock, becoming competent at 2.0-2.5m						
Groundwater:	Minor entry at rockhead	PID readings:	50ppm (North)— <1ppm (south)	Lab Samples:	HS10cell1ss1 HS10cell1ss2 HS10cell1ss3 HS10cell1ss4 HS10cell1ss5 HS10cell1ss6	Lab ref:	21/1589



HS10 Cell 2

Job number	R2174c	Date	03.02.21	Cell No.	HS10 Cell 2	Compiled by	BJT
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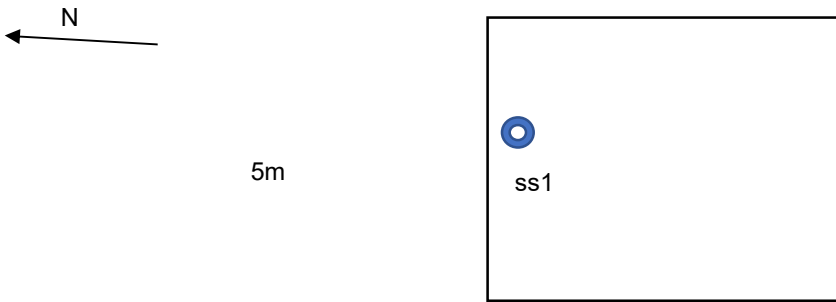


General view west over HS10-Cell 2 – excavation continued to competent Rough Rock Strata where ingress groundwater commenced



General view south over HS10-Cell 2- hydrocarbon sheen visible on groundwater ingress. Very strong white spirit / gasoline odour

HS10 Cell 2

Approx. turnover volume:	22m ³	Depth made ground:	2.0m	Base of Cell Depth:	2.0m	Source replacement Fill:	Replaced materials Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete. Strong odour and white spirit vapour temporarily ignited from sparking of machine bucket teeth on sandstone resulting in minor fire—excavation temporarily backfilled while further control measures put in place and working methods adopted						
Groundwater:	Minor entry at rockhead	PID readings:	1,000ppm	Lab Samples:	HS10cell2ss1	Lab ref:	21/1589
 The diagram shows a rectangular site plan. A blue circle with a dot in the center is labeled 'ss1'. To the left of the rectangle, there is a north arrow pointing left, labeled 'N', and a scale bar labeled '5m'.							

HS10 Cell 3

Job number	R2174c	Date	08.02.2021	Cell No.	HS10 Cell 3	Compiled by	BJT
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General view north over Cell



Commencement Excavation in south – temporary removal clean overburden



Cell excavated northwards



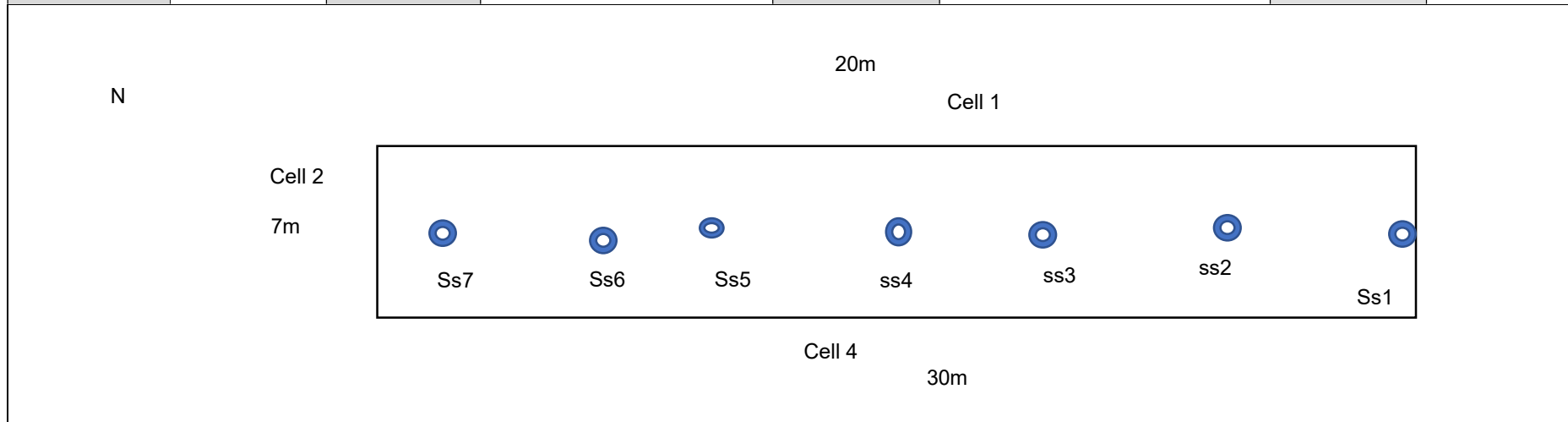
Weathered coal present at rockhead



Boundary between natural clay (excavated) and underlying Rough Rock (excavated to competent rockhead)

HS10 Cell 3

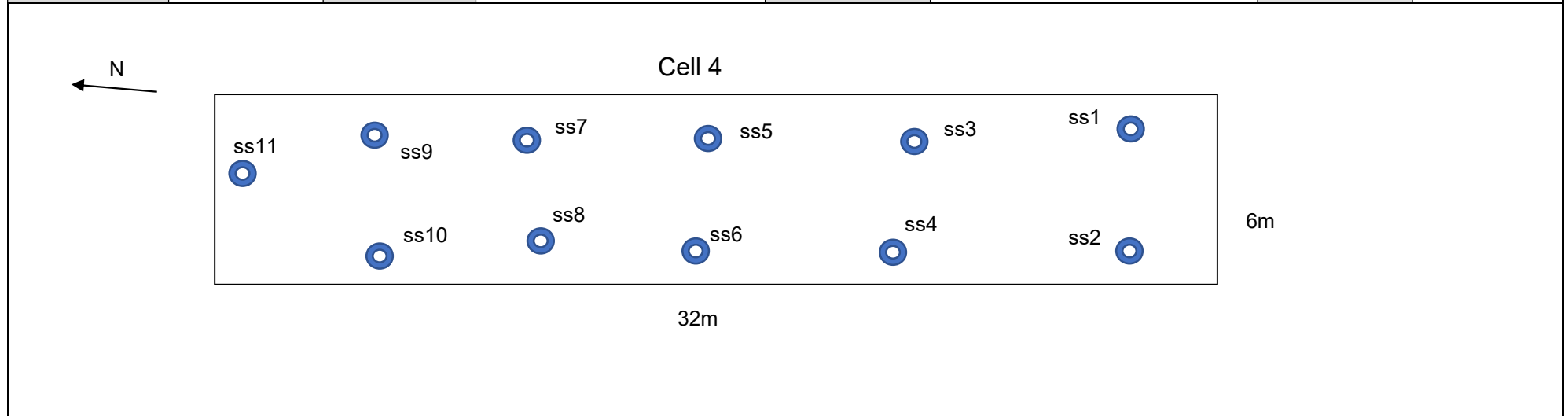
Approx. turnover volume:	175m ³	Depth made ground:	1-2.5m	Base of Cell Depth:	1.5m-2.5m	Source replacement Fill:	Replaced materials Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete. Thin weathered coal at rockhead in one location, rest weathered Rough Rock, becoming competent at 2.0-2.5m						
Groundwater:	None	PID readings:	150ppm (Centre / North)– <1ppm (south)	Lab Samples:	HS10cell3ss1 HS10cell3ss2 HS10cell3ss3 HS10cell3ss4 HS10cell3ss5 HS10cell3ss6 HS10cell3ss7	Lab ref:	21/1773



Job number	R2174c	Date	09.02.21	Cell No.	HS10 Cell 4	Compiled by	CS
 General view		 Sample location: ss4		 Sample location: ss5			
 Sample location: ss7		 Sample location: ss9		 Sample location: ss10			

HS10 Cell4

Approx. turnover volume:	528m ³	Depth made ground:	2.5m – 3mm	Base of Cell Depth:	3.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Blackish brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete. Slabs of concrete. Occasional pipes, wood, rags, iron scrap.						
Groundwater:	Perched groundwater within made ground rapid inflow at 1m – 1.1m (north)	PID readings:	10ppm – 160ppm	Lab Samples:	HS10cell4ss1 HS10cell4ss2 HS10cell4ss3 HS10cell4ss4 HS10cell4ss5 HS10cell4ss6 HS10cell4ss7 HS10cell4ss8 HS10cell4ss9 HS10cell4ss10 HS10cell4ss11	Lab ref:	21/1772b1V2



HS10 Cell5

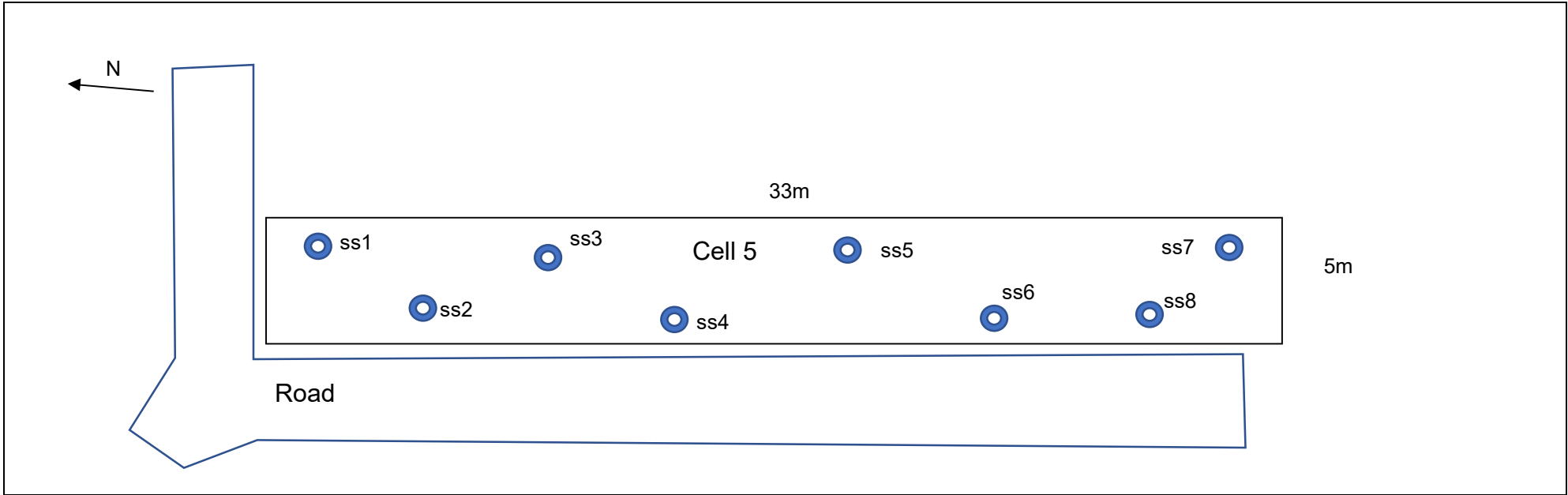
Job number	R2174c	Date	15.02.21 – 16.02.21	Cell No.	HS10 Cell 5	Compiled by	CS
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 General view to the north	 General view to the north	 General view to the south
 Relict foundations	 Sample location: ss1	 Sample location: ss2
 Sample location: ss3	 Sample location: ss4	 Sample location: ss5

HS10 Cell5

 Sample location: ss7	 Sample location: ss8	
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Approx. turnover volume:	413m ³	Depth made ground:	between 1.5m and 3.5mm	Base of Cell Depth:	2m -3.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Blackish brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete. Slabs of concrete. Occasional pipes, wood, rags, iron scrap.						
Groundwater:	Groundwater at between 2m and 2.5m to the south.	PID readings:	Higher readings to the north, 10—100ppm. Generally, < 20ppm to the south.	Lab Samples:	HS10cell5ss1 HS10cell5ss2 HS10cell5ss3 HS10cell5ss4 HS10cell5ss5 HS10cell5ss6 HS10cell5ss7 HS10cell5ss8	Lab ref:	21/2151b1



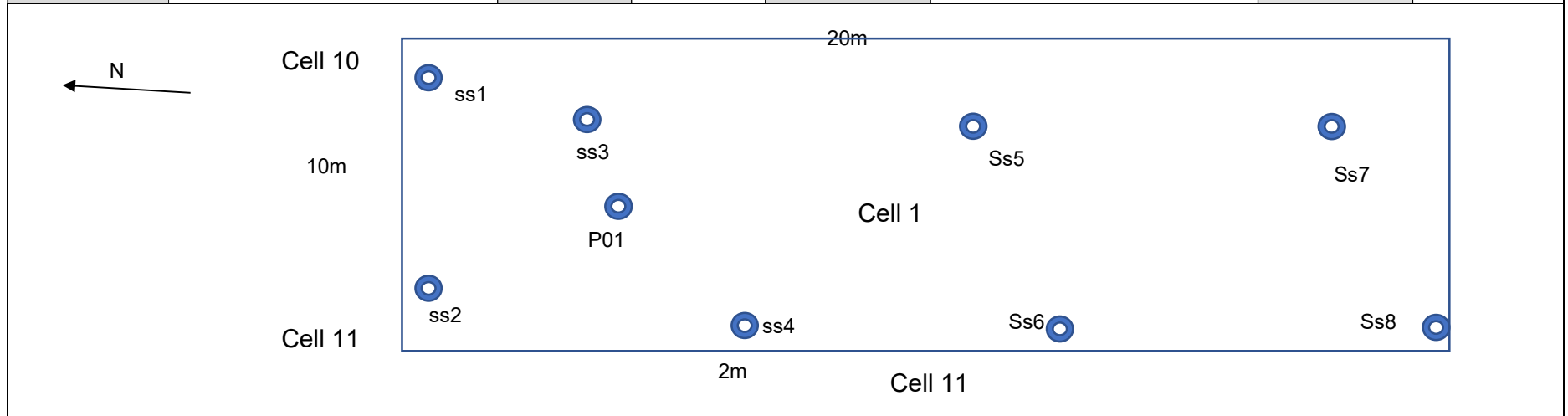
HS11 Cell1

Job number	R2174c	Date	03.02.21	Cell No.	HS11 Cell1	Compiled by	bjt
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 Initial Trial Pits Excavated to locate start remediation excavation and establish depth	 Excavation extended through granular made ground	 Excavation extended to competent rough rock where contamination indicators present (mainly below clay in weathered rough rock)
	 Thin free product (black) on top of groundwater ingress in centre of cell	 Cell backfilled with clean overburden and recycled aggregate

HS11 Cell1

Approx. turnover volume:	250m ³	Depth made ground:	1.0m	Base of Cell Depth:	2.5m-3m	Source replacement Fill:	Site-won (clean overburden or aggregate)
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Blackish brown/grey slightly clayey to clayey sandy gravel. Moderate hydrocarbon odours becoming string at base of clay– small area of black product sleeping in middle of excavation						
Groundwater:	Groundwater inflow base where competent Rough Rock rockhead	PID readings:	5ppm - 1,000ppm	Lab Samples:	HS11cell1- P1 (PRODUCT) HS11cell1- SS1 HS11cell1- SS2 HS11cell1- SS3 HS11cell1- SS4 HS11cell1- SS5 HS11cell1- SS6 HS11cell1- SS7 HS11cell1- SS8	Lab ref:	21/1453

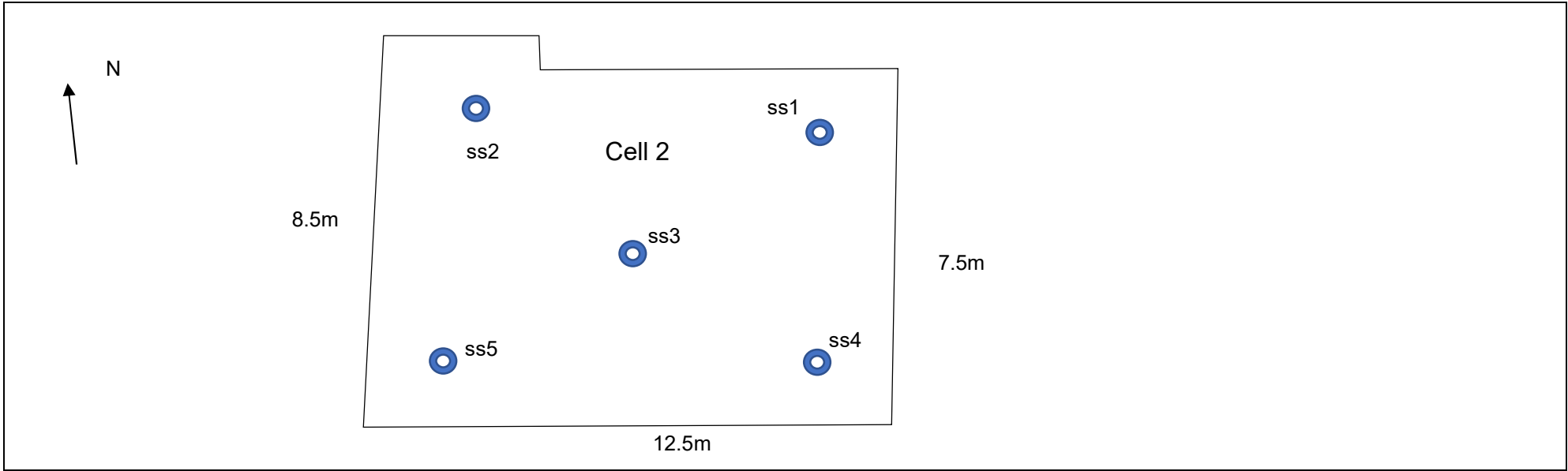


HS11 Cell2

Job number	R2174c	Date	04.02.21	Cell No.	HS11 Cell 2	Compiled by	CS
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 Sample location: ss4	 Sample location: ss5
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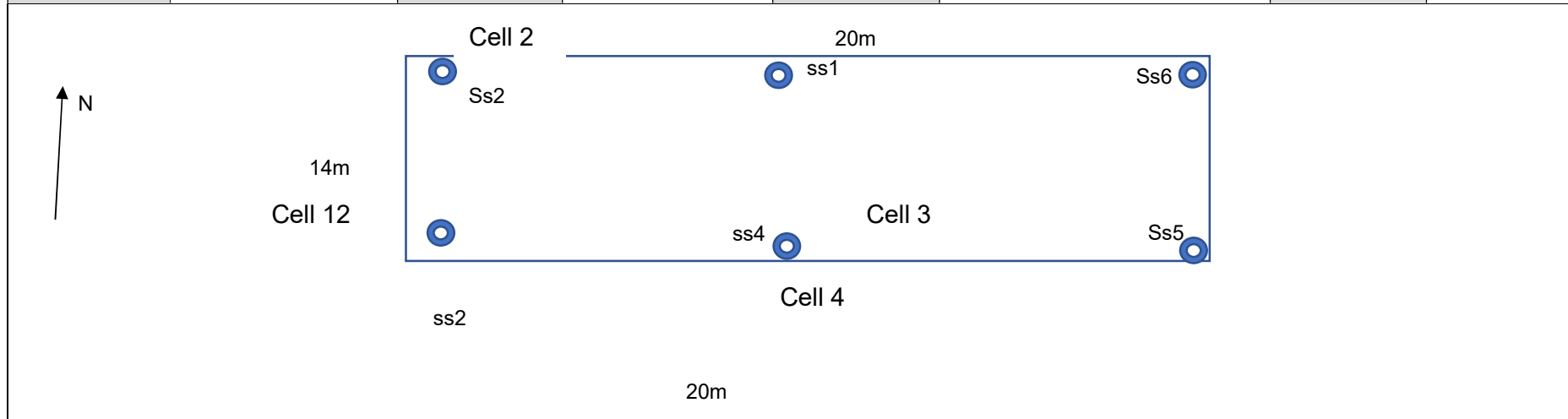
Approx. turnover volume:	270m ³	Depth made ground:	2m	Base of Cell Depth:	2.5m -3m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Brown/grey gravelly clay. Gravel is brick, concrete.						
Groundwater:	Groundwater at 2.5m to the eastern wall of the cell	PID readings:	High readings to the west and the centre of the cell; >500ppm	Lab Samples:	HS11cell2ss1 HS11cell2ss2 HS11cell2ss3 HS11cell2ss4 HS11cell2ss5	Lab ref:	21/1589b1V2



Job number	R2174c	Date	04.02.21	Cell No.	HS11 Cell3	Compiled by	bjt
							
							
Local deepening of made ground in east around relict pipe – water ingress				Competant bedrock at around 3m			
Section through natural clay and weathered bedrock				Full depth excavation			

HS11 Cell3

Approx. turnover volume:	110m ³	Depth made ground:	1-2.5.0m Deepens in east around VC pipe in infilled trench	Base of Cell Depth:	2.5m-3m	Source replacement Fill:	Site-won (clean overburden or aggregate)
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock.						
Groundwater:	Groundwater inflow base where competent Rough Rock rockhead	PID readings:	5ppm -150ppm	Lab Samples:	HS11cell3- SS1 HS11cell3- SS2 HS11cell3- SS3 HS11cell3- SS4 HS11cell3- SS5 HS11cell3- SS6	Lab ref:	21/1589



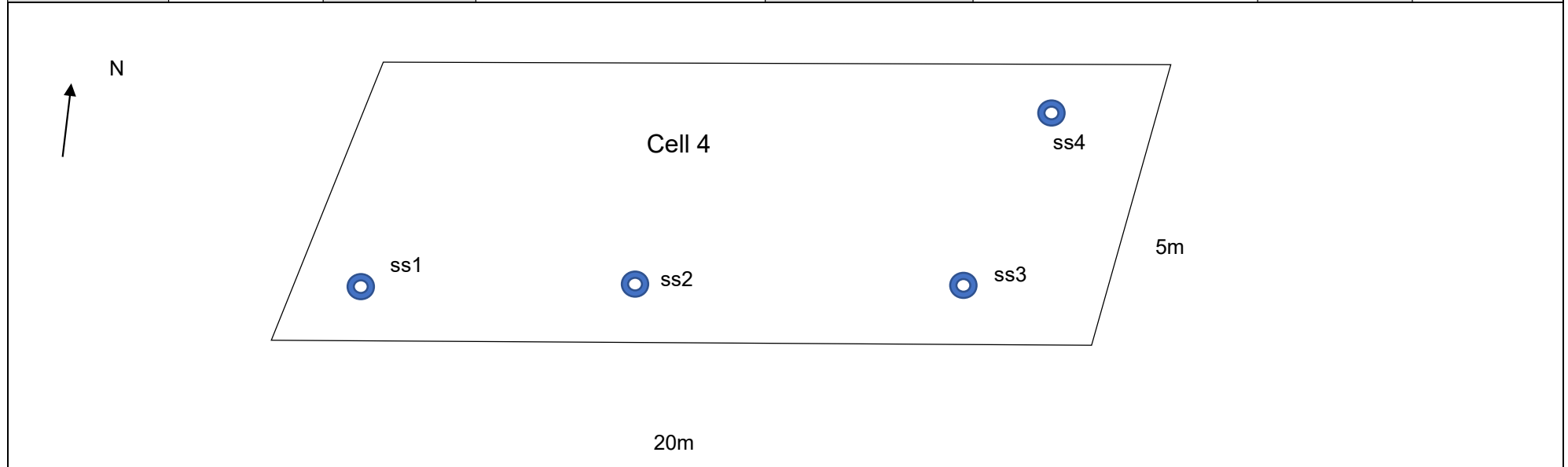
HS11 Cell4

Job number	R2174c	Date	04.02.21 – 05.02.21	Cell No.	HS11 Cell 4	Compiled by	CS
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 General view	 Sample location: ss1	 Sample location: ss2
	 Sample location: ss3	 Sample location: ss4

HS11 Cell4

Approx. turnover volume:	230m ³	Depth made ground:	2-2.5m	Base of Cell Depth:	2.5m -3m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Brown/grey slightly gravelly clay. Gravel is brick, concrete.						
Groundwater:	Groundwater at 2m	PID readings:	Readings in excess of 150ppm within the clay.	Lab Samples:	HS11cell4ss1 HS11cell4ss2 HS11cell4ss3 HS11cell4ss4	Lab ref:	21/1589b1V2



Job number	R2174c	Date	04-05.02.21	Cell No.	HS11 Cell 5	Compiled by	CS
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General view



Sample location: ss1



Sample location: ss2

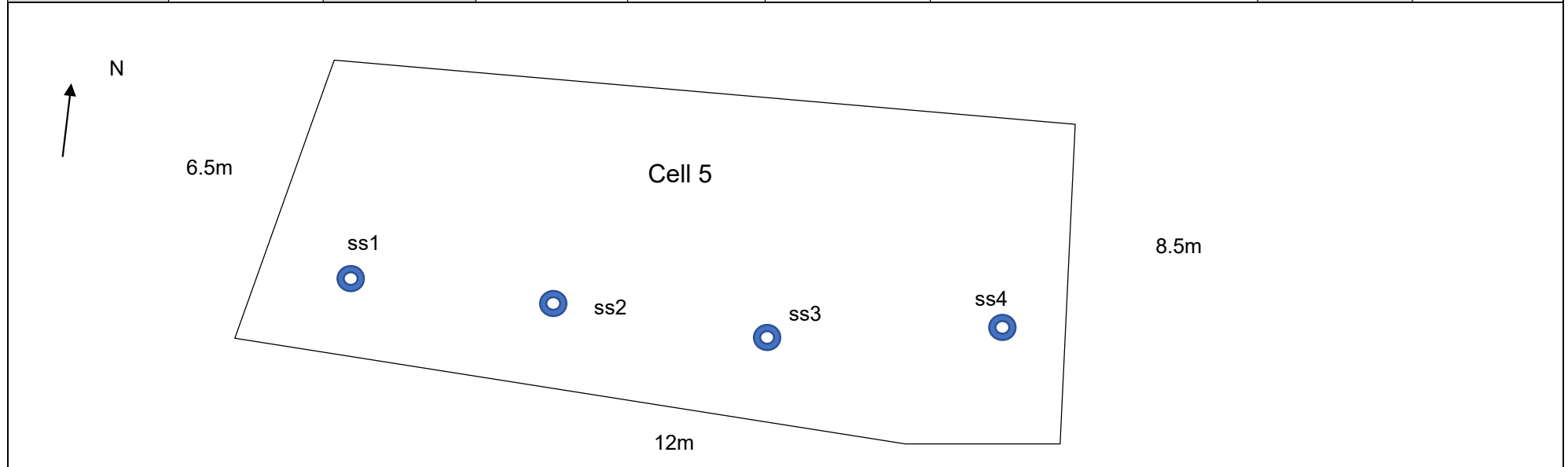


Sample location: ss3



Sample location: ss4

Approx. turnover volume:	385m ³	Depth made ground:	2.5m-3m	Depth bedrock:	3m – 3.5m	Base of Cell Depth:	3m -3.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Made ground: brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete.								
Groundwater:	Groundwater at 2m	PID readings:	Readings in excess of 100ppm within the clay.		Lab Samples:	HS11cell5ss1 HS11cell5ss2 HS11cell5ss3 HS11cell5ss4		Lab ref:	21/1589b1V2



HS11 Cell6

Job number	R2174c	Date	05.02.21	Cell No.	HS11 Cell 6	Compiled by	CS
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Sample location: ss1



Sample location: ss2



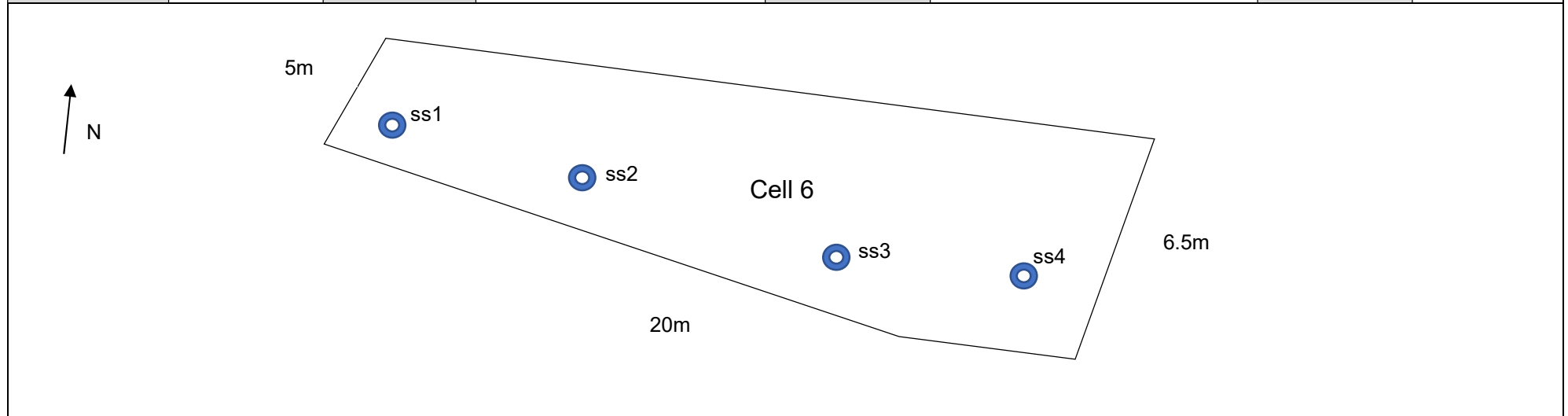
Sample location: ss3



Sample location: ss4

HS11 Cell6

Approx. turnover volume:	300m ³	Depth made ground:	2m – 3m	Base of Cell Depth:	3m-3.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Blackish brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete.						
Groundwater:	Not observed	PID readings:	20ppm – 180ppm	Lab Samples:	HS11cell6ss1 HS11cell6ss2 HS11cell6ss3 HS11cell6ss4	Lab ref:	21/1589b1V2



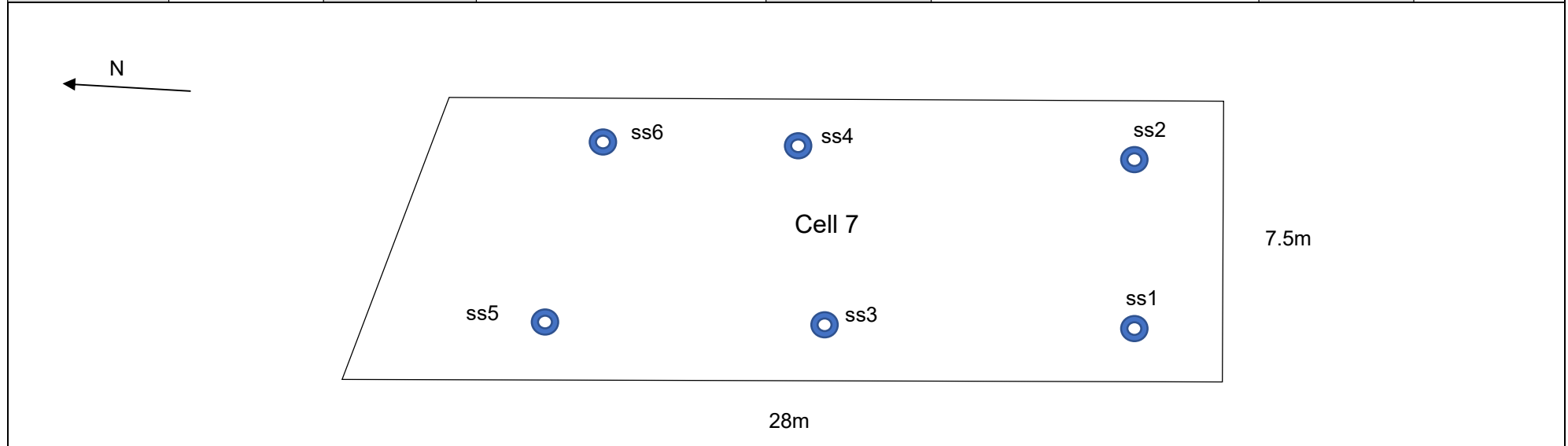
HS11 Cell7

Job number	R2174c	Date	08.02.21	Cell No.	HS11 Cell7	Compiled by	CS
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 Sample location ss1	 Sample location ss2	 Sample location ss3
 Sample location ss4	 Sample location ss5	 Sample location ss6

HS11 Cell7

Approx. turnover volume:	560m ³	Depth made ground:	2.5m-3m	Base of Cell Depth:	2.5m-3m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Made ground: Blackish brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete.						
Groundwater:	Groundwater not observed.	PID readings:	15ppm – 180ppm (north)	Lab Samples:	HS11cell7ss1 HS11cell7ss2 HS11cell7ss3 HS11cell7ss4 HS11cell7ss5 HS11cell7ss6	Lab ref:	21/1773b1

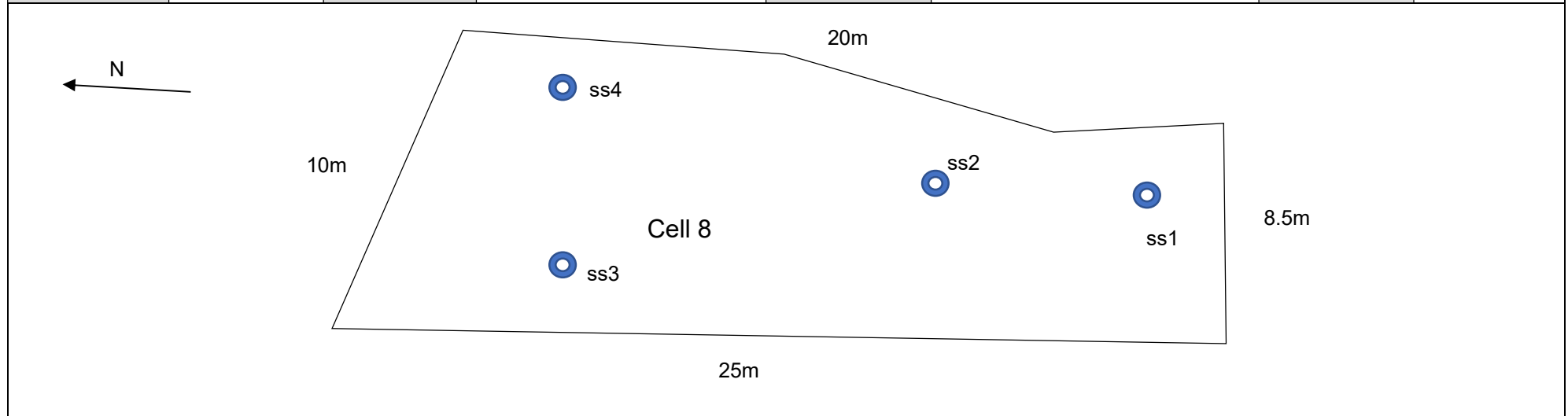


Job number	R2174c	Date	08.02.21	Cell No.	HS11 Cell8	Compiled by	CS
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 General view	 Sample location ss1	 Sample location ss2	 Sample location ss3	 Sample location ss4
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HS11 Cell8

Approx. turnover volume:	520m ³	Depth made ground:	2.5m	Base of Cell Depth:	2.5m-3m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Blackish brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, concrete.						
Groundwater:	Groundwater inflow from the made ground 2.5m to the east	PID readings:	5ppm (south-west)– 160ppm (north/north-east)	Lab Samples:	HS11cell8ss1 HS11cell8ss2 HS11cell8ss3 HS11cell8ss4	Lab ref:	21/1773b1



Job number	R2174c	Date	09.02.21	Cell No.	HS10 Cell 2	Compiled by	BJT
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Excavation profile



Initial dig in south side



Extent of excavation



Second dig in north side (south backfilled with clen overburden)



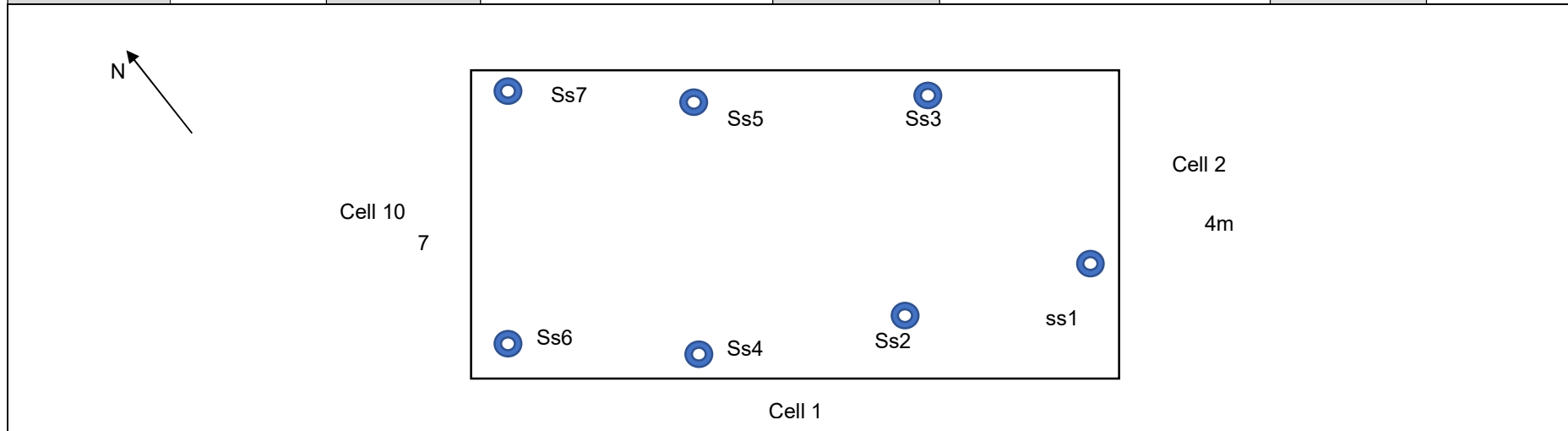
Ingress of water at base in competent rough rock



Base of excavation at 2.5-3.0m

HS10 Cell 9

Approx. turnover volume:	22m ³	Depth made ground:	2.0m	Base of Cell Depth:	2.0m	Source replacement Fill:	Replaced materials Site-won
Observations/ Contamination Remediation:	Removal of surface aggregate and made ground and clay of the Glacial Till down to the bedrock. Brown/grey slightly clayey to clayey sandy gravel. Moderate but transient odour of petroleum or white spirit becoming stronger in weathered bedrock						
Groundwater:	Minor entry at rockhead-sheen and some globules of free product visible	PID readings:	1-250ppm	Lab Samples:	HS11cell9 ss1 HS11cell9 ss2 HS11cell9 ss3 HS11cell9 ss4 HS11cell9 ss5 HS11cell9 ss6 HS11cell9 ss7	Lab ref:	21/1772



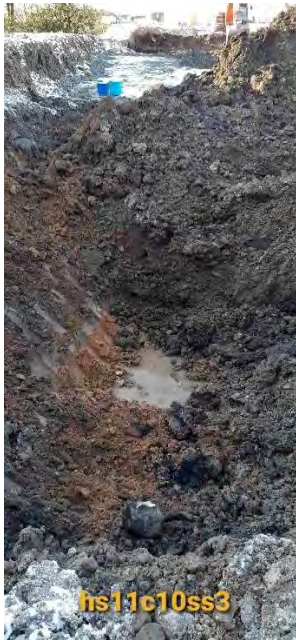
Job number	R2174c	Date	10.02.21	Cell No.	HS11 Cell10	Compiled by	CS
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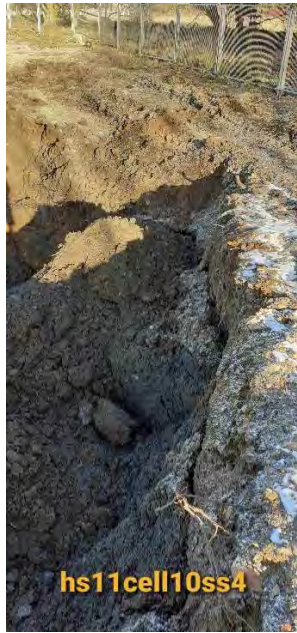
General view



General view



Sample location ss3



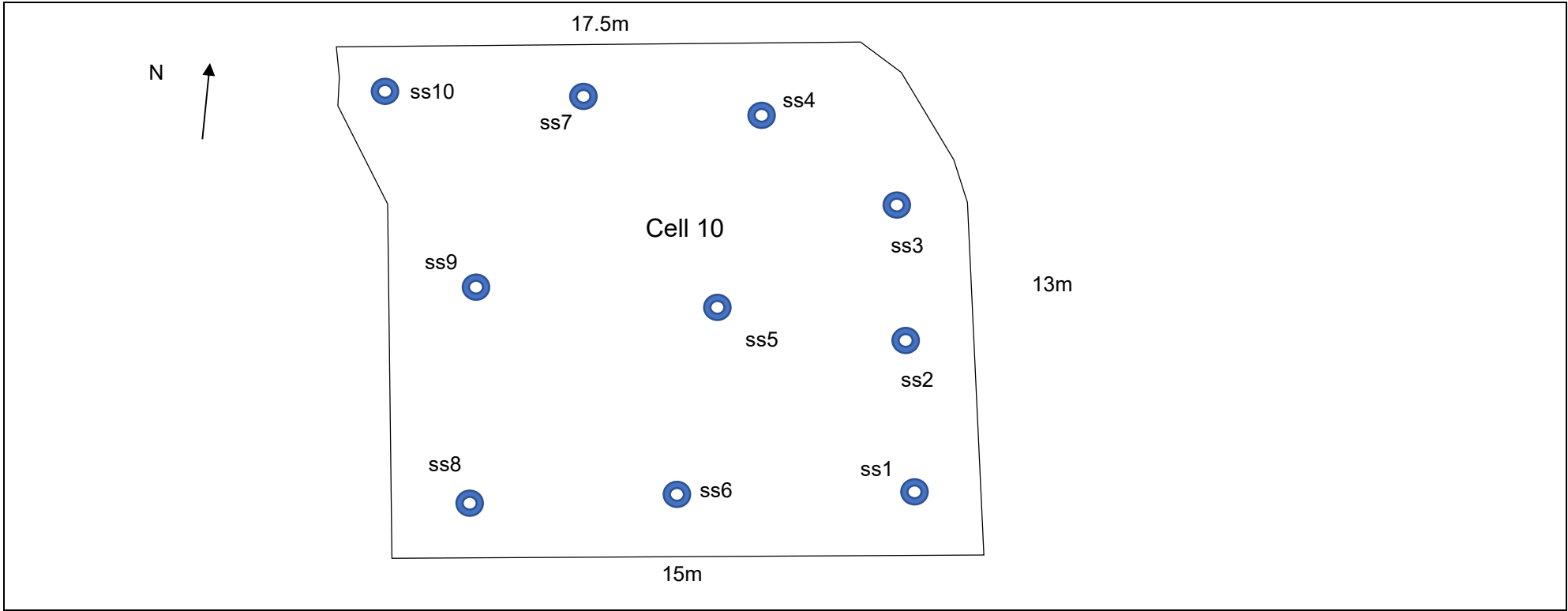
Sample location ss4



Sample location ss6

HS11 Cell10

Approx. turnover volume:	520m ³	Depth made ground:	2m-3m	Base of Cell Depth:	2.5m-3.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Removal of made ground. Made ground is brown/grey gravelly clay. Gravel is brick, sandstone, and concrete.						
Groundwater:	Groundwater at 2.5m.	PID readings:	10ppm – 150ppm	Lab Samples:	HS11cell10ss1 HS11cell10ss2 HS11cell10ss3 HS11cell10ss4 HS11cell10ss5 HS11cell10ss6 HS11cell10ss7 HS11cell10ss8 HS11cell10ss9 HS11cell10ss10	Lab ref:	21/1883b1V2



HS11 Cell11

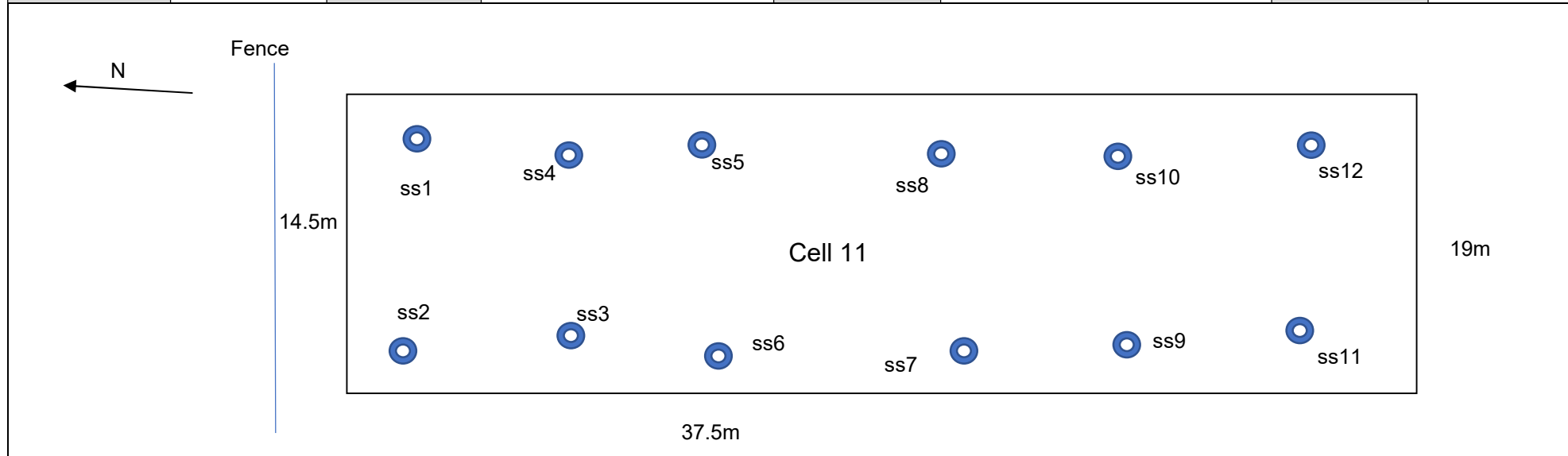
Job number	R2174c	Date	10.02.21- 11.02.21	Cell No.	HS11 Cell11	Compiled by	CS
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 HS11 Cell 11 – general view	 Sample location ss3 and ss4
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Approx. turnover volume:	1200m ³	Depth made ground:	2m	Base of Cell Depth:	2.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Blackish brown/grey slightly clayey to clayey sandy gravel. Gravel is brick, sandstone, and concrete. Slabs of concrete, occasional pipes						

HS11 Cell11

Groundwater:	Groundwater not observed	PID readings:	10ppm – 150ppm (north-east)	Lab Samples:	HS11cell11ss1 HS11cell11ss2 HS11cell11ss3 HS11cell11ss4 HS11cell11ss5 HS11cell11ss6 HS11cell11ss7 HS11cell11ss8 HS11cell11ss9 HS11cell11ss10 HS11cell11ss11 HS11cell11ss12	Lab ref:	21/1883b1V2
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HS11 Cell12

Job number	R2174c	Date	17.02.21	Cell No.	HS11 Cell12	Compiled by	CS
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General view

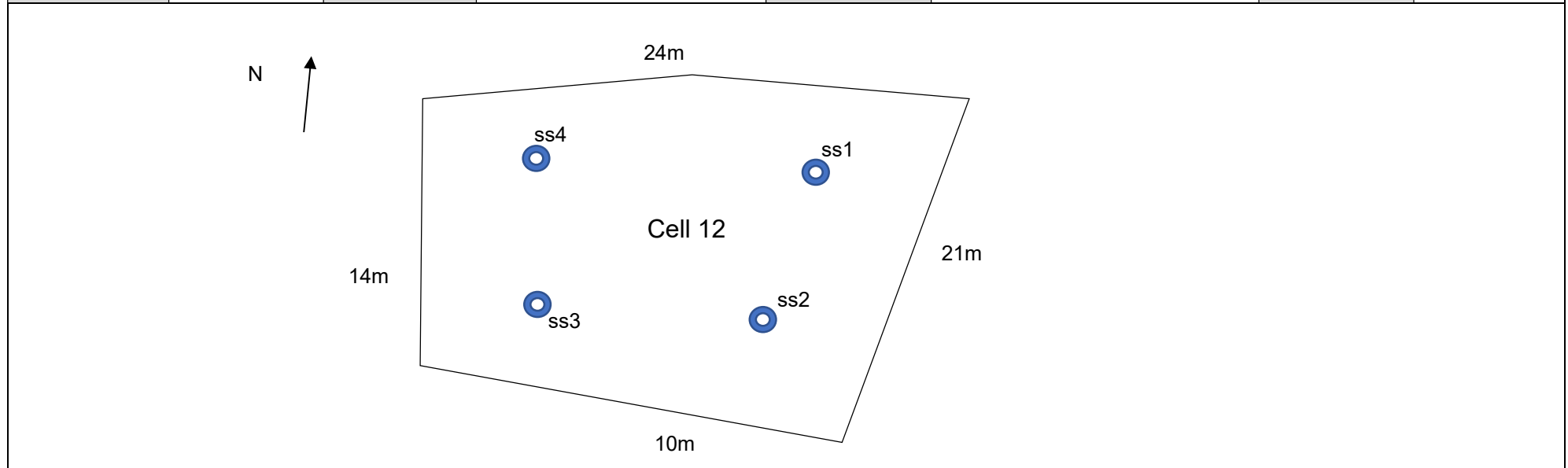


Samples location ss1 and ss2



Samples location ss3 and ss4

Approx. turnover volume:	750m ³	Depth made ground:	2m-2.5m	Base of Cell Depth:	2.5m-3.5m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Made ground locally very sandy gravelly clay. Gravel is brick and concrete.						
Groundwater:	Groundwater at 2m. Northern part of the cell flooded.	PID readings:	10ppm – 30ppm	Lab Samples:	HS11cell12ss1 HS11cell12ss2 HS11cell12ss3 HS11cell12ss4	Lab ref:	21/2280b1



Job number	R2174c	Date	18.02.21	Cell No.	HS13 Cell1	Compiled by	CS
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General view before excavation



Sample location ss1



Sample location ss2



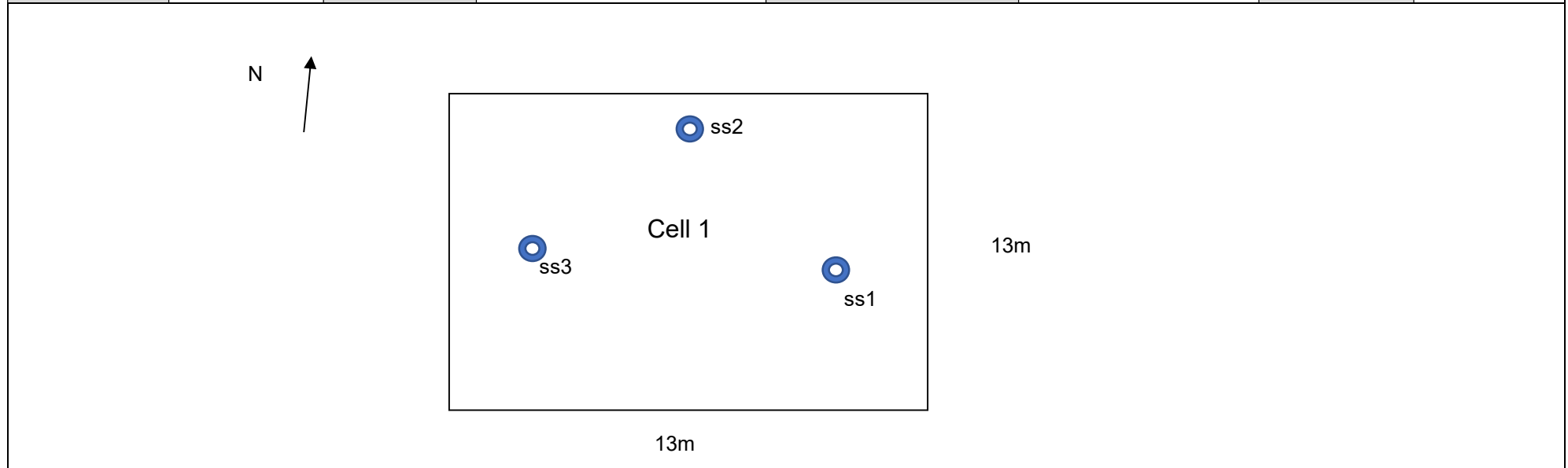
General view after excavation



Sample location ss3

HS13 Cell1

Approx. turnover volume:	250m ³	Depth made ground:	1.5m	Base of Cell Depth:	2m	Source replacement Fill:	Site-won
Observations/ Contamination Remediation:	Removal of made ground and clay of the Glacial Till down to the bedrock. Made is locally sandy gravelly clay, gravel is brick and concrete.						
Groundwater:	Groundwater at 2m to the northern wall of the cell.	PID readings:	1ppm – 20ppm	Lab Samples:	HS13cell1ss1 HS13cell1ss2 HS13cell1ss3	Lab ref:	21/2280b1



APPENDIX B

Chemical Analysis Results

Tier 1 Screening										42	100	27	130	1100	65000	65000											70	130	34	74	140	260	1100										
Lab ref	Sample	Depth	Date sampled	Natural Moisture Content	TOC	Dilution Required x100	>C5-C6 ^{***}	>C6-C8 ^{**}	>C8-C10	>C10-C12 [*]	>C12-C16 ^{***}	>C16-C21 ^{***}	>C21-C35 ^{***}	aliphatics ^{***}	>C5-EC7 ^{***}	>EC7-EC8 ^{***}	EC8-EC10 ^{***}	EC10-EC12 ^{***}	EC12-EC16 ^{***}	EC16-EC21 ^{***}	EC21-EC35 ^{***}	aromatics ^{***}	CS and arom ^{***}	Tertiary Buty ^{***}	Benzene ^{***}	Toluene ^{***}	Phylbenzene ^{***}	m-Xylene ^{***}	p-Xylene ^{***}														
voice Approved				%	%	µm	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
21/453 b1	HS10-Cell 1-SS1	3.0	03.02.2021	16	0.48		0.1	0.3	0.5	0.2	4.0	7.0	7.0		0.1	0.2	1.4	0.2	4.0	7.0	7.0			7.0	8.0	227.0	128.0	1191.0	100.0														
21/453 b1	HS10-Cell 1-SS2	3.0	03.02.2022	18.4	0.69		0.1	0.8	1.2	4.6	4.0	7.0	7.0		0.1	0.1	1.1	17.5	4.0	7.0	7.0			20.0	8.0	45.0	169.0	838.0	54.0														
21/453 b1	HS10-Cell 1-SS3	3.0	03.02.2023	14.3	1.05		0.1	0.2	0.1	0.2	4.0	7.0	7.0		0.1	0.1	0.1	0.2	4.0	7.0	7.0			57.0	21.0	19.0	7.0	19.0	5.0														
21/453 b1	HS10-Cell 1-SS4	3.0	03.02.2024	14.4	0.83		0.1	0.1	0.1	0.2	4.0	7.0	7.0		0.1	0.1	0.1	0.2	4.0	7.0	7.0			5.0	5.0	5.0	5.0	5.0	5.0														
1/1589 b1-V	HS10-Cell 1-SS5	3.0	03.02.2023	13.7	1.05		0.1	0.2	0.2	0.2	4.0	7.0	7.0		0.1	1.6	1.3	0.2	4.0	7.0	7.0			5.0	5.0	1400.0	306.0	890.0	127.0														
1/1589 b1-V	HS10-Cell 1-SS6	3.0	03.02.2024	16.7	1.3		0.2	0.5	2.7	0.2	4.0	7.0	7.0		0.1	0.6	3.2	0.2	4.0	7.0	7.0			5.0	5.0	540.0	5.0	2525.0	572.0														
1/1589 b1-V	HS10-Cell 1-SS1	3.8	02.02.2026	16.7	0.6		0.1	48.4	10.2	52.2	33.0	15.0	7.0		0.1	2.8	12.6	18.3	4.0	7.0	7.0			382.0	5.0	2871.0	2112.0	8872.0	1993.0														
21/1773 b1	HS10-Cell 2-SS1	2.5	08.02.2021	19.9	0.29		0.1	0.1	0.2	0.2	4.0	7.0	7.0		0.1	0.5	0.5	0.2	4.0	7.0	7.0			5	17	428	84	327	74														
21/1773 b1	HS10-Cell 2-SS2	2.5	08.02.2021	16.4	0.26		0.1	0.2	0.7	0.2	4.0	7.0	7.0		0.1	0.7	1.4	0.2	4.0	7.0	7.0			7	12	646	172	1100	130														
21/1773 b1	HS10-Cell 3-SS3	3.0	08.02.2021	15.3	0.34		6.7	367.8	604.9	272.1	28.0	8.0	37.0		1.0	902.0	1073.9	184.9	7.0	7.0	7.0			9849	253	901982	207804	718095	147956														
21/1773 b1	HS10-Cell 3-SS4	3.0	08.02.2021	9	1.83		0.1	0.1	0.1	6.1	14.0	14.0	22.0		0.1	0.2	0.2	4.5	10.0	22.0	17.0			5	5	166	41	169	43														
21/1773 b1	HS10-Cell 3-SS5	3.0	08.02.2021	10.6	0.17		0.1	0.1	0.1	0.2	4.0	7.0	7.0		0.1	0.1	0.2	0.2	4.0	7.0	7.0			5	5	64	33	157	46														
21/1773 b1	HS10-Cell 3-SS6	3.0	08.02.2021	18.1	0.5		1.0	10.4	10.4	115.0	15.0	11.0	27.0		1.0	1.0	6.7	37.8	15.0	21.0	20.0			50	50	548	1540	4565	652														
21/1773 b1	HS10-Cell 3-SS7	2.5	08.02.2021	16.6	0.51		0.1	0.8	0.8	10.8	4.0	7.0	7.0		0.1	0.2	0.5	7.2	4.0	7.0	7.0			5	5	184	64	335	83														
1/1772 b1-V	HS10-Cell 4-SS1	2.5	09.02.2021	24	0.39		2.4	132.9	225.3	57.5	11.0	9.0	7.0		0.1	292.0	498.0	31.2	4.0	7.0	7.0			3623	79	292035	102702	337491	57821														
1/1772 b1-V	HS10-Cell 4-SS10	3.0	09.02.2021	26.2	0.25		0.1	31.5	6.0	29.5	30.0	73.0	170.0		0.1	6.3	10.2	19.8	79.0	1098.0	1393.0			131	5	6313	1703	6973	1493														
1/1772 b1-V	HS10-Cell 4-SS11	3.0	09.02.2021	18.4	0.31		0.1	43.0	0.7	0.2	4.0	7.0	7.0		0.1	0.6	0.9	0.2	4.0	7.0	7.0			6	5	637	152	593	147														
1/1772 b1-V	HS10-Cell 4-SS2	2.5	09.02.2021	19	0.65		0.1	4.2	9.5	13.1	4.0	7.0	7.0		0.1	1.4	9.3	12.3	4.0	7.0	7.0			100	5	1471	1609	6625	1081														
1/1772 b1-V	HS10-Cell 4-SS3	2.5	09.02.2021	18.4	0.28		1.0	1.7	15.2	75.1	7.0	7.0	7.0		0.1	2.8	18.7	27.9	4.0	7.0	7.0			50	50	2888	2692	12534	3634														
1/1772 b1-V	HS10-Cell 4-SS4	3.0	09.02.2021	16.1	0.32		1.5	133.7	342.2	2160.2	106.0	66.0	14.0		0.1	493.4	493.4	994.2	72.0	66.0	9.0			2225	153	493467	100591	331626	62202														
1/1772 b1-V	HS10-Cell 4-SS5	3.0	09.02.2021	13.5	0.45		1.0	655.7	46.4	107.6	254.0	141.0	39.0		0.1	431.6	599.4	336.9	116.0	244.0	35.0			1799	5	431644	93561	347644	60711														
1/1772 b1-V	HS10-Cell 4-SS6	3.0	09.02.2021	17.4	0.42		21.0	17.3	96.3	921.6	180.0	85.0	19.0		1.0	1.5	32.6	230.0	63.0	140.0	28.0			50	50	1514	4239	22810	5660														
1/1772 b1-V	HS10-Cell 4-SS7	2.5	09.02.2021	19.2	0.48		2.7	894.8	314.8	500.9	113.0	70.0	15.0		0.1	234.6	294.2	175.5	55.0	114.0	24.0			2127	5	234633	53344	200443	40338														
1/1772 b1-V	HS10-Cell 4-SS8	2.5	09.02.2021	19	0.36		5.9	664.1	104.4	233.2	40.0	24.0	13.0		0.1	346.3	164.3	77.1	19.0	28.0	7.0			2510	5	346316	30630	198967	24716														
1/1772 b1-V	HS10-Cell 4-SS9	3.0	09.02.2021	20.5	0.46		1.2	598.8	52.9	126.6	67.0	51.0	16.0		0.1	5.5	22.2	49.0	49.0	72.0	12.0			2379	50	5496	3109	14841	4193														
21/2151 b1	HS10-Cell 5-SS1	2.0	15.02.2021	11.7	0.15		0.1	9.3	8.9	161.0	146.0	135.0	45.0		0.1	0.2	8.8	62.8	71.0	87.0	25.0			20	5	236	1402	6686	728														
21/2151 b1	HS10-Cell 5-SS2	1.5	15.02.2021	21	0.47		0.4	21.3	25.8	323.1	526.0	578.0	257.0		0.1	3.3	5.7	112.0	324.0	387.0	137.0			186	5	3263	1216	3347	1097														
21/2151 b1	HS10-Cell 5-SS3	1.5	15.02.2021	24.3	2.19		2.1	954.1	160.2	11.4	7.0	7.0	7.0		1.0	111.9	221.8	8.9	4.0	7.0	7.0			2958	50	111838	38931	150847	31982														
21/2151 b1	HS10-Cell 5-SS4	1.5	15.02.2021	18.1	2.57		1.8	445.7	96.7	85.9	159.0	159.0	214.0		1.0	289.9	243.4	54.7	71.0	161.0	489.0			1709	426	289984	41050	164155	38221														
21/2151 b1	HS10-Cell 5-SS5	2.0	15.02.2021	21.7	1.97		3.0	1067.4	264.8	88.1	30.0	30.0	84.0		1.0	377.0	413.9	39.9	16.0	26.0	7.0			4221	50	377010	72758	279966	61181														
21/2151 b1	HS10-Cell 5-SS6	2.5	15.02.2021	11.8	0.17		0.1	0.3	1.3	53.7	295.0	295.0	215.0		0.1	0.1	0.2	19.0	115.0	186.0	75.0			5	5	35	47	121	44														
21/2151 b1	HS10-Cell 5-SS7	2.5	16.02.2021	18.1	1.17		1.0	9.9	12.0	9.1	7.0	7.0	7.0		1.0	5.6	15.8	8.1	4.0	7.0	7.0			193	50	5551	3105	10879	1861														
21/2151 b1	HS10-Cell 5-SS8	3.0	16.02.2021	18.8	0.91		1.0	5.0	21.6	398.7	925.0	925.0	481.0		1.0	1.0	1.8	108.5	505.0	605.0	245.0			50	50	168	557	880	387														
						Min	0.1	0.1	0.1	0.2	4.0	7.0	7.0		0.1	0.1	0.1	0.2	4.0	7.0	7.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
						Max	31.0	1067.4	604.9	2160.2	925.0	925.0	481.0		1.0	902.0	1073.9	994.2	905.0	1098.0	1393.0			9849.0	426.0	901982.0	207804.0	718095.0	147956.0														
						No	33.0	33.0	33.0	33.0	33.0	33.0	33.0		0.1	0.3	33.0	33.0	33.0	33.0	33.0			5.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0			
21/453 b1	HS11-Cell 1-SS1	1.6	03.02.2025	25.8	1		0.1	0.1	0.3	5.0	4.0	7.0	7.0		0.1	0.3	0.8	8.3	4.0	7.0	7.0			5.0	5.0	308.0	62.0	557.0	143.0														
21/453 b1	HS11-Cell 1-SS2	3.0	03.02.2026	14.5	0.8		0.1	0.1	0.1	0.2	4.0	7.0	7.0		0.1	0.1	0.1	0.2	4.0	7.0	7.0			5.0	5.0	103.0	17.0	71.0	24.0														
21/453 b1	HS11-Cell 1-SS3	3.0	03.02.2027	12	0.14		0.1	0.1	0.1	14.1	4.0	7.0	7.0		0.1	0.1	0.3	19.3	4.0	7.0	7.0			25.0	11.0	25.0	225.0	99.0	40.0														
21/453 b1	HS11-Cell 1-SS4	3.0	03.02.2028	12.6	0.2		0.3	2.7	2.1	4.3	4.0	7.0	7.0		0.1	5.0	5.1	4.7	4.0	7.0	7.0			47.0	12.0	4978.0	4978.0	3280.0	967.0														
21/453 b1	HS11-Cell 1-SS5	3.0	03.02.2029	15.8	0.51		0.1	3.2	1.7	15.7	4.0	7.0	7.0		0.1	2.3	2.5	16.8	4.0	7.0	7.0			32.0	5.0	2326.0	2326.0	1651.0	581.0														
21/453 b1	HS11-Cell 1-SS6	3.0	03.02.2030	7.8	0.12		0.8	1.0	1.2	0.2	4.0	7.0	7.0		0.1	1.2	2.7	0.2	4.0	7.0	7.0			17.0	18.0	1139.0	1139.0	1836.0	690.0														
21/453 b1	HS11-Cell 1-SS7	3.0	03.02.2031	10.9	0.12		4.2	223.6	356.2	875.9	63.0	32.0	141.0		0.1	560.0																											

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention : Ben Thomas
Date : 15th February, 2021
Your reference : R2174C
Our reference : Test Report 21/1453 Batch 1
Location :
Date samples received : 3rd February, 2021
Status : Final report
Issue : 1

Thirteen samples were received for analysis on 3rd February, 2021 of which thirteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location:
Contact: Ben Thomas
EMT Job No: 21/1453

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-2	3-4	5	6-7	8-9	10-11	12-13	14-16	17-18	19-20	Please see attached notes for all abbreviations and acronyms		
Sample ID	HS 10-CELL1-SS1	HS 10-CELL1-SS2	HS 10-CELL1-SS3	HS 10-CELL1-SS4	HS 11-CELL1-SS1	HS 11-CELL1-SS2	HS 11-CELL1-SS3	HS 11-CELL1-SS4	HS 11-CELL1-SS5	HS 11-CELL1-SS6			
Depth	3.00	3.00	3.00	3.00	1.60	3.00	3.00	3.00	3.00	3.00			
COC No / misc													
Containers	V J	V J	J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021	03/02/2021			
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	<0.1	0.8	<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	0.3	0.8	0.2	<0.1	0.1	<0.1	0.1	2.7	3.2	1.0	<0.1	mg/kg	TM36/PM12
>C8-C10	0.5	1.2	<0.1	<0.1	0.3	<0.1	0.1	2.1	1.7	1.2	<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	<0.2	4.6	<0.2	<0.2	5.0	<0.2	14.1	4.3	15.7	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	<19	<19	<19	21	<19	<19	mg/kg	TM5/PM8/PM16/PM21/PM25
Aromatics													
>C5-EC7 [#]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	0.2	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	5.0	2.3	1.2	<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	1.4	1.1	<0.1	<0.1	0.8	<0.1	0.3	5.1	2.5	2.7	<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	<0.2	17.5	<0.2	<0.2	8.3	<0.2	19.3	4.7	16.8	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	<19	<19	<19	<19	<19	<19	20	<19	22	<19	<19	mg/kg	TM5/PM8/PM16/PM21/PM25
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	<38	<38	<38	43	<38	<38	mg/kg	TM5/PM8/PM16/PM21/PM25
MTBE [#]	7	20	57	<5	<5	<5	25	47	32	17	<5	ug/kg	TM36/PM12
Benzene [#]	8	8	21	<5	<5	<5	11	12	<5	18	<5	ug/kg	TM36/PM12
Toluene [#]	227	45	19	<5	308	103	25	4978	2326	1139	<5	ug/kg	TM36/PM12
Ethylbenzene [#]	128	169	7	<5	62	17	225	830	269	180	<5	ug/kg	TM36/PM12
m/p-Xylene [#]	1191	838	19	<5	557	71	99	3280	1651	1836	<5	ug/kg	TM36/PM12
o-Xylene [#]	100	54	<5	<5	143	24	40	967	581	690	<5	ug/kg	TM36/PM12
Natural Moisture Content	16.0	18.4	14.3	14.4	25.8	14.5	12.0	12.6	15.8	7.8	<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.48	0.69	1.05	0.83	1.00	0.80	0.14	0.20	0.51	0.12	<0.02	%	TM21/PM24
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay		None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Dark Brown	Medium Brown	Medium Brown	Medium Brown	Light Brown	Medium Brown	Medium Brown	Light Brown		None	PM13/PM0
Other Items	stones	stones	stones	stones	stones	stones, sand	stones, sand	stones, sand	stones, sand	stones, sand		None	PM13/PM0

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location:
Contact: Ben Thomas
EMT Job No: 21/1453

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	21-22	23-24										
Sample ID	HS 11-CELL1-SS7	HS 11-CELL1-SS8										
Depth	3.00	3.00										
COC No / misc												
Containers	V J	V J										
Sample Date	03/02/2021	03/02/2021										
Sample Type	Clay	Clay										
Batch Number	1	1										
Date of Receipt	03/02/2021	03/02/2021										
										Please see attached notes for all abbreviations and acronyms		
										LOD/LOR	Units	Method No.
TPH CWG												
Aliphatics												
>C5-C6 ^{#M}	>>4.2	0.6								<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	>>223.6	11.6								<0.1	mg/kg	TM36/PM12
>C8-C10	>>356.2	19.7								<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	875.9	11.8								<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	63	<4								<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	32	<7								<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	141	<7								<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	1696	44								<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics												
>C5-EC7 [#]	>><0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	>>560.0	17.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	>>766.0	42.0								<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	533.5	8.6								<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	31	<4								<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	18	<7								<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	91	<7								<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	2000	68								<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	3696	112								<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	5543 ^{SV}	413								<5	ug/kg	TM36/PM12
Benzene [#]	<5 ^{SV}	<5								<5	ug/kg	TM36/PM12
Toluene [#]	>>560069	>>17067								<5	ug/kg	TM36/PM12
Ethylbenzene [#]	>>114675	6248								<5	ug/kg	TM36/PM12
m/p-Xylene [#]	>>531339	>>28645								<5	ug/kg	TM36/PM12
o-Xylene [#]	>>119999	7112								<5	ug/kg	TM36/PM12
Natural Moisture Content	10.9	11.7								<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.12	0.10								<0.02	%	TM21/PM24
Sample Type	Clay	Clay									None	PM13/PM0
Sample Colour	Light Brown	Light Brown									None	PM13/PM0
Other Items	stones, sand	stones, sand									None	PM13/PM0

Element Materials Technology

Client Name: Smith Grant LLP
 Reference: R2174C
 Location:
 Contact: Ben Thomas
 EMT Job No: 21/1453

Report : Product

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	25-26												
Sample ID	HS 11-CELL1-PO1												
Depth	3.50												
COC No / misc													
Containers	V												
Sample Date	03/02/2021												
Sample Type	Product												
Batch Number	1												
Date of Receipt	03/02/2021												
Whole Oil Trace #	See Attached										LOD/LOR	Units	Method No.
												None	TM1/PM0
TPH CWG													
Aliphatics													
>C5-C6 #	0.8										<0.1	%	TM1/PM0
>C6-C8 #	8.8										<0.1	%	TM1/PM0
>C8-C10 #	5.7										<0.1	%	TM1/PM0
>C10-C12 #	3.5										<0.1	%	TM1/PM0
>C12-C16 #	<0.1										<0.1	%	TM1/PM0
>C16-C21 #	<0.1										<0.1	%	TM1/PM0
>C21-C35 #	<0.1										<0.1	%	TM1/PM0
Aromatics													
>EC6-EC8 #	33.8										<0.1	%	TM1/PM0
>EC8-EC10 #	42.9										<0.1	%	TM1/PM0
>EC10-EC12 #	4.5										<0.1	%	TM1/PM0
>EC12-EC16 #	<0.1										<0.1	%	TM1/PM0
>EC16-EC21 #	<0.1										<0.1	%	TM1/PM0
>EC21-EC35 #	<0.1										<0.1	%	TM1/PM0

Please see attached notes for all abbreviations and acronyms

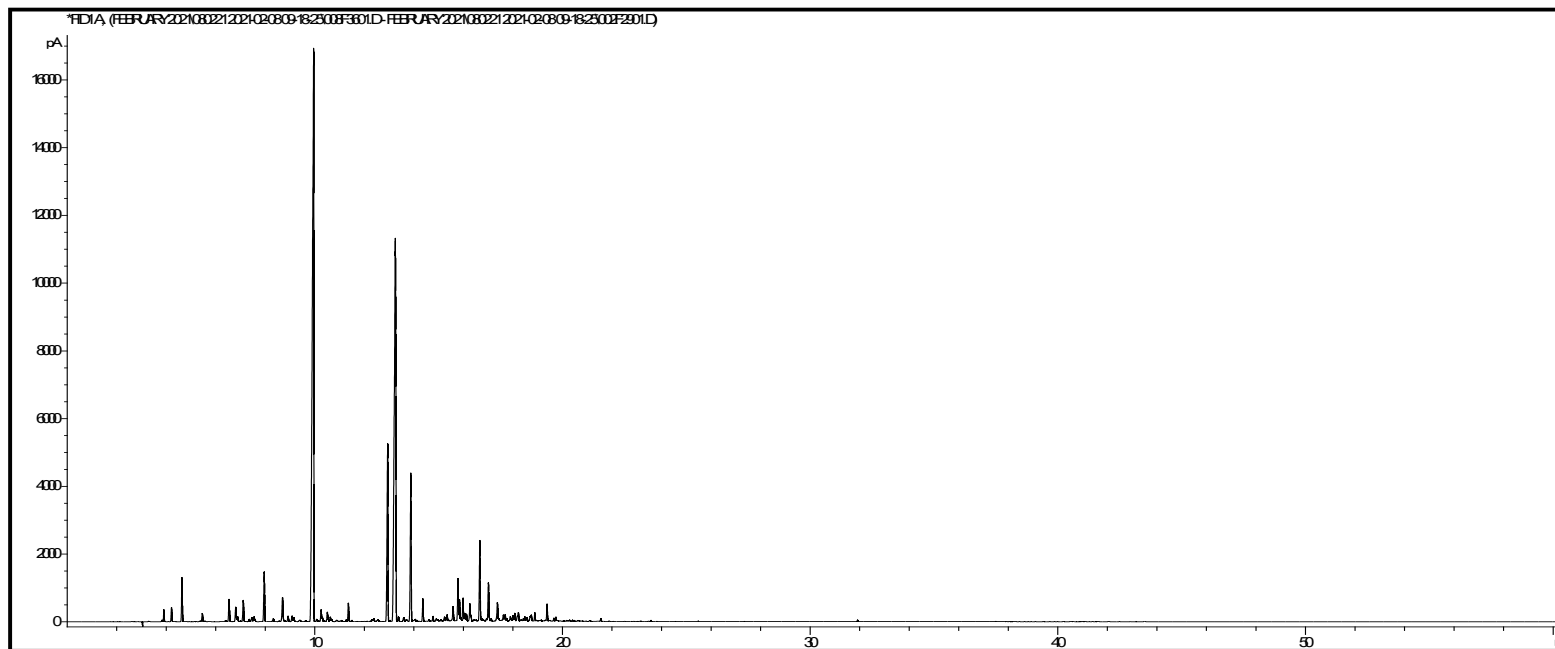
Client Name: Smith Grant LLP
Reference: R2174C
Location:
Contact: Ben Thomas

EMT Job No.: 21/1453
EMT Sample No.: 25
Sample Identity: HS 11-CELL1-PO1
Depth: 3.50

Description: Brown Oil on Water
Carbon Range: 5-12
Boiling Point Range (°C): 36-216
Pristane/Phytane Ratio: N/A
nC₁₇/Pristane Ratio: N/A
Age of Diesel (+/- 2 years)*: N/A

Interpretation: Degraded Gasoline

Chromatogram:



*The age of release estimated in this report is based on the nC₁₇/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996). Age estimation should be treated with caution as it can be influenced by site specific factors that the laboratory are not aware of.

Client Name: Smith Grant LLP

Reference: R2174C

Location:

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/1453

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 21/1453

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM1	Modified USEPA 8015B v2:1996 method for the determination of carbon banding in oil and product samples by GC-FID.	PM0	No preparation is required.			AR	
TM1	Modified USEPA 8015B v2:1996 method for the determination of carbon banding in oil and product samples by GC-FID.	PM0	No preparation is required.	Yes		AR	
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 21/1453

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM124	Modified USEPA 8260B v2:1996. Semi- Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM0	No preparation is required.			AR	

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention : Ben Thomas
Date : 3rd March, 2021
Your reference : R2174C
Our reference : Test Report 21/1589 Batch 1
Location : Tetrosyl URL
Date samples received : 5th February, 2021
Status : Final report
Issue : 2

Twenty six samples were received for analysis on 5th February, 2021 of which twenty six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/1589

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	41-42	43-44	45-46	47-48	49-50	51-52					Please see attached notes for all abbreviations and acronyms		
Sample ID	HS11-CELL5-SS3	HS11-CELL5-SS4	HS11-CELL6-SS1	HS11-CELL6-SS2	HS11-CELL6-SS3	HS11-CELL6-SS4							
Depth	2.50	2.50	3.00	2.50	2.00	2.50							
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J							
Sample Date	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021							
Sample Type	Clayey Sand	Clayey Sand	Clayey Sand	Clay	Clay	Clayey Sand							
Batch Number	1	1	1	1	1	1							
Date of Receipt	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021	05/02/2021					LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	>>1.6	>>7.6	<0.1	<0.1	>>4.0	>>4.4					<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	>>215.6	>>464.5	<0.1	0.2	>>100.0	>>202.9					<0.1	mg/kg	TM36/PM12
>C8-C10	>>246.9	>>428.1	<0.1	0.5	>>140.0	>>179.8					<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	184.9	214.7	<0.2	<0.2	28.0	95.2					<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	18	21	<4	<4	<4	13					<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	667	1136	<19	<19	272	495					<19	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 [#]	>>0.3	>>0.9	<0.1	<0.1	>>0.2	>>1.0					<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	>>1228.4	>>2119.6	<0.1	0.2	>>557.6	>>1092.0					<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	>>726.8	>>704.7	0.2	0.5	>>426.2	>>561.1					<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	132.9	180.7	<0.2	<0.2	18.0	95.4					<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	5	6	<4	<4	<4	13					<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	2093	3012	<19	<19	1002	1763					<19	mg/kg	TM5/PM8/PM16
Total aliphatics and aromatics(C5-35)	2760	4148	<38	<38	1274	2258					<38	mg/kg	TM5/PM8/PM16
MTBE [#]	1944 ^{SV}	>>14019	<5	16	1349 ^{SV}	4793 ^{SV}					<5	ug/kg	TM36/PM12
Benzene [#]	353 ^{SV}	896 ^{SV}	<5	<5	172 ^{SV}	972 ^{SV}					<5	ug/kg	TM36/PM12
Toluene [#]	>>1228450	>>2119573	103	204	>>557586	>>1091948					<5	ug/kg	TM36/PM12
Ethylbenzene [#]	>>140625	>>15704	23	72	>>85560	>>100518					<5	ug/kg	TM36/PM12
m/p-Xylene [#]	>>486653	>>572344	187	385	>>283893	>>377810					<5	ug/kg	TM36/PM12
o-Xylene [#]	>>99518	>>116642	24	56	>>56754	>>82705					<5	ug/kg	TM36/PM12
Natural Moisture Content	14.4	13.1	14.2	17.3	14.1	12.1					<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.28	0.18	0.42	0.56	0.53	0.24					<0.02	%	TM21/PM24
Sample Type	Clayey Sand	Clayey Sand	Clayey Sand	Clay	Clay	Clayey Sand						None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown						None	PM13/PM0
Other Items	stones	stones	stones	stones	stones	stones						None	PM13/PM0

Client Name: Smith Grant LLP

Matrix : Solid

Reference: R2174C

Location: Tetrosyl URL

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/1589

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

EMT Job No: 21/1589

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention : Ben Thomas
Date : 2nd March, 2021
Your reference : R2174C
Our reference : Test Report 21/1772 Batch 1
Location : Tetrosyl
Date samples received : 9th February, 2021
Status : Final report
Issue : 2

Eighteen samples were received for analysis on 9th February, 2021 of which eighteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl
Contact: Ben Thomas
EMT Job No: 21/1772

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	21-22	23-24	25-26	27-28	29-30	31-32	35-36	37-38			Please see attached notes for all abbreviations and acronyms		
Sample ID	HS10 CELL4 SS11	HS11 CELL9 SS1	HS11 CELL9 SS2	HS11 CELL9 SS3	HS11 CELL9 SS4	HS11 CELL9 SS5	HS11 CELL9 SS6	HS11 CELL9 SS7					
Depth	3.00	2.00	3.00	3.00	2.50	2.50	2.00	3.00					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021					
Sample Type	Clay	Clay	Clayey Sand	Clay	Clayey Sand	Clayey Sand	Clay	Clay					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021			LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1	<1.0 ^{AA}	1.2	>>2.8	3.7	<0.1	0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	4.3	4.0	139.7 ^{AA}	0.9	>>103.3	7.4	0.6	2.3			<0.1	mg/kg	TM36/PM12
>C8-C10	0.7	2.8	119.9 ^{AA}	0.7	>>228.7	8.2	0.4	5.7			<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	<0.2	44.1	282.8	<0.2	126.4	<0.2	<0.2	5.1			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	<4	6	27	<4	8	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	<7	<7	<7	<7	<7	<7	<7			<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	<7	<7	<7	21	<7	<7	<7			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	57	569	<19	490	19	<19	<19			<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 [#]	<0.1	<0.1	<1.0 ^{AA}	<0.1	>><0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	0.6	13.3	57.2 ^{AA}	1.3	>>311.0	22.1	0.9	2.5			<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	0.9	8.6	245.8 ^{AA}	1.7	>>764.9	33.3	2.3	13.0			<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	<0.2	44.2	197.6	2.4	113.7	<0.2	<0.2	2.0			<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	<4	<4	7	<4	6	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	<7	<7	<7	<7	<7			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	<7	<7	<7	<7	<7	<7			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	<19	66	508	<19	1196	55	<19	<19			<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	<38	123	1077	<38	1686	74	<38	<38			<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	6	27	2200 ^{AA}	14	5097 ^{SV}	233	46	49			<5	ug/kg	TM36/PM12
Benzene [#]	<5	<5	<50 ^{AA}	10	<5 ^{SV}	<5	39	<5			<5	ug/kg	TM36/PM12
Toluene [#]	637	13295	57215 ^{AA}	1265	>>310986	22061	923	2482			<5	ug/kg	TM36/PM12
Ethylbenzene [#]	152	1159	31883 ^{AA}	222	>>127858	5401	454	1828			<5	ug/kg	TM36/PM12
m/p-Xylene [#]	593	5898	170714 ^{AA}	1085	>>545301	22264	1681	9004			<5	ug/kg	TM36/PM12
o-Xylene [#]	147	1502	43148 ^{AA}	391	>>91789	5550	246	2168			<5	ug/kg	TM36/PM12
Natural Moisture Content	18.4	20.9	17.7	9.2	17.0	12.0	11.5	9.5			<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.31	1.19	0.25	0.15	0.24	0.09	0.43	0.10			<0.02	%	TM21/PM24
Sample Type	Clay	Clay	Clayey Sand	Clay	Clayey Sand	Clayey Sand	Clay	Clay				None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown				None	PM13/PM0
Other Items	stones	stones	stones	stones	stones	stones	stones	stones, sand				None	PM13/PM0

Element Materials Technology

Notification of Deviating Samples

Notification of Deviating Samples

Client Name: Smith Grant LLP **Matrix : Solid**

Reference: R2174C

Location: Tetrosyl

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/1772

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

EMT Job No: 21/1772

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention : Ben Thomas
Date : 19th February, 2021
Your reference : R2174C
Our reference : Test Report 21/1773 Batch 1
Location : Tetrosyl URL
Date samples received : 9th February, 2021
Status : Final report
Issue : 1

Seventeen samples were received for analysis on 9th February, 2021 of which seventeen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/1773

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	Please see attached notes for all abbreviations and acronyms		
Sample ID	HS11 CELL7 SS1	HS11 CELL7 SS2	HS11 CELL7 SS3	HS11 CELL7 SS4	HS11 CELL7 SS5	HS11 CELL7 SS6	HS11 CELL8 SS1	HS11 CELL8 SS2	HS11 CELL8 SS3	HS11 CELL8 SS4			
Depth	2.50	2.50	3.00	3.00	2.50	2.50	3.00	3.00	2.50	3.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021			
Sample Type	Clay	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clay	Clay	Clayey Sand	Clayey Sand	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021			
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1 ^{SV}	>>3.1 ^{AA}	>><1.0 ^{AA}	>><1.0 ^{AA}	<1.0 ^{AA}	<0.1	<0.1	<1.0 ^{AA}	<1.0 ^{AA}	<1.0 ^{AA}	<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	1.3 ^{SV}	>>166.9 ^{AA}	>>38.0 ^{AA}	>>60.1 ^{AA}	35.3 ^{AA}	0.5	0.2	12.1 ^{AA}	23.1 ^{AA}	19.4 ^{AA}	<0.1	mg/kg	TM36/PM12
>C8-C10	0.9 ^{SV}	>>224.7 ^{AA}	>>117.6 ^{AA}	>>117.4 ^{AA}	77.0 ^{AA}	1.7	0.7	24.7 ^{AA}	70.1 ^{AA}	39.6 ^{AA}	<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	80.5	217.6	150.3	301.7	119.8	10.9	<0.2	53.4	42.2	72.1	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	148	22	21	28	17	<4	<4	12	11	15	<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	128	12	9	13	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	119	36	<7	42	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	478	682	336	562	249	<19	<19	102	146	146	<19	mg/kg	TM5/PM8/PM16/PM21/PM25
Aromatics													
>C5-EC7 [#]	<0.1 ^{SV}	>><1.0 ^{AA}	>><1.0 ^{AA}	>><1.0 ^{AA}	<1.0 ^{AA}	<0.1	<0.1	<1.0 ^{AA}	<1.0 ^{AA}	<1.0 ^{AA}	<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	6.5 ^{SV}	>>516.8 ^{AA}	>>69.7 ^{AA}	>>138.8 ^{AA}	41.2 ^{AA}	0.5	1.3	22.0 ^{AA}	66.2 ^{AA}	25.8 ^{AA}	<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	2.2 ^{SV}	>>447.7 ^{AA}	>>193.6 ^{AA}	>>185.8 ^{AA}	97.0 ^{AA}	2.0	1.7	36.8 ^{AA}	113.0 ^{AA}	50.9 ^{AA}	<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	14.4	153.2	94.3	229.8	81.0	7.3	<0.2	30.7	30.7	44.7	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	81	6	<4	11	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	205	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	404	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	713	1124	358	565	219	<19	<19	90	210	121	<19	mg/kg	TM5/PM8/PM16/PM21/PM25
Total aliphatics and aromatics(C5-35)	1191	1806	694	1127	468	<38	<38	192	356	267	<38	mg/kg	TM5/PM8/PM16/PM21/PM25
MTBE [#]	<5 ^{SV}	3656 ^{AA}	683 ^{AA}	1010 ^{AA}	796 ^{AA}	<5	<5	173 ^{AA}	145 ^{AA}	354 ^{AA}	<5	ug/kg	TM36/PM12
Benzene [#]	17 ^{SV}	134 ^{AA}	<50 ^{AA}	<50 ^{AA}	<50 ^{AA}	<5	<5	<50 ^{AA}	<50 ^{AA}	<50 ^{AA}	<5	ug/kg	TM36/PM12
Toluene [#]	6471 ^{SV}	>>516861 ^{AA}	69651 ^{AA}	138704 ^{AA}	41114 ^{AA}	473	1212	22010 ^{AA}	66173 ^{AA}	25830 ^{AA}	<5	ug/kg	TM36/PM12
Ethylbenzene [#]	491 ^{SV}	90237 ^{AA}	33527 ^{AA}	36235 ^{AA}	16709 ^{AA}	287	325	6217 ^{AA}	19471 ^{AA}	8841 ^{AA}	<5	ug/kg	TM36/PM12
m/p-Xylene [#]	1395 ^{SV}	>>293942 ^{AA}	128802 ^{AA}	122276 ^{AA}	64784 ^{AA}	1382	1137	24313 ^{AA}	74444 ^{AA}	33701 ^{AA}	<5	ug/kg	TM36/PM12
o-Xylene [#]	269 ^{SV}	63583 ^{AA}	31199 ^{AA}	27233 ^{AA}	15507 ^{AA}	344	272	6231 ^{AA}	19089 ^{AA}	8404 ^{AA}	<5	ug/kg	TM36/PM12
Natural Moisture Content	22.7	17.7	14.4	16.9	13.4	18.5	14.2	17.1	13.1	18.9	<0.1	%	PM4/PM0
Total Organic Carbon [#]	39.21	0.50	0.63	0.36	0.59	0.22	0.96	0.69	0.29	0.74	<0.02	%	TM21/PM24
Sample Type	Clay	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clay	Clay	Clayey Sand	Clayey Sand	Clay		None	PM13/PM0
Sample Colour	Dark Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown		None	PM13/PM0
Other Items	stones, clinker	stones	stones	stones	stones	stones, sand	stones	stones	stones	stones		None	PM13/PM0

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/1773

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	21-22	23-24	25-26	27-28	29-30	31-32	33-34				Please see attached notes for all abbreviations and acronyms		
Sample ID	HS10 CELL3 SS1	HS10 CELL3 SS2	HS10 CELL3 SS3	HS10 CELL3 SS4	HS10 CELL3 SS5	HS10 CELL3 SS6	HS10 CELL3 SS7						
Depth	2.50	2.50	2.00	3.00	3.00	3.00	2.50						
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J						
Sample Date	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021						
Sample Type	Clay	Clayey Sand	Clayey Sand	Clay	Clay	Clay	Clay						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021	09/02/2021				LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1	>>6.7 ^{AA}	<0.1	<0.1	<1.0 ^{AA}	<0.1				<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	0.1	0.2	>>367.8 ^{AA}	<0.1	<0.1	10.4 ^{AA}	0.8				<0.1	mg/kg	TM36/PM12
>C8-C10	0.2	0.7	>>604.9 ^{AA}	0.1	0.1	18.2 ^{AA}	1.3				<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	<0.2	<0.2	272.1	6.1	<0.2	115.0	10.8				<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	<4	<4	28	14	<4	15	<4				<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	<7	8	14	<7	11	<7				<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	<7	37	22	<7	27	<7				<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	1325	56	<19	197	<19				<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 [#]	<0.1	<0.1	>><1.0 ^{AA}	<0.1	<0.1	<1.0 ^{AA}	<0.1				<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	0.5	0.7	>>902.0 ^{AA}	0.2	<0.1	<1.0 ^{AA}	0.2				<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	0.5	1.4	>>1073.9 ^{AA}	0.2	0.2	6.7 ^{AA}	0.5				<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	<0.2	<0.2	184.9	4.5	<0.2	37.8	7.2				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	<4	<4	7	10	<4	15	<4				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	22	<7	21	<7				<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	<7	17	<7	20	<7				<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	<19	<19	2168	54	<19	101	<19				<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	<38	<38	3493	110	<38	298	<38				<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE[#]	<5	7	9849 ^{AA}	<5	<5	<50 ^{AA}	<5				<5	ug/kg	TM36/PM12
Benzene[#]	17	12	253 ^{AA}	<5	<5	<50 ^{AA}	<5				<5	ug/kg	TM36/PM12
Toluene[#]	428	646	>>901982 ^{AA}	166	64	548 ^{AA}	184				<5	ug/kg	TM36/PM12
Ethylbenzene[#]	84	172	>>207804 ^{AA}	41	33	1540 ^{AA}	64				<5	ug/kg	TM36/PM12
m/p-Xylene[#]	337	1100	>>718095 ^{AA}	169	157	4565 ^{AA}	335				<5	ug/kg	TM36/PM12
o-Xylene[#]	74	130	>>147956 ^{AA}	43	46	652 ^{AA}	83				<5	ug/kg	TM36/PM12
Natural Moisture Content	19.9	16.4	15.3	9.0	10.6	18.1	16.6				<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.29	0.26	0.34	1.83	0.17	0.50	0.51				<0.02	%	TM21/PM24
Sample Type	Clay	Clayey Sand	Clayey Sand	Clay	Clay	Clay	Clay				None		PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown				None		PM13/PM0
Other Items	stones	stones	stones	stones, sand	stones	stones	stones				None		PM13/PM0

Matrix : Solid

[illegible]

Client Name: Smith Grant LLP

Reference: R2174C

Location: Tetrosyl URL

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/1773

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

Please include all sections of this report if it is reproduced

EMT Job No: 21/1773

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

EMT Job No: 21/1773

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention : Ben Thomas
Date : 2nd March, 2021
Your reference : R2174C
Our reference : Test Report 21/1883 Batch 1
Location : Tetrosyl URL
Date samples received : 11th February, 2021
Status : Final report
Issue : 2

Twenty two samples were received for analysis on 11th February, 2021 of which twenty two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/1883

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	Please see attached notes for all abbreviations and acronyms		
Sample ID	HS11 CELL10 SS1	HS11 CELL10 SS2	HS11 CELL10 SS3	HS11 CELL10 SS4	HS11 CELL10 SS5	HS11 CELL10 SS6	HS11 CELL10 SS7	HS11 CELL10 SS8	HS11 CELL10 SS9	HS11 CELL10 SS10			
Depth	3.00	3.00	3.00	3.00	3.00	3.00	2.50	2.50	2.00	2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	10/02/2021	10/02/2021	10/02/2021	10/02/2021	10/02/2021	10/02/2021	10/02/2021	10/02/2021	10/02/2021	10/02/2021			
Sample Type	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1	>>3.5	<0.1	<0.1	<0.1	>>9.7 ^{AB}	<0.5 ^{AA}	<0.1	0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	3.4	<0.1	>>151.8	<0.1	1.1	0.1	>>355.6 ^{AB}	6.3 ^{AA}	<0.1	2.6	<0.1	mg/kg	TM36/PM12
>C8-C10	4.6	<0.1	>>212.0	0.2	10.9	0.5	>>1718.7 ^{AB}	9.5 ^{AA}	<0.1	3.8	<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	<0.2	<0.2	204.0	<0.2	216.1	13.2	252.6	31.6	10.9	21.3	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	<4	<4	16	<4	24	<4	23	16	16	30	<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	<7	<7	<7	<7	<7	<7	16	14	26	<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	<7	<7	<7	<7	<7	<7	178	69	313	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	587	<19	252	<19	2360	257	110	397	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 [#]	<0.1	<0.1	>><0.1	<0.1	<0.1	<0.1	>><1.0 ^{AB}	<0.5 ^{AA}	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	9.0	<0.1	>>594.7	0.1	2.1	<0.1	>>264.5 ^{AB}	<0.5 ^{AA}	<0.1	0.6	<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	11.4	<0.1	>>692.9	0.3	20.3	0.2	>>2625.3 ^{AB}	5.6 ^{AA}	<0.1	1.7	<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	<0.2	<0.2	151.4	<0.2	158.7	<0.2	146.0	21.4	9.8	12.5	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	<4	<4	14	<4	16	9	12	15	11	32	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	<7	9	15	<7	47	22	100	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	<7	<7	<7	29	<7	381	143	594	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	20	<19	1453	<19	206	53	3048	470	186	741	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	<38	<38	2040	<38	458	53	5408	727	296	1138	<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	111	<5	6933	<5	12	<5	15060 ^{SV AB}	122 ^{AA}	<5	81	<5	ug/kg	TM36/PM12
Benzene [#]	80	9	74	<5	<5	<5	<50 ^{SV AB}	<25 ^{AA}	<5	<5	<5	ug/kg	TM36/PM12
Toluene [#]	9035	55	>>594706	111	2119	37	>>264509 ^{AB}	331 ^{AA}	11	513	<5	ug/kg	TM36/PM12
Ethylbenzene [#]	2042	18	>>114660	48	2602	15	>>398293 ^{AB}	387 ^{AA}	<5	207	<5	ug/kg	TM36/PM12
m/p-Xylene [#]	6909	83	>>493768	227	14522	115	>>1865857 ^{AB}	3653 ^{AA}	19	1008	<5	ug/kg	TM36/PM12
o-Xylene [#]	2412	11	>>84381	47	3177	40	>>361109 ^{AB}	1613 ^{AA}	<5	459	<5	ug/kg	TM36/PM12
Natural Moisture Content	42.3	25.4	13.9	10.8	11.0	12.9	13.6	14.4	10.8	12.5	<0.1	%	PM4/PM0
Total Organic Carbon [#]	4.94	1.49	0.09	0.46	0.28	0.28	0.09	1.16	0.25	2.24	<0.02	%	TM21/PM24
Sample Type	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand		None	PM13/PM0
Sample Colour	Dark Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Dark Brown		None	PM13/PM0
Other Items	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones		None	PM13/PM0

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/1883

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	HS11 CELL11 SS1	HS11 CELL11 SS2	HS11 CELL11 SS3	HS11 CELL11 SS4	HS11 CELL11 SS5	HS11 CELL11 SS6	HS11 CELL11 SS7	HS11 CELL11 SS8	HS11 CELL11 SS9	HS11 CELL11 SS10			
Depth	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	10/02/2021	10/02/2021	10/02/2021	10/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021			
Sample Type	Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Sand	Sand	Sand	Sand			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1 ^{SV}	>>0.9	<0.5 ^{AA}	0.2	<0.5 ^{AA}	0.9	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	7.2	1.2 ^{SV}	>>70.3	177.0 ^{AA}	0.4	0.8 ^{AA}	2.5	0.2	0.4	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	13.0	6.0 ^{SV}	>>232.2	42.2 ^{AA}	0.8	7.0 ^{AA}	3.8	1.0	0.7	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	68.2	307.0	340.3	256.3	<0.2	29.9	51.2	<0.2	8.5	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	37	312	69	36	<4	24	97	<4	22	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	11	12	21	15	<7	27	72	<7	19	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	76	47	75	<7	151	44	<7	13	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	136	714	781	602	<19	240	271	<19	64	<19	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 [#]	<0.1	<0.1 ^{SV}	>><0.1	<0.5 ^{AA}	<0.1	<0.5 ^{AA}	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	<0.1	2.2 ^{SV}	>>198.9	<0.5 ^{AA}	0.3	3.1 ^{AA}	1.0	<0.1	1.7	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	9.9	7.0 ^{SV}	>>686.2	3.8 ^{AA}	1.5	7.8 ^{AA}	2.8	0.3	1.2	0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	14.9	20.2	186.7	42.0	<0.2	15.6	12.9	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	15	13	16	14	<4	11	20	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	<7	<7	<7	<7	<7	24	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	<7	<7	<7	<7	<7	28	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	40	42	1088	60	<19	38	89	<19	<19	<19	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	176	756	1869	662	<38	278	360	<38	64	<38	<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	130	21 ^{SV}	2051	1326 ^{AA}	11	<25 ^{AA}	17	35	8	<5	<5	ug/kg	TM36/PM12
Benzene [#]	<5	<5 ^{SV}	26	<25 ^{AA}	<5	<25 ^{AA}	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Toluene [#]	74	2267 ^{SV}	>>198841	310 ^{AA}	324	3099 ^{AA}	968	49	1599	53	<5	ug/kg	TM36/PM12
Ethylbenzene [#]	2002	664 ^{SV}	>>105290	586 ^{AA}	180	1019 ^{AA}	319	45	211	14	<5	ug/kg	TM36/PM12
m/p-Xylene [#]	7619	4667 ^{SV}	>>472159	1881 ^{AA}	959	4930 ^{AA}	1866	191	845	99	<5	ug/kg	TM36/PM12
o-Xylene [#]	277	1644 ^{SV}	>>108804	1419 ^{AA}	337	1777 ^{AA}	604	67	193	22	<5	ug/kg	TM36/PM12
Natural Moisture Content	12.8	16.7	14.5	13.1	8.5	14.1	7.5	8.8	10.0	11.4	<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.15	0.29	0.08	0.21	0.13	1.31	0.34	0.19	0.23	0.05	<0.02	%	TM21/PM24
Sample Type	Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Sand	Sand	Sand	Sand		None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Grey	Medium Brown	Dark Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown		None	PM13/PM0
Other Items	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones		None	PM13/PM0

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/1883

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	41-42	43-44											
Sample ID	HS11 CELL11 SS11	HS11 CELL11 SS12											
Depth	2.00	2.00											
COC No / misc													
Containers	V J	V J											
Sample Date	11/02/2021	11/02/2021											
Sample Type	Clay	Sand											
Batch Number	1	1											
Date of Receipt	11/02/2021	11/02/2021											
Please see attached notes for all abbreviations and acronyms													
											LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	0.1	<0.5 _{AA}									<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	0.9	7.9 _{AA}									<0.1	mg/kg	TM36/PM12
>C8-C10	9.5	230.2 _{AA}									<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	8.1	3105.2									<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	15	821									<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	<7	264									<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	<7	1330									<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	34	5758									<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 [#]	11.5	<0.5 _{AA}									<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	0.3	<0.5 _{AA}									<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	13.9	8.8 _{AA}									<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	<0.2	290.9									<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	<4	147									<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	<7	73									<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	<7	458									<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	26	978									<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	60	6736									<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	69	830 _{AA}									<5	ug/kg	TM36/PM12
Benzene [#]	11517	<25 _{AA}									<5	ug/kg	TM36/PM12
Toluene [#]	314	215 _{AA}									<5	ug/kg	TM36/PM12
Ethylbenzene [#]	495	615 _{AA}									<5	ug/kg	TM36/PM12
m/p-Xylene [#]	10952	2000 _{AA}									<5	ug/kg	TM36/PM12
o-Xylene [#]	2529	6158 _{AA}									<5	ug/kg	TM36/PM12
Natural Moisture Content	14.3	10.9									<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.28	0.28									<0.02	%	TM21/PM24
Sample Type	Clay	Sand										None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown										None	PM13/PM0
Other Items	Stones, sand	Stones										None	PM13/PM0

Element Materials Technology **Notification of Deviating Samples**

Notification of Deviating Samples

Client Name: Smith Grant LLP **Matrix :** Solid

Reference: R2174C

Location: Tetrosyl URL

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/1883

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

AB	x10 Dilution
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EMT Job No: 21/1883

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention : Ben Thomas
Date : 26th February, 2021
Your reference : R2174C
Our reference : Test Report 21/2151 Batch 1
Location : Tetrosyl URL
Date samples received : 16th February, 2021
Status : Final report
Issue : 1

Eight samples were received for analysis on 16th February, 2021 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/2151

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16			Please see attached notes for all abbreviations and acronyms		
Sample ID	HS10 CELL 5 SS1	HS10 CELL 5 SS2	HS10 CELL 5 SS3	HS10 CELL 5 SS4	HS10 CELL 5 SS5	HS10 CELL 5 SS6	HS10 CELL 5 SS7	HS10 CELL 5 SS8					
Depth	2.00	1.50	1.50	1.50	2.00	1.50	2.50	3.00					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	15/02/2021	15/02/2021	15/02/2021	15/02/2021	15/02/2021	15/02/2021	16/02/2021	16/02/2021					
Sample Type	Clayey Sand	Clayey Sand	Clay	Clayey Sand	Clay	Clayey Sand	Clay	Clayey Sand					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	16/02/2021	16/02/2021	16/02/2021	16/02/2021	16/02/2021	16/02/2021	16/02/2021	16/02/2021			LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1 ^{SV}	0.4	>>2.1 ^{AA}	>>1.8 ^{AA}	>>3.0 ^{AA}	<0.1 ^{SV}	<1.0 ^{AA}	<1.0 ^{SV AA}			<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	9.3 ^{SV}	21.3	>>954.1 ^{AA}	>>445.7 ^{AA}	>>1067.4 ^{AA}	0.3 ^{SV}	9.9 ^{AA}	5.0 ^{SV AA}			<0.1	mg/kg	TM36/PM12
>C8-C10	8.9 ^{SV}	25.8	>>160.2 ^{AA}	>>96.7 ^{AA}	>>264.8 ^{AA}	1.3 ^{SV}	12.0 ^{AA}	21.6 ^{SV AA}			<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	161.0	323.1	11.4	85.9	88.1	53.7	9.1	398.7			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 ^{#M}	146	526	<4	125	30	199	<4	764			<4	mg/kg	TM5/PM8/PM16
>C16-C21 ^{#M}	135	578	<7	159	30	295	<7	925			<7	mg/kg	TM5/PM8/PM16
>C21-C35 ^{#M}	45	257	<7	214	84	215	<7	481			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	505	1732	1128	1128	1567	764	31	2595			<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 [#]	<0.1 ^{SV}	<0.1	>><1.0 ^{AA}	>><1.0 ^{AA}	>><1.0 ^{AA}	<0.1 ^{SV}	<1.0 ^{AA}	<1.0 ^{SV AA}			<0.1	mg/kg	TM36/PM12
>EC7-EC8 [#]	0.2 ^{SV}	3.3	>>111.9 ^{AA}	>>289.9 ^{AA}	>>377.0 ^{AA}	<0.1 ^{SV}	5.6 ^{AA}	<1.0 ^{SV AA}			<0.1	mg/kg	TM36/PM12
>EC8-EC10 ^{#M}	8.8 ^{SV}	5.7	>>221.8 ^{AA}	>>243.4 ^{AA}	>>413.9 ^{AA}	0.2 ^{SV}	15.8 ^{AA}	1.8 ^{SV AA}			<0.1	mg/kg	TM36/PM12
>EC10-EC12 [#]	62.8	112.0	8.8	54.7	39.9	19.0	8.1	108.5			<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 [#]	71	324	<4	71	16	115	<4	505			<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 [#]	87	387	<7	161	26	186	<7	605			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 [#]	25	137	<7	489	<7	75	<7	245			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 [#]	255	969	343	1309	873	395	30	1465			<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35)	760	2701	1471	2437	2440	1159	61	4060			<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	20 ^{SV}	186	2958 ^{AA}	1709 ^{AA}	4221 ^{AA}	<5 ^{SV}	193 ^{AA}	<50 ^{SV AA}			<5	ug/kg	TM36/PM12
Benzene [#]	<5 ^{SV}	<5	<50 ^{AA}	426 ^{AA}	<50 ^{AA}	<5 ^{SV}	<50 ^{AA}	<50 ^{SV AA}			<5	ug/kg	TM36/PM12
Toluene [#]	236 ^{SV}	3263	>>111838 ^{AA}	>>289984 ^{AA}	>>377010 ^{AA}	35 ^{SV}	5551 ^{AA}	168 ^{SV AA}			<5	ug/kg	TM36/PM12
Ethylbenzene [#]	1402 ^{SV}	1216	>>38931 ^{AA}	>>41050 ^{AA}	72758 ^{AA}	47 ^{SV}	3105 ^{AA}	557 ^{SV AA}			<5	ug/kg	TM36/PM12
m/p-Xylene [#]	6686 ^{SV}	3347	>>150847 ^{AA}	>>164155 ^{AA}	279966 ^{AA}	121 ^{SV}	10879 ^{AA}	880 ^{SV AA}			<5	ug/kg	TM36/PM12
o-Xylene [#]	728 ^{SV}	1097	>>31982 ^{AA}	>>38221 ^{AA}	61181 ^{AA}	44 ^{SV}	1861 ^{AA}	387 ^{SV AA}			<5	ug/kg	TM36/PM12
Natural Moisture Content	11.7	21.0	24.3	18.1	21.7	11.8	18.1	18.8			<0.1	%	PM4/PM0
Total Organic Carbon [#]	0.15	0.47	2.19	2.57	1.97	0.17	1.17	0.91			<0.02	%	TM21/PM24
Sample Type	Clayey Sand	Clayey Sand	Clay	Clayey Sand	Clay	Clayey Sand	Clay	Clayey Sand			None		PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown			None		PM13/PM0
Other Items	stones	stones	stones	stones	stones	stones	stones	stones			None		PM13/PM0

Client Name: Smith Grant LLP

Reference: R2174C

Location: Tetrosyl URL

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/2151

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

EMT Job No: 21/2151

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes

Smith Grant LLP
Station House
Station Road
Ruabon
Wrexham
LL14 6DL



Attention :	Ben Thomas
Date :	2nd March, 2021
Your reference :	R2174C
Our reference :	Test Report 21/2280 Batch 1
Location :	Tetrosyl URL
Date samples received :	18th February, 2021
Status :	Final report
Issue :	1

Seven samples were received for analysis on 18th February, 2021 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: Smith Grant LLP
Reference: R2174C
Location: Tetrosyl URL
Contact: Ben Thomas
EMT Job No: 21/2280

Solids: V=60g VOC jar. J=250g glass jar. T=plastic tub

Please see attached notes for all abbreviations and acronyms

Client Name: Smith Grant LLP

Reference: R2174C

Location: Tetrosyl URL

Contact: Ben Thomas

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/2280

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 21/2280

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes

APPENDIX C

Instrument Calibration Certificates

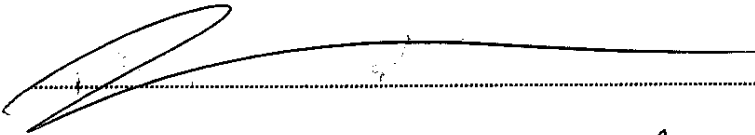
Certificate of Calibration

Customer: Smith Grant LLP
Instrument: MiniRAE 3000
Job: Service, test & re-calibration
Serial number: 592-915404
Fleet Number: -
Certificate no: 915404/161220
Next calibration due date: 16.12.2021
Tested on: 16.12.2020
Calibrated for: Isobutylene

<u>Applied Gas Concentration:</u>	<u>Cylinder Reference:</u>	<u>Initial Sensor Reading</u>	<u>Final Sensor Reading</u>	<u>Accuracy Limits</u>
Isobutylene 100ppm	WO263190-10	89ppm	100ppm	+/-5%

The instrument has been calibrated after re-zeroing and introducing span calibration gas, using gas that is traceable to national standards and has been prepared in accordance with BS EN ISO 6145-6:2017

Calibration Engineer: DANIEL JACQUES

Sign: 

Quality Assessed by (Print): R.L. BAINBRIDGE	Sign: 
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CERTIFICATE OF CALIBRATION
Phocheck Tiger

CALIBRATION CERTIFICATE NO: 69743

ISSUED BY: SHAWCITY LIMITED
DATE: 01.12.20
APPROVED SIGNATORY: 
NAME: Ben Challenger
CUSTOMER: Shawcity Ltd -Exhibition equipment
INSTRUMENT: PhoCheck Tiger
SERIAL NUMBER: T-115610
CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO262581-2	100 ppm	100 ppm
Isobutylene	WO224476-2	1000 ppm	1000 ppm

COMMENTS:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is $\pm 2\%$
The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

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