REMEDIATION VERIFICATION REPORT

Lidl, Mapplewell

Client: Grupotec

Remada Ltd
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616.02
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Executive Summary

Remada Ltd was appointed by Grupotec to provide technical support and verification services as detailed below for the remediation of land at the former William Freeman site, east of the A61 Wakefield Road, Mapplewell, Barnsley, S71 3LT in preparation for the development of a Lidl store.

Previous Site Assessments

A Geoenvironmental Appraisal Report was prepared in 2018 by Sirius and concluded that "recorded soil contaminant concentrations did not exceed generic assessment criteria for retail use; as such 'formal' remediation to protect site end users was not considered necessary". Consequently, remediation objectives were limited to grubbing up and crushing of existing concrete slabs and relict foundations, importation of fill material to raise ground levels and management of unforeseen contamination.

Remediation of the Former Rubberworks

The site preparation or remediation works commenced in December 2018 and were generally complete by March 2019, however due to the occurrence of unforeseen contamination, the final disposal of wastes did not take place until 30th May 2019.

Concrete slabs across the site area were broken out using mechanical excavators and shallow foundations were grubbed up to be crushed and for subsequent use as a piling mat. The far east of the site (known to contain historical landfill material) was excavated and the arisings comprised waste rubber products / off-cuts and production waste associated with the site's historic use. Where these materials encroached onto the site they were excavated and placed in a designated stockpile for off-site disposal. During excavation works, a concrete in-ground holding chamber was encountered in the east of the site. A thick black sludge was found within the chamber, believed to comprise residues from the rubber manufacturing (dying) process.

Geotechnical Remediation

A total of 3,600m^3 of recycled 2C stony cohesive material (general fill) was imported to site between January and February 2019 in order to raise levels and create a development platform. The material was typically a brown sandy gravelly clay containing minor constituents of limestone, coal, brick, concrete, mudstone and siltstone with occasional fragments of plastic sheet.

Assessment of Soil Chemical Analyses

A total of sixteen samples were taken for chemical analysis of asbestos, CLEA metals, FOC, TPHCWG, PAH, BTEX and Phenols on samples of imported Clay Class 2C, Site Won Crushed Concrete 6F2 and site won topsoil. With the exception of asbestos fibres none of the samples yielded concentrations of contaminants greater than the GAC, however asbestos screening and quantification indicates that much of the imported 2C fill material contains trace or low concentrations of chrysotile asbestos.

The 2C fill is cohesive and overlain by a layer of 6F2 fill which will serve to break the human health (end users) exposure pathway of outdoor inhalation. The existence of hardstanding in pavement, car parking and highway areas further serves to sever the exposure pathway. The asbestos contaminated material below the footprint of the building will be 'sealed in' by the floor slab and will therefore not pose an unacceptable risk to site users by indoor inhalation.

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Issue No /	Date	Prepared By	Technical Review	Authorised
01	11.06.19	I Cairns	G Jones	G Jones

1 INTRODUCTION

Remada Ltd was appointed by Grupotec to provide technical support and verification services as detailed below for the remediation of land at the former William Freeman site, east of the A61 Wakefield Road, Mapplewell, Barnsley, S71 3LT. Grupotec was contracted by Lidl (UK) GmbH to provide a package of demolition, remediation and subsequent construction work at the site.

Development proposals comprise construction of a Lidl food store, along with access road, hard surfaced car parking and some areas of peripheral landscaping. It is understood that as part of the redevelopment proposals that site levels will be raised by approximately 1.3m across the footprint of the proposed store and car parks; retaining structures up to 2.5m in height will be constructed at the site boundaries.

The proposed layout is indicated at **Figure 1.**

As part of the planning application (reference 2017/1716), prior to occupation of the proposed development a Validation Report is required by the Local Planning Authority (LPA) Barnsley Metropolitan Borough Council (BMBC) to confirm remediation works have been undertaken.

1.1 Objectives

The objective of this assessment is to verify that the remediation works undertaken at the site were:

- implemented in accordance with Sirius Group's Strategy for Remediation and Preparatory Works (ref C7481/RS) as approved by BMBC, and;
- to enable planning condition 18 or planning application 2017/1716 to be discharged.

1.2 Scope of Work

The scope and layout of this report has been designed with DEFRA and the Environment Agency's CLR11[(1)] in mind and guidance issued by the Environment Agency for land contamination reports. In addition the report is prepared with cognisance to BMBC's Supplementary Planning Guidance 28, entitled "Developing Contaminated Land".

The scope of remedial work implemented by Grupotec comprised:

- Preparation of a Materials Management Plan (MMP);
- grubbing up concrete slabs and external hardstanding;
- site vegetation clearance;
- removal of asbestos debris from the site surface;
- crushing / screening of site derived concrete into recycled aggregate
- excavation of relict foundations from historic buildings to a maximum 2m depth beneath the proposed car park / access highway;
- excavation of in-ground carbon dye storage tank;
- importation and placement of fill to raise ground levels across the site;

Remada provided the following services under sub-contract to Grupotec:

- Declaration of the MMP at **Appendix A**;
- four site visits to inspect on-going remedial works;

- undertaking inspection of imported fill;
- inspection of waste destined for off-site disposal;
- sampling and testing of imported soil materials; and,
- preparation of a Verification Report.

1.3 Previous Reports

A summary list of the previous reports relating to land quality at the site is tabulated below:

2017	*Preliminary Appraisal Report - ref. C7481 Rev. A – Sirius group - June 2017*
2018	*Geoenvironmental Appraisal Report – Land off Wakefield Road, Mapplewell, Barnsley - ref. C7481/GA – Sirius Group - January 2018*
	Supplementary Ground Gas Risk Assessment – Land off Wakefield Road, Mapplewell, Barnsley – ref C7481 – Sirius Group - March 2018
	Strategy for Remedial and Preparatory Works – Land off Wakefield Road, Mapplewell, Barnsley – ref C7481/RS – Sirius Group - March 2018

1.4 Limitations

The comments given in this report and the opinions expressed are based on the information reviewed and observations during site work. However, there may be conditions pertaining to the site that have not been disclosed by this assessment and therefore could not be taken into account.

2 GENERAL SITE CHARACTERISTICS

2.1 Site Description

The site falls within an area of land first previously developed by William Freeman Rubber Products. The site was disused after the close of William Freeman in 2009 and most building subsequently demolished to slab level.

Immediately prior to remediation commencing, the site was occupied by the floor slab to the former factory, stockpiles of demolition rubble and areas of grass and dense scrubland.

2.2 Review of Previous Reports

A brief summary of the salient points from the previous reports is provided in this section; each report is summarised in turn below:

2017 – Sirius Group - Preliminary Appraisal Report

The report is a desk-based assessment of the site history and its environs and incorporates a site area greater than the proposed Lidl store development. The report contains a preliminary risk assessment with regards to contamination risks. Historical Ordnance Survey (OS) maps reviewed in the report records the site as agricultural fields until the 1960s when the William Freemans Factory was constructed. The factory was demolished sometime in the early 21st century, with the factory footprint at slab level at the time of writing. It was noted that the site levels had been modified by cut and fill to provide the development platform on which the factory and associated buildings had stood.

A preliminary conceptual site model within the report indicates contamination sources including the former rubber factory (and associated industrial processes), an on-site landfill and coal mining. Pollutant linkages were considered possible with regards to a variety of receptors. Ground gas risks from infilled ground, mining and landfill are identified. The report states that potential contamination on-site may include heavy metals, inorganic compounds, organic compounds (including petroleum hydrocarbons, PAHs, PCBs and VOCs) and asbestos fibres and may pose potential risks to human health (construction workers, adjacent land users and site end-users) and construction materials (including underground services). Risks related to these potential linkages were given risk ratings of Low to Moderate and the report concludes that further assessment is required before the site can be developed. Required work includes intrusive investigation, ground gas monitoring and laboratory testing of site soils. Invasive species surveys were also recommended.

2018 – Sirius Group - Geoenvironmental Appraisal Report

The report detailed the findings of an intrusive site investigation which comprised excavation of 8 trial pits, soakaway testing in three trial pits, drilling of 9 windowless sampler boreholes and rotary open-hole drilling of 9 boreholes. Soil and groundwater samples were recovered and analysed for a range of commonly occurring contaminants and chemical parameters. Waste Acceptance Criteria (WAC) analysis was undertaken on eight soil samples. Two samples of suspected asbestos containing materials (ACMs) were taken from the surface stockpiles on the site and analysed for asbestos presence / absence.

The intrusive site investigation identified made ground / possible re-worked clay soils in proximity to the footprint of the proposed food store building vary in depth from 0.6m to 3.0m, with the greatest thicknesses recorded in the eastern side of the footprint, including landfilled waste at the north-eastern tip. The identified landfilled waste included hot water bottles, plastic, steel drums, polystyrene and wood, in a matrix of clay.

No shallow mine workings were found during drilling. Recorded soil contaminant concentrations did not exceed generic assessment criteria for retail use; as such 'formal' remediation to protect site end users was not considered necessary. However, a growing medium including imported topsoil was stated as being

required within soft landscaped areas. Finally, it was noted that unforeseen contamination of soil and / or groundwater cannot be discounted.

Then-existing demolition waste stockpiles on the site included minor proportions of ACMs; fragments of asbestos cement corrugated sheeting and rainwater pipe were identified, confirmed to contain chrysotile by laboratory analysis. It was recommended that all visible ACM fragments should be removed from the stockpiles prior crushing, to minimise the risk of release of asbestos fibres into the air, and contamination of the crushed product. It was recommended that if the crushed product was to be re-used as fill, it should be placed in areas where future disturbance will not take place, e.g., by construction and maintenance activities, in accordance with a Materials Management Plan.

Combined 50mm diameter ground gas and groundwater monitoring wells were installed within six window sample holes (WS01A, WS02 and WS04 to WS07). Ground gas monitoring was underway at the site at the time of the report but not complete; this was to be reported as an addendum (see below).

2018 – Sirius Group – Supplementary Ground Gas Risk Assessment

The ground gas risk assessment incorporates data from 7no monitoring visits. The report states that methane was not detected in any of the monitoring wells on any visit. Carbon dioxide was positively detected in all boreholes on the majority of monitoring visits, with a maximum steady concentration of 16.5% v/v, recorded in borehole WS05. The maximum recorded peak borehole flow rate was 104.4 litres/hour. The site was concluded to fall within Characteristic Situation 2 as defined in BS8485:2015. Based on Table 4 within BS8485:2015, a minimum gas protection score of 2.5 is required for the proposed development, i.e. for a Type C building. In line with Tables 5 to 7 within BS8485:2015, this should be achieved by a combination of two or more of the following elements: the structural barrier of the floor slab; ventilation measures; gas resistant membrane (only when installed and independently verified by suitably qualified personnel). It was noted that the site is in an area where basic radon protection measures are required within the construction of new buildings under current guidance, and therefore the ground gas protection measures proposed should also consider protection against radon (and vice versa).

2018 Sirius Group - Strategy for Remedial and Preparatory Works

Sirius Geotechnical Ltd (Sirius) was commissioned by Lidl UK GmbH Ltd (Lidl), to produce a Strategy for Remedial and Preparatory Works required to facilitate development of the subject site as a Lidl store.

Redevelopment proposals at the time of writing comprised a Lidl food store, along with access road, hard surfaced car parking and areas of peripheral landscaping. It is understood that as part of the redevelopment proposals that site levels will be raised by c. 1.3m across the footprint of the proposed store and adjacent car parks. Retaining walls of up to 2.5m in height will be required at the site boundaries.

The main aims of the strategy were stated as: i) to discharge the relevant planning conditions pertaining to contaminated land; ii) to enable the ground at the site to be prepared to a condition ready for development and which is suitable for the proposed end-use (low-rise commercial) whilst ensuring construction workers and environmental receptors are not put at an unacceptable short term risk during the remediation, preparation and redevelopment of the site; (iii) to minimise the risk of future end users coming into contact with any contaminated soils; and (iv) in the interests of sustainability, to promote the use of site-won materials where possible, providing they are suitable for the proposed end-use.

2.3 Pre-Remediation Conceptual Site Model

The pre-remediation Conceptual Site Model is shown in Table 1 below.

2.4 Remediation Strategy Objectives

2.4.1 Environmental Objectives

The principal environmental remediation objectives as defined in the Strategy for Remediation and Preparatory Works (Sirius Report C7481/RS) were to undertake:

- Production of a Materials Management Plan (MMP).
- The presence or absence of invasive / protected plant species should be confirmed by a qualified consultant and their advice taken on appropriate treatment if necessary.
- Removal of any remaining fly-tipped material from the site.
- Strip suitable topsoil and stockpile for assessment and potential re-use on site.
- Controlled removal of all asbestos containing materials (ACMs) from stockpiles by an approved licensed contractor.
- Safe demolition / breaking out of remnant slabs and areas of hardstanding within the proposed development area and inspect for ACMs.
- Excavation of waste material within former landfill in full where present beneath the site, disposal to a licenced landfill / waste management facility, and establishment of final site levels with suitable fill material compacted in accordance with an agreed earthworks specification.
- Where possible and practical, on site crushing, screening and classification of all suitable materials won from the above works, to provide fills suitable for re-use on site in accordance with an agreed specification for the works. Alternatively, such materials to be removed off-site for possible processing and re-use elsewhere.
- A watching brief, by the GE during all of the above, to identify any previously unidentified sources of contamination.
- On site treatment and / or removal (where required) from site if any unidentified hydrocarbon contaminated soils and groundwater is encountered with the potential to pose a significant risk to end-users and / or controlled waters.
- All geotechnical and chemical testing as required throughout the remedial earthworks.
- A validation report produced by a suitably qualified geoenvironmental engineer on completion of the works. This initial report will provide a record of the remediation works including the results of testing to demonstrate the integrity of the work and confirm the work has been carried out in accordance with the relevant legislation, the remediation specification and planning conditions.

The development will also include the provision of soft-landscaped areas to the periphery of the car parking areas. These will not be required to provide a ‘clean cover’ to the site; however, a suitable depth of clean soil will be required in order to provide a suitable plant growth medium.

2.4.2 Geotechnical Objectives

The principal geotechnical remediation objectives as defined in the Strategy for Remediation and Preparatory Works (Sirius Report C7481/RS) were as follows:

- Dependent on the chosen foundation type and floor slab construction type for the building, it is recommended that existing made ground soils, and clays identified as 'possibly reworked' within the footprint of the building, are excavated and removed to expose the underlying natural strata, in particular the residual Coal Measures strata beneath, prior to earthworks commencing. Proof rolling of exposed natural material should be undertaken, with any soft spots, large obstructions or other deleterious materials removed and replaced with suitable material compacted in accordance with an agreed earthworks specification, where necessary.
- During the above process, all excavations should be inspected for evidence of mine entries / bell pits. If evidence of a mine entry or ground disturbance is suspected, advice regarding treatment / foundation precautions should be sought from a suitably qualified engineer.
- Excavation of waste material within former landfill in full where present beneath the site, disposal to a licenced landfill / waste management facility, and establishment of final site levels with suitable fill material compacted in accordance with an agreed earthworks specification.
- For made ground across the remainder of the site, outside of the building footprint / landfilled area, consideration could be given to excavating the upper 1m to 2m of fill (or down to residual Coal Measures strata if shallower) classifying and compacting to development subgrade levels, to facilitate the construction of a lightly reinforced hardstand.
- Break out all relic foundations, below ground obstructions and oversized / unsuitable materials encountered during the site wide strip / earthworks which would hinder subsequent foundation, utility / service and highway construction.
- Where possible and practical, on site crushing, screening and classification of all suitable materials won from the above works, to provide fills suitable for re-use on site in accordance with an agreed specification for the works. Alternatively, such materials to be removed off-site for possible processing and re-use elsewhere.
- Where applicable, removal or relocation to suitable areas (i.e. non-structural), any material which fails to achieve the requirements set out within the agreed specification for re-use. • Re-profile site to finished ground levels, re-engineering suitable fill materials (site-won and / or imported) back into place, in accordance with the requirements of the agreed specification, within the site area to form a suitable development plateau as agreed with Lidl. If a raft foundation, or a ground-bearing floor slab is proposed, the earthworks specification should be sufficiently robust to allow for their construction and use. • As part of the above works, it is possible that the proposed retaining walls will require constructing in order to retain the fill materials to the proposed levels (c. 1.3m above existing ground level). Alternatively, the fill materials could potentially be left at a suitably stable angle towards the edge of the development plateau and the retaining walls constructed at a later date, with fill material placed up to these at that time, to the required earthworks specification.
- Undertake all geotechnical and chemical testing as required throughout the remedial earthworks

Potential Source Areas	Potential Contaminants of Concern	Pathways	Potential Receptor	Exposure Route	Potential Identified Linkage (unmitigated)	Findings of Ground Investigat-ion	Risk (Un-mitigated)	Implemented / Recommended Mitigation Measures	Residual Risk Estimation
<u>On-site Sources</u> **Re-use of crushed demolition waste** **Hazardous ground gases from made ground** **Hazardous ground gases from historical landfill** ***<u>Off-site Sources</u>*** **Hazardous ground gases from historical landfill**	Asbestos Methane Carbon Dioxide Methane Carbon Dioxide Methane Carbon Dioxide	Disturbance due to construction plant causing direct contact, dusts, vapours. Direct Contact with occupants/workers/customers in the proposed development Inhalation of vapours/ gases by occupants of proposed development Permeation of water supply pipework Leachate	<u>Human Health</u> End users Adjacent land users	Direct Soil Ingestion	No	GAC not exceeded	N/A	N/A	Low
				Indoor Dust ingestion	No	GAC not exceeded	N/A	N/A	Low
				Skin Contact with Soils	No	GAC not exceeded	N/A	N/A	Low
				Skin Contact with Dust	No	GAC not exceeded	N/A	N/A	Low
				Inhalation of Outdoor Dust	Yes	GAC not exceeded	Moderate		Low
				Inhalation of Outdoor Vapours	No	GAC not exceeded	N/A	N/A	Low
				Inhalation of Indoor Vapours	No	GAC not exceeded	N/A	N/A	Low
				Inhalation of ground gas	Yes	Characteristic Situation 2 – Protection measures required	High		Low
				Ingestion via permeated water supply pipework	No	Organics/ Inorganics present in soils	N/A	N/A	Low
			<u>Controlled Waters</u> Secondary (A) Aquifer within (Bedrock) Surface waters	Direct contact/migration	No	Low Risk	N/A	N/A	Low
				Migration via secondary aquifer	No	Low Risk	N/A	N/A	Low
				Migration via perched groundwater / secondary aquifer	No	Low Risk	N/A	N/A	Low

Table 1: Pre-Remediation Conceptual Site Model

3 SITE PREPARATION & REMEDIATION ACTIVITIES

3.1 Overview

The site clearance and remediation works commenced on site on 14th January 2019 and continued until the remediation ground level (i.e. upper surface of 2C fill material awaiting 6F2 capping) was reached in March 2019. Unforeseen waste was stockpiled but not removed from site until 30th May 2019.

3.2 Site Vegetation Strip

Minimal vegetative cover was present on-site, although some small shrubs and trees in areas of former landscaping were scraped up with excavators and removed to the west of the site for stockpiling prior to off-site disposal.

Vegetation clearance underway (6th February 2019)

Vegetation, shrubs etc scraped off the site surface and stockpiled ready for disposal (6th February 2019)

3.3 Breaking Out Concrete Slabs, Grubbing Out Shallow Foundations and Recycling of Materials

Concrete slabs across the site area were broken out using mechanical excavators fitted with hydraulic breakers during January and February 2019. The concrete was stockpiled and subsequently run through a crusher operating with a mobile plant licence.

Shallow foundations were grubbed up using mechanical plant and the arising concrete was also stockpiled for crushing. In addition a previously un-encountered in-ground concrete chamber was discovered in the eastern area of the site (former storage tank for carbon dye). The contents of the chamber were excavated and stockpiled on-site and treated as unforeseen contamination. The chamber was subsequently broken up using a hydraulic breaker, before being stockpiled ready for subsequent crushing.

The site won crushed concrete was subsequently used to construct a piling mat over the Class 2C fill material.

Mobile plant crusher on-site crushing site derived brick and concrete (31 January 2019)

Stockpiles of site derived crushed brick and concrete (6th February 2019)

3.4 Excavation and Removal of Rubber Waste

The area in the far east of the site (known to contain historical landfill material) was excavated and the arisings comprised waste rubber products / off-cuts and production waste associated with the site's historic use. Where these materials encroached onto the site they were excavated and placed in a designated stockpile for off-site disposal. The materials were sampled by Remada and dispatched for laboratory analysis to enable the waste stream to be classified prior to disposal off-site.

Excavated rubber waste stockpiled for disposal (6th February 2019)

Rubber waste containing hot water bottles etc (6th February 2019)

3.5 Import and Emplacement of 2C Fill

A total of 3,600m^3 of recycled 2C stony cohesive material (general fill) was imported to site between January and February 2019.

The Remada Geoenvironmental Engineer attended site to inspect the placement and compaction of deliveries made on 31st January and 6th February 2019. The material was described as typically a brown sandy gravelly clay containing minor constituents of limestone, coal, brick, concrete, mudstone and siltstone with occasional fragments of plastic sheet.

The imported 2C material was observed across the entire site to have excessive moisture content and during compaction the vibrating roller displaced the material laterally during each pass; this was not an issue in terms of engineering properties as the proposed store is founded on pile / ring beam foundations thus not bearing on the fill material.

Emplacement of imported 2C fill underway in store footprint area (6th February 2019)

Emplacement of imported 2C fill underway in car park area (6th February 2019)

Site surface mid-way through 2C fill placement (6th February 2019)

Site surface mid-way through 2C fill placement (6th February 2019)

3.6 Soakaway Installation

A large excavation was undertaken in the southern area of the site below the proposed car park; a layer of geotextile was laid coarse 40-80.

Completed soakaway excavation with laying of geotextile underway (31st January 2019).

Completion of geotextile lining with emplacement of 40-80 stone underway (6th February 2019).

3.7 Unforeseen Contamination

3.7.1 Black Carbon Dye Sludge

During excavation works, a concrete in-ground holding chamber was encountered in the east of the site. A thick black sludge was found within the chamber, believed to comprise residues from the rubber manufacturing (dying) process. The sludge was excavated, set aside and sampled on the 31st January 2019 for chemical analysis to confirm its composition and origin. The sludge material was later relocated on-site (observed by the Remada Geoenvironmental Engineer on 6th February 2019) pending laboratory test results to enable its disposal.

Concrete chamber containing black sludge believed to be from the rubber dying process (31st January 2019)

Stockpile of black sludge segregated and stored in isolation ready for disposal (6th February 2019)

3.7.2 Asbestos contamination within imported fill materials

During the routine validation visits, the imported 2C fill material was sampled and tested after placement on the 15th March 2019 by a Remada Geo-Environmental Engineer. Five (5 No) soil samples were taken from the uppermost surface of the fill on that date i.e. finished levels minus final 600mm of 6F2 capping and surfacing (yet to be placed). All 6 No samples yielded positive detections for asbestos fibres.

Quantification testing was undertaken on the samples to determine the percentage by weight of asbestos present in each sample. The results are summarised below:

Test	Sample 11	Sample 12	Sample 13	Sample 14	Sample 15	Sample 16
Asbestos Containing Material Type	Fibres / Clumps	Fibres / Clumps	Fibres / Clumps	Fibres / Clumps	Fibres / Clumps	Cement
Asbestos Identification	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Asbestos by Gravimetry (% w/w)	0.002	0.003	0.002	0.004	0.002	0.027
Total Asbestos (% w/w)	0.002	0.003	0.002	0.004	0.002	0.027

The concentrations of asbestos fibres in the soils are not considered unacceptable on the basis that they have been placed in areas below the store floor slab and external parking and access road areas.

3.8 Remediation Finished Levels

The 2C material was also inspected by the Remada Geo-Environmental Engineer on completion of its placement (prior to placement of 6F2 capping) on March 15th 2019. The material was locally firm and soft underfoot.

View across site along southern boundary facing west on completion of finished remediation level completed with imported 2C fill material

General view of central area of the site showing finished remediation levels with imported 2C fill at the surface

View across site towards east showing finished remediation level completed with imported 2C fill material

View across central part of site showing finished remediation ground levels comprising imported 2C fill

Finished remediation levels below store footprint showing ring beam installation underway (15th March 2019)

Finished remediation levels (left) to the south of the retaining wall below store footprint (15th March 2019)

The topographical survey showing site levels at the time of completion is shown in **Appendix B**.

3.9 Waste Removal

The following wastes were removed from site during the remediation works:

Hazardous Waste

Asbestos cement sheeting debris from the early phase of site clearance

- Hazardous soils: 1 load consigned to JTL, Oakes Lane, Barnsley, S71 1HJ

Non-Hazardous Wastes

The following were transferred to a waste transfer station EPR/JP3894/FM:

- 4 No loads of unforeseen bottlewaste were transferred to Augean Middlesborough EPR/BV1402/ICV008 on 30th May 2019.
- 2 No loads of unforeseen black carbon waste were transferred to Shaws Wath Upon Dearne EA/WML/65262 on 30th May 2019.

Waste Transfer Notes are presented at **Appendix B.**

4 SOIL & GROUNDWATER SAMPLING & ANALYSIS

4.1 Sample Quality Assurance / Quality Control

Samples for chemical laboratory testing purposes were collected in amber glass jars, amber glass vials and plastic tubs and retained in a cool box for transport to the laboratory. All samples were submitted to an approved United Kingdom Accredited Laboratory (UKAS) and MCERTS laboratory under a completed chain of custody. The laboratories carried out their own QA/QC programme to ensure that the quality of the analytical data conformed to the appropriate test method protocols. Containers for volatile analysis were filled so that minimal (soil) air space remained prior to sealing the container.

Soil samples for chemical analysis were collected in plastic tubs and amber glass jars. All samples were retained in a cool box with chain of custody for transport to the laboratory for environmental analysis.

Geotechnical samples were bagged and despatched to the laboratory with a schedule.

4.2 Sample Schedule

A schedule of soil samples is presented as **Table 2** below.

Sample No	Date	Sample Location	Description	Test / Analysis	Laboratory	Notes
612.02 / Sample 1	31/01/19	Eastern area	Imported 2C	Asbestos screen / ID Asbestos quantification pH NMC CLEA Metals Chromium VI FOC TPH CWG BTEX EPA16 PAH	Chemtest Ltd UKAS and MCERTS accredited analytical laboratory	Sampled to confirm quality of fill arriving on-site
612.02 / Sample 2	31/01/19	Eastern Area	Imported 2C			Sampled to confirm quality of fill arriving on-site
612.02 / Sample 3	31/01/19	Eastern edge of site	Rubber waste			Sampled to enable characterisation and identification
612.02 / Sample 4	31/01/19	In-ground concrete chamber in east of site	Black carbon dye sludge			Sampled to enable characterisation and identification
612.02 / Sample 5	31/01/19	6F2 Stockpile in central area of site	Site derived 6F2	Asbestos screen / ID		Sampled to confirm presence or absence of asbestos prior to export off-site
612.02 / Sample 6	31/01/19	6F2 Stockpile in central area of site	Site Derived 6F2	Asbestos screen / ID		Sampled to confirm presence or absence of asbestos prior to export off-site
612.02 / Sample 7	06/01/19	2C arriving on-site in central area	Imported 2C	Asbestos screen / ID		Sampled to confirm quality of fill arriving on-site
612.02 / Sample 8	06/01/19	2C arriving on-site in central area	Imported 2C	Asbestos screen / ID		Sampled to confirm chemical quality of fill arriving on-site
612.02 / Sample 9	06/01/19	Fresh 6F2 crush in stockpile (north side)	Site derived 6F2	Asbestos screen / ID		Sampled to confirm presence or absence of asbestos prior to export off-site
612.02 / Sample 10	06/01/19	Fresh 6F2 crush in stockpile (south side)	Site Derived 6F2	Asbestos screen / ID		Sampled to confirm presence or absence of asbestos prior to export off-site
612.02 / Sample 11	15/03/19	Finished remediation level – footprint of store	Imported 2C	Asbestos screen / ID Asbestos quantification pH NMC CLEA Metals Chromium VI FOC TPH CWG BTEX EPA16 PAH		Sampled to confirm chemical quality of fill arriving on-site
612.02 / Sample 12	15/03/19	Finished remediation level – access route (south of store footprint)	Imported 2C			Sampled to confirm chemical quality of fill arriving on-site
612.02 / Sample 13	15/03/19	Finished remediation level – eastern end of proposed car park	Imported 2C			Sampled to confirm chemical quality of fill arriving on-site
612.02 / Sample 14	15/03/19	Finished remediation level – near southern boundary	Imported 2C			Sampled to confirm chemical quality of fill arriving on-site
612.02 / Sample 15	15/03/19	Finished remediation level – south-western area	Imported 2C			Sampled to confirm chemical quality of fill arriving on-site
612.02 / Sample 16	15/03/19	Western area – stockpile	Stockpiled organic soil			Sampled to enable waste characterisation and off-site disposal route to be established

Table 2: Sample Schedule

5 RISK ASSESSMENT

5.1 Site Soils

5.1.1 Chemical Quality of Imported 2C Soil and Human Health Risk

Seven samples of imported Class 2C cohesive fill were scheduled for the analyses of asbestos, CLEA metals, fraction of organic carbon (FOC), speciated Total Petroleum Hydrocarbons (TPHCWG), Poly Aromatic Hydrocarbons (PAH), Volatile Organic Compounds (BTEX) and Phenols. The laboratory chemical test results for imported site soils were assessed against GAC for commercial development. All samples have yielded results below the respective GAC for each chemical determinand except asbestos and as such the risk to human health from chemical contamination within the 2C fill is considered to be Negligible.

A comparison of the results of chemical analyses with GAC are presented at **Table 3** and the laboratory reports are presented at **Appendix C.**

5.1.2 Asbestos Content of Imported 2C Soil and Human Health Risk

Asbestos screening and quantification analyses have shown that much of the imported 2C fill material contains trace or low concentrations of chrysotile asbestos. Anything other than non-detects are considered unacceptable in terms of soils and human health risk assessment. However, the 2C fill is cohesive and overlain by a layer of 6F2 fill which will serve to break the human health (end users) exposure pathway of outdoor inhalation. The existence of hardstanding in pavement, car parking and highway areas further serves to sever the exposure pathway. The asbestos contaminated material below the footprint of the building will be 'sealed in' by the floor slab and will therefore not pose an unacceptable risk to site users by indoor inhalation.

A comparison of the results of chemical analyses with GAC are presented at **Table 3** and the laboratory reports are presented at **Appendix C.**

5.1.3 Site Won Class 6F2

Four samples of site won crushed concrete were scheduled for the analyses of asbestos, CLEA metals, FOC, TPHCWG, PAH, BTEX and Phenols and yielded results below the respective GAC.

A comparison of the results of chemical analyses with GAC are presented at **Table 3** and the laboratory reports are presented at **Appendix C.**

5.1.4 Site Won Topsoil

One sample of site won topsoil was scheduled for the analyses of asbestos, CLEA metals, FOC, TPHCWG, PAH, BTEX and Phenols and yielded results below the respective GAC.

A comparison of the results of chemical analyses with GAC are presented at **Table 3** and the laboratory reports are presented at **Appendix C.**

5.2 Post Remediation Conceptual Site Model

A post remediation Conceptual Site Model is presented as **Table 4** below:

Potential Source Areas	Potential Contaminants of Concern	Pathways	Potential Receptor	Exposure Route	Potential Identified Linkage (unmitigated)	Findings of Ground Investigat-ion	Risk (Un-mitigated)	Implemented / Recommended Mitigation Measures	Residual Risk Estimation
<u>On-site Sources</u> **Re-use of crushed demolition waste** **Hazardous ground gases from made ground** **Hazardous ground gases from historical landfill** ***<u>Off-site Sources</u>*** **Hazardous ground gases from historical landfill**	Asbestos Methane Carbon Dioxide Methane Carbon Dioxide Methane Carbon Dioxide	Disturbance due to construction plant causing direct contact, dusts, vapours. Direct Contact with occupants/workers/customers in the proposed development Inhalation of vapours/ gases by occupants of proposed development Permeation of water supply pipework Leachate	<u>Human Health</u> End users Adjacent land users	Direct Soil Ingestion	No	TPH & PAH>GAC	N/A	Not-considered a risk as site to be covered in hard standing*	Negligible
				Indoor Dust ingestion	No	TPH & PAH>GAC	N/A	As above	Negligible
				Skin Contact with Soils	No	TPH & PAH>GAC	N/A	As above	Negligible
				Skin Contact with Dust	No	TPH & PAH>GAC	N/A	As above	Negligible
				Inhalation of Outdoor Dust	Yes	TPH & PAH>GAC	Moderate	As above	Negligible
				Inhalation of Outdoor Vapours	No	TPH & PAH>GAC	N/A	As above	Negligible
				Inhalation of Indoor Vapours	No	PAH>GAC	N/A	Hydrocarbon vapour resistant membrane to be installed beneath store	Negligible
				Inhalation of ground gas	Yes	CH_4 /$C0_2$ <CS1	High	As above	Negligible
				Ingestion via permeated water supply pipework	No	Organics/ Inorganics present in soils	N/A	Water Company Requirements to be implemented	Negligible
			<u>Controlled Waters</u> Secondary (A) Aquifer within (Bedrock) Potable Water Abstraction 1.2km to east Prestatyn Gutter 300m to north	Direct contact/migration	No	TPH & PAH>GAC	N/A	Removal of: • Interceptor; • Surrounding Made Ground; • Sump water; & • Localised groundwater remediation to the north	Negligible
				Migration via secondary aquifer	No	TPH & PAH>GAC	N/A		Negligible
				Migration via perched groundwater / secondary aquifer	No	TPH & PAH>GAC	N/A		Negligible

Table 4: Post Remediation Conceptual Site Model

REFERENCES & GUIDANCE

Environmental Protection Act 1990, Part 2A. Contaminated Land Statutory Guidance DEFRA 2012.

CLR 11: Model Procedures for the Management of Land Contamination. Environment Agency 2004.

LQM/CIEH, The LQM/CIEH S4ULs for Human Health Risk Assessment: S4UL3146, 2015.

SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document. December 2014, and Erratum December 2014, DEFRA.

SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination Final Project Report. CL:AIRE. 20.12.13.

The Definition of Waste: Development Industry Code of Practice Version 2. www.claire.co.uk.

Verification of Remediation of Land Contamination Science Report – NC/00/38/SR Environment Agency.

STUDY LIMITATIONS

IMPORTANT. This section should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Remada, Ltd with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with (the 'Client'). Remada does not accept responsibility for any matters outside the agreed scope.

2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing.

3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Remada is unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have published, more stringent objectives. Further work may be required by these parties.

4. All work carried out in preparing this report has used, and is based on, Remada' professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice pending changes in legislation, of which Remada is aware, have been considered. Following delivery of the report Remada has no obligation to advise the Client or any other party of such changes or their repercussions.

5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6. Whilst this report and the opinions made are to the best of Remada' belief, Remada cannot guarantee the accuracy or completeness of any information provided by third parties.

7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have received.

8. This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of changes in the condition of the site since the time of the investigation.

9. The content of this report represents the professional opinion of experienced environmental consultants. Remada does not provide specialist legal or other professional advice. The advice of other professionals may be required.

10. Where intrusive investigation techniques have been employed they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the site have not been investigated.

11. If below ground intrusive investigations have been conducted as part of the scope, service tracing for safe location of exploratory holes has been carried out. The location of underground services shown on any drawing in this report has been determined by visual observations and electromagnetic techniques. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on site.

12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issues.

13. Unless otherwise stated, samples from the site (soil, groundwater, building fabric or other samples) have NOT been analysed or assessed for waste classification purposes.

TABLES (not presented within text)

TABLES (not presented within text)

Table 4: Comparison of Chemical Analyses with GAC

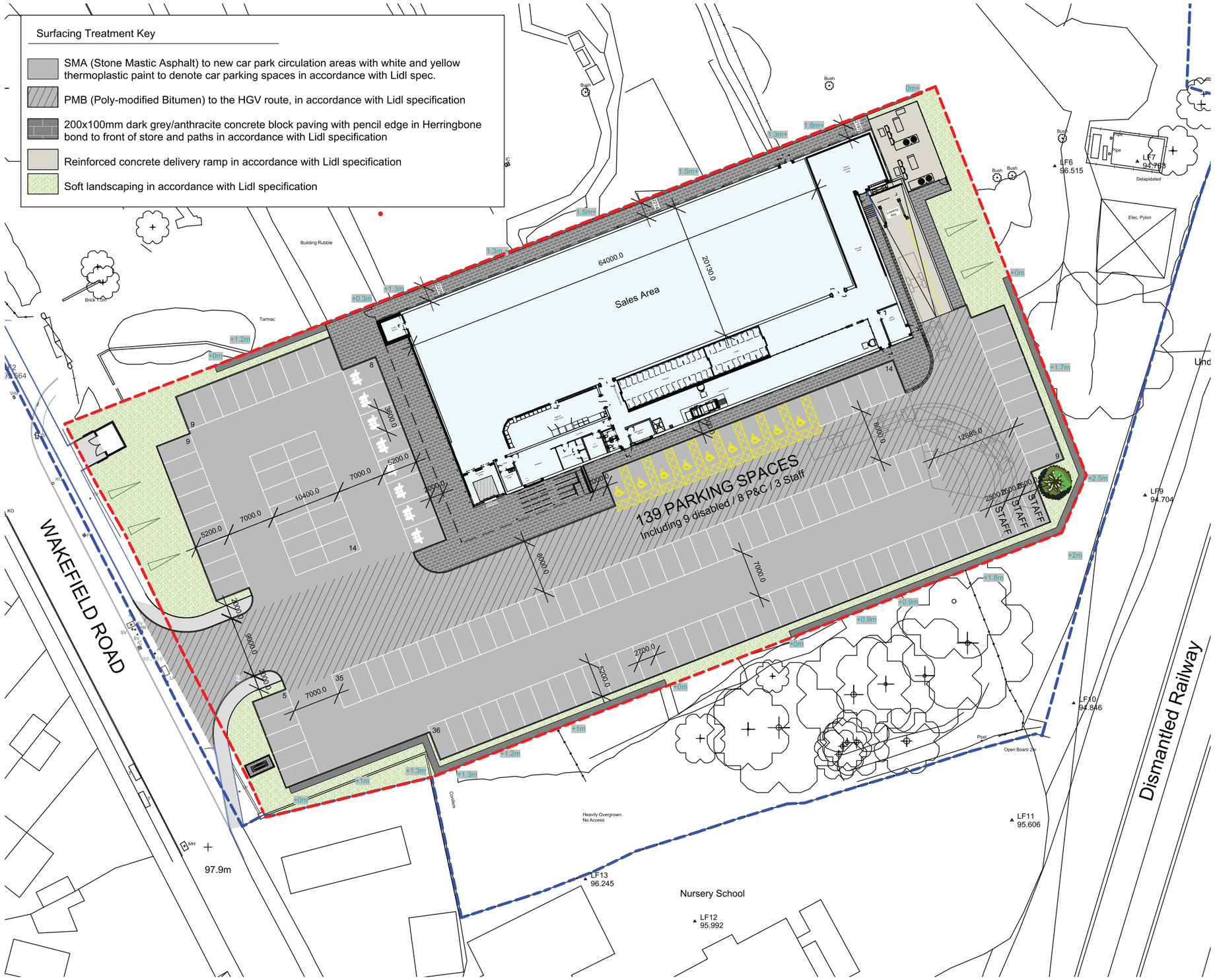
Chemtest Sample ID.:				767724	767725	767726	767727	767728	767729	773641	773642	773643	773644	795910	795911	795912	795913	795914	795915
Client Sample ID.:				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Sample Type:				Class 2C	Class 2C	Black Waste	Rubber Waste	6F2	6F2	Class 2C	Class 2C	6F2	6F2	2C	2C	2C	2C	2C	Topsoil
Date Sampled:				31/01/2019	31/01/2019	31/01/2019	31/01/2019	31/01/2019	31/01/2019	06/02/2019	06/02/2019	06/02/2019	06/02/2019	15/03/2019	15/03/2019	15/03/2019	15/03/2019	15/03/2019	15/03/2019
Determinand	**Units**	**LOD**	**GAC 6% SOM**																
ACM Type		N/A		-	-	-	-	-	Fibres/Clumps	-	-	-	-	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	Cement
Asbestos Identification	%	0.001		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Asbestos by Gravimetry	%	0.001							<0.001					0.002	0.003	0.002	0.004	0.002	0.027
Total Asbestos	%	0.001							<0.001					0.002	0.003	0.002	0.004	0.002	0.027
Moisture	%	0.020		12.00	14.00	< 0.020	48.00			14.00	15.00			9.9	12	14	14	15	17
pH		N/A		10.00	7.40	7.80	8.80			9.70	9.10			11.4	11.4	8.3	9.3	9.0	9.6
Boron (Hot Water Soluble)	mg/kg	0.40	240000	0.55	0.61	0.44	< 0.40			0.66	0.67			0.86	0.60	0.70	0.85	0.79	0.72
Arsenic	mg/kg	1.0	640	18.00	95.00	< 1.0	3.00			11.00	9.30			12	29	29	26	20	21
Beryllium	mg/kg	1.0	12	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	mg/kg	0.10	190	0.36	0.28	0.14	< 0.10			0.30	0.20			0.31	0.60	0.35	0.49	0.43	0.40
Copper	mg/kg	0.50	68000	31.00	29.00	5.90	4.40			19.00	20.00			19	35	74	39	31	35
Mercury	mg/kg	0.10	320.00	0.13	0.13	< 0.10	< 0.10			< 0.10	0.10			0.10	0.12	0.15	0.13	0.16	0.15
Nickel	mg/kg	0.50	980	24.00	20.00	1.50	1.80			18.00	15.00			21	22	29	29	24	31
Lead	mg/kg	0.50	2300	58.00	24.00	7.50	3.20			24.00	25.00			24	35	50	59	47	79
Selenium	mg/kg	0.20	12000	< 0.20	< 0.20	< 0.20	< 0.20			< 0.20	< 0.20			< 0.20	0.21	0.55	0.42	0.34	0.45
Vanadium	mg/kg	5.0	9000	27.00	13.00	< 5.0	< 5.0			16.00	16.00			20	20	30	27	27	29
Zinc	mg/kg	0.50	730000	92.00	53.00	1300.00	150.00			53.00	49.00			170	98	93	110	99	130
Chromium (Trivalent)	mg/kg	1.0	8600	26.00	20.00	1.10	2.20			22.00	17.00			43	25	31	35	49	46
Chromium (Hexavalent)	mg/kg	0.50	33	< 0.50	< 0.50	< 0.50	< 0.50			< 0.50	< 0.50			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fraction of Organic Carbon (FoC)		0.0010		0.03	0.11					0.02	0.03			0.012	0.031	0.061	0.076	0.058	0.021
Total Organic Carbon (FoC x 100)				3.20	11.00	24.00	83.00			2.00	3.30			1.20	3.10	6.10	7.60	5.80	2.10
Soil Organic Matter (TOC/0.58)				5.52	18.97	41.38	143.10			3.45	5.69			2.07	5.34	10.52	13.10	10.00	3.62
Aliphatic TPH >C5-C6	mg/kg	1.0	12000[sol] (1150)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	mg/kg	1.0	40000[sol] (736)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	mg/kg	1.0	11000[vap] (451)	< 1.0	8.60	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	mg/kg	1.0	47000[vap] (283)	< 1.0	12.00	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	5.2	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	mg/kg	1.0	90000[sol] (142)	< 1.0	13.00	1.00	< 1.0			< 1.0	< 1.0			1.5	< 1.0	12	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	mg/kg	1.0	1800000	< 1.0	6.50	8.70	< 1.0			< 1.0	< 1.0			14	< 1.0	11	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	mg/kg	1.0	1800000	45.00	16.00	440.00	< 1.0			7.20	< 1.0			150	62	28	52	38	37
Aliphatic TPH >C35-C44	mg/kg	1.0	1800000	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5.0		45.00	55.00	450.00	< 5.0			7.20	< 5.0			170	62	56	52	38	37
Aromatic TPH >C5-C7	mg/kg	1.0	86000[sol] (4710)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	mg/kg	1.0	180000[vap] (4360)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	mg/kg	1.0	17000[vap] (3580)	< 1.0	5.30	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	mg/kg	1.0	34000[sol] (2150)	< 1.0	1.20	3.10	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	mg/kg	1.0	38000	< 1.0	4.60	19.00	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	5.7	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	mg/kg	1.0	28000	4.90	3.10	310.00	6.90			< 1.0	3.20			1.5	1.6	< 1.0	2.4	1.3	4.7
Aromatic TPH >C21-C35	mg/kg	1.0	28000	95.00	35.00	630.00	11.00			7.30	29.00			77	75	32	80	64	85
Aromatic TPH >C35-C44	mg/kg	1.0	28000	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5.0		100.00	49.00	950.00	18.00			8.70	32.00			79	76	38	82	65	90
Total Petroleum Hydrocarbons	mg/kg	10.0		150.00	100.00	1400.00	18.00			16.00	32.00			240	140	94	130	100	130
Naphthalene	mg/kg	0.10	1100[sol] (432)	0.89	4.00	1.30	< 0.10			0.33	< 0.10			0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.10	100000	1.20	0.93	0.46	< 0.10			< 0.10	< 0.10			0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.10	100000	0.48	4.40	27.00	< 0.10			0.12	< 0.10			0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.10	71000	0.66	4.10	5.60	< 0.10			0.18	< 0.10			0.37	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.10	23000	3.20	27.00	12.00	< 0.10			1.20	0.72			6.9	3.4	< 0.10	11	2.9	4.6
Anthracene	mg/kg	0.10	540000	0.83	5.00	4.70	< 0.10			0.30	0.15			0.21	0.90	< 0.10	2.5	0.64	1.1
Fluoranthene	mg/kg	0.10	23000	4.90	22.00	15.00	14.00			1.50	0.95			4.5	4.4	< 0.10	9.7	3.4	6.0
Pyrene	mg/kg	0.10	54000	4.80	19.00	15.00	50.00			1.50	0.88			3.9	4.1	< 0.10	9.6	3.1	5.2
Benzo[a]anthracene	mg/kg	0.10	180	2.70	7.30	< 0.10	< 0.10			0.81	0.70			< 0.10	1.3	< 0.10	3.2	1.3	1.9
Chrysene	mg/kg	0.10	350	3.40	8.80	< 0.10	< 0.10			0.55	0.42			< 0.10	1.7	< 0.10	2.1	1.0	1.8
Benzo[b]fluoranthene	mg/kg	0.10	45	3.30	7.50	< 0.10	< 0.10			0.31	0.51			< 0.10	0.93	< 0.10	1.7	0.96	1.3
Benzo[k]fluoranthene	mg/kg	0.10	1200	0.97	3.10	< 0.10	< 0.10			0.14	0.27			< 0.10	1.6	< 0.10	0.39	0.35	0.80
Benzo[a]pyrene	mg/kg	0.10	36	1.90	5.10	< 0.10	< 0.10			0.58	0.38			< 0.10	0.67	< 0.10	1.3	0.84	1.2
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.10	510	1.10	2.20	< 0.10	< 0.10			0.47	0.47			< 0.10	< 0.10	< 0.10	0.72	0.14	< 0.10
Dibenz(a,h)Anthracene	mg/kg	0.10	3.6	0.22	0.63	< 0.10	< 0.10			< 0.10	< 0.10			< 0.10	< 0.10	< 0.10	0.30	< 0.10	< 0.10
Benzo[g,h,i]perylene	mg/kg	0.10	4000	1.90	2.50	< 0.10	< 0.10			0.54	0.39			< 0.10	< 0.10	< 0.10	0.86	0.11	< 0.10
Total Of 16 PAH's	mg/kg	2.0		33.00	120.00	81.00	64.00			8.70	5.90			16	19	< 2.0	43	15	24
Benzene	µg/kg	1.0	90	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	2.0	1.4	1.5	< 1.0
Toluene	µg/kg	1.0	180000[vap] (4360)	4.30	3.90	< 1.0	< 1.0			< 1.0	< 1.0			1.8	1.5	2.6	1.7	2.8	< 1.0
Ethylbenzene	µg/kg	1.0	27000[vap] (2840)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	µg/kg	1.0	30000[sol] (3170)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			3.8	< 1.0	2.8	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1.0	33000[sol] (2620)	< 1.0	< 1.0	< 1.0	< 1.0			< 1.0	< 1.0			2.9	< 1.0	1.9	< 1.0	< 1.0	< 1.0
Total Phenols	mg/kg	0.30		< 0.30	< 0.30	1.10	1.00			< 0.30	< 0.30			< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

NC: No published criteria
vap: Screening criteria presented exceed the vapour saturation limit, which is presented in brackets.
sol: Screening criteria presented exceed the solubility saturation limit, which is presented in brackets.
dir: Screening criteria based on threshold protective of direct skin contact (guideline in brackets based on health effects following long term exposure provided for illustration only).
(1): For assessment based on the use of the surrogate marker approach the GAC for Coal Tar must be used instead of benzo(a)pyrene.

FIGURES

Surfacing Treatment Key

- SMA (Stone Mastic Asphalt) to new car park circulation areas with white and yellow thermoplastic paint to denote car parking spaces in accordance with Lidl spec.
- PMB (Poly-modified Bitumen) to the HGV route, in accordance with Lidl specification
- 200x100mm dark grey/anthracite concrete block paving with pencil edge in Herringbone bond to front of store and paths in accordance with Lidl specification
- Reinforced concrete delivery ramp in accordance with Lidl specification
- Soft landscaping in accordance with Lidl specification



DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE WORK COMMENCES

SUBJECT TO HGV TRACKING CHECK

INLINE WITH TOPOGRAPHICAL SURVEY, LANDFORM SURVEY DATED 03.07.15 DRAWING NUMBER 001.

SUBJECT TO REVIEW OF LEVELS AND FALLS

SUBJECT TO CONFIRMATION OF CAR CHARGING POINT REQUIREMENT

SUBJECT TO LIGHTING PLAN

BASED ON LIDL SPEC DRAWING LD(13)-GF-01 - Ground Floor - Setting Out Plan

SUBJECT TO HIGHWAYS CONSULTED DESIGN

N

Residual Hazard Register:
HGV Tracking
Vehicular movements within car park
Pedestrian movements within car park.

Rev.	Date	Description	Drawn

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client
Lidl UK GmbH

project
New Store
Wakefield Road,
Mapplewell

drawing title
Proposed Type 1300
Surfacing Plan

date	July 2017		
status	Planning Issue		
scale	1:500 @ A3		
drawn	AB	checked	LS
job no.	1744	dwg no.	P401 rev. -

Legend

Notes

Project Title
Mapplewell

Drawing Title
Figure 1: Proposed Layout

Client
Grupotec

Scale	Drawn	Size
as shown	GJ	A4
Date	Job No.	Drawing /Rev No
11.06.19	616.02	01

Remada

Appendix A

MMP Declaration

Subject: CL:AIRE Def. of Waste Code of Practice Declaration - 29/01/2019 17:59:35

Date: Monday, 4 March 2019 at 11:02:53 Greenwich Mean Time

From: Yueming Lu

To: greg jones, Waste Exemptions

Thank you for your recent submission of a Definition of Waste: Development Industry Code of Practice Declaration (DoW CoP).

This Declaration will be submitted to the Environment Agency / Natural Resources Wales under the DoW CoP.

You are reminded that if materials are not used in accordance with the Materials Management Plan or risk assessment or if it is discovered that materials were not suitable for use, were used in excessive quantity or in such a manner as to harm human health or pollute the environment, the Environment Agency / Natural Resources Wales may conclude that those materials were discarded and were waste.

You are also reminded that a Verification Report must be prepared on completion of the work as set out in the Remediation Strategy / Design Statement covering the site. This Verification Report must be provided to the Environment Agency / Natural Resources Wales upon request.

This acknowledgement email relates to the following Declaration

Timestamp	
Qualified Person Name	Greg Jones
Qualified Person Number	QP245
1. This Declaration relates to -	Site of Origin - Route A: Land affected by c contamination.
2. Proposed Volumes	
3a. Site of origin - name of site owner, address & contact details	Lidl UK GmbH 19 Worple Road, London, SW19 4JS
3b. Site of origin - site name & address	Lidl store development Wakefield Road, Mapplewell, Nr Barnsley, S
3c. Site of origin - developer name, address & contact details	Lidl UK GmbH Wakefield Road, S75 6FZ Mapplewell, Nr B
4a. Donor Site - developer name, address & contact details	
4b. Donor Site - site name & address	
4c. Receiver Site - developer name, address & contact details	
4d. Receiver Site - site name & address	
5a. Soil Treatment Facility / Hub site owner / operator - name, address & contact details	N/A
5b. EA / NRW Permit number for Mobile Treatment Plant or Fixed Soil Treatment site	N/A
5c. Donor site - developer name, address & contact details	N/A
5d. Donor site - name & address	N/A
5e. Receiver site - developer name, address & contact details	N/A
5f. Receiver site name and address	N/A
6a. Local Authority name, address	Barnsley Metropolitan Borough Council West Gate Plaza 1 West St Barnsley S70 2DR
6b. Local Authority - name and contact details:	Barnsley Metropolitan Borough Council West Gate Plaza 1 West St Barnsley S70 2DR
6c. Environment Agency / Natural Resources Wales local office	Environment Agency

address & contact details	Lateral 8 City Walk Leeds LS11 9A
7. How will payment be made	Credit card by phone - please call 01844 29
8. Who will pay the Declaration fee?	Remada Ltd
9. Email address of person identified in Q8	greg.jones@remada.co.uk
10. Terms & Conditions	Person identified in Q8 has read and agree
11. Please provide a purchase order number	
12a. I confirm that -	I satisfy the Qualified Person requirements Development Industry Code of Practice to c Management Plan for the above project. I h Remediation Strategy/Design Statement co documentation relating to the development
12b. Please provide a reference for the Materials Management Plan	GRUPOTEC DESIGN & BUILD Otterman H RICHMOND TW10 6UW
12c. Please provide a reference for the Risk Assessment	Geoenvironmental Appraisal of Land off Wa 2018
12d. Please provide a reference for the Remediation Strategy or Design Statement documents.	Strategy for Remedial and Preparatory Wor report c7481/rs March 2018
12e. Please provide a reference for the Verification Plan	Remada report 616.02
12f. Identify the organisation and individual(s) (email address / contact details) with responsibility for producing the Verification Report	greg.jones@remada.co.uk
12g. Please provide an estimated production date for the Verification Report.	
12h. Please reference other supporting documents as required in the MMP.	As stated in MMP
13a. I confirm that I have reviewed the following correspondence / documentation relating to the development and how that relates to the use of materials from:	a) The Local Authority, b) Environment Age bodies associated with the development, e.
13b. Please reference the correspondence with the Local Authority.	Statutory consulates to Planning permissio Contaminated Land Officer at Regulatory S
13c. Please reference the correspondence with the EA / NRW.	The EA has emailed and stated that it no ob
13d. Please reference the correspondence with other relevant regulatory bodies	None
14a. I have reviewed the planning consent including planning conditions	Barsley 2017/1716 has been reviewed
14b. I have reviewed correspondence concerning the planning consent regarding the development from:	a) The Local Authority , b) Environment Age
14c. Please list correspondence reviewed in 14b.	Contaminated Land Officer consultation to t the Remediation Strategy states that a MMI
15. If planning consent is not required please explain why	
16. I confirm that the MMP contains the information required:-	The risk assessment assesses human heal of all the materials in the MMP. The risk ass to human health and pollution of the enviro manner., The Local Authority, the Environm environmental regulatory bodies have not o the basis that the use of any material is like environment. [This confirmation should be g the activity. Also see paragraph 3.37 of the materials on the grounds that it a.) constitut previous application for an environmental p project represents waste disposal)., The pro profiling.

Appendix B
Waste Transfer Notes

Jakto

CONVEYANCE NOTE 207801

Jakto Transport Ltd
Oaks Lane
Stairfoot
Barnsley
S71 1HT
Tel 01226 248050

Waste Carrier No.	CBDU93250
Place of Loading	
Date	Vehicle Reg.
Customer	
Delivery Address	

Material	Waste		Product	
Description (Please Tick)		Demolition Waste EWC 170904		6F5
				Bulk Fill
I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011		Inert Soils/Stone EWC 170504		Screened Topsoil
		Concrete EWC 170101		As Dug Topsoil
		Waste Sand & Clays EWC 010409		Road Planings
		Other (Specify)		Other (Specify)
Gross Weight	29,100	Tonnes		
Tare Weight	13,800	Tonnes		
Nett Weight	15,200	Tonnes		

SIGN AND PRINT IN APPROPRIATE BOX				
	Holder Sign		Dispatched by: Sign	
	Print		Print	
	Carrier Sign		Carrier Sign	
	Print		Print	
	Disposer Sign		Customer Sign	
	Print		Print	

Jakto

CONVEYANCE NOTE 207802

Jakto Transport Ltd
Oaks Lane
Stairfoot
Barnsley
S71 1HT
Tel 01226 248050

Waste Carrier No.	CBDU93250
Place of Loading	
Date	Vehicle Reg.
Customer	
Delivery Address	

Material	Waste		Product	
Description (Please Tick)		Demolition Waste EWC 170904		6F5
				Bulk Fill
I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011		Inert Soils/Stone EWC 170504		Screened Topsoil
		Concrete EWC 170101		As Dug Topsoil
		Waste Sand & Clays EWC 010409		Road Planings
	✓	Other (Specify)		Other (Specify)
Gross Weight	29,620	Tonnes		
Tare Weight	12,800	Tonnes		
Nett Weight	15,820	Tonnes		

SIGN AND PRINT IN APPROPRIATE BOX				
	Holder Sign		Dispatched by: Sign	
	Print		Print	
	Carrier Sign		Carrier Sign	
	Print		Print	
	Disposer Sign		Customer Sign	
	Print		Print	

SHAWS

SHAWS WASTE RECYCLING LTD

Duty of Care - Waste Transfer Note

Waste Carrier Licence No. **CBDU187032**
Environmental Permit No. **EA65262**
Vat No. **104 5159 45**

№ 38807

Section A - Description of Waste

1 Waste Type - EWC Code

Mixed Municipal (20 03 01) ☐	Construction & Demolition (17 09 04) ☐	Brick Rubble (17 01 07) ☐	Transfer Station Waste (19 12 12) ☐
Wood (19 12 07) ☐	Soil & Stones (17 05 04) ☐	Green (20 02 01) ☐	Other ☑

2 Skip Size

2 Ton Mini Skip ☐	3 Ton Midi Skip ☐	4 Ton Maxi Skip ☐	6 Ton Builders Skip ☐	8 ton Builders Skip ☐
10 Ton Builders Skip ☐	14yd Skip ☐	16yd Skip ☐	20yd Roll on Roll off ☐	40yd Roll on Roll off ☐

NO TYRES, ASBESTOS, FRIDGES, FREEZERS, CHEMICALS AND PAINTS, FIRE EXTINGUISHERS, GAS BOTTLES, BATTERIES, FLOURESCENT TUBES, TELEVISIONS, COMPUTER MONITORS OR ANY OTHER HAZARDOUS WASTES CAN BE ATTEMPTED AT ANY TIME

3 Weight (Tonnes) Gross: 28120 Tare: 12800 Nett: 15320

4 Order No. _____ **5** Hire Period 7 Days ☐

Section B - Current Holder of the Waste - the Transferor

1. Name of Customer: Jackto
2. Address: Lidl, Mapplewell
   Post Code: _____
3. Contact No. _____
4. Signature _____
5. Producer of Waste: Commercial ☐ Domestic ☐
6. Waste Carriers Licence Number (if applicable) _____

I confirm that the Waste Management Hierarchy has been applied to this load ☑

Payment

Account	✓
Cash	
C/Card	
Cheque	
Not Paid	
Paid	
VAT	
Total	

Section C - Person Collecting the Waste - the Transferee

1. Name of Driver _____
2. Signature _____
3. Company Address _____
4. Vehicle Registration: SJ56 HHA
5. Date of Transfer: 30/5/19
6. Time of Transfer _____

Location of Skip

Drive	
Verge	
Road	
Other	
Cones/Lights	
Permit	

Section D - Waste End Point

Place of Deposit: Shaws Permit No: _____

Conditions of Hire Overleaf as acknowledged in Section B.

This Document is a Waste Transfer Note as provided for by the Environmental Protection Act 1990 (Duty of Care) Regulations Section 34.

The Recycling Centre, Derwent Way, Wath West Industrial Estate, Wath-Upon-Dearne, Rotherham S63 6EX
Telephone No: 01709 877955 • Fax: 01709 877966 • Email: info@shawskips.co.uk

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Jackto

CONVEYANCE NOTE 207804

Jackto Transport Ltd
Oaks Lane
Stairfoot
Barnsley
S71 1HT
Tel 01226 248000

Waste Carrier No. CBDU93350

Place of Loading: Lidl, Mapplewell

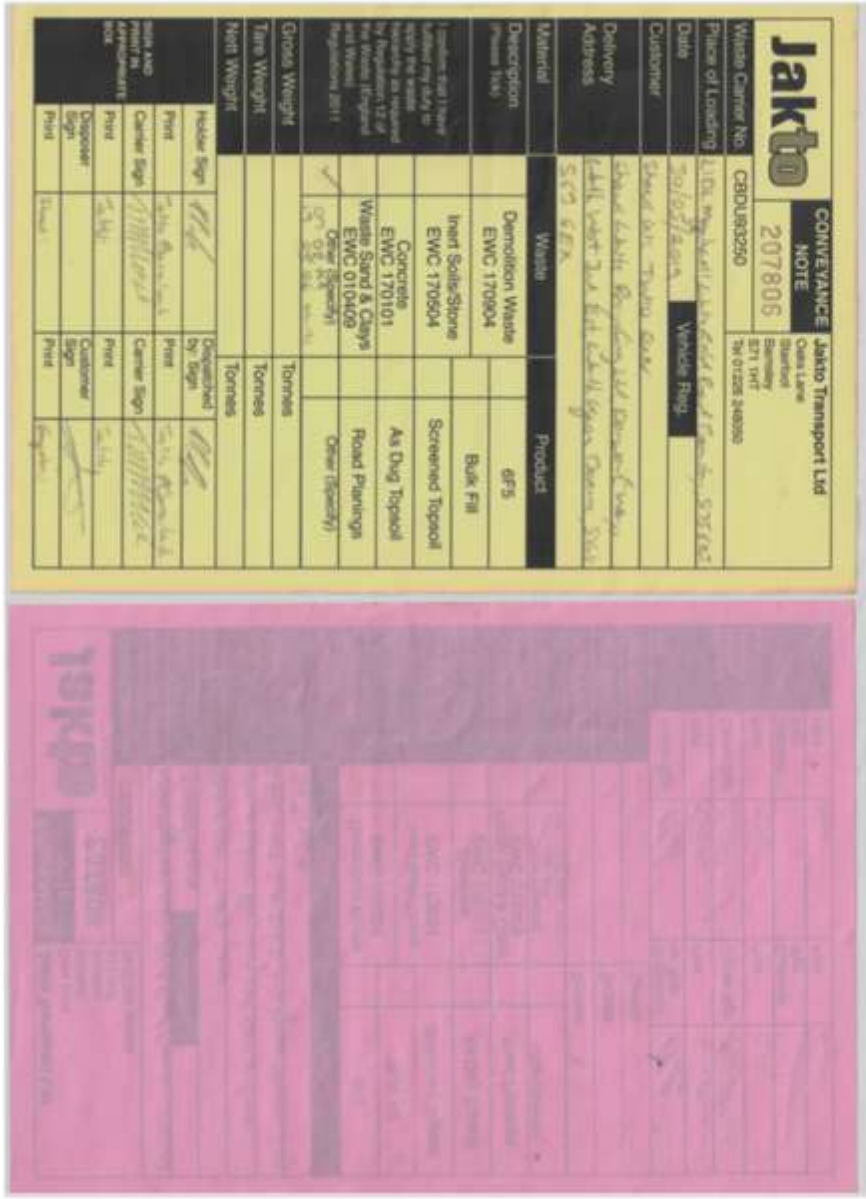
Date: 30/05/19 Vehicle Reg: SJ56 HHA

Customer: Lidl

Delivery Address: Shaws Recycling Ltd, Derwent Way, Wath West Ind Est, Wath Upon Dearne, Rotherham S63 6EX

Material	Waste	Product
Description (Please Tick)		
Demolition Waste EWC 170904		6F5
Inert Soils/Stone EWC 170504		Bulk Fill
Concrete EWC 170101		Screened Topsoil
Waste Sand & Clays EWC 010409		As Dug Topsoil
Other (Specify)		Road Planings
		Other (Specify)
Gross Weight	Tonnes	
Tare Weight	Tonnes	
Nett Weight	Tonnes	

SIGN AND PRINT IN APPROPRIATE BOX				
Hooker Sign		Dispatched by: Sign		
Print		Print		
Carrier Sign		Carrier Sign		
Print		Print		
Dropper Sign		Customer Sign		
Print		Print		



Jakto

CONVEYANCE NOTE 207806

Jakto Transport Ltd
Oaks Lane
Stairfoot
Barnsley
S71 1HT
Tel 01226 249350

Waste Carrier No. CBDU83250

Vehicle Reg.

Place of Loading

Date

Customer

Delivery Address

Material

Waste

Product

Description (Please Tick)

Demolition Waste EWC 170904 — 6F5

Inert Soils/Stone EWC 170504 — Bulk Fill

Concrete EWC 170101 — Screened Topsoil

Waste Sand & Clays EWC 010409 — As Dug Topsoil

Other (Specify) — Road Planings

Other (Specify)

Gross Weight — Tonnes

Tare Weight — Tonnes

Nett Weight — Tonnes

Dispatched by: Sign / Print

Holder Sign / Print

Carrier Sign / Print

Disposer Sign / Print

Customer Sign / Print

SIGN AND PRINT IN APPROPRIATE BOX

SHAWS

SHAWS WASTE RECYCLING LTD

Duty of Care - Waste Transfer Note

Waste Carrier Licence No. **CBDU187032**
Environmental Permit No. **EA65262**
Vat No. **104 5159 45**

№ 38828

Section A - Description of Waste

1 Waste Type - EWC Code

Mixed Municipal (20 03 01) ☐	Construction & Demolition (17 09 04) ☐	Brick Rubble (17 01 07) ☐	Transfer Station Waste (19 12 12) ☐
Wood (19 12 07) ☐	Soil & Stones (17 05 04) ☐	Green (20 02 01) ☐	Other ☑

2 Skip Size

2 Ton Mini Skip ☐	3 Ton Midi Skip ☐	4 Ton Maxi Skip ☐	6 Ton Builders Skip ☐	8 ton Builders Skip ☐
10 Ton Builders Skip ☐	14yd Skip ☐	16yd Skip ☐	20yd Roll on Roll off ☐	40yd Roll on Roll off ☐

NO TYRES, ASBESTOS, FRIDGES, FREEZERS, CHEMICALS AND PAINTS, FIRE EXTINGUISHERS, GAS BOTTLES, BATTERIES, FLUORESCENT TUBES, TELEVISIONS, COMPUTER MONITORS OR ANY OTHER HAZARDOUS WASTES CAN BE ATTEMPTED AT ANY TIME

3 Weight (Tonnes) Gross: 31320 Tare: 13740 Nett: 18080

4 Order No. _____ **5** Hire Period _____ 7 Days ☐

Section B - Current Holder of the Waste - the Transferor

1. Name of Customer: JAKTO
2. Address: Unit Birchall Post Code: _____
3. Contact No. _____
4. Signature _____
5. Producer of Waste: Commercial ☐ Domestic ☐
6. Waste Carriers Licence Number (if applicable) _____

I confirm that the Waste Management Hierarchy has been applied to this load ☐

Payment

Account	✓
Cash	
C/Card	
Cheque	
Not Paid	
Paid	
VAT	
Total	

Section C - Person Collecting the Waste - the Transferee

1. Name of Driver: [signature]
2. Signature _____
3. Company Address _____
4. Vehicle Registration: RF16 XVR
5. Date of Transfer: 31/5/16
6. Time of Transfer _____

Location of Skip

Drive	
Verge	
Road	
Other	
Correct Lights	
Permit	

Section D - Waste End Point

Place of Deposit: _____ Permit No: _____

Conditions of Hire Overleaf as acknowledged in Section B.

This Document is a Waste Transfer Note as provided for by the Environmental Protection Act 1990 (Duty of Care) Regulations Section 34.

The Recycling Centre, Derwent Way, Wath West Industrial Estate, Wath-Upon-Dearne, Rotherham S63 6EX
Telephone No: 01709 877955 • Fax: 01709 877966 • Email: info@shawsskips.co.uk

SHAWS

SHAWS WASTE RECYCLING LTD

Duty of Care - Waste Transfer Note

Waste Carrier Licence No. **CBDU187032**
Environmental Permit No. **EA65262**
Vat No. **104 5159 45**

№ 37297

Section A - Description of Waste

1 Waste Type - EWC Code

Mixed Municipal (20 03 01) ☑	Construction & Demolition (17 09 04) ☐	Brick Rubble (17 01 07) ☐	Transfer Station Waste (19 12 12) ☐
Wood (19 12 07) ☐	Soil & Stones (17 05 04) ☐	Green (20 02 01) ☐	Other ☐

2 Skip Size

2 Ton Mini Skip ☐	3 Ton Midi Skip ☐	4 Ton Maxi Skip ☐	6 Ton Builders Skip ☐	8 ton Builders Skip ☐
10 Ton Builders Skip ☐	14yd Skip ☐	16yd Skip ☐	20yd Roll on Roll off ☐	40yd Roll on Roll off ☐

NO TYRES, ASBESTOS, FRIDGES, FREEZERS, CHEMICALS AND PAINTS, FIRE EXTINGUISHERS, GAS BOTTLES, BATTERIES, FLOURESCENT TUBES, TELEVISIONS, COMPUTER MONITORS OR ANY OTHER HAZARDOUS WASTES CAN BE ATTEMPTED AT ANY TIME

3 Weight (Tonnes) Gross: 27460 Tare: 12800 Nett: 14660

4 Order No. _____ **5 Hire Period** 7 Days ☐

Section B - Current Holder of the Waste - the Transferor

1. Name of Customer: Jakto
2. Address: Ltd, Mepplewell
   Post Code: _____
3. Contact No. _____
4. Signature _____
5. Producer of Waste: Commercial ☐ Domestic ☐
6. Waste Carriers Licence Number _____ (if applicable)

I confirm that the Waste Management Hierarchy has been applied to this load ☑

Payment

Account	✓
Cash	
C/Card	
Cheque	
Not Paid	
Paid	
VAT	
Total	

Section C - Person Collecting the Waste - the Transferee

1. Name of Driver _____
2. Signature _____
3. Company Address _____
4. Vehicle Registration 3556 HHA
5. Date of Transfer 2/5/19
6. Time of Transfer _____

Location of Skip

Drive	
Verge	
Road	
Other	
Cones/Lights	
Permit	

Section D - Waste End Point

Place of Deposit: Shaws. Permit No: _____

Conditions of Hire Overleaf as acknowledged in Section B.

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Telephone No: 01709 877955 • Fax: 01709 877966 • Email: info@shawskips.co.uk

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Jakto

CONVEYANCE NOTE 207805

Jakto Transport Ltd
Oaks Lane
Stairfoot
Barnsley
S71 1HT
Tel 01226 248080

Waste Carrier No. CBDU93250

Place of Loading

Date

Customer

Delivery Address

Material

Description (Please Tick)

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011 ✓

Gross Weight

Tare Weight

Nett Weight

SIGN AND PRINT IN APPROPRIATE BOX

Waste	Product
Demolition Waste EWC 170904	6F5
Inert Soils/Stone EWC 170504	Bulk Fill
Concrete EWC 170101	Screened Topsoil
Waste Sand & Clays EWC 010409	As Dug Topsoil
Other (Specify)	Road Planings
	Other (Specify)

Tonnes
Tonnes
Tonnes

Holder Sign		Dispatched by: Sign	
Print		Print	
Carrier Sign		Carrier Sign	
Print		Print	
Disposal Sign		Customer Sign	
Print		Print	

SHAWS

SHAWS WASTE RECYCLING LTD

Duty of Care - Waste Transfer Note

Waste Carrier Licence No. **CBDU187032**
Environmental Permit No. **EA65262**
Vat No. **104 5159 45**

№ 38802

Section A - Description of Waste

1 Waste Type - EWC Code

Mixed Municipal (20 03 01) ☐	Construction & Demolition (17 09 04) ☐	Brick Rubble (17 01 07) ☐	Transfer Station Waste (19 12 12) ☐
Wood (19 12 07) ☐	Soil & Stones (17 05 04) ☐	Green (20 02 01) ☐	Other ☑

2 Skip Size

2 Ton Mini Skip ☐	3 Ton Midi Skip ☐	4 Ton Maxi Skip ☐	6 Ton Builders Skip ☐	8 ton Builders Skip ☐
10 Ton Builders Skip ☐	14yd Skip ☐	16yd Skip ☐	20yd Roll on Roll off ☐	40yd Roll on Roll off ☐

NO TYRES, ASBESTOS, FRIDGES, FREEZERS, CHEMICALS AND PAINTS, FIRE EXTINGUISHERS, GAS BOTTLES, BATTERIES, FLOURESCENT TUBES, TELEVISIONS, COMPUTER MONITORS OR ANY OTHER HAZARDOUS WASTES CAN BE ATTEMPTED AT ANY TIME

3 Weight (Tonnes) Gross: 28500 Tare: 12800 Nett: 15700

4 Order No. 5 Hire Period 7 Days ☐

Section B - Current Holder of the Waste - the Transferor

1. Name of Customer: JAKTO
2. Address: Lidl Lakefield Road
   Post Code
3. Contact No. Shawsroses
4. Signature
5. Producer of Waste: Commercial ☐ Domestic ☐
6. Waste Carriers Licence Number (if applicable)

I confirm that the Waste Management Hierarchy has been applied to this load ☐

Payment

Account	
Cash	
C/Card	
Cheque	
Not Paid	
Paid	
VAT	
Total	

Section C - Person Collecting the Waste - the Transferee

1. Name of Driver
2. Signature [signature]
3. Company Address
4. Vehicle Registration: S356 HHA
5. Date of Transfer: 30/5/19
6. Time of Transfer

Location of Skip

Drive	
Verge	
Road	
Other	
Cones/Lights	
Permit	

Section D - Waste End Point

Place of Deposit: Permit No:

Conditions of Hire Overleaf as acknowledged in Section B.

This Document is a Waste Transfer Note as provided for by the Environmental Protection Act 1990 (Duty of Care) Regulations Section 34.

The Recycling Centre, Derwent Way, Wath West Industrial Estate, Wath-Upon-Dearne, Rotherham S63 6EX
Telephone No: 01709 877955 • Fax: 01709 877966 • Email: info@shawskips.co.uk

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Jakto

CONVEYANCE NOTE 207803

Jakto Transport Ltd
Oaks Lane
Stairfoot
Barnsley
S71 1HT
Tel 01226 248050

Waste Carrier No.	CBDU93250		
Place of Loading	[illegible]		
Date	[illegible]	Vehicle Reg.	S356 HHA
Customer	[illegible]		
Delivery Address	[illegible]		

Material		Waste		Product
Description (Please Tick)		Demolition Waste EWC 170904		6F5
				Bulk Fill
I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011		Inert Soils/Stone EWC 170504		Screened Topsoil
		Concrete EWC 170101		As Dug Topsoil
		Waste Sand & Clays EWC 010409		Road Planings
	✓	Other (Specify) [illegible]		Other (Specify)

Gross Weight		Tonnes
Tare Weight		Tonnes
Nett Weight		Tonnes

SIGN AND PRINT IN APPROPRIATE BOX				
	Holder Sign	[signature]	Dispatched by: Sign	[signature]
	Print	[illegible]	Print	[illegible]
	Carrier Sign	[signature]	Carrier Sign	
	Print	[illegible]	Print	[illegible]
	Disposer Sign		Customer Sign	[signature]
	Print	[illegible]	Print	[illegible]

Appendix C
Results of Chemical Analyses

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	19-04165-1
Initial Date of Issue:	13-Feb-2019
Client	Remada Ltd
Client Address:	Forward House 17 High Street Henley in Arden B95 5AA
Contact(s):	Greg Jones
Project	616.02 Mapplewell

Quotation No.:		**Date Received:**	04-Feb-2019
Order No.:		**Date Instructed:**	05-Feb-2019
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	11-Feb-2019
Date Approved:	12-Feb-2019		

Approved By:

Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 616.02 Mapplewell

Client: Remada Ltd				**Chemtest Job No.:**	19-04165	19-04165	19-04165	19-04165	19-04165	19-04165
Quotation No.:				**Chemtest Sample ID.:**	767724	767725	767726	767727	767728	767729
				Client Sample ID.:	1	2	3	4	5	6
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Date Sampled:	31-Jan-2019	31-Jan-2019	31-Jan-2019	31-Jan-2019	31-Jan-2019	31-Jan-2019
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	Fibres/Clumps
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	Stereo Microscopy
Asbestos by Gravimetry	U	2192	%	0.001						<0.001
Total Asbestos	N	2192	%	0.001						<0.001
Moisture	N	2030	%	0.020	12	14	< 0.020	48		
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,		
Other Material	N	2040		N/A	Stones,	Stones,	Stones,	Stones,		
Soil Texture	N	2040		N/A	Sand,	Sand,	Sand,	Sand,		
Chromatogram (TPH)	N			N/A	See Attached	See Attached	See Attached	See Attached		
pH	M	2010		N/A	10.0	7.4	7.8	8.8		
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.55	0.61	0.44	< 0.40		
Arsenic	M	2450	mg/kg	1.0	18	95	< 1.0	3.0		
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Cadmium	M	2450	mg/kg	0.10	0.36	0.28	0.14	< 0.10		
Copper	M	2450	mg/kg	0.50	31	29	5.9	4.4		
Mercury	M	2450	mg/kg	0.10	0.13	0.13	< 0.10	< 0.10		
Nickel	M	2450	mg/kg	0.50	24	20	1.5	1.8		
Lead	M	2450	mg/kg	0.50	58	24	7.5	3.2		
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20		
Vanadium	U	2450	mg/kg	5.0	27	13	< 5.0	< 5.0		
Zinc	M	2450	mg/kg	0.50	92	53	1300	150		
Chromium (Trivalent)	N	2490	mg/kg	1.0	26	20	1.1	2.2		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Fraction of Organic Carbon	M	2625		0.0010	0.032	0.11	0.24	0.83		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	8.6	< 1.0	< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	12	< 1.0	< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	13	1.0	< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	6.5	8.7	< 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	45	16	440	< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	45	55	450	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	5.3	< 1.0	< 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	1.2	3.1	< 1.0		

Chemtest
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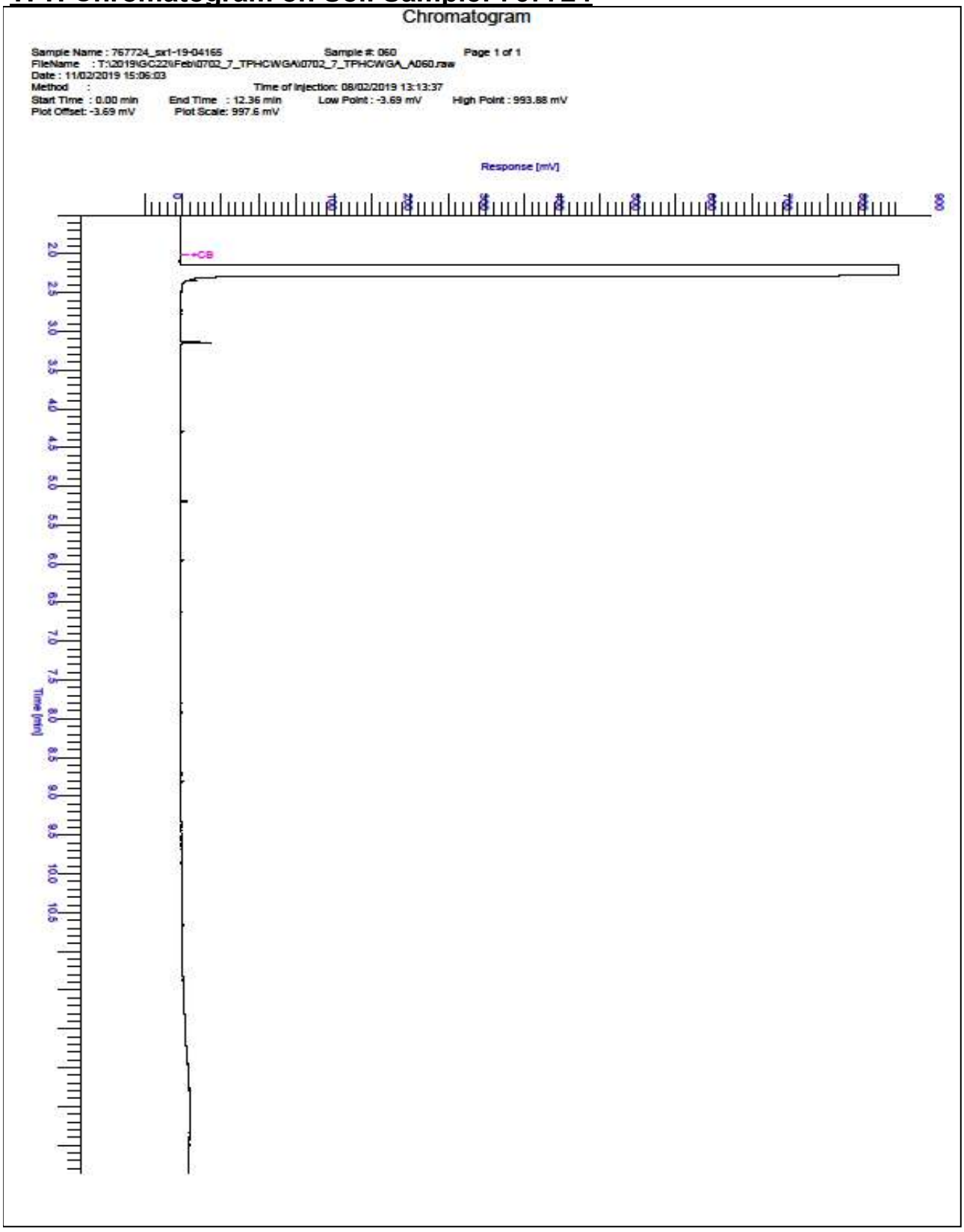
Results - Soil

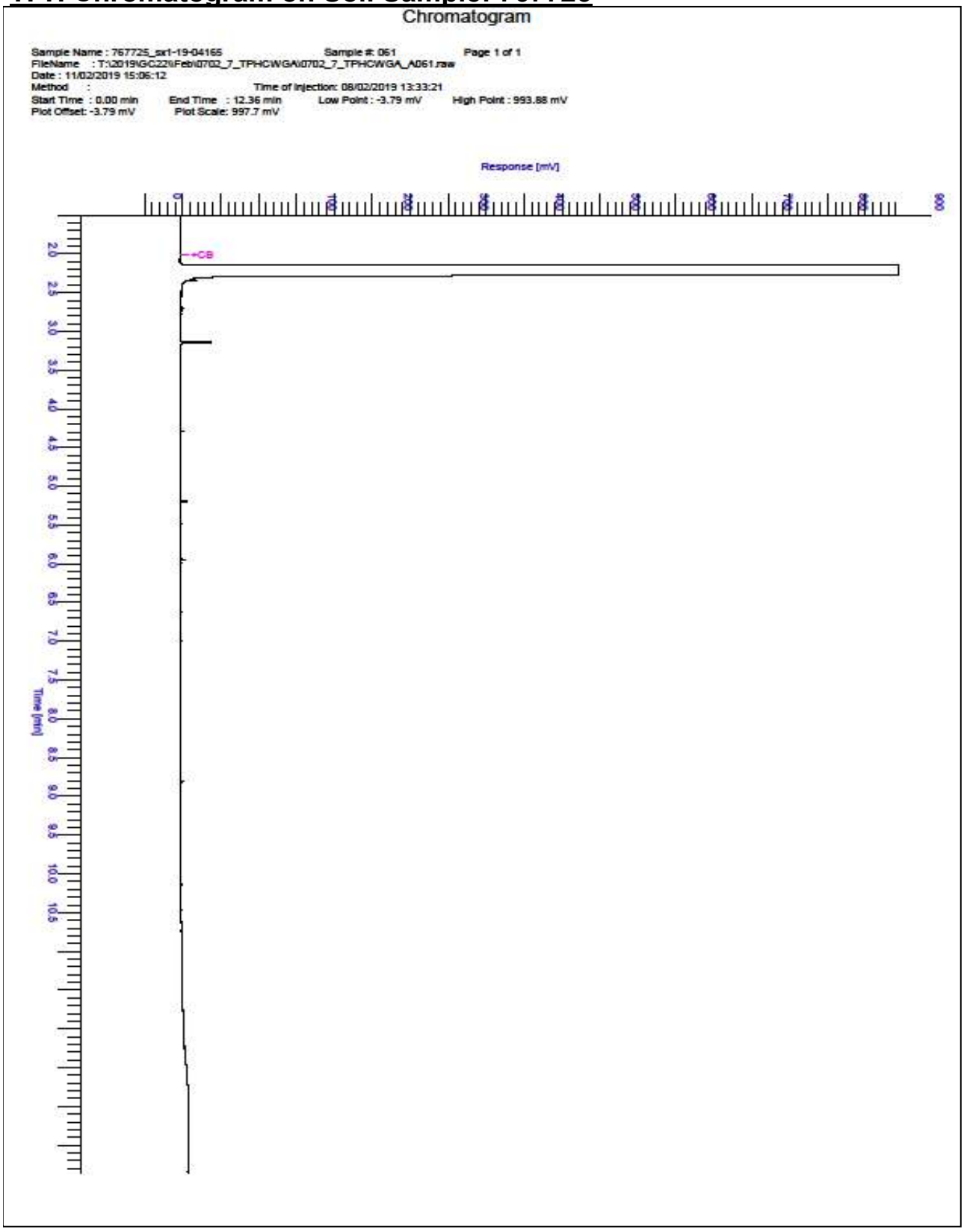
Project: 616.02 Mapplewell

Client: Remada Ltd					**Chemtest Job No.:**	19-04165	19-04165	19-04165	19-04165	19-04165
Quotation No.:					**Chemtest Sample ID.:**	767724	767725	767726	767727	767728	767729
					Client Sample ID.:	1	2	3	4	5	6
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Date Sampled:	31-Jan-2019	31-Jan-2019	31-Jan-2019	31-Jan-2019	31-Jan-2019	31-Jan-2019
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0	4.6	19	< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		4.9	3.1	310	6.9		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		95	35	630	11		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		100	49	950	18		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		150	100	1400	18		
Naphthalene	M	2700	mg/kg	0.10		0.89	4.0	1.3	< 0.10		
Acenaphthylene	M	2700	mg/kg	0.10		1.2	0.93	0.46	< 0.10		
Acenaphthene	M	2700	mg/kg	0.10		0.48	4.4	27	< 0.10		
Fluorene	M	2700	mg/kg	0.10		0.66	4.1	5.6	< 0.10		
Phenanthrene	M	2700	mg/kg	0.10		3.2	27	12	< 0.10		
Anthracene	M	2700	mg/kg	0.10		0.83	5.0	4.7	< 0.10		
Fluoranthene	M	2700	mg/kg	0.10		4.9	22	15	14		
Pyrene	M	2700	mg/kg	0.10		4.8	19	15	50		
Benzo[a]anthracene	M	2700	mg/kg	0.10		2.7	7.3	< 0.10	< 0.10		
Chrysene	M	2700	mg/kg	0.10		3.4	8.8	< 0.10	< 0.10		
Benzo[b]fluoranthene	M	2700	mg/kg	0.10		3.3	7.5	< 0.10	< 0.10		
Benzo[k]fluoranthene	M	2700	mg/kg	0.10		0.97	3.1	< 0.10	< 0.10		
Benzo[a]pyrene	M	2700	mg/kg	0.10		1.9	5.1	< 0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10		1.1	2.2	< 0.10	< 0.10		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10		0.22	0.63	< 0.10	< 0.10		
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10		1.9	2.5	< 0.10	< 0.10		
Total Of 16 PAH's	M	2700	mg/kg	2.0		33	120	81	64		
Benzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Toluene	M	2760	µg/kg	1.0		4.3	3.9	< 1.0	< 1.0		
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		
o-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0		
Total Phenols	M	2920	mg/kg	0.30		< 0.30	< 0.30	1.1	1.0		

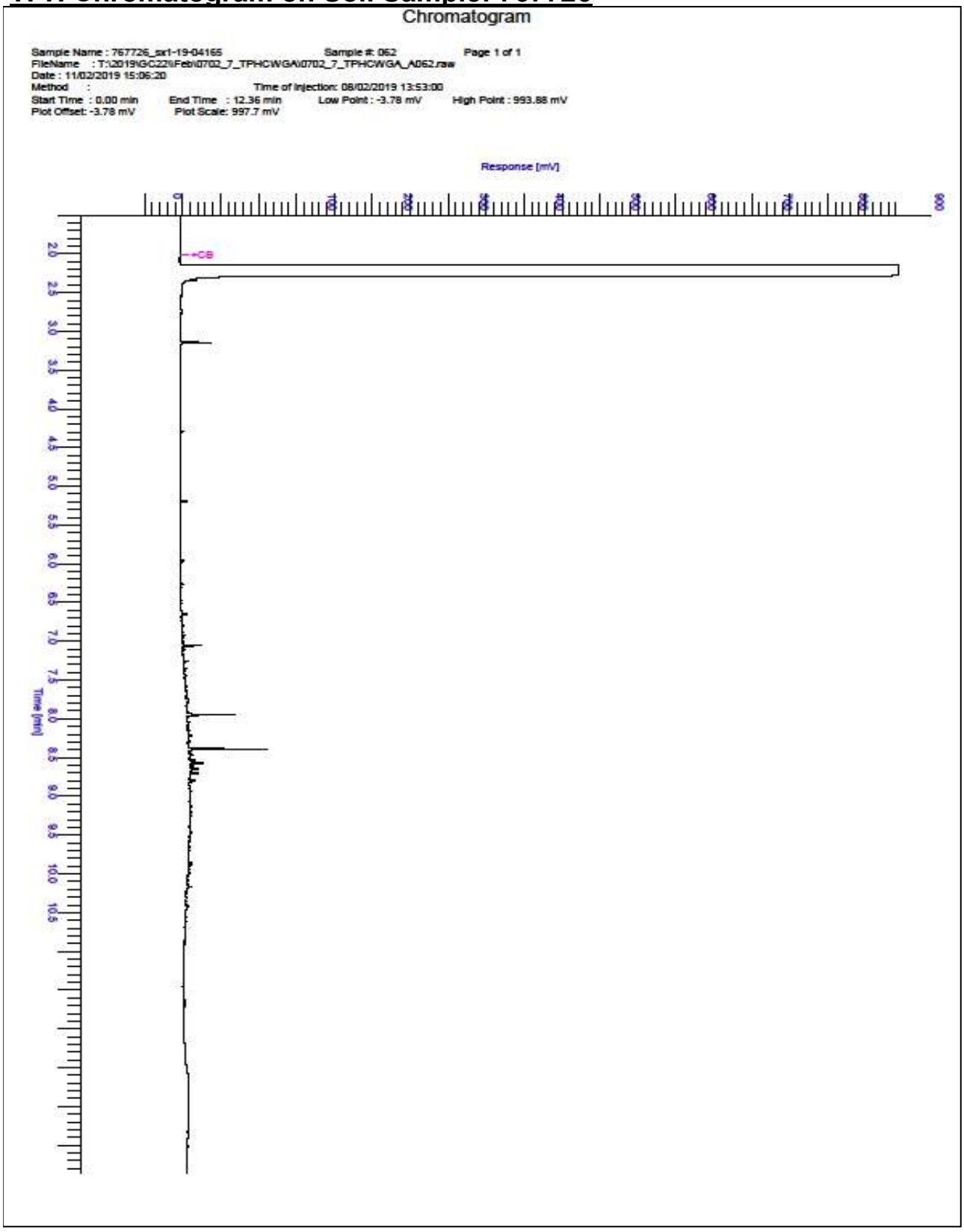
TPH Chromatogram on Soil Sample: 767724



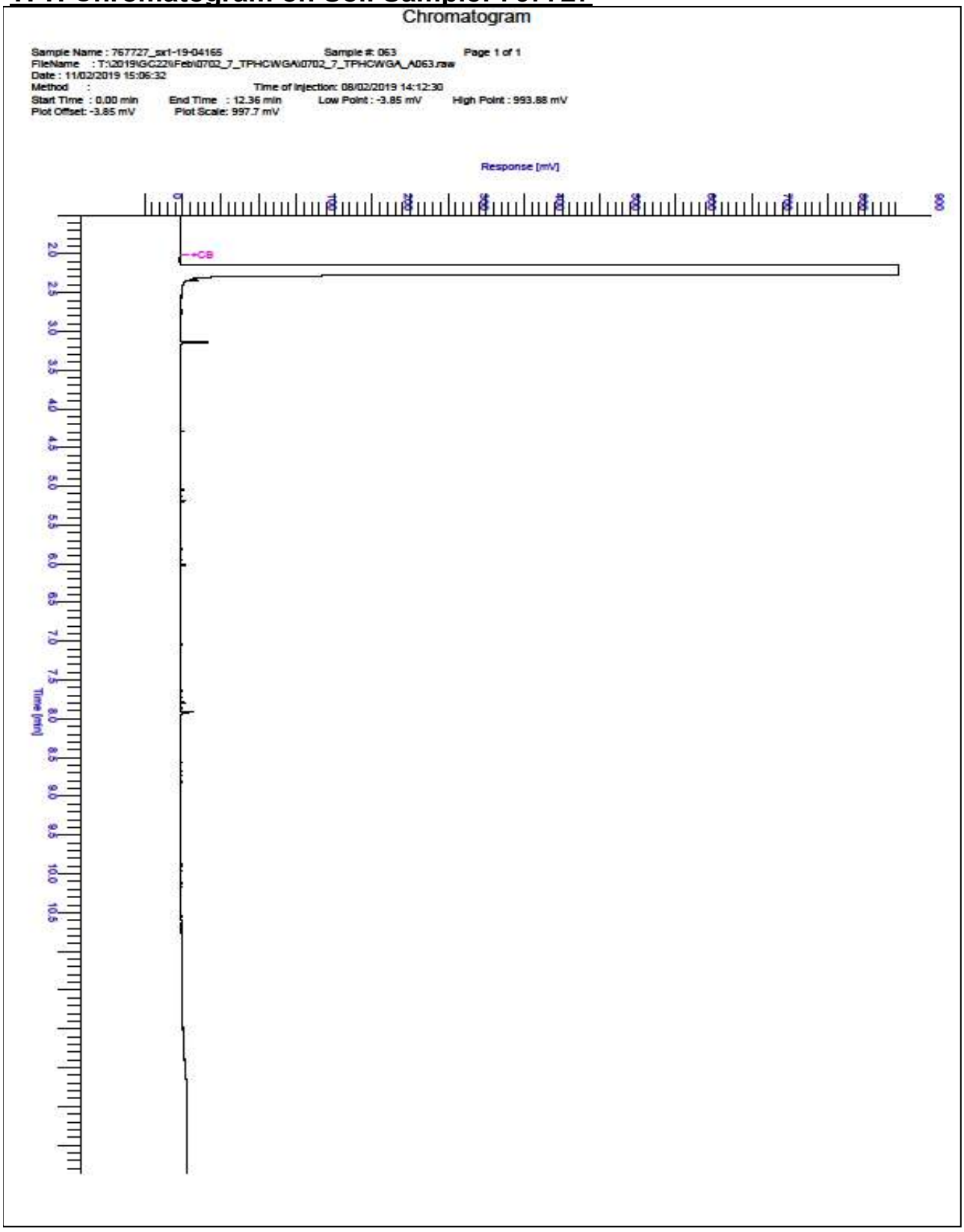
TPH Chromatogram on Soil Sample: 767725



TPH Chromatogram on Soil Sample: 767726



TPH Chromatogram on Soil Sample: 767727



Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

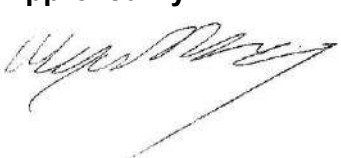
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	19-05275-2		
Initial Date of Issue:	18-Feb-2019	**Date of Re-Issue:**	21-Feb-2019
Client	Remada Ltd		
Client Address:	Forward House 17 High Street Henley in Arden B95 5AA		
Contact(s):	Greg Jones		
Project	616.02 Mapplenell		
Quotation No.:		**Date Received:**	11-Feb-2019
Order No.:		**Date Instructed:**	12-Feb-2019
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	18-Feb-2019
Date Approved:	21-Feb-2019		

Approved By:



Details: Glynn Harvey, Laboratory Manager
Marcin Waryszak, IT Systems Admin

Chemtest
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Results - Soil

Project: 616.02 Mapplenell

Client: Remada Ltd			**Chemtest Job No.:**	19-05275	19-05275	19-05275	19-05275
Quotation No.:			**Chemtest Sample ID.:**	773641	773642	773643	773644
			Client Sample ID.:	7	8	9	10
			Sample Type:	SOIL	SOIL	SOIL	SOIL
			Date Sampled:	06-Feb-2019	06-Feb-2019	06-Feb-2019	06-Feb-2019
			Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-
Moisture	N	2030	%	0.020	14	15		
Soil Colour	N	2040		N/A	Brown,	Brown,		
Other Material	N	2040		N/A	Stones,	Stones,		
Soil Texture	N	2040		N/A	Sand,	Sand,		
Chromatogram (TPH)	N			N/A	See Attached	See Attached		
pH	M	2010		N/A	9.7	9.1		
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.66	0.67		
Arsenic	M	2450	mg/kg	1.0	11	9.3		
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0		
Cadmium	M	2450	mg/kg	0.10	0.30	0.20		
Copper	M	2450	mg/kg	0.50	19	20		
Mercury	M	2450	mg/kg	0.10	< 0.10	0.10		
Nickel	M	2450	mg/kg	0.50	18	15		
Lead	M	2450	mg/kg	0.50	24	25		
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20		
Vanadium	U	2450	mg/kg	5.0	16	16		
Zinc	M	2450	mg/kg	0.50	53	49		
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	17		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		
Fraction of Organic Carbon	M	2625		0.0010	0.020	0.033		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	7.2	< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	7.2	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	3.2		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	7.3	29		

Chemtest
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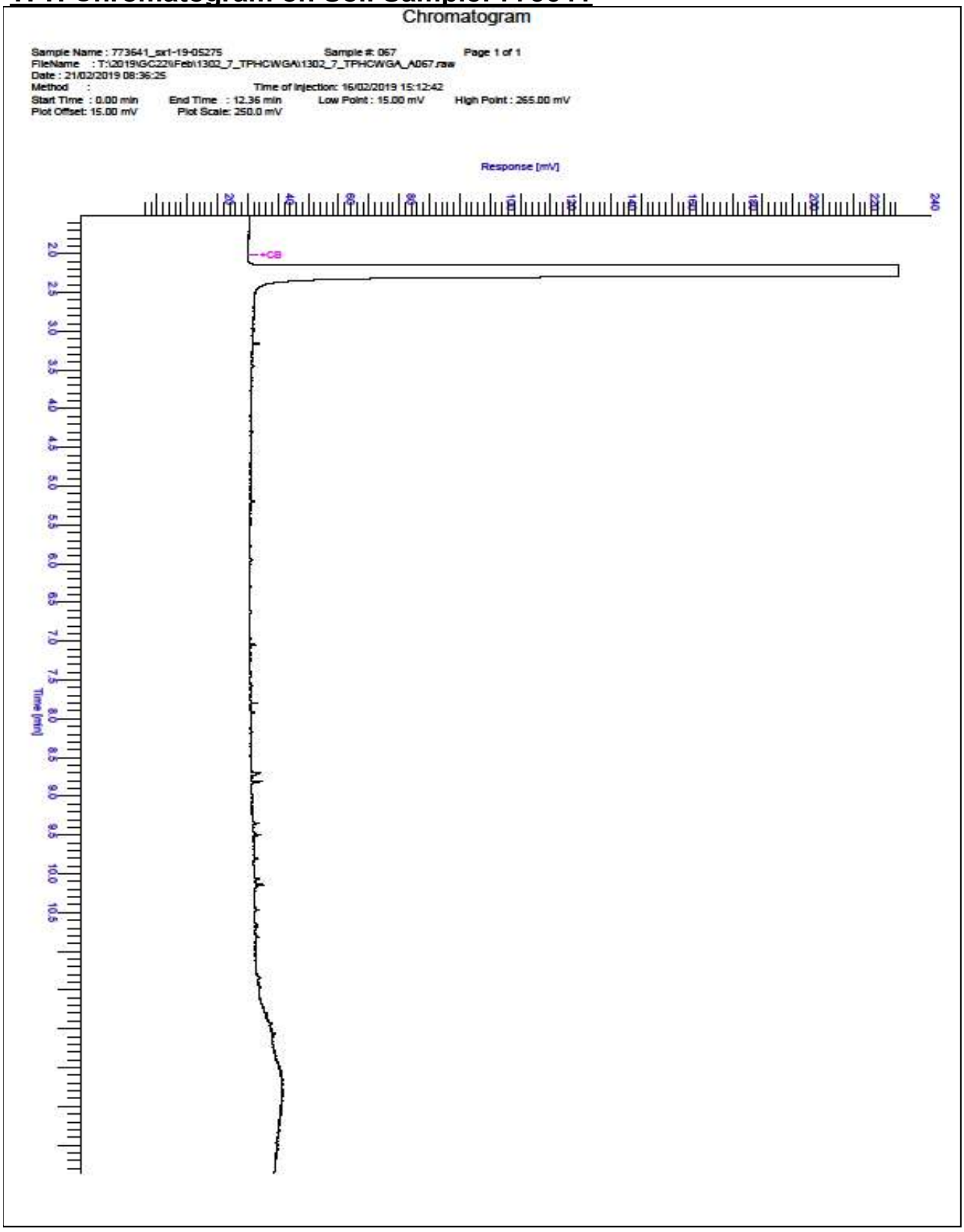
Results - Soil

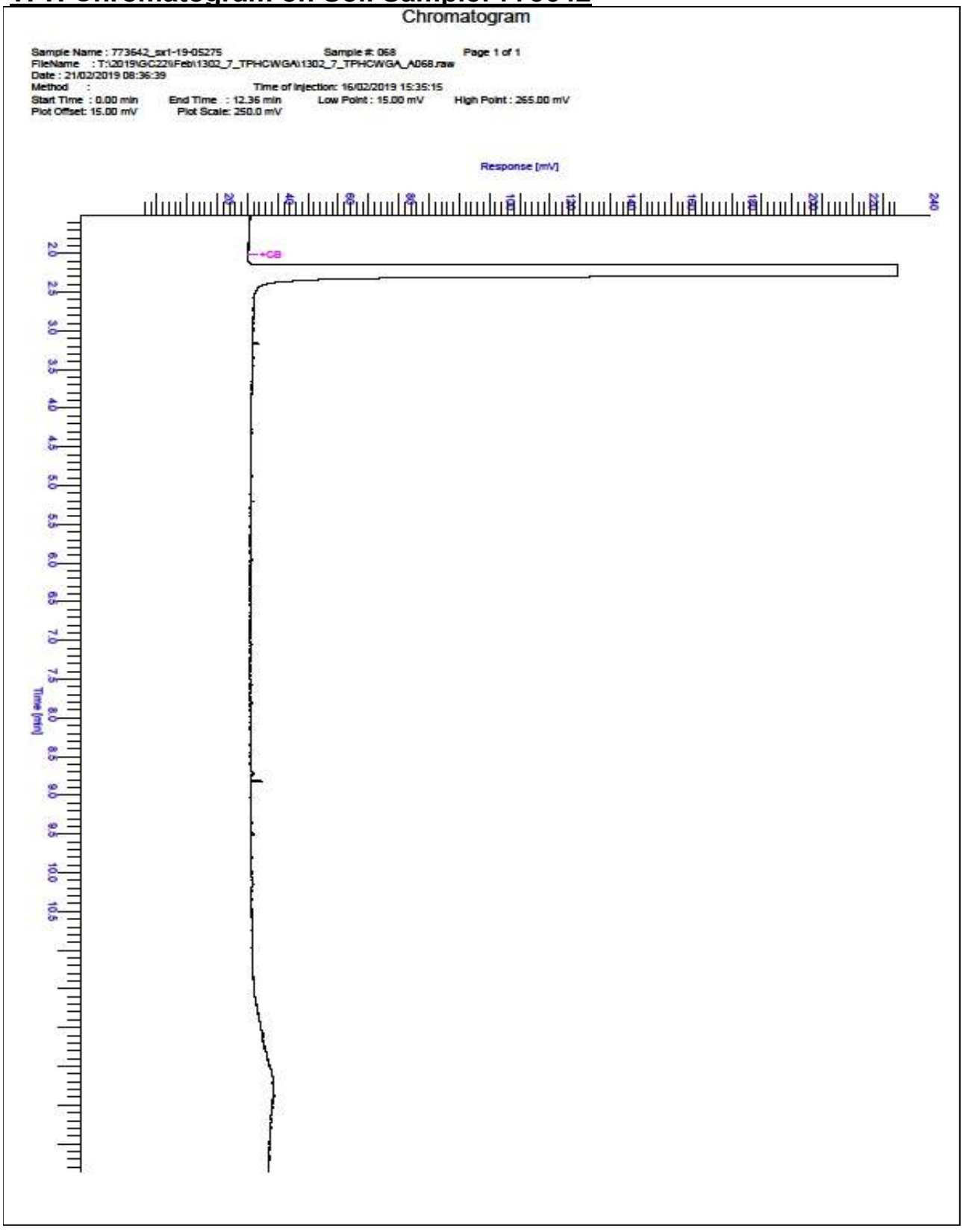
Project: 616.02 Mapplenell

Client: Remada Ltd		**Chemtest Job No.:**			19-05275	19-05275	19-05275	19-05275
Quotation No.:		**Chemtest Sample ID.:**			773641	773642	773643	773644
		Client Sample ID.:			7	8	9	10
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Date Sampled:			06-Feb-2019	06-Feb-2019	06-Feb-2019	06-Feb-2019
		Asbestos Lab:			DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	8.7	32		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	16	32		
Naphthalene	M	2700	mg/kg	0.10	0.33	< 0.10		
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10		
Acenaphthene	M	2700	mg/kg	0.10	0.12	< 0.10		
Fluorene	M	2700	mg/kg	0.10	0.18	< 0.10		
Phenanthrene	M	2700	mg/kg	0.10	1.2	0.72		
Anthracene	M	2700	mg/kg	0.10	0.30	0.15		
Fluoranthene	M	2700	mg/kg	0.10	1.5	0.95		
Pyrene	M	2700	mg/kg	0.10	1.5	0.88		
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.81	0.70		
Chrysene	M	2700	mg/kg	0.10	0.55	0.42		
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	0.31	0.51		
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.14	0.27		
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.58	0.38		
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.47	0.47		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10		
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.54	0.39		
Total Of 16 PAH's	M	2700	mg/kg	2.0	8.7	5.9		
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0		
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0		
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0		
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30		

TPH Chromatogram on Soil Sample: 773641



TPH Chromatogram on Soil Sample: 773642



Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

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U	UKAS accredited
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All results are expressed on a dry weight basis
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For all other tests the samples were dried at < 37°C prior to analysis
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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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C - Sample not received in appropriate containers
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E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

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All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	19-09668-1
Initial Date of Issue:	27-Mar-2019
Client	Remada Ltd
Client Address:	Forward House 17 High Street Henley in Arden B95 5AA
Contact(s):	Greg Jones Iain Cairns
Project	616.02 Mapplewell

Quotation No.:		**Date Received:**	19-Mar-2019
Order No.:	616.02	**Date Instructed:**	19-Mar-2019
No. of Samples:	6		
Turnaround (Wkdays):	7	**Results Due:**	27-Mar-2019
Date Approved:	27-Mar-2019		

Approved By:

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 616.02 Mapplewell

Client: Remada Ltd				**Chemtest Job No.:**	19-09668	19-09668	19-09668	19-09668	19-09668	19-09668
Quotation No.:				**Chemtest Sample ID.:**	795910	795911	795912	795913	795914	795915
Order No.: 616.02				Client Sample Ref.:	Sample 11	Sample 12	Sample 13	Sample 14	Sample 15	Sample 16
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Date Sampled:	15-Mar-2019	15-Mar-2019	15-Mar-2019	15-Mar-2019	15-Mar-2019	15-Mar-2019
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	Cement
Asbestos Identification	U	2192	%	0.001	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
ACM Detection Stage	U	2192		N/A	Stereo Microscopy	Stereo Microscopy	Stereo Microscopy	Stereo Microscopy	Stereo Microscopy	Stereo Microscopy
Asbestos by Gravimetry	U	2192	%	0.001	0.002	0.003	0.002	0.004	0.002	0.027
Total Asbestos	N	2192	%	0.001	0.002	0.003	0.002	0.004	0.002	0.027
Moisture	N	2030	%	0.020	9.9	12	14	14	15	17
Chromatogram (TPH)	N			N/A	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached
pH	U	2010		N/A	11.4	11.4	8.3	9.3	9.0	9.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.86	0.60	0.70	0.85	0.79	0.72
Arsenic	U	2450	mg/kg	1.0	12	29	29	26	20	21
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	U	2450	mg/kg	0.10	0.31	0.60	0.35	0.49	0.43	0.40
Copper	U	2450	mg/kg	0.50	19	35	74	39	31	35
Mercury	U	2450	mg/kg	0.10	0.10	0.12	0.15	0.13	0.16	0.15
Nickel	U	2450	mg/kg	0.50	21	22	29	29	24	31
Lead	U	2450	mg/kg	0.50	24	35	50	59	47	79
Selenium	U	2450	mg/kg	0.20	< 0.20	0.21	0.55	0.42	0.34	0.45
Vanadium	U	2450	mg/kg	5.0	20	20	30	27	27	29
Zinc	U	2450	mg/kg	0.50	170	98	93	110	99	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	43	25	31	35	49	46
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fraction of Organic Carbon	U	2625		0.0010	0.012	0.031	0.061	0.076	0.058	0.021
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	5.2	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	1.5	< 1.0	12	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	14	< 1.0	11	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	150	62	28	52	38	37
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	170	62	56	52	38	37
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	5.7	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	1.5	1.6	< 1.0	2.4	1.3	4.7
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	77	75	32	80	64	85
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

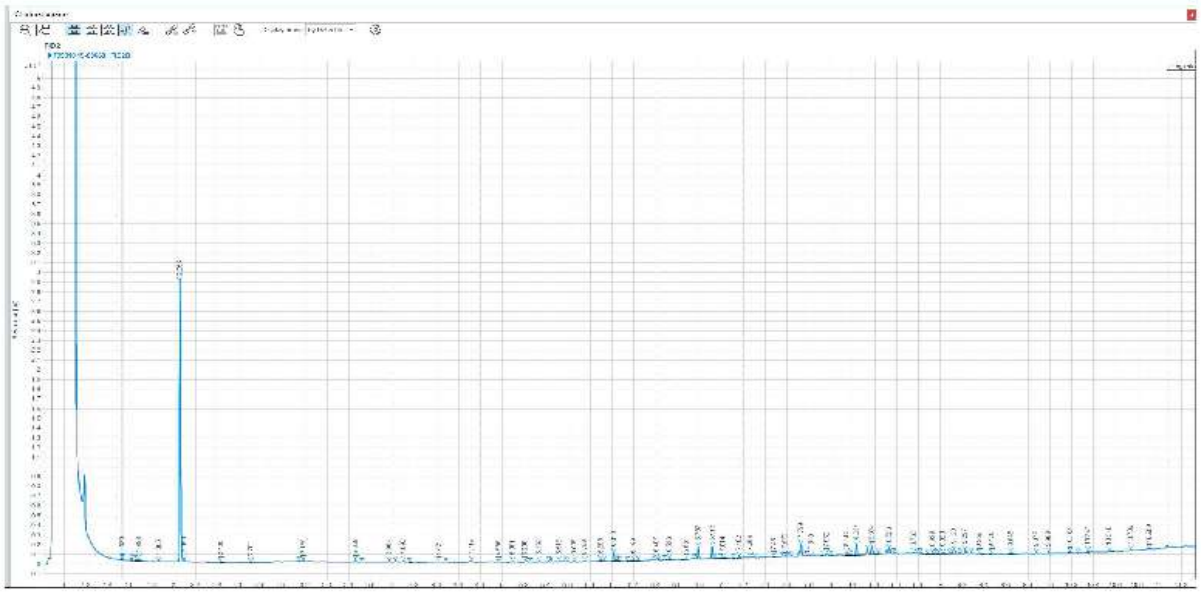
Chemtest
The right chemistry to deliver results

Results - Soil

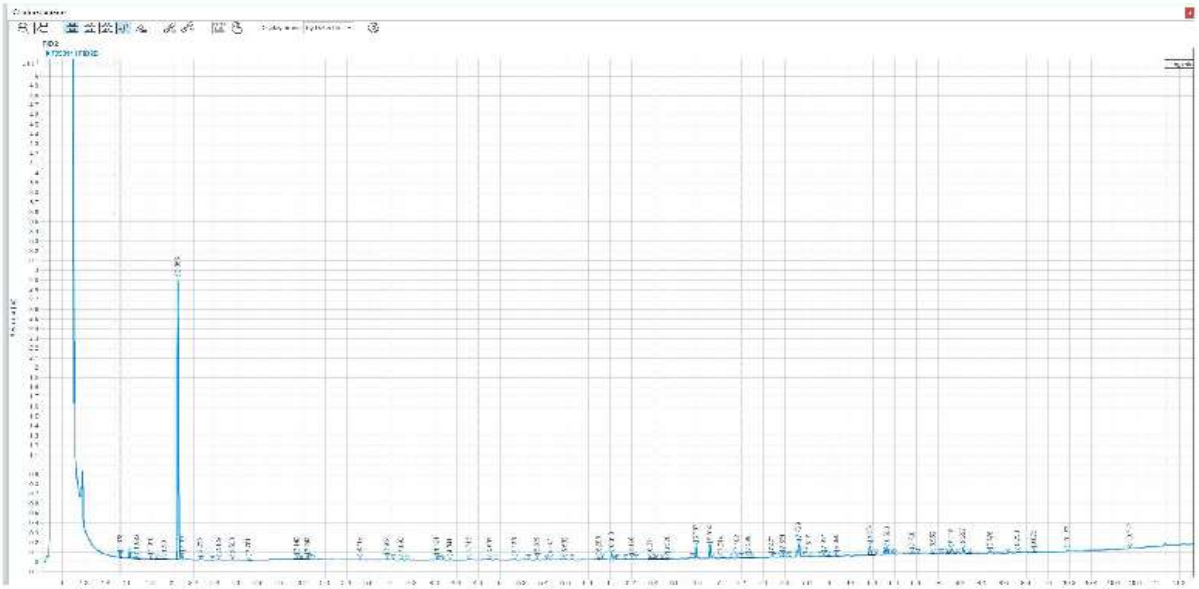
Project: 616.02 Mapplewell

Client: Remada Ltd			**Chemtest Job No.:**		19-09668	19-09668	19-09668	19-09668	19-09668	19-09668
Quotation No.:			**Chemtest Sample ID.:**		795910	795911	795912	795913	795914	795915
Order No.: 616.02			Client Sample Ref.:		Sample 11	Sample 12	Sample 13	Sample 14	Sample 15	Sample 16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Date Sampled:		15-Mar-2019	15-Mar-2019	15-Mar-2019	15-Mar-2019	15-Mar-2019	15-Mar-2019
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	79	76	38	82	65	90
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	240	140	94	130	100	130
Naphthalene	U	2700	mg/kg	0.10	0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	0.37	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	6.9	3.4	< 0.10	11	2.9	4.6
Anthracene	U	2700	mg/kg	0.10	0.21	0.90	< 0.10	2.5	0.64	1.1
Fluoranthene	U	2700	mg/kg	0.10	4.5	4.4	< 0.10	9.7	3.4	6.0
Pyrene	U	2700	mg/kg	0.10	3.9	4.1	< 0.10	9.6	3.1	5.2
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	1.3	< 0.10	3.2	1.3	1.9
Chrysene	U	2700	mg/kg	0.10	< 0.10	1.7	< 0.10	2.1	1.0	1.8
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	0.93	< 0.10	1.7	0.96	1.3
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	1.6	< 0.10	0.39	0.35	0.80
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	0.67	< 0.10	1.3	0.84	1.2
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.72	0.14	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.30	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.86	0.11	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	16	19	< 2.0	43	15	24
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	2.0	1.4	1.5	< 1.0
Toluene	U	2760	µg/kg	1.0	1.8	1.5	2.6	1.7	2.8	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	3.8	< 1.0	2.8	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	2.9	< 1.0	1.9	< 1.0	< 1.0	< 1.0
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

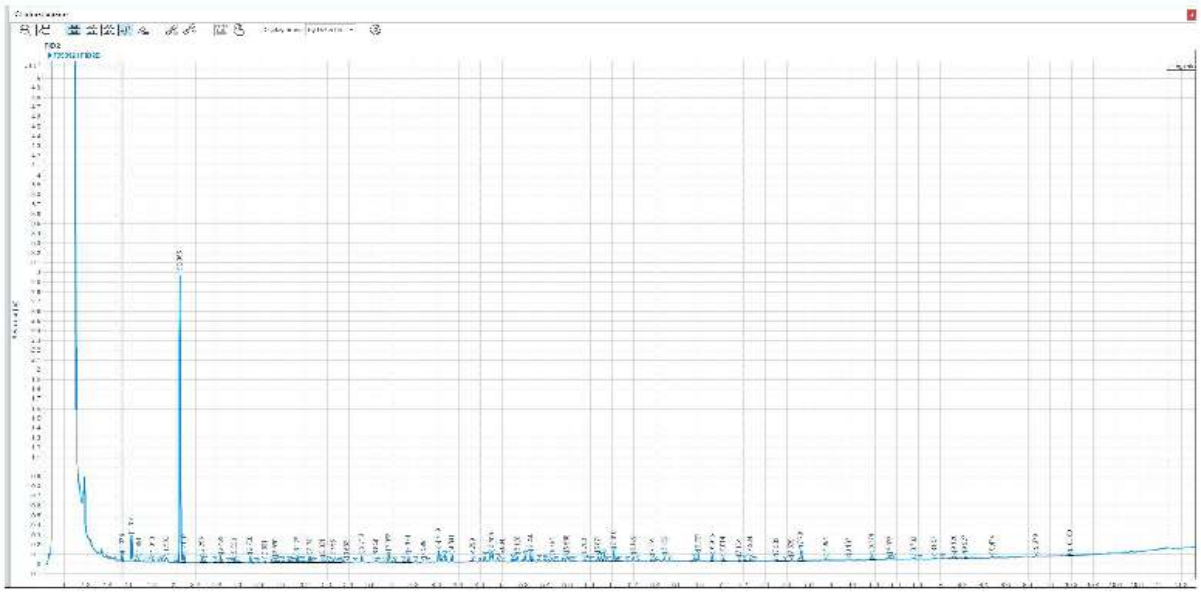
TPH Chromatogram on Soil Sample: 795910



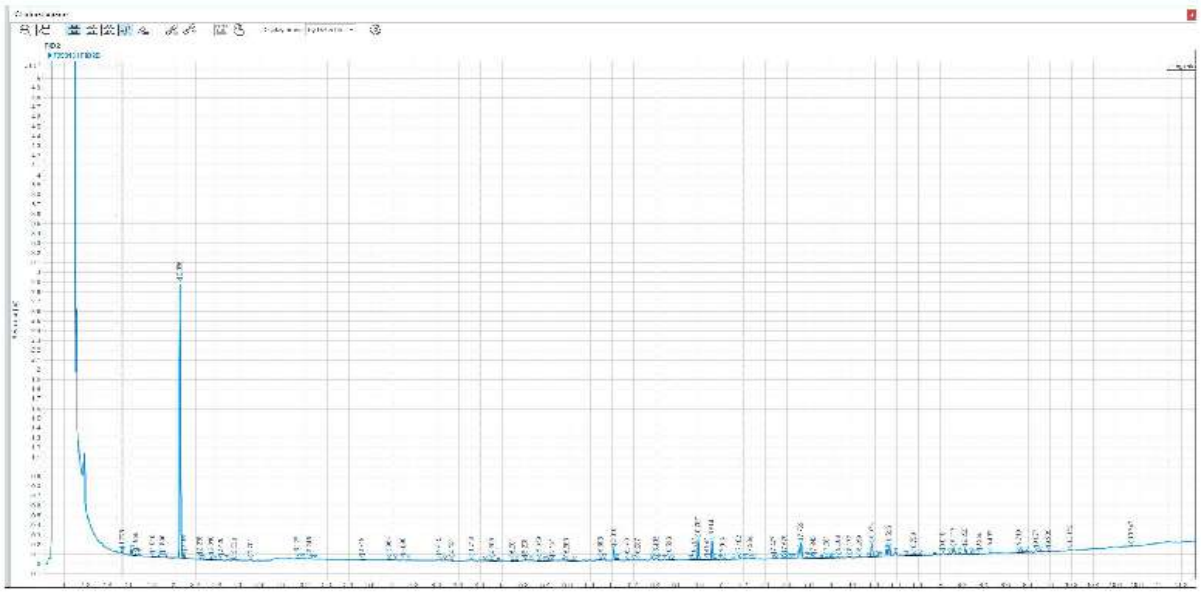
TPH Chromatogram on Soil Sample: 795911



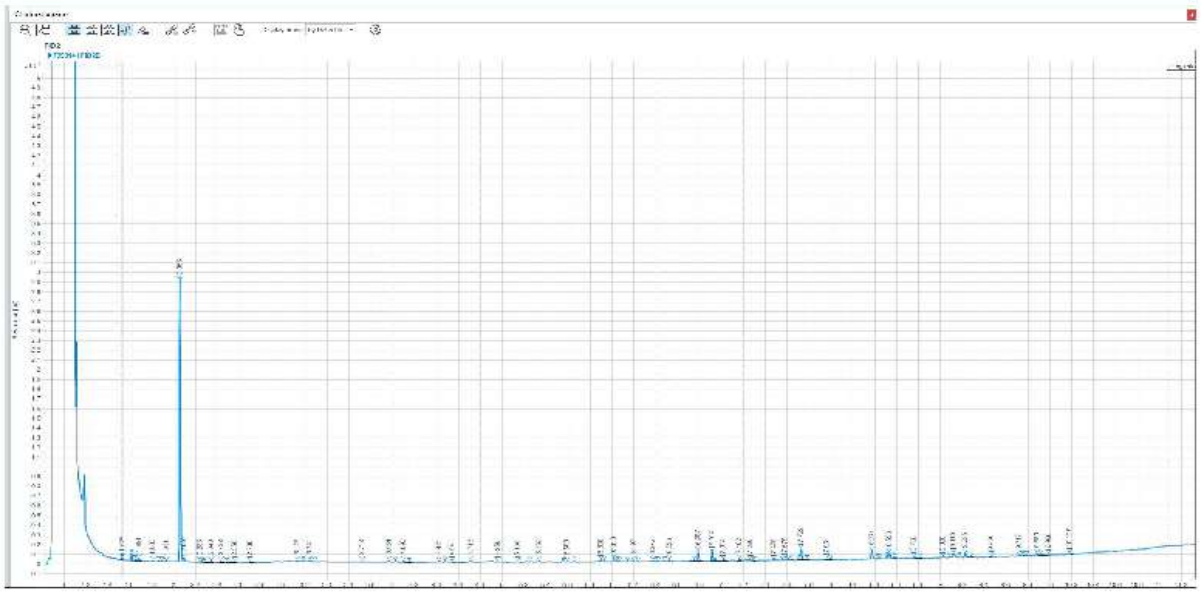
TPH Chromatogram on Soil Sample: 795912



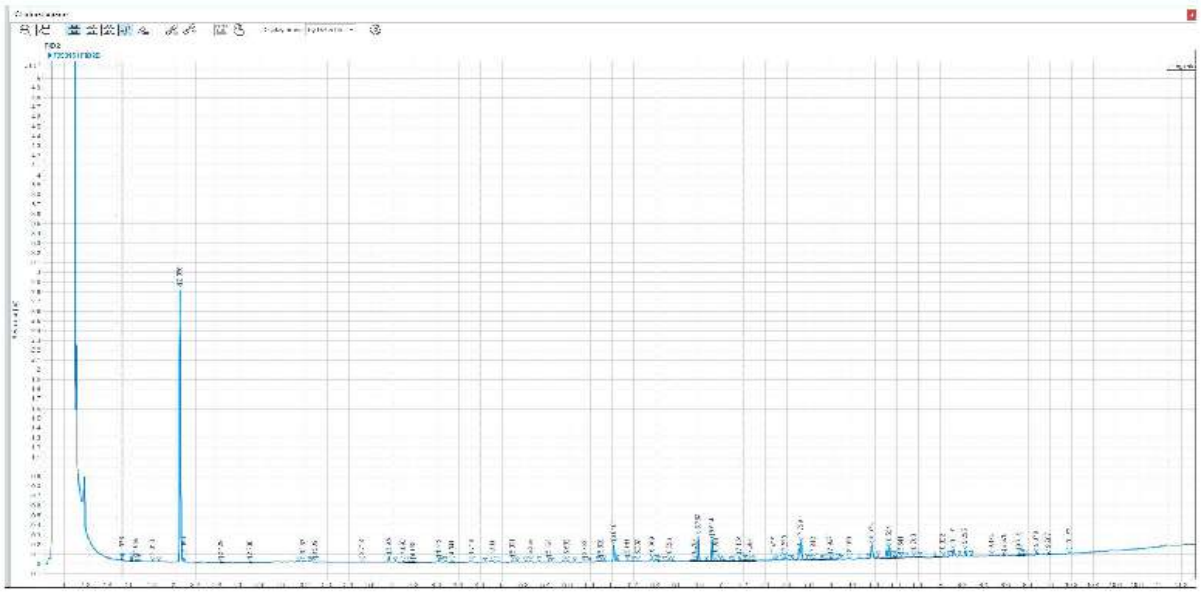
TPH Chromatogram on Soil Sample: 795913



TPH Chromatogram on Soil Sample: 795914



TPH Chromatogram on Soil Sample: 795915



Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com