

St Francis Group

Former BA Tubes, Redditch

Remediation Verification Report

March 2017

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	Report							
Author	G&J Geoenvironmental Consultants Ltd	Contamination / Geotechnical	Contamination					
Work Stage	Verification	Report Date	March 2017					
Brief Description of the Report Contents	The site was remediated in accordance with the remediation strategy agreed with the Environment Agency. This report presents the data collected to validate the remediation of the site and reviews this data to verify that this part of the site has been remediated accordance with the agreed specification.							
	This work is to enable the removal of the Part IIA determination for the site and also establish the site's suitability for the proposed commercial end use.							



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1.0 Introduction

G&J Geoenvironmental Consultants Ltd (G&J) has been commissioned by St Francis Group (SFG) to carry out the verification of remediation works at the former British Aluminium Tubes Site, Studley Rd, Redditch, B98 7HN.

The site has been designated by the local authority (Redditch Borough Council) as Contaminated Land under Part IIA of the Environmental Protection Act 1990, given the presence of TCE and its degradation products and petroleum hydrocarbons in the subsurface at the site. It is proposed to redevelop the site for a mixed commercial / industrial use and this report has been prepared primarily to remove the Part IIA determination of the site but also to support the discharge of any contamination linked planning conditions imposed on the planning consent.

Previous investigations, risk assessments and proposed remediation schemes (undertaken by Fairhurst, RPS, URS, KDC, and Ramboll) identified ground contamination which represented potentially significant risks to controlled waters and therefore required remediation. The findings of these investigations and risk assessments, and recommendations of the remediation schemes are detailed in the following reports:

- FAIRHURST, REMEDIATION OF A SITE AT OLD FORGE DRIVE, REDDITCH, REF: R/I/D/40689/05, NOVEMBER 1998;
- RPS CONSULTANTS, SITE INVESTIGATION: BRITISH ALUMINIUM TUBES, REDDITCH, REF: CD3059, MAY 2000;
- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: CONCEPTUAL SITE MODEL, 8 JULY 2004;
- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: REVISED CONCEPTUAL SITE MODEL AND RISK ASSESSMENT, REF: R890/44358949-1942, 20 DECEMBER 2006;
- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: STAGE 2 REMEDIATION OPTIONS APPRAISAL, R998/44358990-3040, 14 JULY 2008;
- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: SITE CONDITION REPORT, REF: R1136/49327994-3040, 16 DECEMBER 2009;
- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: OUTLINE REMEDIATION STRATEGY TO FACILITATE A POTENTIAL DEVELOPMENT, REF: R1142/49327994-3040, 27 JANUARY 2010;
- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: SUMMARY OF PROPOSED REMEDIATION SCHEME, REF: R1178/49327994-3039, 4 AUGUST 2010;

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- URS CORPORATION LTD., LAND AT STUDLEY ROAD, REDDITCH: SURFACE WATER &
 GROUNDWATER MONITORING PROGRAMME, R1253/46399389-3053, 23 JULY 2012;
- KDC CONTRACTORS LTD, DUE DILIGENCE TRIAL PIT SITE INVESTIGATION, FORMER BA TUBES
 SITE, REDDITCH, REF:1181/MM/SI, JULY 2015;
- RAMBOLL ENVIRON, LAND AT STUDLEY ROAD, REDDITCH: COST-BENEFIT ANALYSIS OF PROPOSED REMEDIATION OPTIONS, REF: UK15-22659-1, JANUARY 2016;
- RAMBOLL ENVIRON, LAND AT STUDLEY ROAD, REDDITCH: CONTROLLED WATERS RISK ASSESSMENT, REF: UK15-22659-2, FEBRUARY 2016.

In order to mitigate the risks identified by the site investigations and assessments, an updated remedial strategy was developed by G&J and agreed with the Environment Agency in April 2016. The remedial strategy was developed after consideration of all the previous information held for the site and represented the most reasonable, practicable and sustainable approach to the clean-up of the site. The strategy is described in detail in the following report;

 G&J GEOENVIRONMENTAL CONSULTANTS LTD, REMEDIATION STATEMENT FOR LAND AT STUDLEY ROAD, REDDITCH, REPORT REFERENCE GJ079-GT-L01-RS, 8 APRIL 2016.

This report describes validation works undertaken to demonstrate the successful remediation of the agreed hotspot areas in accordance with the agreed remediation strategy above.

All works have been undertaken in general accordance with industry guidance and best practice including Environment Agency reports *CLR11: Model Procedures for the Management of Land Contamination* and *SC030114-R1 - Verification of Remediation of Land Contamination*

1.1 Report Format

This report is presented as follows:

Section 2 presents a summary of the site setting and proposed development;

Section 3 presents a summary of the areas of the site requiring remediation, background to the remedial works and the pre-remediation Conceptual Site Model;

Section 4 of the report presents a summary of the remedial strategy, the remedial targets and their derivation, and the proposed verification sampling regime;

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Section 5 of the report presents a summary of the works undertaken during the remediation programme and the volumes excavated, treated and reused;

Section 6 of the report summarises the results of the validation works and presents an assessment of the remediation validation data with reference to the agreed remedial targets and the risks to human health and controlled waters;

Section 7 summarises the outcome of the remedial works, the post remediation Conceptual Site Model and any further works required to meet the final remedial objectives.

1.2 Terms and Conditions

This report has been prepared for St Francis Group in consideration of the proposed commercial end use of the site. Much of the environmental information relates to the site in its present state and should not be used in a different context without reference to G&J.



2.0 Site Information

2.1 Site Location

The former BA Tubes site is located approximately 2km to the south-east of Redditch town centre and covers an area of approximately 6.5 hectares. The general topography slopes gently from approximately 79.8m Above Ordnance Datum (mAOD) in the western part of the site to 73.3mAOD in eastern part, towards the River Arrow, which is located approximately 100m to the east of the site at its nearest point. The site location is shown in Figure 2.1.

Brockhill (Wood of Street County) | Creet Street County | Creet Co

Figure 2.1 - Site Location

2.2 Brief Site History

Industrial activities at the site started during the 1940s and the site was demolished in early 2011. Historical operations involved the manufacture of aluminium tubes, which included the handling of chemicals such as

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caustic soda, TCE and various hydrocarbon-based fuels and oils. In addition to the main tube production areas, other facilities at the site included materials storage, distribution and general administration areas.

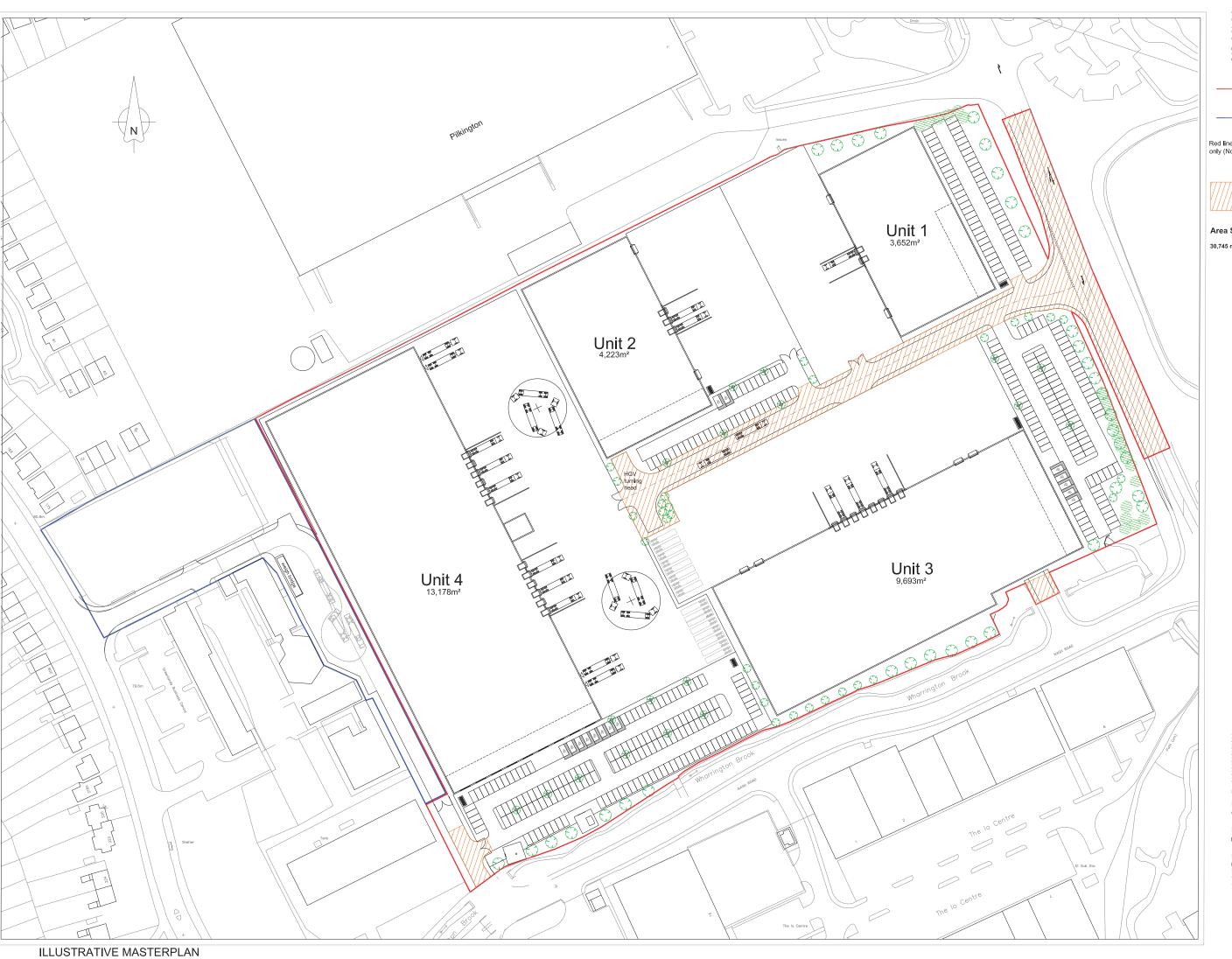
The site comprised two large manufacturing buildings (Heavy Tube Mill and the Light Tube Mill) and other ancillary buildings (small office building, a laboratory, canteen, workshop and caustic shop). The chlorinated solvent TCE was used for **degreasing**, which involved degreasing products in large liquid or vapour baths at several locations across the site, and **greasing**, which involved greasing of products in large dip tanks at several locations on the site using a mixture of 75% TCE and 25% lubricating oil.

2.3 Geology and Hydrogeology

Available previous site investigation reports indicate that the subject site is underlain by Made Ground to depths of up to 2.9mbgl, which mainly comprises a mixture of brick/concrete fragments in a clay matrix. The Made Ground overlies unconsolidated superficial alluvial and periglacial flood gravel deposits (up to 4.2m thick), which in turn overlie bedrock of the Mercia Mudstone Group. Groundwater was typically encountered during previous investigations in sand and gravel deposits, sometimes confined beneath an overlying shallow clay layer. Discontinuous perched shallow groundwater was identified in made ground on top of the superficial clay. Groundwater flow is towards the east / southeast, in the direction of the River Arrow. The saturated thickness of the aquifer in the superficial deposits and, to a degree, in the weathered mudstone, is relatively thin. It was observed in previous investigations to vary between approximately 1m and 4m thick, although was generally in the order of 2m thick. Both the Mercia Mudstone bedrock and overlying superficial deposits are classified by the Environment Agency as a Secondary B Aquifers. The aquifers are unlikely to represent a significant groundwater resource and there are no known groundwater abstractions within 1km of the site.

2.4 Development Proposals

The proposals are for redevelopment of the site with the construction of up to 30,745m² of B1, B2 and B8 end use with ancillary offices, parking and servicing areas (Planning application reference: **2016/350/HYB**). The proposed development masterplan is presented overleaf.



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NOTES:

Metres 0 5m 10m 15m 20m 25m

Planning Application boundary 7.44 hectares (18.4 acres).

Area of adjoining land in the ownership of applicant

Red line plan for purpose of planing application only (Not for section 106 purposes).

Area of detailed application (site access and estate roads) all other matters reserved with exception of drainage infrastructure.

Area Summary

 $30,\!745~m^2$ of B1 / B2 / B8 use with ancillary offices.

G 27-10-2016 RedIne amended

E 25-10-2016 RedIne amended

D 24-10-2016 Redline amended to Include Nash Road
C 16-09-2016 notes amended
B 15-09-2016 residential site lomitted, planning bounds

15-09-2016 residential site indicated

AME NOTES

NOTES

ST FRANCIS GROUP

OLD FORGE DRIVE, REDDITCH

Drawing Title

ILLUSTRATIVE MASTERPLA

Drawn Checked Paper Size Scale Data

Project No. 12806 D130 G

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3.0 Background to the Remedial Works

The previous investigations identified contamination at the site, most notably from chlorinated solvents. Visual and olfactory evidence of gross organic contamination was noted at several locations, while laboratory analysis found some contaminants at concentrations in excess of generic and detailed risk criteria.

The site was observed to be affecting Controlled Waters (primarily the River Arrow) and was therefore designated as a Special Site, with regulatory responsibility being passed to the Environment Agency. Historical discussions between the previous owner (Luxfer) and the Environment Agency identified that the main risk driver at key controlled waters receptors was TCE (and its daughter products), rather than petroleum hydrocarbons.

Following the investigations and subsequent risk assessments, an original remediation strategy was developed by URS in the context of the operational use of the site as an active aluminium tube manufacturing plant with restricted access for source zone remediation. It therefore focussed primarily on pathway management for chlorinated hydrocarbons. Once the site was demolished, a number of 'hotspot' areas would require remedial measures to treat impacted soils and groundwater.

3.1 Changes at the site following agreement to URS Remediation Strategy

A number of events have occurred since the strategy was developed:

- Site Closure and Demolition Manufacturing operations at the site ceased some years ago and the buildings and structures were subsequently demolished to ground level. The previous presence of operational structures had prevented the suitable access for source remediation; and
- Acquisition of Adjacent Land by St Francis Group This land was previously owned by Rio Tinto
 and its acquisition will form part of the redevelopment scheme of the main site.

3.2 Remediation Action to Date

Prior to the current remediation works, a series of remediation actions were implemented by the previous owners. Further information on the overall remediation strategy can be found in URS Stage 2 Remediation Options Appraisal referenced in Section 1.0. The following actions have been undertaken:

 Decommissioning of Site Drains – Storm-water drainage formerly discharged contaminated groundwater into Broadground Ditch. These were decommissioned in 2011 and contaminant concentrations subsequently reduced in the ditch and the River Arrow;

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- Infilling of Broadground Ditch Broadground Ditch, the stream immediately to the east of the site, was infilled in 2014 to remove a key preferential pathway from the Site to the River Arrow;
- Phytoremediation Planting in Riparian Buffer Zone More than 800 willow trees were planted in the riparian buffer between Old Forge Drive and the River Arrow, to reduce the contaminant mass flux from shallow groundwater baseflow into the River Arrow.
- Hyporheic Zone Attenuation Attenuation processes in the stream bed of the River Arrow (the "hyporheic zone") were demonstrably reducing chlorinated hydrocarbon concentrations by up to 2 to 3 orders of magnitude in groundwater between the river bank and before it discharged into some parts of the river;
- General downward trend in Contaminant Concentrations Since 2000, groundwater and surface water sampling has been undertaken by RPS, URS, the Environment Agency and other parties. The results demonstrate that concentrations of TCE and its degradation products have declined significantly over time. This reduction is attributed to the various remediation measures that have been undertaken and the likely general natural attenuation of mass in source areas. More recently, TCE concentrations had also reduced in the River Arrow to around the EQS of 10µg/l.

3.3 Hotspot Areas to be remediated by current scheme

Several areas of impacted soils, groundwater and potential DNAPL have been found on site during previous investigations. It was agreed that the main 'spill zone' and downgradient plume zone at the site were the primary risks to controlled waters and human health. These have been identified as Area 1 (Impacted made ground throughout profile) and Area 2 (Impacted made ground at groundwater interface) in Figure 3.1 and Drawing C10726-005.

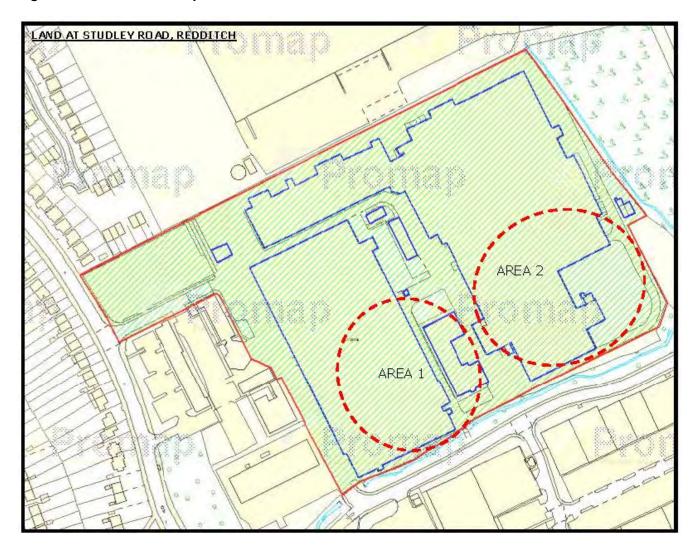
Prior to the remediation commencing, approximate soil volumes designated as 'clean' and 'requiring remediation' were calculated based on trial pit records and these are reproduced below in Table 3.1.

Table 3.1 - Hotspot volumes

Area 1 – Main spill zone	Estimated area (m²)	Estimated depth (m)	Estimated volume (m³)	
Estimated 'Clean' Soils	5000	3	15,000	
Estimated 'Contaminated' Soils	5000	1	5,000	
Area 2 – Downgradient plume zone	Estimated area (m²)	Estimated depth (m)	Estimated volume (m³)	
	Estimated area (m²) 6500	Estimated depth (m) 3.5	Estimated volume (m³) 22,750	



Figure 3.1 – Nominal Hotspot areas



3.4 Pre-Remediation Conceptual Site Model (CSM)

The outcome of the investigations and the subsequent risk assessments was that the following pollution linkages were identified as being potentially significant and would therefore require mitigation.

- PL1 Exposure of future site users to contamination in soil via dermal contact, soil and dust ingestion, and inhalation of dusts and vapours;
- PL2 Leaching of contamination in soil through the unsaturated zone to the shallow groundwater and migration via the saturated zone to the River Arrow;
- PL3 Migration of already contaminated shallow groundwater to the River Arrow.





3.5 Summary of Remediation Objectives

In order to address the identified pollution linkages a remedial scheme was required to meet the following objectives;

- remediation of contaminants within soil to address potential unacceptable risks to controlled waters (and human health);
- remediation of organic contaminants within shallow perched groundwater to address potential unacceptable risks to controlled waters; and
- to meet specific requirements of removing the Part IIA determination for the site whilst also ensuring suitability for the proposed redevelopment.



4.0 Summary of Remedial Measures

4.1 Remedial Strategy

The remediation strategy involved the selective excavation, segregation and treatment of two major source areas of solvent contamination. It was agreed that the potential impacts on controlled waters would be substantially mitigated and overall site betterment achieved through treatment of the on-site soils and removal / treatment of perched water from the excavations. It was further agreed, that based on the above, no post-remediation groundwater monitoring was deemed necessary.

The following strategy was considered the most appropriate in terms of effectiveness and sustainability:

- Selective excavation and segregation of overburden materials followed by direct reuse or treatment (see below) depending on chemical results;
- Bioremediation treatment followed by direct re-use of material, to address potential vapour inhalation
 by site users and reduce the risk of organic pollution of controlled waters to acceptable levels;
- Pumping out of any free product / contaminated groundwater encountered in excavations and treatment on site through oil separators, and sand / carbon filters, prior to discharge under a discharge consent.

The remediation strategy is described in detail in the G&J Remediation statement document referenced in Section 1.0.

Where contamination 'hotspots' were identified, soils were excavated and those showing obvious visual or olfactory evidence of contamination separated for treatment via bioremediation. Those not showing evidence of contamination were separated and samples taken to validate the material, which determined whether it could be re-used or whether treatment was required.

In addition, the remainder of the site (northern half) will be the subject of a 'surge' to 2mbgl, whereby all slabs, foundations and other below ground structures will be broken out and removed. Any soils showing evidence of gross contamination that have not been previously identified will also be excavated and any treatment or disposal reported separately.

4.2 Remedial Targets

Elevated TCE concentrations on the site were historically relatively widespread. Therefore, given the distribution of the source areas on the site along the groundwater flowpath, risk assessment calculations were undertaken by Ramboll Environ (the previous site owner's consultant) using the Environment Agency



Remedial Targets Worksheet v3.1 to assess the potential influence of distance from receptors on target concentrations. They proposed that the remedial target concentrations varying between 2.9mg/kg to 3471 mg/kg of TCE should be applied across the site based on distance from source areas (backfill location) to the nearest controlled waters receptor.

Following a meeting between G&J, St Francis Group and the Environment Agency on 5th April 2016, a single site wide remedial target based on the EA's own P20 modelling work was agreed for TCE. The remedial target (Table 4.1) was only to be used to validate excavations.

Table 4.1 - Remedial Target for Part IIA remediation

Contaminant of Concern	Remedial Target (mg/kg)
TCE	35

The soil remedial target was determined such that no risk to the River Arrow will exist once soils are excavated and remediated. The derived soil remedial target is not considered protective of human health. As such, the commercial end use DEFRA C4SL and LQM S4UL criteria (Land Quality Press, 2015, Unique publication number **S4UL3312**) for TCE and other contaminants of concern were used to be protective of human health. These criteria (Table 4.2) were used to determine the suitability of both untreated site won and bioremediated soils for re-use under a commercial end use.

Table 4.2 - LQM S4UL Commercial End Use

Determinand	Chemical acceptance criteria – GAC (mg/kg)	Source
Arsenic	640	DEFRA C4SL
Cadmium	410	DEFRA C4SL
Chromium	8,600	LQM / CIEH S4UL
Copper	68,000	LQM / CIEH S4UL
Lead	2,300	DEFRA C4SL
Mercury	1,100	LQM / CIEH S4UL
Nickel	980	LQM / CIEH S4UL
Selenium	12,000	LQM / CIEH S4UL
Zinc	730,000	LQM / CIEH S4UL
Naphthalene	190	LQM / CIEH S4UL
Acenaphthylene	83,000	LQM / CIEH S4UL
Acenaphthene	84,000	LQM / CIEH S4UL
Fluorene	63,000	LQM / CIEH S4UL
Phenanthrene	22,000	LQM / CIEH S4UL
Anthracene	520,000	LQM / CIEH S4UL
Fluoranthene	23,000	LQM / CIEH S4UL
Pyrene	54,000	LQM / CIEH S4UL
Benzo(a)anthracene	170	LQM / CIEH S4UL



Determinand	Chemical acceptance criteria – GAC (mg/kg)	Source
Chrysene	350	LQM / CIEH S4UL
Benzo(b)fluoranthene	44	LQM / CIEH S4UL
Benzo(k)fluoranthene	1,200	LQM / CIEH S4UL
Benzo(a)pyrene	35	DEFRA C4SL
Indeno(123-cd)pyrene	500	LQM / CIEH S4UL
Dibenzo(ah)anthracene	3.5	LQM / CIEH S4UL
Benzo(ghi)perylene	3,900	LQM / CIEH S4UL
Aliphatics >C5-C6	3,200	LQM / CIEH S4UL
Aliphatics >C6-C8	7,800	LQM / CIEH S4UL
Aliphatics >C8-C10	2,000	LQM / CIEH S4UL
Aliphatics >C10-C12	9,700	LQM / CIEH S4UL
Aliphatics >C12-C16	59,000	LQM / CIEH S4UL
Aliphatics >C16-C35	1,600,000	LQM / CIEH S4UL
Aromatics >EC5-EC7	26,000	LQM / CIEH S4UL
Aromatics >EC7-EC8	56000	LQM / CIEH S4UL
Aromatics >EC8-EC10	3500	LQM / CIEH S4UL
Aromatics >EC10-EC12	16,000	LQM / CIEH S4UL
Aromatics >EC12-EC16	36,000	LQM / CIEH S4UL
Aromatics >EC16-EC21	28,000	LQM / CIEH S4UL
Aromatics >EC21-EC35	28,000	LQM / CIEH S4UL
Benzene	27	DEFRA C4SL
Toluene	56,000	LQM / CIEH S4UL
Ethylbenzene	5,700	LQM / CIEH S4UL
Xylene	5,900	LQM / CIEH S4UL
TCE	1.2	LQM / CIEH S4UL

4.3 Pre-Remediation Delineation

As part of the remedial strategy, an initial trial trenching exercise was undertaken within the perimeter of the proposed contamination hotspot areas to assess level of contamination and potential for water ingress. The findings of the delineation exercise confirmed the areas of worst contamination were in line with previous investigations but volumes of contamination appeared higher than those made in the initial assessment (Table 3.1). Following this work, each of the hotspot areas was set out using a 10m x 10m grid to aid in the management of the zone.

4.4 Verification Sampling

As part of the works to verify the remediation has been completed successfully, the remedial strategy details a programme of verification sampling and analysis which comprises the following:

 verification samples taken from the remediation excavations at a frequency of 1 sample from the base per 10m by 10m grid square and every 10m along the sides of excavations;

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- as per agreement with EA, the samples retrieved for validation of the sides and base of the excavation
 was only analysed for the contaminant with a remedial target (TCE);
- clean site won soil was tested for Speciated TPH (including BTEX), Metals, USEPA PAH and TCE at a rate of one sample per 500m³ for the first 5000m³ reducing to 1 sample per 1000m³ thereafter;
- remediated material was tested for Speciated TPH (including BTEX), Metals, USEPA PAH and TCE at a rate of one sample per 250m³ for the first 1500m³ reducing to 1 sample per 500m³ thereafter;
- Excavation sample data was screened against the relevant remedial target for the site for TCE (detailed in Table 4.1) and site reuse and treated material samples for the other parameters against suitability for use criteria (LQM S4UL Commercial) detailed in Table 4.2.

In addition, material movements were tracked via a Material Management Plan and excavations recorded through a photographic record and the logging of locations and depths. The works were undertaken under the CL:AIRE Definition of Waste Industry Code of Practice.



5.0 Remediation Works

5.1 Placement of a clay cut-off wall to control groundwater

The trial pits carried out as part of the pre-remediation delineation works identified there was a high potential for water ingress into the remediation excavations. Therefore a puddle clay "cut off wall" was installed in an "inverted horseshoe" up-gradient of Area 1 to impede groundwater into the remedial excavations. A reduced level dig was carried out to 2mbgl which facilitated the excavation of a slip trench for the installation of the clay barrier to a depth of 4.5-5mbgl. The trench was extended 0.5m past the standing water level with the clay being keyed into the mudstone. The clay barrier was 0.5m wide and extended to 100m in length with two 90 degree returns which were 20m at the eastern end and 10m at the western end (see photos below).





5.2 Identification of Contaminated Soils

Remediation works were based on olfactory and visual evidence and set out on a 10m by 10m grid to ensure that material movements could be tracked easily. The hotspot labelled Area 1 essentially lies within columns A to I and between rows 1 to 9. The hotspot labelled Area 2 essentially lies within columns K to V and between rows 1 to 9. A minimum 5m 'stand-off zone' was marked out along the route of the live sewer and was maintained throughout bulk excavation works. The stand-off zone lies within columns I, J and K.

The entirety of Areas 1 and 2 were subjected to a 'surge' (minimum 2m deep turn over), where slabs, foundations and other large below ground obstructions were broken out and removed to be crushed and reused on site (see photo below). Contaminated soils identified during the 'surge' exercise were excavated and treated as appropriate.



Where evidence of contamination had been previously noted, the soils across the square were excavated and separated based on whether they displayed evidence of contamination or not. Soils exhibiting obvious evidence of contamination were sent to the treatment area to undergo bioremediation. The remainder were stockpiled and samples taken for analysis to determine whether they could be re-used or whether they would require treatment. The photographs below show remediation excavations being undertaken in both the main hotspot areas.













5.3 Volumes Excavated

Material volumes were recorded on a grid square by grid square basis. Appendix A is an extract of the Materials Management Plan (MMP) which details the volumes of soil removed from each grid square for treatment. Appendix B is a further extract of the MMP which details the volumes of soil which demonstrated no evidence of significant contamination and were stockpiled for re-use pending validation sampling.







5.2.1 Material sent for Treatment

The treatment area was constructed on concrete slabs with lined and bunded edges. A sump was created to collect any contaminated water run-off from the windrows (see photos below).



Appendix A details the volumes from each grid square that was sent to the treatment area to undergo bioremediation, together with the date it was sent. A total of approximately 9770m³ of contaminated soil from Area 1 was sent for treatment. A total of approximately 8055m³ of contaminated soil from Area 2 was sent for treatment.

Shallow groundwater filled the base of remedial excavations, and whilst no appreciable DNAPL was encountered on the surface of the mudstone, groundwater often showed evidence of a hydrocarbon sheen.

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Where this was the case the groundwater was pumped to the water treatment plant for remediation prior to discharge to sewer. A total of approximately 767m³ of groundwater originating from Area 1 and 4088m³ of groundwater from Area 2 passed through the treatment plant. Appendix C details the volumes of groundwater removed from each area.

Excavations began in the west of Area 1 in August and gradually proceeded eastwards. Contamination was found to be more widely distributed than anticipated, predominantly occurring in large hotspots (which extended to the full depth in several adjacent grid squares) rather than a continuous 1m thick band of contamination on the surface of the mudstone. A total of 2350m³ of soil was sent for treatment in August.

During September, the excavation moved into the main area where contamination had been previously identified. More significant volumes of soil exhibiting evidence of contamination were removed to the treatment area during this period. During September a total of 4790m³ of soil was sent to the treatment area.

There was further eastward progression during October and Area 1 was terminated at the western edge of the stand-off zone for the existing sewer. A total of 2630m³ of material was removed for treatment in October. The total volume of treatment of soils from Area 1 was 9770m³.



As there was a significant drop in site level in the Area 2 part of site, groundwater in trial trenches was encountered much shallower than in Area 1 (at approx. 2mbgl). G&J felt that it would be unreasonable to dig out saturated soils up to 2 metres below static water level due to a) the practicalities of dewatering a larger

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volume and b) the issues associated with backfilling a larger volume beneath the water table than originally envisaged. The main driver for remediation at this site was to remove or treat the source of contamination on site, such that the remediation is compliant with the Part 2A legislation. Therefore, it was agreed with the EA that excavations would proceed to 2.5mbgl where no contamination was encountered and a trial pit would be excavated to the surface of the bedrock (circa 3.5-4mbgl) for validation purposes. Where gross contamination was encountered in the top 2.5m of a grid square, the excavations would proceed to the surface of the bedrock (as per Area 1 works).

Excavations began in the west of Area 2 (at the eastern edge of the stand-off zone for the existing sewer) at the end of October and gradually proceeded eastwards. Contamination was found to be more patchily distributed than Area 1 with two main chlorinated hydrocarbon hotspots which extended to the full depth between cells N4-N8 and O7-O8, and between cells P1-P4 and Q1 to Q5. A total of 400m³ of soil was sent for treatment in October, 1050m³ in November and 1725m³ in December.

The site was made safe over the Christmas and New Year shutdown. On return to site in January the excavation moved eastwards, in January a total of 3050m³ of soil was sent to the treatment area, with a further 830m³ in February. The remediation excavation was terminated at the eastern edge of Column T. The total volume of treatment of soils from Area 2 was 7055m³.

During the surge to the eastern site boundary, approximately a further 1000m³ of material was sent for treatment. A hotspot (found adjacent to the 3 stage interceptor in Cells U4 to U10) was impacted with petroleum hydrocarbons rather than chlorinated hydrocarbons. Whilst petroleum hydrocarbons were not considered a primary risk driver for controlled waters at the site, the hotspot was removed for treatment as part of the overall site betterment and to ensure suitability for use as a commercial development in terms of human health / perceived risk. Therefore, the total volume of treatment of soils from the area to the east of the sewer stand-off zone was 8055m³.

5.2.2 Tanks

During the surging and remediation excavation, a number of below ground structures (i.e. redundant tanks) were encountered, which in some cases may have represented the primary sources of contamination. Where encountered, the tanks were pumped to remove any remaining oily waters and residues and removed from the ground. Photographs of a deep tank in situ is shown below.





5.2.3 Material not requiring treatment

Appendix B details the volumes of soil removed from each grid square that did not show evidence of contamination and was stockpiled for re-use pending results of verification testing (Individual laboratory certificates are presented in Appendix F). A total of approximately 18,230m³ is recorded in Appendix B as being stockpiled for re-use for Area 1, and a total of approximately 15,745m³ from Area 2. The photos below show the excavation of clean material and also the backfilling of suitable for re-use materials.





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5.2.3 River Arrow monitoring

As part of the Environmental Permit, the EA requested that surface water monitoring of the River Arrow was undertaken at two locations on a weekly basis to demonstrate that the remediation works were not causing the TCE contamination to mobilise and affect the controlled waters receptor. The photos below show the sampling of the River and the results of the chemical analysis are included in Appendix D. All results demonstrate that concentrations of TCE in the River Arrow are less than the EQS of $10\mu g/l$.







6.0 Validation Sampling and Analysis

6.1 General

Validation sampling was undertaken for three reasons:

- To demonstrate the suitability of 'clean' soils for direct re-use;
- To demonstrate that contaminated soils had been removed from the main hotspot areas identified prior to, and during, the remediation works;
- To demonstrate the suitability of soils for re-use after treatment.

A master sheet containing all validation sample analysis screened against remedial targets is presented in Appendix E. In addition, the individual laboratory certificates are presented in Appendix F.

6.2 Hotspot Validation

The removal of contaminated soils from hotspot areas was confirmed by taking validation samples from the sides of the excavation at a frequency of 1 every 10m, and from the base of the excavation at a frequency of 1 every 10m grid square. In Area 1, the samples were taken between 2 September and 25 October 2016. In Area 2, the samples were taken between 27 October 2016 and 8 February 2017. The location of the grid squares system used for validation samples is shown overleaf.

The results of the validation sampling showed that all samples returned concentrations below the remedial targets for the contaminants of concern.

6.3 Validation of Treated Soils

Approximately 17,825m³ of soil was removed to the treatment area during the course of the remediation between August 2016 and February 2017.

Thirty-eight samples of the treated material, designated T1.1 to T38.1 (and prefixed by the windrow number) were taken at regular intervals from the windrows, with the final validation sample being collected in March 2017. These were sampled at a frequency of 1 for every 250m³ for the first 1500m³, and 1 per 500m³ thereafter as agreed in the remedial strategy.

The results of chemical analysis on these samples showed no exceedances of the remedial targets. In addition, all samples returned concentrations below the C4SL and LQM S4UL criteria for a commercial development with the exception of 9 samples for TCE.





Samples T2.1 (Windrow 1), T7.1-T11.1 (Windrow 3), T15.1 (Windrow 4), T18.1 and T20.1 (Windrow 5) recorded TCE concentrations in excess of the LQM S4UL value of 1.2mg/kg. This criteria is set for human health risk so usually applies to materials contained in the top 0.5m of the development. With this in mind, materials were backfilled at 1.3mbgl in Column A to E (W1/T2.1), between 2.5-1.9mbgl in Columns K to O (W3/T7.1 to W3/T11.1 and W4/T15.1), and 1.2-0.7mbgl in Columns P, Q, R and S (W5/T18.1 and W5/T20.1).

6.4 Validation of Site Won Soils (Materials Management)

Appendix B details the volumes of soil removed from each grid square that did not show evidence of contamination and was stockpiled for re-use pending results of verification testing. A total of approximately 18,230m³ from Area 1 and approximately 15,745m³ from Area 2.

Forty five samples of this 'suitable for use' material, designated SFU1 to SFU45 (1 for every 500m³ for the first 5000m³, and 1 per 1000m³ thereafter, as agreed in the remedial strategy), were taken at regular intervals from the stockpiles.

The results of chemical analysis on these samples showed no exceedances of the remedial targets (Individual laboratory certificates are presented in Appendix F). In addition, all samples returned concentrations below the C4SL and LQM S4UL criteria for a commercial development with the exception of 4 samples for TCE.

Samples SFU15, SFU16, SFU23 and SFU33 recorded TCE concentrations in excess of the LQM S4UL value of 1.2mg/kg. As described above, this usually only applies to materials contained in the top 0.5m of the development. With this in mind, materials were backfilled between 3.7-1.3mbgl in Column F (SFU15 and SFU16), 3.8-2.5mbgl in Columns G, H and I (SFU23), and 2.1-1.5mbgl in Columns G, H and I (SFU33).







7.0 Summary & Conclusions

7.1 Remediation Validation

Remediation works have resulted in approximately 17,825m³ of soil being removed to the treatment area, and approximately 4855m³ of groundwater removed for treatment and disposal. There were no exceedances of the remedial targets but there were a number of exceedances of the human health generic assessment criteria for TCE by suitable for use and treated materials. However, the validation sampling and analysis and the backfill locations of the exceeding materials is considered to demonstrate that the remedial works have been successful and that no significant risks remain to human health or controlled waters. Therefore no further action is considered necessary.

7.2 Post Remediation Conceptual Model

Prior to the remediation of the organic contamination within soil and groundwater, the following pollutant linkages were considered to be potentially significant;

- PL1 Exposure of future site users to contamination in soil via dermal contact, soil and dust ingestion, and inhalation of dusts and vapours;
- PL2 Leaching of contamination in soil through the unsaturated zone to the shallow groundwater and migration via the saturated zone to River Arrow;
- PL3 Migration of already contaminated shallow groundwater to River Arrow.

The removal of primary sources such as tanks, the successful remediation of the organic contamination in soil and the removal of contaminated groundwater from the remedial excavations is considered to have addressed PL2 and PL3, and the vapour inhalation element of PL1 for the most contaminated part of the site. Therefore the remediation of the site is considered complete and it's designation as 'Contaminated Land' under Part IIA of the Environmental Protection Act 1990 can be removed.

7.3 Further Works

Although it is considered that significant risks are no longer present as a result of TCE contamination within the southern half of the site, a watching brief should be undertaken during the 'surge' and removal of slabs, foundations and other below ground structures on the remainder of the site (northern half). Any soils showing evidence of contamination that had not been previously identified will need to be excavated and any treatment or disposal reported separately. Depending on the chemical test results from this area, a clean cover may also need to be placed in landscaped areas in order to address PL1.

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APPENDICES



Appendix A – Soil Volumes Removed for Treatment



Date	Source		Approx.	Location	Approx.	Treatment	Testing Details			
Placed	Area	Grid	Amount		Total	windrow	Date	Sample		Comments
(week commencing)		Squares	Placed		Amount		Sampled	Numbers	Test Certificate Number	
,			m ³		m ³					
22/08/2016	1	A7	100	Т	100		28/09/2016	W1/T1.1	16-49810	PASS
22/08/2016	1	A6	100	T	200		28/09/2016	W1/T2.1	16-49810	PASS
22/08/2016	1	A5	200	T T	400	WINDROW 1	28/09/2016	W1/T3.1	16-49810	PASS
22/08/2016	1	A4	200	Т	600	(800m3)	20,03,2020	,	10 15010	REUSED AREA 1
22/08/2016	1	A2	200	T	800	1				HEOGED / HIE/(I
22/08/2016	1	A8	200	T	1000		28/09/2016	W2/T4.1	16-49810	PASS
22/08/2016	1	A7	50	Т	1050		28/09/2016	W2/T5.1	16-49810	PASS
	+	B2	100	Т		WINDROW 2		W2/T6.1	16-49810	PASS
29/08/2016	1			T	1150	(800m3)	28/09/2016	W2/10.1	10-49810	+
29/08/2016	1	B3	150 100	T T	1300	(8001113)				REUSED AREA 1
29/08/2016	1	A3		ļ	1400	_				
29/08/2016	1	B4	200	T -	1600		27/10/2016		47.54400	
29/08/2016	1	B5	200	T	1800	_	27/10/2016	W3/T7.1	16-51122	PASS
29/08/2016	1	В6	100	Т	1900	_	27/10/2016	W3/T8.1	16-51122	PASS
29/08/2016	1	B7	100	Т	2000	_	27/10/2016	W3/T9.1	16-51122	PASS
29/08/2016	1	B8	100	Т	2100	_	27/10/2016	W3/T10.1	16-51122	PASS
29/08/2016	1	A2	100	Т	2200	_	27/10/2016	W3/T11.1	16-51122	PASS
29/08/2016	1	B2	150	Т	2350	_				REUSED AREA 2
05/09/2016	1	В3	150	Т	2500					
05/09/2016	1	A4	150	Т	2650					
05/09/2016	1	B4	150	Т	2800	_				
05/09/2016	1	A5	150	Т	2950	WINDROW 3				
05/09/2016	1	B5	150	T	3100	(2550m3)				
05/09/2016	1	A6	100	T	3200					
05/09/2016	1	В6	200	Т	3400	_				
05/09/2016	1	A7	150	Т	3550					
05/09/2016	1	В7	100	Т	3650					
05/09/2016	1	A8	100	Т	3750					
05/09/2016	1	В8	100	Т	3850					
12/09/2016	1	C1	50	Т	3900	1				
12/09/2016	1	C2	100	Т	4000]				
12/09/2016	1	C3	150	Т	4150]				
12/09/2016	1	C4	150	Т	4300		27/10/2016	W4/T12.1	16-51122	PASS
12/09/2016	1	C5	150	Т	4450	1		W4/T13.1	16-51122	PASS
12/09/2016	1	C6	150	Т	4600	_		W4/T14.1	16-51122	PASS
12/09/2016	1	C7	150	Т	4750	1	27/10/2016	W4/T15.1	16-51122	PASS
12/09/2016	1	C8	50	Т	4800		27/10/2016	W4/T16.1	16-51122	PASS
19/09/2016	1	D3	50	Т	4850	-	27/10/2016	W4/T17.1	16-51122	PASS
19/09/2016	1	D3	150	T	5000	_	27/10/2010	VV-4/117.1	10-31122	REUSED AREA 2
19/09/2016	1	D5	150	T	5150					REUSED AREA 2
	1	D6	150	Т	5300	-				
19/09/2016	+					_				
19/09/2016	1	D7	150	T	5450	<u> </u>				
19/09/2016	1	D8	50	T	5500	WINDROW 4				
26/09/2016	1	E1	20	T -	5520	(3000m3)				
26/09/2016	1	E2	160	T	5680	_				
26/09/2016	1	E3	220	T -	5900	_				
26/09/2016	1	E4	280	T	6180	_				
26/09/2016	1	E5	200	Т	6380	_				
26/09/2016	1	E6	200	Т	6580	_				
26/09/2016	1	E7	120	Т	6700	_				
26/09/2016	1	F1	60	Т	6760	_				
26/09/2016	1	F2	140	Т	6900					
26/09/2016	1	F3	180	Т	7080					
26/09/2016	1	F4	60	Т	7140					
03/10/2016	1	F5	100	Т	7240		13/12/2016	W5/T18.1	16-52964	PASS
03/10/2016	1	F6	100	T	7340		13/12/2016	W5/T19.1	16-52964	PASS
03/10/2016	1	F7	50	Т	7390		13/12/2016	W5/T20.1	16-52964	PASS
03/10/2016	1	F8	100	Т	7490		13/12/2016	W5/T21.1	16-52964	PASS
17/10/2016	1	G7	20	Т	7510		13/12/2016	W5/T22.1	16-52964	PASS
17/10/2016	1	G8	350	T	7860	WINDROW 5				REUSED AREA 2
17/10/2016	1	Н8	350	Т	8210	(2630m3)				
17/10/2016	1	H7	350	T	8560					
17/10/2016	1	H6	350	Т	8910					
17/10/2016	1	17	400	T	9310					
17/10/2016	1	18	400	T	9710	_				
24/10/2016	1	16	60	T	9770	<u> </u>				
24/10/2016	2	K1	100	Т	100		08/02/2017	W6/T23.1	17-54958	PASS
31/10/2016	2	K2	100	Т	200		08/02/2017	W6/T24.1	17-54958	PASS
31/10/2016	2	К3	100	Ţ	300		08/02/2017	W6/T25.1	17-54958	PASS
31/10/2016	2	K4	100	Т	400	1				REUSED AREA 2
21/11/2016	2	M4	100	Ţ	500	WINDROW 6				
21/11/2016	2	S8	100	T	600	(1450m3)				
21/11/2016	2	Т8	150	T	750]				
28/11/2016	2	N7	300	T	1050	1				
28/11/2016	2	N8	200	T	1250	1				
28/11/2016	2	08	200	T	1450	1		<u> </u>		
20/11/2010	2	N4	350	Т	1800			+		
	2	N5	350	T	2150	1	23/02/2017	W7/T26.1	17-55729	PASS
05/12/2016	_	N6	200	T	2350	1	23/02/2017	W7/T26.1 W7/T27.1	17-55729	PASS
05/12/2016 05/12/2016	יי					4		+		
05/12/2016 05/12/2016 05/12/2016	2		300	T	2650	MAINES 2	23/02/2017	W7/T28.1	17-55729	PASS
05/12/2016 05/12/2016 05/12/2016 05/12/2016	2	N7			2700	WINDROW 7	1		1	REUSED AREA 2
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2	01	50	T		/473E21				REGOLD / IRE/CE
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2 2	01 07	200	Т	2900	(1725m3)				NEGOED AMENTE
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2 2 2	01 07 08	200 200	T T	2900 3100	(1725m3)				NEGOLD ANEX E
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2 2 2 2	01 07 08 04	200 200 25	T T T	2900 3100 3125	(1725m3)				NEGOLD AND A
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2 2 2 2 2 2	01 07 08 04 05	200 200 25 25	T T T	2900 3100 3125 3150	(1725m3)				
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2 2 2 2 2 2 2 2	01 07 08 04 05	200 200 25 25 25 25	T T T T	2900 3100 3125 3150 3175	(1725m3)				NEOSES ANEAE
05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016 05/12/2016	2 2 2 2 2 2 2	01 07 08 04 05	200 200 25 25	T T T	2900 3100 3125 3150	(1725m3)				PASS

						7			-	
02/01/2017	2	P3	125	T	3800		08/03/2017	W8/T30.1	17-56163	PASS
02/01/2017	2	P4	125	Т	3925		08/03/2017	W8/T31.1	17-56163	PASS
09/01/2017	2	Q1	200	Т	4125		08/03/2017	W8/T32.1	17-56163	PASS
09/01/2017	2	Q2	200	Т	4325		08/03/2017	W8/T33.1	17-56163	PASS
09/01/2017	2	Q3	200	Т	4525		08/03/2017	W8/T34.1	17-56163	PASS
09/01/2017	2	Q4	200	T	4725					REUSED AREA 1 & 2
09/01/2017	2	Q5	200	Т	4925					
16/01/2017	2	R3	100	T	5025	14/14/00004/40				
16/01/2017	2	R4	100	Т	5125	WINDROW 8 (2850m3)				
16/01/2017	2	R5	100	Т	5225	(28501113)				
16/01/2017	2	R6	100	Т	5325					
16/01/2017	2	R7	100	Т	5425					
16/01/2017	2	R8	100	Т	5525					
23/01/2017	2	R1	50	Т	5575					
23/01/2017	2	R2	50	Т	5625					
23/01/2017	2	S8	100	Т	5725					
23/01/2017	2	S7	100	Т	5825					
23/01/2017	2	S6	100	Т	5925					
23/01/2017	2	S5	100	Т	6025					
23/01/2017	2	S4	100	T	6125					
23/01/2017	2	S3	100	Т	6225		08/03/2017	W9/T35.1	17-56163	PASS
06/02/2017	2	S2	100	Т	6325		08/03/2017	W9/T36.1	17-56163	PASS
06/02/2017	2	S1	80	Т	6405					REUSED AREA 1
06/02/2017	2	Т8	100	Т	6505					
06/02/2017	2	T7	100	Т	6605	WINDROW 9				
06/02/2017	2	Т6	100	Т	6705	(1030m3)				
06/02/2017	2	T5	100	Т	6805					
06/02/2017	2	T4	80	Т	6885					
06/02/2017	2	T3	70	Т	6955					
06/02/2017	2	T2	50	Т	7005					
06/02/2017	2	T1	50	Т	7055					
06/02/2017	2	U8	150	Т	7205		08/03/2017	W10/T37.1	17-56163	PASS
06/02/2017	2	U7	150	Т	7355		08/03/2017	W10/T38.2	17-56163	PASS
06/02/2017	2	U6	150	Т	7505	WINDROW 10 -				REUSED AREA 1
06/02/2017	2	U5	150	Т	7655	H/carbon				
06/02/2017	2	U4	150	Т	7805	(1000m3)				
13/02/2017	2	U9	150	Т	7955					
13/02/2017	2	U10	100	Т	8055	1				

		Matches dirty			Matches dirty
Call	Maliana	on 'site won'	Call	Maliana	on 'site won'
Cell	Volume	sheet	Cell	Volume	sheet
A1	0	TRUE	K1	100	TRUE
A2	300	TRUE	K2	100	TRUE
A3	100	TRUE	K3 K4	100	TRUE
A4 A5	350 350	TRUE TRUE	K4 M4	100 100	TRUE TRUE
A6	200	TRUE	\$8	100	TRUE
A7	300	TRUE	T8	150	TRUE
A8	300	TRUE	N7	300	TRUE
B1	0	TRUE	N8	200	TRUE
B2 B3	250 300	TRUE TRUE	08 N4	200 350	TRUE TRUE
B4	350	TRUE	N5	350	TRUE
B5	350	TRUE	N6	200	TRUE
B6	300	TRUE	N7	300	TRUE
B7	200	TRUE	01	50	TRUE
B8	200	TRUE	07	200	TRUE
C1	50	TRUE	08	200	TRUE
C2	100	TRUE	04	25	TRUE
C3	150	TRUE	05	25	TRUE
C4	150	TRUE	06	25	TRUE
C5	150	TRUE	P1	250	TRUE
C6	150	TRUE	P2	250	TRUE
C7	150	TRUE	P3	125	TRUE
C8	50	TRUE	P4	125	TRUE
D1	0	TRUE	Q1	200	TRUE
D2	0	TRUE	Q2	200	TRUE
D3	50	TRUE	Q3	200	TRUE
D3	150	TRUE	Q3 Q4	200	TRUE
D5	150	TRUE	Q5	200	TRUE
D6	150	TRUE	R3	100	TRUE
D7	150	TRUE	R4	100	TRUE
D8	50	TRUE	R5	100	TRUE
E1	20	TRUE	R6	100	TRUE
E2	160	TRUE	R7	100	TRUE
E3	220	TRUE	R8	100	TRUE
E4	280	TRUE	R1	50	TRUE
E5	200	TRUE	R2	50	TRUE
E6	200	TRUE	S8	100	TRUE
E7	120	TRUE	S7	100	TRUE
E8	0	TRUE	S 6	100	TRUE
F1	60	TRUE	S 5	100	TRUE
F2	140	TRUE	S4	100	TRUE
F3	180	TRUE	S 3	100	TRUE
F4	60	TRUE	S2	100	TRUE
F5	100	TRUE	S1	80	TRUE
F6	100	TRUE	Т8	100	TRUE
F7	50	TRUE	T7	100	TRUE
F8	100	TRUE	Т6	100	TRUE
G1	0	TRUE	T5	100	TRUE
G2	0	TRUE	T4	80	TRUE
G3	0	TRUE	T3	70	TRUE
G4	0	TRUE	T2	50	TRUE
G5	0	TRUE	T1	50	TRUE
G6	0	TRUE	U8	150	TRUE
G7	20	TRUE	U7	150	TRUE
G8	350	TRUE	U6	150	TRUE
H6	350	TRUE	U5	150	TRUE
H7	350	TRUE	U4	150	TRUE
H8	350	TRUE	U9	150	TRUE
16	60	TRUE	U10	100	TRUE
17	400	TRUE			
18	400	TRUE			

Date	Removed	Approx.	Removed	Location		
Removed	From	Amount	То	T treatmer	nt area	Q quarantine area
		Removed				
		m^3		<u>Depth</u>	<u>Notes</u>	
	Windrow 1 & Windrow	1600	Rows A, B, C,			
Oct-16	2	1600	D, E	0.9-1.3m bgl	See site won sheet	
	Windrow 3 & Windrow	5550				
Nov-16	4	5550	Rows K to O	2.5-1.1mbgl	See site won sheet	
lan 47	M.Condones F	2600	Row P, Q, R, S	4.2.0 5	C	
Jan-17	Windrow 5			1.2-0.5mbgl	See site won sheet	
Feb-17	Windrow 6	1450	Row T & U	1.7-0.9mbgl	See site won sheet	
Feb-17	Windrow 7	1725	Row P to U	0.9-0.1mbgl	See site won sheet	
		2850				
Mar-17	Windrow 8		Row AA to U	~0.5-0.0mbgl	See site won sheet	
Mar-17	Windrow 9	1030	Row AA to I	~0.5-0.0mbgl	See site won sheet	
Mar-17	Windrow 10	1000	Row AA to I	~0.5-0.0mbgl	See site won sheet	

Part	Date Sampled Sample No Depth (m) QTSE Sample No				28/09/2016 W1/T1.1 Composite 230197	28/09/2016 W1/T2.1 Composite 230198	28/09/2016 W1/T3.1 Composite 230199	28/09/2016 W2/T4.1 Composite 230200	28/09/2016 W2/T5.1 Composite 230201	28/09/2016 W2/T6.1 Composite 230202	27/10/2016 W3/T7.1 Composite 235939	27/10/2016 W3/T8.1 Composite 235940	27/10/2016 W3/T9.1 Composite 235941	27/10/2016 W3/T10.1 Composite 235942	27/10/2016 W3/T11.1 Composite 235943	27/10/2016 W4/T12.1 Composite 235944	27/10/2016 W4/T13.1 Composite 235945	27/10/2016 W4/T14.1 Composite 235946	27/10/2016 W4/T15.1 Composite 235947	27/10/2016 W4/T16.1 Composite 235948	27/10/2016 W4/T17.1 Composite 235949	13/12/2016 W5/T18.1 Composite 243590	13/12/2016 W5/T19.1 Composite 243591	13/12/2016 W5/T20.1 Composite 243592	13/12/2016 W5/T21.1 Composite 243593	13/12/2016 W5/T22.1 Composite 243594	08/02/2017 W6/T23.1 Composite 252488
Part	-	Units																									
Control Cont					8	9	-	•		5	3	7	4		2	5	4		3		4	8	7	2	6	6	6
Property									201 1			133 1				155 1											
This column	* '								< 1	_		< 1		_		< 1								< 1		< 1	
Part																											
The column												32 26															
Mathematic							8	8	8	5		16	51	9			7	4	6	5	6	9	5	5	7	8	9
Part																											
Part																											
Property column Property c	• • •																										
Part	Zinc (Zn)	mg/kg	< 3	MCERTS	48	59	38	46	48	63	79	76	68	51	52	58	49	44	40	57	59	49	47	46	50	53	30
Part	Polycyclic aromatic hydrocarbons																										
Profession Pro	Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.27	< 0.1	< 0.1	< 0.1	< 0.1	0.74	0.15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Part	Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mathematic Mat		mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Part		mg/kg												< 0.1								< 0.1	< 0.1		< 0.1		
Profession Pro																											
Property color:																											
Properties																											
Properties	-																										
Part																											
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Marcial Conference Marcial																											
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Part	· · · · · ·																										
March Marc																											
Description of the proper prop																											
Part Marche Mar		9,9		oz.rro	1.10	1.10	1110				1 1.0	1 1.0	1 1.0	1110		1.10	1 1.0	1 1.0		1.10	1 1.0	1	11.0	11.0	11.0	11.0	11.0
Figure F	Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Properties Market	Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Oxyglemic Uging < 2 MCERTS < 2 54.00 < 2 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 < 0.0 <	Ethylbenzene	ug/kg	< 2	MCERTS	< 2	17.00	< 2	< 2	< 2	< 2	< 2	< 2	19.00	25.00	71.00	24.00	< 2	< 2	38.00	< 2	99.00	< 2	< 2	< 2	< 2	< 2	< 2
MIRE Petroleum Hydrocarbons Petroleum Hy	p & m-xylene	ug/kg	< 2	MCERTS	< 2	72.00	< 2	< 2	< 2	< 2	< 2	< 2	55.00	77.00	217.00	33.00	< 2	3.00	57.00	< 2	203.00	< 2	< 2	< 2	< 2	< 2	< 2
Perfusion Hydrocarbons Perfusion Hydrocarb	o-xylene	ug/kg	< 2	MCERTS	< 2	54.00	< 2	< 2	< 2	< 2	11.00	11.00	144.00	90.00	244.00	85.00	9.00	9.00	153.00	< 2	168.00	< 2	< 2	< 2	< 2	< 2	< 2
Alphalic CG - CG		ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Aliphalic > C.	•					0.04						0.04	0.04			0.04	0.04	0.04	0.04	0.04	0.04						
Aliphatic > C10	·																										
Aliphatic >C10 - C112	•										2.72	33.0		0.31													
Aliphalic >C12 - C16	•										4 8	g Q		20													
Aliphalic >C16 - C21	·										5	6															
Aliphatic C21 - C35	•										< 3	< 3															
Aliphatic (C5 - C35) mg/kg	·																										
Aromatic >C7	Aliphatic (C5 - C35)		< 21				82	38	< 21	< 21	< 21	56	132	51		290	40	637	204	1196	347				< 21		
Aromatic >C10	Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C10 - C12	Aromatic >C7 - C8		< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C12 - C16	Aromatic >C8 - C10		< 2	MCERTS	< 2	4	< 2	< 2	< 2	< 2	< 2	< 2	7	2	6	3	< 2	5	3	< 2	4	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21								-			7	8															
Aromatic >C21 - C35												7															
Total > C5 - C35	Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
TCE ug/kg <5 MCERTS 434 4035 349 219 67 116 2381 30490 3371 5019 20100 473 318 444 5994 215 289 7135 815 2137 1009 40 340 Only an issue if used	Total >C5 - C35																										
issue if used		ug/kg	< 5	MCERTS	434	4035	349	219	67	116	2381	30490	3371	5019	20100	473	318	444	5994	215	289	7135	815	2137	1009	40	340
						issue if used					issue if used	issue if used	issue if used	issue if used	issue if used				issue if used			issue if used		issue if used			

ate Sampled ample No epth (m)	08/02/2017 W6/T24.1 Composite	08/02/2017 W6/T25.1 Composite	23/02/2017 W7/T26.1 Composite	23/02/2017 W7/T27.1 Composite	23/02/2017 W7/T28.1 Composite	08/03/2017 W8 / T29.1 Composite	08/03/2017 W8 / T30.1 Composite	08/03/2017 W8 / T31.1 Composite	08/03/2017 W8 / T32.1 Composite	08/03/2017 W8 / T33.1 Composite	08/03/2017 W8 / T34.1 Composite	08/03/2017 W9 / T35.1 Composite	08/03/2017 W9 / T36.1 Composite	08/03/2017 W10 / T37.1 Composite								
TSE Sample No	252489	252490	255491	255492	255493	257271	257272	257273	257274	257275	257276	257277	257278	257279	257280					Commercial		
nalytical Parameter Soil Analysis)																				Commercial GAC (1% SOM)		
rsenic (As)	5	4	6	7	7	5	7	7	8	9	10	108	82	29	q	MAX 108.0	MIN 2.0	AVERAGE 11.80	Arsenic (As)	mg/kg 640	>GAC 0	_
arium (Ba)	108	80	141	151	152	129	173	170	201	236	205	300	280	473	231	473.0	79.0	155.89	Barium (Ba)	0.0	0	
ryllium (Be)	0.6	< 0.5	0.6	0.8	0.6	0.5	0.7	0.7	0.9	0.9	0.9	0.9	0.8	1.5	0.9	1.5	0.5	0.86	Beryllium (Be)		0	
S Boron dmium (Cd)	< 1	<1	< 1	<1	<1	<1	<1	<1	<1	< 1	< 1	< 1	< 1	< 1	< 1	0.0 0.7	0.0 0.2	#DIV/0! 0.48	W/S Boron Cadmium (Cd)	410	0	
omium (Cr)	< 0.2 18	< 0.2 12	< 0.2 18	< 0.2 22	< 0.2 18	< 0.2 15	< 0.2 21	< 0.2 20	< 0.2 27	< 0.2 27	< 0.2 25	0.7 21	0.5 16	0.2 33	0.5 27	43.0	12.0	25.13	Chromium (Cr)	8,600	0	
per (Cu)	11	7	18	19	15	11	19	20	22	21	21	9	7	31	38	38.0	7.0	20.11	Copper (Cu)	68000	0	
(Pb)	10	9	41	20	10	38	79	102	89	62	72	11	9	38	118	118.0	4.0	25.26	Lead (Pb)	2330	0	
ury (Hg) el (Ni)	< 1 16	< 1 10	< 1 16	< 1 20	< 1 15	< 1 11	< 1 17	< 1 15	< 1 20	< 1 21	< 1 20	< 1 16	< 1 12	< 1 32	< 1 21	0.0 50.0	0.0 10.0	#DIV/0! 22.95	Mercury (Hg) Nickel (Ni)	1100 980	0	
nium (Se)	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	0.0	0.0	#DIV/0!	Selenium (Se)	12000	0	
adium (V)	32	20	32	42	34	23	31	29	36	44	37	49	43	106	36	106.0	20.0	35.61	Vanadium (V)		0	
(Zn)	40	30	59	61	46	59	94	88	131	148	107	37	33	102	174	174.0	30.0	63.66	Zinc (Zn)	730000	0	
cyclic aromatic hydrocarbons																						
thalene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.7	0.2	0.39	Naphthalene	190	0	
aphthylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Acenaphthylene	83000	0	
aphthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Acenaphthene	84000	0	
ene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	0.3	0.33	Fluorene	63000	0	
anthrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.14	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.14	Phenanthrene	22000	0	
racene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Anthracene	520000	0	
anthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.14	0.15	0.36	0.17	0.21	0.24	< 0.1	< 0.1	< 0.1	0.26	0.4	0.1	0.22	Fluoranthene	23000	0	
ne - (-) th	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.14	0.14	0.32	0.17	0.2	0.22	< 0.1	< 0.1	< 0.1	0.24	0.3	0.1	0.20	Pyrene	54000	0	
o(a)anthracene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.13	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.13	Benzo(a)anthracene	170	0	
sene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2	0.15	Chrysene	350	0	
o(b)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.18	0.11	0.13	0.14	< 0.1	< 0.1	< 0.1	0.18	0.2	0.1	0.15	Benzo(b)fluoranthene	44	0	
o(k)fluoranthene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Benzo(k)fluoranthene	1200	0	
o(a)pyrene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.11	Benzo(a)pyrene	35	0	
no(1,2,3-cd)pyrene nz(a,h)anthracene	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	0.0 0.0	0.0 0.0	#DIV/0! #DIV/0!	Indeno(123-cd)pyrene Dibenzo(ah)anthracene	500 3.5	0 0						
o(ghi)perylene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Benzo(ghi)perylene	3900	0	
EPA-16 PAHs paromatics	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	0.0	0.0	#DIV/0!				In ug/kg
ene	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	BTEX - Benzene	27	0	27000
ene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	0.0	0.0	#DIV/0!	BTEX - Toluene	56000	0	56000000
benzene	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	24	99.0	17.0	39.63	BTEX - Ethyl Benzene	5700	0	5700000
n-xylene	< 2	< 2	< 2	< 2	< 2	< 2	16	28	10	< 2	8	< 2	< 2	< 2	85	217.0	3.0	66.46	BTEX - m & p Xylene	5900	0	5900000
ene	< 2	< 2	< 2	< 2	< 2	< 2	6	12	5	< 2	5	< 2	< 2	< 2	61	244.0	5.0	66.69	BTEX - o Xylene	6600	0	6600000
E oleum Hydrocarbons	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	0.0	0.0	#DIV/0!	МТВЕ			
atic >C5 - C6	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0	0.0	0.01	Ali >C5-C6	3,200	0	
atic >C6 - C8	0.35	0.1	1.21	0.47	0.46	0.29	0.05	0.14	0.15	0.24	0.13	< 0.05	< 0.05	< 0.05	1.52	35.8	0.1	2.97	Ali >C6-C8	7,800	0	
atic >C8 - C10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	23.0	4.0	12.00	Ali >C8-C10	2,000	0	
atic >C10 - C12	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	14	157.0	8.0	50.44	Ali >C10-C12	9,700	0	
atic >C12 - C16	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	20	1019.0	5.0	137.31	Ali >C12-C16	59,000	0	
atic >C16 - C21	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	10	18	58.0	3.0	24.86	Ali >C16-C21	1,600,000	0	
atic >C21 - C35	< 10	12	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	129	405	405.0	12.0	148.50	Ali >C21-C35	1,600,000	0	
natic (C5 - C35)	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	139	458	1196.0	38.0	248.00				
atic >C5 - C7	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0	0.0	#DIV/0!	Aro >C5-C7	26000	0	
atic >C7 - C8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0	0.0	#DIV/0!	Aro >C7-C8	56000	0	
atic >C8 - C10	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	7.0	2.0	4.25	Aro >C8-C10	3500	0	
atic >C10 - C12	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	4	36.0	3.0	16.40	Aro >C10-C12	16000	0	
atic >C12 - C16	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	7	265.0	7.0	45.80 5.47	Aro > C12-C16	36000	0	
atic >C16 - C21 atic >C21 - C35	< 3 < 10	< 3 < 10	< 3 < 10	6 < 10	3 < 10	5 42	< 3 < 10	< 3 < 10	< 3 26	11 287	11.0 287.0	3.0 20.0	5.67 93.75	Aro >C16-C21 Aro >C21-C35	28000 28000	0 0						
natic (C5 - C35)	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	47	< 21	< 21	26	309	309.0	24.0	94.21				
II >C5 - C35	< 42	< 42	< 42	< 42	< 42	< 42	< 42	< 42	< 42	< 42	47	< 42	< 42	165	767	1483.0	47.0	329.81				In ug/kg
	343	96	1182	454	443	209	53	126	139	225	113	< 5	< 5	13	688	30490.0	13.0	2496.50	TCE	1.2	9	1200

TCE 35 0 35000 CW TARGET



Appendix B – Soil Volumes Stockpiled for Re-Use

Summary of Site won material validation



Testing Details Source Approx. Location Approx. Grid Amount Total Sample **Test Certificate Number** Comments numbers m^3 Squares **Date Sampled** m3 Area 1 AA1 300 300 02/08/2016 SFU1 16-47533 Passed SFU2 AA2 300 600 02/08/2016 16-47534 Area 1 S Passed Area 1 AA3 300 S 900 02/08/2016 SFU3 16-47535 Passed SFU4 16-47536 Area 1 AA4 300 S 1200 02/08/2016 Passed 02/08/2016 Area 1 AA5 300 1500 SFU5 16-47537 Passed AA6 300 1800 02/08/2016 SFU6 16-47538 Area 1 S Passed Area 1 AA7 300 S 2100 24/08/2016 SFU7 16-48570 Passed AA8 300 S 2400 24/08/2016 SFU8 16-48571 Area 1 Passed Area 1 Α1 400 S 2800 26/08/2016 SFU9 16-48572 Passed A2 100 2900 26/08/2016 SFU10 S 16-48573 Area 1 Passed Area 1 Α3 300 S 3200 27/08/2016 SFU11 16-48574 Passed Α4 50 S 3250 27/08/2016 SFU12 16-48575 Passed Area 1 Area 1 A5 50 S 3300 Area 1 A6 200 S 3500 Α7 100 3600 Area 1 S FIRST 5000m3 @ 1 per S 500m3; then 1 per Area 1 Α8 100 3700 1000m3 400 S 4100 Area 1 В1 Area 1 В2 150 S 4250 100 4350 В3 S Area 1 В4 50 S 4400 Area 1 S B5 50 4450 Area 1 В6 100 S 4550 Area 1 Area 1 В7 200 S 4750 В8 200 S 4950 Area 1 C1 350 S 5300 Area 1 Area 1 C2 300 5600 250 5850 C3 Area 1 S Area 1 C4 250 S 6100 **C**5 250 S 6350 Area 1 Area 1 **C6** 250 6600 **C7** 250 6850 Area 1 S Area 1 **C8** 350 S 7200 14/09/2016 SFU13 16-49272 Passed D1 400 S 7600 14/09/2016 SFU14 16-49272 Area 1 Passed Area 1 D2 400 S 8000 D3 350 S 8350 Area 1 Area 1 D4 250 S 8600 D5 250 S 8850 Area 1 250 S 9100 28/09/2016 SFU15 Area 1 D6 16-49810 Passed 28/09/2016 SFU16 16-49810 Area 1 D7 250 S 9350 Passed Area 1 D8 350 S 9700 E1 380 S 10080 Area 1 240 10320 Area 1 E2 S Area 1 E3 180 S 10500 E4 120 10620 S Area 1 E5 200 S 10820 Area 1 E6 200 S 11020 05/10/2016 SFU 17 16-50174 Passed Area 1 Area 1 E7 280 S 11300 05/10/2016 SFU18 16-50174 Passed E8 400 11700 05/10/2016 SFU19 16-50174 Passed Area 1 S F1 340 S 12040 Area 1 F2 260 12300 S Area 1 Area 1 F3 220 12520 F4 340 12860 Area 1 F5 300 S 13160 Area 1 F6 300 S 13460 Area 1 Area 1 F7 350 13810 F8 14110 Area 1 300 S 20/10/2016 16-50793 SFU20 Area 1 G1 400 S 14510 Passed Area 1 G2 400 S 14910 20/10/2016 SFU21 16-50793 Passed Area 1 G3 400 S 15310 20/10/2016 SFU22 16-50793 Passed 26/10/2016 Area 1 G4 400 15710 SFU23 16-51122 Passed S Area 1 G5 400 S 16110 16510 Area 1 G6 400 S 16890 Area 1 G7 380 S Area 1 G8 50 S 16940 Area 1 Н3 100 17040 S Area 1 H4 200 S 17240 Н5 400 S 17640 Area 1 Н6 17690 Area 1 50 S Н7 17740 Area 1 50 S Н8 50 S 17790 Area 1 S 17990 Area 1 15 200 16 240 18230 Area 1 S

From cut off wall excavation

CROSS CHECK

	Ci	KOSS CHECK			
CELL	DIRTY	CLEAN	Depth to Base		
		Area of cell			
	Number from	(100m2) * depth -		Cross	
	treatment sheet	dirty		check	
AA1	0	300	2	TRUE	
AA2	0	300	2	TRUE	
AA3	0	300	2	TRUE	
AA4	0	300	2	TRUE	
AA5 AA6	0 0	300 300	2 2	TRUE TRUE	
AAO AA7	0	300	2	TRUE	
AA8	0	300	2	TRUE	
A1	0	400	4	TRUE	
A2	300	100	4	TRUE	
A3	100	300	4	TRUE	
A4 A5	350 350	50 50	4 4	TRUE TRUE	
A6	200	200	4	TRUE	
A7	300	100	4	TRUE	
A8	300	100	4	TRUE	
B1	0	400	4	TRUE	
B2	250	150	4	TRUE	
B3	300	100	4	TRUE	
B4 B5	350 350	50 50	4 4	TRUE TRUE	
B6	300	100	4	TRUE	
В7	200	200	4	TRUE	
B8	200	200	4	TRUE	
C1	50	350	4	TRUE	
C2	100	300	4	TRUE	
C3 C4	150 150	250 250	4 4	TRUE TRUE	
C5	150	250	4	TRUE	
C6	150	250	4	TRUE	
C7	150	250	4	TRUE	
C8	50	350	4	TRUE	
D1	0	400	4	TRUE	
D2	0	400	4	TRUE	
D3 D4	50 150	350 250	4 4	TRUE TRUE	
D5	150	250	4	TRUE	
D6	150	250	4	TRUE	
D7	150	250	4	TRUE	
D8	50	350	4	TRUE	
E1 E2	20	380 240	4 4	TRUE TRUE	
E3	160 220	180	4	TRUE	
E4	280	120	4	TRUE	
E5	200	200	4	TRUE	
E6	200	200	4	TRUE	
E7	120	280	4	TRUE	
E8	0	400	4	TRUE	
F1 F2	60 140	340 260	4 4	TRUE TRUE	
F3	180	220	4	TRUE	
F4	60	340	4	TRUE	
F5	100	300	4	TRUE	
F6	100	300	4	TRUE	
F7	50 100	350 300	4	TRUE	
F8 G1	100 0	300 400	4 4	TRUE TRUE	
G2	0	400	4	TRUE	
G3	0	400	4	TRUE	
G4	0	400	4	TRUE	
G5	0	400	4	TRUE	
G6 G7	0	400 380	4	TRUE TRUE	
G7 G8	20 350	380 50	4 4	TRUE	
H3	0	100	4	TRUE	Cell incomplete due to shape of Area 1
H4	0	200	4	TRUE	Cell incomplete due to shape of Area 1
H5	0	400	4	TRUE	
H6	350	50	4	TRUE	
H7 H8	350 350	50 50	4	TRUE TRUE	
H8 I5	350	200	4 4	TRUE	Cell incomplete due to shape of Area 1
16	60	240	4	TRUE	Cell incomplete due to shape of Area 1
17	400	0	4	TRUE	•
18	400	0	4	TRUE	

Date Removed	Removed From	Approx. Amount Removed m ³	Removed To	Doroth	Natas	Calcs
Aug-16	Site won stockpile	m 1200	ROW AA	<u>Depth</u> 2.0-1.0mbgl	<u>Notes</u>	1200m ² by 1m
Aug-10	Site Wolf Stockpile		NOW AA	2.0-1.01110g1	Not included in site won	·
Aug-16	Gypsy bund	720	ROWS A, B, C	4m-3.7mbgl	figures	2400m ² by 300mm
Aug-16	Site won stockpile	5800	ROWS A, B, C	3.7-1.3mbgl		2400m ² by ~2.4m
Sep-16	Gypsy bund	480	Row D & E	4m-3.7mbgl	Not included in site won figures	1600m ² by 300mm
Sep-16	Site won stockpile	2400	Row D & E	3.7-2.2mbgl		1600m² by ~1.5m
Oct-16	Site won stockpile	1400	Row D & E	2.2-1.3mbgl		1600m ² by ~0.9m
Oct-16	Windrow 1 & Windrow 2	1600	ROWS A, B, C, D,	1.3-0.9mbgl		4000m ² by 400mm
Oct-16	Gypsy bund	500	Row F (and deep tank)	4m-3.7mbgl	Not included in site won figures	800m ² by 400mm
Oct-16	Site won stockpile	2000	Row F	3.7-1.3mbgl	gu.es	800m ² by ~2.4m
Oct-16	Site won stockpile	1200	Rows AA to F	0.9-0.7mbgl		6000m ² by ~200mm
Oct-16	Gypsy bund / Brick piles	480	Rows G,H & I	4m-3.8mbgl	Not included in site won figures	2400m ² by 200mm
Oct-16	Site won stockpile	3200	Rows G,H & I	3.8m-2.5mbgl		2400m ² by ~1.3m
Nov-16	Site won stockpile	1030	Rows G,H & I	2.5-2.1mbgl		2400m ² by ~0.4m
Dec-16	Site won stockpile (Area 2)	1440	Rows G,H & I	2.1-1.5mbgl		2400m ² by ~0.6m
Jan-17	Site won stockpile (Area 2)	1900	Rows G,H & I	1.5-0.7mbgl		2400m ² by ~0.8m
Jan-17	Site won stockpile (Area 2)	1600	Rows AA to I	0.7-0.5mbgl		8400m ² by ~0.2m
Mar-17	Windrow 8	2000	Proposed to be			Currently stockpiled ready for reuse -
Mar-17	Windrow 9	1030	used as part of			→ All meets HH and CW risk values so
Mar-17	Windrow 10	1000	end developmen	t		can be used anywhere on site

 Gypsy bund
 2180

 Site won stockpile (Area 1)
 18230

 Site won stockpile (Area 2)
 4940

 Treatment stockpile
 5630

 30980

ОК

Check validated site won / treatment volume

18,230m3 Site won (Area 1); 4,940m3 Site won (Area 2); 5,630m3 Treated



Source		Annroy	Location					
	Grid	Approx. Amount m ³	Location	Approx. Total	Testing Details	Sample numbers	Test Certificate Number	Comments
A 2	Squares		C	m3	Date Sampled		16 51050	D I
Area 2	K1	150	S	150	16/11/2016	SFU24	16-51959	Passed
Area 2	K2	150	S	300	16/11/2016	SFU25	16-51959	Passed
Area 2	К3	150	S	450	23/11/2016	SFU26	16-52472	Passed
Area 2	K4	150	S	600	23/11/2016	SFU27	16-52472	Passed
Area 2	K5	250	S	850	23/11/2016	SFU28	16-52472	Passed
Area 2	L1	250	S	1100	23/11/2016	SFU29	16-52472	Passed
Area 2	L2	250	S	1350	29/11/2016	SFU30	16-52472	Passed
Area 2	L3	250	S	1600	29/11/2016	SFU31	16-52472	Passed
Area 2	L4	250	S	1850	29/11/2016	SFU32	16-52472	Passed
	L5	250	S	2100	08/12/2016	SFU33	16-52716	Passed
Area 2			_		06/12/2010	35033	10-32710	
Area 2	L6	250	S	2350				FIRST 5000m3 @ 1 pe
Area 2	L7	250	S	2600				500m3; then 1 per
Area 2	L8	250	S	2850				1000m3
Area 2	M1	250	S	3100				
			_					
Area 2	M2	250	S	3350				
Area 2	M3	250	S	3600				
Area 2	M4	300	S	3900				
Area 2	M5	250	S	4150				
Area 2	M6	250	S	4400				
Area 2	M7	250	S	4650				
Area 2	M8	250	S	4900				<u> </u>
Area 2	S8	100	S	5000				
Area 2	T8	50	S	5050	08/12/2016	SFU34	16-52716	Passed
	1		_					
Area 2	N1	250	S	5300	13/12/2016	SFU35	16-52964	Passed
Area 2	N2	250	S	5550	13/12/2016	SFU36	16-52964	Passed
Area 2	N3	250	S	5800	13/12/2016	SFU37	16-52964	Passed
Area 2	N4	50	S	5850	17/01/2017	SFU38	17-53778	Passed
		50	S					
Area 2	N5			5900	17/01/2017	SFU39	17-53778	Passed
Area 2	N6	200	S	6100	17/01/2017	SFU40	17-53778	Passed
Area 2	N7	100	S	6200	17/01/2017	SFU41	17-54167	Passed
Area 2	N8	200	S	6400	17/01/2017	SFU42	17-54167	Passed
Area 2	01	200	S	6600	, ,			1 per 1000m3
								1 bc: 10001112
Area 2	02	250	S	6850				
Area 2	03	250	S	7100				<u> </u>
Area 2	04	225	S	7325				
Area 2	05	225	S	7550				1
	 		+					1
Area 2	06	225	S	7775				1
Area 2	07	200	S	7975				1
Area 2	08	200	S	8175				
Area 2	P1	150	S	8325				
Area 2	P2	150	S	8475				
			_					
Area 2	P3	125	S	8600				
Area 2	P4	125	S	8725	<u> </u>			<u> </u>
Area 2	P5	250	S	8975				
Area 2	P6	250	S	9225				
								<u> </u>
Area 2	P7	250	S	9475				
Area 2	P8	250	S	9725				
Area 2	Q1	200	S	9925				
Area 2	Q2	200	S	10125				
	Q3	200	S	10325				
Area 2								
Area 2	Q4	200	S	10525				
Area 2	Q5	200	S	10725				
Area 2	Q6	250	S	10975				
Area 2	Q7	250	S	11225				
Area 2	Q8	250	S	11475				
Area 2	R3	150	S	11625				
Area 2	R4	150	S	11775	<u> </u>			
Area 2	R5	150	S	11925				
		150	_					+
Area 2	R6		S	12075				
Area 2	R7	150	S	12225				
Area 2	R8	150	S	12375				
Area 2	R1	200	S	12575				
Area 2	R2	200	S	12775				
	S8	150	S	12925			1	
Δrea 🤈	J O		_	14343	I .			
Area 2	^-	4=-		400==				1
Area 2	S7	150	S	13075				
	S7 S6	150 150	S S	13075 13225				
Area 2								
Area 2 Area 2 Area 2	\$6 \$5	150 150	S S	13225 13375				
Area 2 Area 2 Area 2 Area 2	\$6 \$5 \$4	150 150 150	S S S	13225 13375 13525				
Area 2 Area 2 Area 2 Area 2 Area 2	\$6 \$5 \$4 \$3	150 150 150 150	S S S	13225 13375 13525 13675				
Area 2 Area 2 Area 2 Area 2	\$6 \$5 \$4 \$3 \$2	150 150 150 150 150	\$ \$ \$ \$ \$	13225 13375 13525	17/01/2017	SFU43	17-54167	Passed
Area 2 Area 2 Area 2 Area 2 Area 2	\$6 \$5 \$4 \$3	150 150 150 150	S S S	13225 13375 13525 13675	17/01/2017 08/02/2017	SFU43 SFU44	17-54167 17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1	150 150 150 150 150 150	S S S S S S	13225 13375 13525 13675 13825 13995	08/02/2017	SFU44	17-54958	Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$8	150 150 150 150 150 150 170	S S S S S S S	13225 13375 13525 13675 13825 13995 14145				Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7	150 150 150 150 150 150 170 150	S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295	08/02/2017	SFU44	17-54958	Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7	150 150 150 150 150 170 150 150	S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7	150 150 150 150 150 150 170 150	S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$75	150 150 150 150 150 170 150 150 150	S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$5 \$7	150 150 150 150 150 150 170 150 150 150 170	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$5 \$7 \$4 \$7	150 150 150 150 150 150 170 150 150 150 150 170	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$5 \$7 \$7	150 150 150 150 150 170 150 150 150 150 150 150 200	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$5 \$7 \$4 \$7	150 150 150 150 150 150 170 150 150 150 150 170	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$75 \$74 \$73 \$72 \$71	150 150 150 150 150 170 150 150 150 150 170 180 200	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$75 \$74 \$73 \$72 \$71 \$08	150 150 150 150 150 150 170 150 150 150 150 150 150 200 200 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15395	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$6 \$75 \$74 \$73 \$72 \$71	150 150 150 150 150 170 150 150 150 150 170 180 200	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$7 \$6 \$75 \$74 \$73 \$72 \$71 \$18 \$17 \$17 \$18 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17	150 150 150 150 150 150 150 170 150 150 150 150 200 200 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15395 15445	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$7 \$6 \$75 \$74 \$73 \$72 \$71 \$18 \$17 \$17 \$18 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17	150 150 150 150 150 170 150 150 150 150 170 180 200 200 50 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15345 15395 15445	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$7 \$7 \$6 \$75 \$74 \$73 \$72 \$71 \$18 \$17 \$17 \$18 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17	150 150 150 150 150 150 150 170 150 150 150 150 200 200 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15395 15445	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$76 \$75 \$74 \$73 \$72 \$71 \$18 \$17 \$19 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10	150 150 150 150 150 150 150 170 150 150 150 150 150 150 50 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15345 15345 15445 1545	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$76 \$75 \$74 \$73 \$72 \$71 \$108 \$17 \$17 \$17 \$17 \$17 \$17 \$17 \$17	150 150 150 150 150 150 150 170 150 150 150 150 150 150 50 50 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15345 15345 1545 1545 1545 1545	08/02/2017	SFU44	17-54958	Passed Passed
Area 2	\$6 \$5 \$4 \$3 \$2 \$1 \$7 \$76 \$75 \$74 \$73 \$72 \$71 \$18 \$17 \$19 \$10 \$10 \$10 \$10 \$10 \$10 \$10 \$10	150 150 150 150 150 150 150 170 150 150 150 150 150 150 50 50	S S S S S S S S S S S S S S S S S S S	13225 13375 13525 13675 13825 13995 14145 14295 14445 14595 14765 14945 15145 15345 15345 15345 15445 1545	08/02/2017	SFU44	17-54958	Passed Passed

CROSS CHECK

CELL DIRTY CLEAN Depth to Base Area of cell (100m2) * depth -Cross Number from check treatment sheet dirty Due to water issues, Area 2 excavation to 2.5m then trial pit to validate bases. Materials movement based on depth to 2.5mbgl Κ1 100 150 TRUE K2 100 150 2.5 TRUE 2.5 К3 100 150 TRUE K4 100 150 2.5 TRUE K5 0 250 2.5 TRUE L1 0 250 2.5 TRUE 2.5 L2 0 250 TRUE L3 0 250 2.5 TRUE L4 0 250 2.5 TRUE L5 0 250 2.5 TRUE 0 L6 250 2.5 TRUE L7 0 250 2.5 TRUE L8 0 250 2.5 TRUE М1 0 250 2.5 TRUE 2.5 0 250 TRUE M2 М3 0 250 2.5 TRUE M4 100 300 4 TRUE Dug to full depth due to area of contam M5 0 250 2.5 TRUE TRUE 0 250 2.5 M6 0 250 2.5 TRUE M7 M8 0 250 2.5 TRUE **S8** 100 100 2 TRUE 2 T8 150 50 TRUE 2.5 0 250 TRUE N1 N2 0 250 2.5 TRUE N3 0 250 2.5 TRUE Dug to full depth due to area of contam N4 350 50 4 TRUE N5 350 50 4 Dug to full depth due to area of contam TRUE N6 200 200 4 TRUE Dug to full depth due to area of contam Ν7 300 100 4 TRUE Dug to full depth due to area of contam N8 200 200 4 TRUE Dug to full depth due to area of contam 2.5 50 200 TRUE 01 0 250 2.5 TRUE 02 03 0 250 2.5 TRUE 25 04 225 2.5 TRUE 25 225 2.5 TRUE 05 25 225 2.5 **TRUE** 06 07 200 200 TRUE Dug to full depth due to area of contam 4 08 200 200 4 TRUE Dug to full depth due to area of contam 250 150 4 TRUE Dug to full depth due to area of contam Ρ1 P2 250 150 4 TRUE Dug to full depth due to area of contam Р3 125 125 2.5 TRUE Ρ4 125 125 2.5 TRUE 0 2.5 TRUE P5 250 0 250 2.5 TRUE Р6 P7 0 250 2.5 TRUE Р8 0 250 2.5 TRUE 200 200 4 TRUE Dug to full depth due to area of contam Q1 200 200 4 TRUE Dug to full depth due to area of contam Q2 Q3 200 200 4 TRUE Dug to full depth due to area of contam Q4 200 200 4 Dug to full depth due to area of contam Q5 200 200 4 TRUE Dug to full depth due to area of contam 2.5 TRUE Q6 0 250 0 **Q7** 250 2.5 TRUE Q8 0 250 2.5 TRUE R3 100 150 2.5 TRUE 2.5 TRUE R4 100 150 R5 100 150 2.5 TRUE R6 100 150 2.5 TRUE R7 100 150 2.5 TRUE 2.5 TRUE R8 100 150 R1 50 200 TRUE 4 R2 50 200 4 TRUE S8 100 150 2.5 TRUE 2.5 S7 100 150 TRUE 2.5 S6 100 150 TRUE S5 100 150 2.5 TRUE S4 100 150 2.5 TRUE 2.5 S3 150 TRUE 100 TRUE 100 2.5 S2 150 **S**1 80 170 2.5 TRUE T8 100 150 2.5 TRUE T7 100 150 2.5 TRUE TRUE 100 150 2.5 T6 T5 100 150 2.5 TRUE T4 80 170 2.5 TRUE T3 70 180 2.5 TRUE 50 2.5 TRUE T2 200 T1 50 200 2.5 TRUE U8 150 50 2 TRUE U7 2 TRUE 150 50 U6 2 150 50 TRUE Shallow hotspots of fuel hydrocarbons- Removed U5 150 50 2 TRUE determination U4 2 150 50 TRUE

U9

U10

150

100

50

100

2

2

TRUE

TRUE

for HH risk, not CW driver or Part 2A

Date Removed	Removed From	Approx. Amount Removed m ³	Removed To	Depth Notes	Calcs
Nov-16	Windrow 3 & Windrow 4	5550	Rows K to O	2.5-1.1mbgl	4000m ² by ~1.4m
Dec-16	Site won stockpile	1440 3500	Rows G,H & I	See Site won (Area 1) sheet	
Dec-16	Site won stockpile	3500	Rows AA to I	See Site won (Area 1) sheet	
Jan-17	Site won stockpile	4000	Rows K to O	1.1-0.1mbgl	4000m ² by ~1m
Feb-17	Site won stockpile	5000	Row P, Q, R, S	Base (between 2.5-4m) to 1.2mbgl	3200m ² by ~1.3-2.8m
Feb-17	Windrow 5	2600	Row P, Q, R, S		3200m ² by ~0.7m
Feb-17	Site won stockpile	600	Row P, Q, R, S	0.5-0.3mbgl	3200m ² by ~0.2m
Feb-17	Site won stockpile	1300	Row T & U	Base (2.6m) to 1.7mbgl	1400m ² by ~0.9m
Feb-17	Windrow 6	1450	Row T & U	1.7-0.9mbgl	1400m ² by ~0.8m
Feb-17	Windrow 7	840	Row T & U	0.9-0.3mbgl	1400m ² by ~0.6m
Feb-17	Windrow 7	920	Row P to U	0.3-0.1mbgl	4600m ² by ~0.2m
Feb-17	Windrow 8	860	Rows K to U	0.1-0.0mbgl	8600m ² by ~0.1m
Mar-17	Windrow 8	2000	Proposed to be	See Site won (Area 1) sheet	
Mar-17	Windrow 9	1030	used as part of	See Site won (Area 1) sheet	
Mar-17	Windrow 10	1000	end development	See Site won (Area 1) sheet	

Site won stockpile 10900
Treatment stockpile 12220
23120

OK

Check validated site won / treatment volume

10,900m3 Site won (Area 2); 12,220m3 Treated

Date Sampled Sample No				02/08/2016 SFU1	02/08/2016 SFU2	02/08/2016 SFU3	02/08/2016 SFU4	02/08/2016 SFU5	02/08/2016 SFU6	02/08/2016 SFU6	24/08/2016 SFU7	24/08/2016 SFU8	26/08/2016 SFU9	26/08/2016 SFU10	26/08/2016 SFU11	26/08/2016 SFU12	14/09/2016 SFU13	14/09/2016 SFU14	28/09/2016 SFU15	28/09/2106 SFU16	05/10/2016 SFU 17	05/10/2016 SFU 18	05/10/2016 SFU 19	20/10/2016 SFU 20	20/10/2016 SFU 21	20/10/2016 SFU 22	27/10/2016 SFU 23	16/11/2016 SFU24	16/11/2016 SFU25	23/11/2016 SFU26
Depth (m) QTSE Sample No				Composite 220750	Composite 220751	Composite 220752	Composite 220753	Composite 220754	Composite 220755	Composite 220755	Composite 225208	Composite 225209	Composite 225210	Composite 225211	Composite 225212	Composite 225213	Composite 228085	Composite 228086	Composite 230195	Composite 230196	Composite 231649	Composite 231650	Composite 231651	Composite 234735	Composite 234736	Composite 234737	Composite 235950	Composite 239249	Composite v 239250	lone Supplied 241511
Analytical Parameter	Units	Limit of	Accreditation																											
(Soil Analysis) Arsenic (As)	mg/kg	detection	Status MCERTS	8	5	4	7	8	5	5	6	6	7	13	7	9			5	4	5	5	3	6	6	12	3	6	6	2
Barium (Ba)	mg/kg	_	NONE	189	180	104	134	145	80	80	232	228	107	173	100	141			113	79	98	123	88	124	172	189	101	107	129	117
Beryllium (Be)	mg/kg		NONE	1.3	1.2	0.7	1.2	0.9	0.6	0.6	1.1	1.1	0.8	1	0.7	0.8			0.9	0.5	1	1.1	0.9	0.8	1	1.1	1	0.5	0.6	1.1
Cadmium (Cd) Chromium (Cr)	mg/kg mg/kg		MCERTS MCERTS	< 0.2 46	< 0.2 40	< 0.2 22	< 0.2 36	< 0.2 28	< 0.2 21	< 0.2 21	< 0.2 44	< 0.2 40	< 0.2 24	< 0.2 32	< 0.2 21	< 0.2 27			< 0.2 24	< 0.2 14	< 0.2 41	< 0.2 44	< 0.2 43	< 0.2 18	< 0.2 28	< 0.2 32	< 0.2 44	< 0.2 14	< 0.2 17	< 0.2 41
Copper (Cu)	mg/kg	_	MCERTS	20	15	11	16	14	11	11	11	13	12	16	13	12			16	9	12	13	10	19	19	19	24	10	12	17
Lead (Pb) Mercury (Hg)	mg/kg	_	MCERTS	21	4	7	7	10	12	12	4	5 - 1	12	15	12	8			9	5	6	4	3	23	11	17	6	6	10	16
Nickel (Ni)	mg/kg mg/kg		NONE MCERTS	< 1 39	< 1 37	< 1 16	< 1 28	< 1 23	< 1 16	< 1 16	< 1 47	< 1 43	< 1 21	< 1 32	< 1 19	< 1 29			< 1 22	< 1 13	< 1 38	< 1 40	< 1 39	2.4 16	< 1 24	< 1 28	< 1 39	< 1 11	< 1 13	< 1 41
Selenium (Se)	mg/kg	_	NONE	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3			< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Vanadium (V) Zinc (Zn)	mg/kg mg/kg		NONE MCERTS	48 81	41 60	29 48	41 57	36 51	25 40	25 40	41 62	39 66	33 51	45 72	30 45	33 55			32 48	18 28	38 56	43 58	32 52	32 67	35 51	48 70	37 58	29 29	37 37	36 78
Zinc (Zii)	mg/kg		MOERTS	01	00	40	37	51	40	40	02	00	31	72	40	33			40	20	50	30	32	01	31	70	30	25	01	70
Polycyclic aromatic hydrocarbo	ons																													
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene Anthracene	mg/kg		MCERTS MCERTS	< 0.1 < 0.1			0.21	< 0.1	< 0.1 < 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1 < 0.1	< 0.1	< 0.1	< 0.1 < 0.1												
Fluoranthene	mg/kg mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1 < 0.1	< 0.1 < 0.1	< 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1
Pyrene	mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg		MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene Benzo(ghi)perylene	mg/kg mg/kg		MCERTS MCERTS	< 0.1 < 0.1			< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1												
Total EPA-16 PAHs	mg/kg		MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6			< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics																														
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Petroleum Hydrocarbons																														
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			1.6	3.83	< 0.05	< 0.05	< 0.05	0.4	0.49	0.31	3.4	0.13	0.07	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg		MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	6	< 2	< 2	< 2	< 2
Aliphatic > C12 - C16	mg/kg		MCERTS	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3			< 3	< 3	< 3	< 3	< 3	< 3	< 3	9	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 Aliphatic >C21 - C35	mg/kg		MCERTS	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3			< 3	< 3	< 3	< 3	< 3	< 3	< 3	9	< 3	< 3	< 3	< 3
Aliphatic (C5 - C35)	mg/kg		MCERTS NONE	< 10 < 21			< 10	< 10	< 10	< 10	< 10	< 10	< 10	78	< 10	< 10	< 10	< 10												
Aromatic >C5 - C7	mg/kg mg/kg		NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01			< 21 < 0.01	< 21 < 0.01	< 21 < 0.01	< 21 < 0.01	< 21 < 0.01	< 21 < 0.01	< 21 < 0.01	102 < 0.01	< 21 < 0.01	< 21 < 0.01	< 21 < 0.01	< 21 < 0.01
Aromatic >C7 - C8	mg/kg		NONE	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			< 0.01	< 0.05	< 0.05	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01
Aromatic >C8 - C10	mg/kg		MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg		MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic > C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21 Aromatic >C21 - C35	mg/kg mg/kg	< 10	MCERTS MCERTS	< 3 < 10			< 3 < 10	< 3 < 10	< 3 < 10	< 3 < 10	< 3 < 10	< 3 < 10	< 3 < 10	< 3 42	< 3 < 10	< 3 < 10	< 3 < 10	< 3 < 10												
Aromatic (C5 - C35) Total >C5 - C35	mg/kg mg/kg	< 21	NONE NONE	< 21 < 42			< 21 < 42	< 21 < 42	< 21 < 42	< 21 < 42	< 21 < 42	< 21 < 42	< 21 < 42	42 145	< 21 < 42	< 21 < 42	< 21 < 42	< 21 < 42												
	mg/kg	~ 4Z	INCINE	~ 42	\ 7 2	~ 42	\ 1 2	~ 72	\ 1 2	\ 7 2	\ 7 2	\ 7 2	\ 7 2	\ 1 2	\ 7 2	- 74			\ 4 2	\ 4 2	N 42	\ 7 2	~ 7 2	\ 4 2	\ 4 2	140	₹	~ 44	~ 74	~ 7 4
VOC TCE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	63	1860	3703	< 5	< 5	< 5	342	457	266	3386	115	57	21

Only an issue if used in top 0.5m

Only an issue if used in top 0.5m

nple No			23/11/2016 SFU27	SFU28	SFU29	SFU30	SFU31	SFU32	SFU33	08/12/2016 SFU34	13/12/2016 SFU35	13/12/2016 SFU36	SFU37	17/01/2017 17/01/2017 17/01/2017 SFU38 SFU39 SFU40	SFU41	SFU42	SFU43	SFU44	08/02/2017 SFU45						
oth (m) SE Sample No					None Supplier 241514	None Supplie 241530	None Supplier 241531	lone Supplier 241532	Composite 242389	Composite 242390	Composite 243587	Composite 243588	Composite 243589	Composite Composite Composite 247133 247134 247135	Composite 248811	Composite 248812	Composite 248813	Composite 252491	Composite 252492						
alytical Parameter	Units	Limit of																						Commercial GAC	
il Analysis)		detection	40		-			•	•	-	•				•	-				MAX	MIN	AVERAGE	Aromia (An)	(1% SOM) mg/kg	>GAC
nic (As) ım (Ba)	mg/kg mg/kg	< 2 < 5	10 201	132	134	132	3 110	3 137	< 2 70	5 115	8 51	52	4 52		3 69	5 105	3 98	6 73	4 65	13.0 232.0	2.0 51.0	5.70 120.22	Arsenic (As) Barium (Ba)		0
ium (Be)	mg/kg	< 0.5	1	1	1	1.2	1.2	1.2	0.7	1.4	1.1	1.2	1.2		< 0.5	0.6	0.6	1.2	1.1	1.4	0.5	0.96	Beryllium (Be)		0
ium (Cd)	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.0	0.0	#DIV/0!	Cadmium (Cd)		0
nium (Cr)	mg/kg	< 2	27	39	40	49	49	48	22	55	32	32	34		16	25	24	35	33	55.0	14.0	32.24	Chromium (Cr)	8,600	0
er (Cu)	mg/kg	< 4	19	18	18	18	19	18	18	19	16	16	17		10	14	12	10	9	24.0	9.0	14.78	Copper (Cu)		0
(Pb)	mg/kg	< 3	8	25	12	5	6	5	8	6	13	10	10		6	10	9	10	9	25.0	3.0	9.68	Lead (Pb)	2330	0
ıry (Hg) I (Ni)	mg/kg mg/kg	< 1 < 3	< 1 24	< 1 38	< 1 40	< 1 55	< 1 57	< 1 55	< 1 18	< 1 60	< 1 27	< 1 28	< 1 29		< 1 16	< 1 21	< 1 21	< 1 31	< 1 29	2.4 60.0	2.4 11.0	2.40 30.22	Mercury (Hg) Nickel (Ni)	1100 980	0
um (Se)	mg/kg	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		< 3	< 3	< 3	< 3	< 3	0.0	0.0	#DIV/0!	Selenium (Se)		0
ium (V)	mg/kg	< 2	29	34	34	41	42	40	28	46	25	29	32		23	37	33	31	28	48.0	18.0	34.51	Vanadium (V)		0
Zn)	mg/kg	< 3	52	74	75	65	67	65	44	70	72	76	76		35	53	46	74	68	81.0	28.0	57.85	Zinc (Zn)	730000	0
cyclic aromatic hydrocarbon	S																								
halene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Naphthalene	190	0
aphthylene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Acenaphthylene	83000	0
phthene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Acenaphthene	84000	0
ne	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Fluorene	63000	0
anthrene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2	0.21	Phenanthrene	22000	0
acene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Anthracene	520000	0
anthene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Fluoranthene	23000	0
e	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Pyrene	54000	0
o(a)anthracene																						#DIV/0!	Benzo(a)anthracene	170	0
	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0				-
ene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Chrysene	350	0
(b)fluoranthene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Benzo(b)fluoranthene	44	0
(k)fluoranthene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Benzo(k)fluoranthene	1200	0
o(a)pyrene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Benzo(a)pyrene	35	0
o(1,2,3-cd)pyrene	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.0	0.0	#DIV/0!	Indeno(123-cd)pyrene	500	0
nz(a,h)anthracene o(ghi)perylene	mg/kg	< 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1 < 0.1	< 0.1	0.0 0.0	0.0 0.0	#DIV/0! #DIV/0!	Dibenzo(ah)anthracene		0
EPA-16 PAHs	mg/kg mg/kg	< 0.1 < 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 0.1 < 1.6	< 0.1 < 1.6	< 0.1 < 1.6	< 0.1 < 1.6	< 0.1 < 1.6		< 0.1 < 1.6	< 1.6	< 1.6	< 1.6	< 0.1 < 1.6	0.0	0.0	#DIV/0!	Benzo(ghi)perylene	3700	O
oaromatics																									
ene	ug/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	BTEX - Benzene	27	0
ne	ug/kg	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5	< 5	< 5	< 5	< 5	0.0	0.0	#DIV/0!	BTEX - Toluene	56000	0
																							BTEX - Ethyl Benzene		-
penzene	ug/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	•		0
n-xylene	ug/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	BTEX - m & p Xylene		0
ene	ug/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	BTEX - o Xylene	6600	0
	ug/kg	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5	< 5	< 5	< 5	< 5	0.0	0.0	#DIV/0!	MTBE		
leum Hydrocarbons																									
tic >C5 - C6	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.0	0.0	0.01	Ali >C5-C6	3,200	0
tic >C6 - C8	mg/kg	< 0.05	< 0.05	0.43	< 0.05	< 0.05	< 0.05	< 0.05	1.86	0.15	< 0.05	< 0.05	< 0.05		0.11	0.09	0.08	< 0.05	< 0.05	3.8	0.1	0.93	Ali >C6-C8	7,800	0
tic >C8 - C10	mg/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	Ali >C8-C10	2,000	0
tic >C10 - C12	mg/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	6.0	6.0	6.00	Ali >C10-C12	9,700	0
tic >C12 - C16	mg/kg	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		< 3	< 3	< 3	< 3	< 3	9.0	9.0	9.00	Ali >C12-C16		0
tic >C16 - C21	mg/kg	< 3	< 3	25	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		< 3	< 3	< 3	< 3	< 3	25.0	9.0	17.00	Ali >C16-C21		0
ic >C21 - C35		< 10	< 10	835	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 10	835.0	78.0	456.50	Ali >C21-C35		0
	mg/kg																						7111 > 02 1-033	.,500,000	U
tic (C5 - C35)	mg/kg	< 21	< 21	861	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21		< 21	< 21	< 21	< 21	< 21	861.0	102.0	481.50 #DIV/O	A=0 : 0E 07	2/022	
rtic >C5 - C7	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.0	0.0	#DIV/0!	Aro >C5-C7		0
tic >C7 - C8	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0	0.0	#DIV/0!	Aro >C7-C8		0
ntic >C8 - C10	mg/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	Aro >C8-C10		0
tic >C10 - C12	mg/kg	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	< 2	< 2	0.0	0.0	#DIV/0!	Aro >C10-C12		0
atic >C12 - C16 atic >C16 - C21	mg/kg	< 2 < 3	< 2	< 2 19	< 2	< 2	< 2	< 2 < 3	< 2	< 2 < 3	< 2 < 3	< 2 < 3	< 2 < 3		< 2	< 2 < 3	< 2 < 3	< 2	< 2 < 3	0.0 19.0	0.0 19.0	#DIV/0! 19.00	Aro >C12-C16 Aro >C16-C21		0 0
itic >C16 - C21	mg/kg mg/kg	< 10	< 3 < 10	484	< 3 < 10	< 3 < 10	< 3 < 10	< 10	< 3 < 10	< 10	< 10	< 10	< 10		< 3 < 10	< 10	< 10	< 3 < 10	< 10	484.0	42.0	263.00	Aro >C16-C21		0
atic (C5 - C35)	mg/kg	< 21	< 21	503	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21	< 21		< 21	< 21	< 21	< 21	< 21	503.0	42.0	272.50			
>C5 - C35	mg/kg	< 42	< 42	1364	< 42	< 42	< 42	< 42	< 42	< 42	< 42	< 42	< 42		< 42	< 42	< 42	< 42	< 42	1364.0	145.0	754.50			
200 000																									

Only an issue if used in top 0.5m



Appendix C – Volumes of Groundwater Removed for Treatment

GJ079 Nash Road, Redditch

Water Treatment

Location W water plant



Max discharge rate approx - 6l/s

Date	Removed	Anr	orox.	Removed	Meter	Meter	Total
Removed	From		ount	To	Reading	Reading	Amount
Kemoved	110111		noved	10	Start	End	Discharged
			L)		m ³	m ³	m ³
		Litres	m ³		III	III	III
05/09/2016	Area 1	30000		W	385620	385650	30
06/09/2016	Area 1		30	W			55
07/09/2016		25000	25 53	W	385650	385675	108
	Area 1	53000			385675	385728	
12/09/2016	Area 1	58000	58	W	385728	385786	166
13/09/2016	Area 1	19000	19	W	385786	385805	185
14/09/2016	Area 1	60000	60	W	385805	385865	245
26/09/2016	Area 1	27000	27	W	385865	385892	272
27/09/2016	Area 1	9000	9	W	385892	385901	281
28/09/2016	Area 1	65000	65	W	385901	385966	346
30/09/2016	Area 1	60000	60	W	385966	386026	406
11/10/2016	Area 1	120000	120	W	386026	386146	526
12/10/2016	Area 1	40000	40	W	386146	386186	566
17/10/2016	Area 1	15000	15	W	386186	386201	581
19/10/2016	Area 1	54000	54	W	386201	386255	635
20/10/2016	Area 1	50000	50	W	386255	386305	685
21/10/2016	Area 1	82000	82	W	386305	386387	767
28/10/2016	Area 2	61000	61	W	386387	386448	828
31/10/2016	Area 2	13000	13	W	386448	386461	841
04/11/2016	Area 2	365000	365	W	386461	386826	1206
07/11/2016	Area 2	164000	164	W	386826	386990	1370
08/11/2016	Area 2	5000	5	W	386990	386995	1375
15/11/2016	Area 2	49000	49	W	386995	387044	1424
16/11/2016	Area 2	124000	124	W	387044	387168	1548
17/11/2016	Area 2	49000	49	W	387168	387217	1597
18/11/2016	Area 2	70000	70	W	387217	387287	1667
23/11/2016	Area 2	147000	147	W	387287	387434	1814
24/11/2016	Area 2	23000	23	W	387434	387457	1837
29/11/2016	Area 2	148000	148	W	387457	387605	1985
06/12/2016	Area 2	73000	73	W	387605	387678	2058
07/12/2016	Area 2	156000	156	W	387678	387834	2214
08/12/2016	Area 2	108000	108	W	387834	387942	2322
15/12/2016	Area 2	123000	123	W	387942	388065	2445
04/01/2017	Area 2	84000	84	W	388065	388149	2529
05/01/2017	Area 2	88000	88	W	388149	388237	2617
09/01/2017	Area 2	149000	149	W	388237	388386	2766
10/01/2017	Area 2	136000	136	W	388386	388522	2902
11/01/2017	Area 2	155000	155	W	388522	388677	3057
12/01/2017	Area 2	101000	101	W	388677	388778	3158
13/01/2017	Area 2	119000	119	W	388778	388897	3277
16/01/2017	Area 2	168000	168	W	388897	389065	3445
17/01/2017	Area 2	137000	137	W	389065	389202	3582
18/01/2017	Area 2	35000	35	W	389202	389237	3617
19/01/2017	Area 2	179000	179	W	389237	389416	3796
23/01/2017	Area 2	118000	118	W	389416	389534	3914
25/01/2017	Area 2	357000	357	W	389534	389891	4271
26/01/2017	Area 2	103000	103	W	389891	389994	4374
30/01/2017	Area 2	136000	136	W	389994	390130	4510
31/01/2017	Area 2	24000	24	W	390130	390154	4534
02/02/2017	Area 2	17000	17	W	390154	390171	4551
03/02/2017	Area 2	151000	151	W	390171	390322	4702
06/02/2017	Area 2	153000	153	W	390322	390475	4855



Appendix D – River Arrow Chemical Analytical Results

Note: Also includes laboratory data from the discharge point into the remediation water treatment plant (Those samples prefixed by "DIS")







Ian Chambers
DSM Demolition Ltd
Arden House
Arden Road
Heartlands
Birmingham
B8 1DE

QTS Environmental Ltd

Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
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russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-48941

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C17026

Order No: 78347

Sample Receipt Date: 07/09/2016

Sample Scheduled Date: 08/09/2016

Report Issue Number: 1

Reporting Date: 14/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis



1,2-Dichlorobenzene

Hexachlorobutadiene

2-Dibromo-3-chloropropane

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



Water Analysis Certificate - Volatile Organic Compounds (VOC QTS Environmental Report No: 16-48941 **Date Sampled** 16/08/16 16/08/16 DSM Demolition Ltd Time Sampled None Supplied None Supplied Site Reference: ex BA Tubes Redditch TP / BH No DSM17026/RA/7/ DSM17026/RA/8/ Project / Job Ref: C17026 Additional Refs None Supplied None Supplied Order No: 78347 Depth (m) None Supplied None Supplied Reporting Date: 14/09/2016 QTSE Sample No 226568 226569 Determinand Unit RL Accreditation Dichlorodifluoromethane ug/ < 5 ISO17025 Vinyl Chloride ISO17025 uq/ ISO17025 Chloromethane < 5 < 5 < 5 ug/ ISO17025 Chloroethane ug/ < 5 Bromomethane ug/ < 5 ISO17025 < 5 < 5 Trichlorofluoromethane ug/ < 5 ISO17025 < 5 < 5 ISO17025 1,1-Dichloroethene ug/ < 10 ISO17025 < 10 < 10 uq/ trans-1,2-Dichloroethene ISO17025 < 5 ua/ < 5 1,1-Dichloroethane < 5 ISO17025 < 5 ug/ < 5 cis-1,2-Dichloroethene ug/ < 5 ISO17025 < 5 < " 2,2-Dichloropropane < 5 ISO17025 < 5 ug/ < 5 < 5 ISO17025 Chloroform ug/l Bromochloromethane < 10 ISO17025 < 10 < 10 uq/ ISO17025 1,1,1-Trichloroethane < 5 < 5 < 5 ug/l ISO1702 1,1-Dichloropropene ug/ < 5 < 5 < 5 Carbon Tetrachloride ug/ < 5 ISO17025 < 5 < 1 1,2-Dichloroethane < 10 ISO17025 < 10 < 10 ug/ Benzene ug/l ISO17025 1,2-Dichloropropane < 5 ISO17025 <! <! ug/ Trichloroethene < 5 ISO17025 ug/ < 5 < 5 Bromodichloromethane < 5 ISO17025 ug/ < 5 < 5 Dibromomethane ug/ < 5 ISO17025 < 5 < 5 TAME ug/ < 5 ISO17025 cis-1,3-Dichloropropene < 5 ISO17025 ug/ Toluene ug/ < 5 ISO17025 <! <! trans-1,3-Dichloropropene < 5 ISO17025 < 5 < 5 ug/ 1,1,2-Trichloroethane < 10 ISO17025 < 10 < 10 ug/ 1,3-Dichloropropane ug/ < 5 ISO17025 < 1 < 1 Tetrachloroethene ug/ < 5 ISO17025 Dibromochloromethane ISO17025 ug/l 1,2-Dibromoethane < 5 ISO17025 < 5 < 5 ug/ ISO17025 Chlorobenzene < 5 ug/ < 5 1,1,1,2-Tetrachloroethane ISO17025 < 5 ug/ < 5 < 5 Fthyl Benzene ua/ < 5 ISO17025 < 5 < 1 m,p-Xylene ug/ < 10 ISO17025 < 10 < 10 < 5 ISO17025 < 5 o-Xylene ug/ Styrene ug/ ISO17025 Bromoform < 10 ISO17025 < 10 < 10 ug/ ISO17025 Isopropylbenzene ug/ < 5 1,1,2,2-Tetrachloroethane < 10 ISO17025 ua/ < 10 < 10 ISO17025 1,2,3-Trichloropropane ug/ < 5 < 5 < 5 n-Propylbenzene < 5 ISO17025 ug/ Bromobenzene < 5 ISO17025 < 5 < 5 ug/ 2-Chlorotoluene < 5 ISO17025 <! ug/ < 5 1,3,5-Trimethylbenzene < 5 ISO17025 ug/ < 5 < " 4-Chlorotoluene ug/ < 5 ISO17025 < 5 < 5 tert-Butylbenzene ug/ < 5 ISO17025 < 5 < ! 1,2,4-Trimethylbenzene < 5 ISO17025 ug/ < 5 < 5 sec-Butylbenzene ug/l ISO17025 < 5 ISO17025 < 5 < 5 p-Isopropyltoluene ug/ ISO17025 1,3-Dichlorobenzene < 5 ug/ < 5 1,4-Dichlorobenzene ug/ < 5 ISO17025 < 5 < 5 n-Butylbenzene ug/l < 5 ISO17025 < 5 < !

< 10

< 10

< 5

< 10

ug/

ug/l

ISO17025

ISO17025





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-48941
DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C17026 Order No: 78347 Reporting Date: 14/09/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Manada dala Dia anal		E121
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	r E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered UF Unfiltered





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QTS Environmental Report No: 16-48943

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 07/09/2016

Sample Scheduled Date: 08/09/2016

Report Issue Number: 1

Reporting Date: 14/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis





Water Analysis Certifica	te - Volatile Organ	ic Com	pounds (VOC)			
QTS Environmental Repor			Date Sampled	29/08/16	29/08/16		
DSM Demolition Ltd			Time Sampled	None Supplied			
Site Reference: ex BA Tul	bes Redditch		TP / BH No	DSM10726/RA/7/			
Project / Job Ref: C1072	6		Additional Refs	None Supplied	None Supplied		
Order No: 78347			Depth (m)	None Supplied	None Supplied		
Reporting Date: 14/09/2	016	Q.	TSE Sample No	226572	226573		
			•				
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5		
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5		
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10		
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
cis-1,2-Dichloroethene 2,2-Dichloropropane	ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5		
2,2-Dichioropropane Chloroform	ug/l ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5		
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10		
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
Benzene	ug/l	< 1	ISO17025	< 1	< 1		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5		
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5		
TAME	ug/l	< 5	ISO17025	< 5	< 5		
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Toluene	ug/l	< 5	ISO17025	< 5	< 5		
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dibromoethane Chlorobenzene	ug/l	< 5 < 5	ISO17025 ISO17025	< 5	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5		
Ethyl Benzene	ug/l ug/l	< 5	ISO17025	< 5	< 5		
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10		
o-Xvlene	ug/l	< 5	ISO17025	< 5	< 5		
Styrene	ug/l	< 5	ISO17025	< 5	< 5		
Bromoform	ug/l			< 10			
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10	 	
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5		
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
sec-Butylbenzene p-Isopropyltoluene	ug/l	< 5 < 5	IS017025 IS017025	< 5	< 5 < 5		
1,3-Dichlorobenzene	ug/l ug/l	< 5	ISO17025	< 5 < 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5		< 5	< 5		
n-Butvlbenzene	ug/i ua/l	< 5					

< 5

< 10

< 5

< 10

ISO17025

ISO17025

ISO17025 ISO17025

ug/l

ug/

ug/l

< 5

< 5

< 10

1,2-Dichlorobenzene

,2-Dibromo-3-chloropropane

n-Butylbenzene





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-48943

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 14/09/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No	
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103	
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101	
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102	
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112	
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109	
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116	
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115	
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115	
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115	
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111	
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104	
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR deter	E110	
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123	
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104	
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104	
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109	
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102	
Leachate	F		Based on National Rivers Authority leaching test 1994	E301	
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302	
Water	F		Determination of metals by filtration followed by ICP-MS	E102	
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104	
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109	
Water	UF	Manada adala Dharad		E121	
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105	
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	E108	
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111	
Water	UF		Determination of pH by electrometric measurement	E107	
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109	
Water	UF		Determination of redox potential by electrometric measurement	E113	
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109	
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118	
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106	
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111	
Water	UF		Low heat with persulphate addition followed by IR detection	E110	
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104	
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104	
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101	
Water	UF		Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101	

Key

F Filtered UF Unfiltered





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QTS Environmental Report No: 16-48942

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 07/09/2016

Sample Scheduled Date: 08/09/2016

Report Issue Number: 1

Reporting Date: 14/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis





Water Analysis Certificate - Volatile Organic Compounds (VOC QTS Environmental Report No: 16-48942 **Date Sampled** 05/09/16 05/09/16 DSM Demolition Ltd Time Sampled None Supplied None Supplied Site Reference: ex BA Tubes Redditch TP / BH No DSM10726/RA/7/ DSM10726/RA/8/ Project / Job Ref: C10726 Additional Refs None Supplied None Supplied Order No: 78347 Depth (m) None Supplied None Supplied Reporting Date: 14/09/2016 QTSE Sample No 226570 226571 Determinand Unit RL Accreditation Dichlorodifluoromethane ug/ < 5 ISO17025 Vinyl Chloride ISO17025 uq/ ISO17025 Chloromethane < 5 < 5 < 5 ug/ ISO17025 Chloroethane ug/ < 5 Bromomethane ug/ < 5 ISO17025 < 5 < 5 Trichlorofluoromethane ug/ < 5 ISO17025 < 5 < 5 ISO17025 1,1-Dichloroethene ug/ < 10 ISO17025 < 10 < 10 uq/ trans-1,2-Dichloroethene ISO17025 < 5 ua/ < 5 1,1-Dichloroethane < 5 ISO17025 < 5 ug/ < 5 cis-1,2-Dichloroethene ug/ < 5 ISO17025 < 5 < " 2,2-Dichloropropane < 5 ISO17025 < 5 ug/ < 5 < 5 ISO17025 Chloroform ug/l Bromochloromethane < 10 ISO17025 < 10 < 10 uq/ ISO17025 1,1,1-Trichloroethane < 5 < 5 < 5 ug/l ISO1702 1,1-Dichloropropene ug/ < 5 < 5 < 5 Carbon Tetrachloride ug/ < 5 ISO17025 < 5 < 1 1,2-Dichloroethane < 10 ISO17025 < 10 < 10 ug/ Benzene ug/l ISO17025 1,2-Dichloropropane < 5 ISO17025 <! <! ug/ Trichloroethene < 5 ISO17025 ug/ < 5 < 5 Bromodichloromethane < 5 ISO17025 ug/ < 5 < 5 Dibromomethane ug/ < 5 ISO17025 < 5 < 5 TAME ug/ < 5 ISO17025 cis-1,3-Dichloropropene < 5 ISO17025 ug/ Toluene ug/ < 5 ISO17025 <! <! trans-1,3-Dichloropropene < 5 ISO17025 < 5 < 5 ug/ 1,1,2-Trichloroethane < 10 ISO17025 < 10 < 10 ug/ 1,3-Dichloropropane ug/ < 5 ISO17025 < 1 < 1 Tetrachloroethene ug/ < 5 ISO17025 Dibromochloromethane ISO17025 ug/l 1,2-Dibromoethane < 5 ISO17025 < 5 < 5 ug/ ISO17025 Chlorobenzene < 5 ug/ < 5 1,1,1,2-Tetrachloroethane ISO17025 < 5 ug/ < 5 < 5 Fthyl Benzene ua/ < 5 ISO17025 < 5 < 1 m,p-Xylene ug/ < 10 ISO17025 < 10 < 10 < 5 ISO17025 < 5 o-Xylene ug/ Styrene ug/ ISO17025 Bromoform < 10 ISO17025 < 10 < 10 ug/ ISO17025 Isopropylbenzene ug/ < 5 1,1,2,2-Tetrachloroethane < 10 ISO17025 ua/ < 10 < 10 ISO17025 1,2,3-Trichloropropane ug/ < 5 < 5 < 5 n-Propylbenzene < 5 ISO17025 ug/ Bromobenzene < 5 ISO17025 < 5 < 5 ug/ 2-Chlorotoluene < 5 ISO17025 <! ug/ < 5 1,3,5-Trimethylbenzene < 5 ISO17025 ug/ < 5 < " 4-Chlorotoluene ug/ < 5 ISO17025 < 5 < 5 tert-Butylbenzene ug/ < 5 ISO17025 < 5 < ! 1,2,4-Trimethylbenzene < 5 ISO17025 ug/ < 5 < 5 sec-Butylbenzene ug/l ISO17025 < 5 ISO17025 < 5 < 5 p-Isopropyltoluene ug/ ISO17025 1,3-Dichlorobenzene < 5

< 5

< 5

< 5

< 10

< 5

< !

< 10

ug/

ug/

ug/l

ug/

ug/l

< 5

< 5

< 5

< 10

ISO17025

ISO17025

ISO17025

ISO17025

1,4-Dichlorobenzene

1,2-Dichlorobenzene

Hexachlorobutadiene

2-Dibromo-3-chloropropane

n-Butylbenzene





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-48942
DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 14/09/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No	
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103	
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101	
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102	
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112	
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109	
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116	
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Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111	
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104	
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR deter	E110	
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Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104	
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Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102	
Leachate	F		Based on National Rivers Authority leaching test 1994	E301	
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302	
Water	F		Determination of metals by filtration followed by ICP-MS	E102	
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104	
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109	
Water	UF	Manada adala Dharad		E121	
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105	
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	E108	
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111	
Water	UF		Determination of pH by electrometric measurement	E107	
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109	
Water	UF		Determination of redox potential by electrometric measurement	E113	
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109	
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118	
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106	
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111	
Water	UF		Low heat with persulphate addition followed by IR detection	E110	
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104	
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104	
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101	
Water	UF		Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101	

Key

F Filtered UF Unfiltered







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QTS Environmental Report No: 16-49468

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 19/09/2016

Sample Scheduled Date: 22/09/2016

Report Issue Number: 1

Reporting Date: 29/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis



n-Butylbenzene

1,2-Dichlorobenzene

Hexachlorobutadiene

2-Dibromo-3-chloropropane

ug/l

ug/

ug/l

< 5

< 5

< 10

ISO17025

ISO17025

ISO17025

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



Water Analysis Certificate - Volatile Organic Compounds (VOC QTS Environmental Report No: 16-49468 **Date Sampled** 12/09/16 12/09/16 DSM Demolition Ltd Time Sampled None Supplied None Supplied Site Reference: ex BA Tubes Redditch TP / BH No DSM10726/RA/7/ DSM10726/RA/8/ Project / Job Ref: C10726 Additional Refs None Supplied None Supplied Order No: 78347 Depth (m) None Supplied None Supplied Reporting Date: 29/09/2016 QTSE Sample No 228828 228829 Determinand Unit RL Accreditation Dichlorodifluoromethane ug/ < 5 ISO17025 Vinyl Chloride ISO17025 uq/ ISO17025 Chloromethane < 5 < 5 < 5 ug/ ISO17025 Chloroethane ug/ < 5 <! Bromomethane ug/ < 5 ISO17025 < 5 < 5 Trichlorofluoromethane ug/ < 5 ISO17025 < 5 < 5 ISO17025 1,1-Dichloroethene ug/ < 10 ISO17025 < 10 < 10 uq/ trans-1,2-Dichloroethene ISO17025 < 5 ua/ < 5 1,1-Dichloroethane < 5 ISO17025 < 5 ug/ < 5 cis-1,2-Dichloroethene ug/ < 5 ISO17025 < 5 < " 2,2-Dichloropropane < 5 ISO17025 < 5 ug/l < 5 < 5 ISO17025 Chloroform ug/l Bromochloromethane < 10 ISO17025 < 10 < 10 uq/ ISO17025 1,1,1-Trichloroethane < 5 < 5 < 5 ug/l ISO1702 1,1-Dichloropropene ug/ < 5 < 5 < 5 Carbon Tetrachloride ug/ < 5 ISO17025 < 5 < 1 1,2-Dichloroethane < 10 ISO17025 < 10 < 10 ug/ Benzene ug/l ISO17025 1,2-Dichloropropane < 5 ISO17025 <! <! ug/ Trichloroethene < 5 ISO17025 ug/ < 5 < 5 Bromodichloromethane < 5 ISO17025 ug/ < 5 < 5 Dibromomethane ug/ < 5 ISO17025 < 5 < 5 TAME ug/ < 5 ISO17025 cis-1,3-Dichloropropene < 5 ISO17025 ug/ Toluene ug/ < 5 ISO17025 <! <! trans-1,3-Dichloropropene < 5 ISO17025 < 5 < 5 ug/ 1,1,2-Trichloroethane < 10 ISO17025 < 10 < 10 ug/ 1,3-Dichloropropane ug/ < 5 ISO17025 < 1 < 1 Tetrachloroethene ug/ < 5 ISO17025 Dibromochloromethane ISO17025 ug/l 1,2-Dibromoethane < 5 ISO17025 < 5 < 5 ug/ ISO17025 Chlorobenzene < 5 ug/ < 5 1,1,1,2-Tetrachloroethane ISO17025 < 5 ug/ < 5 < 5 Fthyl Benzene ua/ < 5 ISO17025 < 5 < 1 m,p-Xylene ug/ < 10 ISO17025 < 10 < 10 < 5 ISO17025 < 5 o-Xylene ug/ Styrene ug/ < 5 ISO17025 Bromoform < 10 ISO17025 < 10 < 10 ug/ ISO17025 Isopropylbenzene ug/ < 5 1,1,2,2-Tetrachloroethane < 10 ISO17025 ua/ < 10 < 10 ISO17025 1,2,3-Trichloropropane ug/ < 5 < 5 < 5 n-Propylbenzene < 5 ISO17025 ug/ Bromobenzene < 5 ISO17025 < 5 < 5 ug/ 2-Chlorotoluene < 5 ISO17025 <! ug/ < 5 1,3,5-Trimethylbenzene < 5 ISO17025 ug/ < 5 < " 4-Chlorotoluene ug/ < 5 ISO17025 < 5 < 5 tert-Butylbenzene ug/ < 5 ISO17025 < 5 < ! 1,2,4-Trimethylbenzene < 5 ISO17025 ug/ < 5 < 5 sec-Butylbenzene ug/l ISO17025 < 5 ISO17025 < 5 < 5 p-Isopropyltoluene ug/ ISO17025 1,3-Dichlorobenzene < 5 ug/ < 5 1,4-Dichlorobenzene ug/ < 5 ISO17025 < 5 < 5

< 5

< 10

< !

< 10





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-49468
DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 29/09/2016

Matrix	Analysed	Determinand	Brief Method Description	Method
маспх	On	Determinand	Brief Method Description	No
14/-4	UF	Alliadiade	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end	
Water	UF	Alkalinity	point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF		Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF		Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR deter	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12,	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
water		C12-C16, C16-C21, C21-C40)		LIUT
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered UF Unfiltered





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QTS Environmental Report No: 16-49610

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 26/09/2016

Sample Scheduled Date: 26/09/2016

Report Issue Number: 1

Reporting Date: 30/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis



n-Butylbenzene

1,2-Dichlorobenzene

,2-Dibromo-3-chloropropane

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



			ıeı	: 01622 8504	10		
Water Analysis Certifica	ete - Volatile Organ	ic Con	anounds (VOC)	\			
QTS Environmental Repor		ic con	Date Sampled	19/09/16	19/09/16		
DSM Demolition Ltd	1101 10 15010		Time Sampled		None Supplied		
Site Reference: ex BA Tubes Redditch			•	DSM10726/RA/7/			
			,	5	5		
Project / Job Ref: C1072	6	,	Additional Refs	None Supplied	None Supplied		
Order No: 78347			Depth (m)	None Supplied	None Supplied		
Reporting Date: 30/09/2	2016	Q	TSE Sample No	229391	229392		
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5		< 5	< 5		
Vinyl Chloride	ug/l	< 5		< 5	< 5		
Chloromethane	ug/l	< 5		< 5	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5		
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10		
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethane cis-1,2-Dichloroethene	ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5		
2,2-Dichloropropane	ug/l ug/l	< 5		< 5	< 5		
Chloroform	ug/l	< 5	ISO17025	< 5	< 5		
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10		
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dichloroethane	ug/l	< 10		< 10	< 10		
Benzene	ug/l	< 1	ISO17025	< 1	< 1		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Bromodichloromethane	ug/l	< 5		< 5	< 5		
Dibromomethane TAME	ug/l	< 5 < 5		< 5	< 5		
cis-1,3-Dichloropropene	ug/l ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5		
Toluene	ug/l	< 5	ISO17025	< 5	< 5		
trans-1,3-Dichloropropene	ug/l	< 5		< 5	< 5		
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
1,3-Dichloropropane	ug/l	< 5		< 5	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Dibromochloromethane	ug/l	< 5		< 5	< 5		
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5		
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5		
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10		
o-Xylene	ug/l	< 5 < 5	ISO17025 ISO17025	< 5	< 5		
Styrene Bromoform	ug/l ug/l	< 10	ISO17025	< 5 < 10	< 5		
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 10 < 5		
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10		
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5		
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5		
1,3-Dichlorobenzene	ug/l	< 5		< 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		

< 5

< 10

< 10

ISO17025

ISO17025

ISO17025 ISO17025

ug/l

ug/l

ug/l

< 10





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-49610
DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 30/09/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No	
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103	
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101	
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102	
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112	
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109	
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116	
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115	
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115	
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115	
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111	
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104	
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR deter	E110	
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123	
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104	
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104	
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109	
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102	
Leachate	F		Based on National Rivers Authority leaching test 1994	E301	
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302	
Water	F		Determination of metals by filtration followed by ICP-MS	E102	
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104	
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109	
Water	UF	Manada adala Dharad		E121	
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105	
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	E108	
Water	ÜF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111	
Water	UF		Determination of pH by electrometric measurement	E107	
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109	
Water	UF		Determination of redox potential by electrometric measurement	E113	
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109	
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118	
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106	
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111	
Water	UF		Low heat with persulphate addition followed by IR detection	E110	
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104	
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104	
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101	
Water	UF		Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101	

Key

F Filtered UF Unfiltered





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QTS Environmental Report No: 16-50177

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 10/10/2016

Sample Scheduled Date: 10/10/2016

Report Issue Number: 1

Reporting Date: 14/10/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CR

Authorised by:

Russell Jarvis





4480

QTS Environmental Report No: 16-50177		Date Sampled	26/09/16	26/09/16	03/10/16	03/10/16	
DSM Demolition Ltd		Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: ex BA Tubes Redditch		TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/	DSM10726/RA/7/	DSM10726/RA/8/	
			6	6	7	7	
Project / Job Ref: C10726		Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 78347		Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 14/10/2016	Q	TSE Sample No	231654	231655	231656	231657	
Determinand Uni	t RL	Accreditation					
Dichlorodifluoromethane ug.	/ < 5	ISO17025	_ F	_ 5	/ 5	_ 5	

Reporting Date: 14/10/2	016	Q	TSE Sample No	231654	231655	231656	231657	
Determinand	Unit	RL	Accreditation					
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloroform	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1-Dichloropropene Carbon Tetrachloride	ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	< 5	
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10			< 5	
Benzene	ug/l	< 10	ISO17025		< 10	< 10	< 10	
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 1 < 5	< 1 < 5	< 1 < 5	< 1 < 5	
Trichloroethene	ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	< 5	
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5 < 5	< 5	< 5	
Dibromomethane	ug/l ug/l	< 5	ISO17025	< 5	< 5 < 5	< 5	< 5	
TAME	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
trans-1,3-Dichloropropene			ISO17025	< 5	< 5	< 5		
1,1,2-Trichloroethane	<u> </u>	< 10	ISO17025	< 10	< 10	< 10		
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromoform	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
Isopropylbenzene		< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
n-Propylbenzene		< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
n-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
.,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10	< 10	< 10		
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	





Soil Analysis Certificate - Methodology	& Miscellaneous Information
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QTS Environmental Report No: 16-50177

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 14/10/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No					
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103					
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101					
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102					
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112					
Water	F	Chloride	Chloride Determination of chloride by filtration & analysed by ion chromatography						
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by						
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry						
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry						
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115					
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111					
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104					
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110					
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123					
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104					
Water	F		Determination of liquid: liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104					
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109					
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102					
Leachate	F		Based on National Rivers Authority leaching test 1994	E301					
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302					
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102					
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104					
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109					
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121					
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105					
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108					
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111					
Water	UF		Determination of pH by electrometric measurement	E107					
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109					
Water	UF		Determination of redox potential by electrometric measurement	E113					
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109					
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118					
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106					
Water	UF		Gravimetrically determined through liquid:liquid extraction with toluene	E111					
Water	UF	` '	Low heat with persulphate addition followed by IR detection	E110					
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104					
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104					
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101					
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101					

<u>Key</u>

F Filtered **UF Unfiltered**





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QTS Environmental Ltd

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QTS Environmental Report No: 16-50529

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 17/10/2016

Sample Scheduled Date: 17/10/2016

Report Issue Number: 1

Reporting Date: 21/10/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CR

Authorised by:

Russell Jarvis





4480

Water Analysis Certifica QTS Environmental Repor			Date Sampled		10/10/16	12/10/16	
DSM Demolition Ltd	t NO. 10-30329		Time Sampled				
Site Reference: ex BA Tul	ac Bodditch	•					
oite Reference: ex da fui	Additional Refs Depth (m)		DSM10726/RA/7/ 8 None Supplied	DSM10726/RA/8/ 8	DSM10726/DIS/2		
Project / Job Ref: C10720				None Supplied	None Supplied		
Order No: 78347			None Supplied		None Supplied		
Reporting Date: 21/10/2	016	QTSE Sample No		233303	233304	233305	
Determinend	11	DI A					
Determinand Dichlorodifluoromethane	Unit ug/l	RL < 5	Accreditation ISO17025	< 5	< 5	< 5	
Vinyl Chloride	ug/l	< 5		< 5	< 5	< 5	
Chloromethane	ug/l	< 5		< 5	<u> </u>	<u> </u>	
Chloroethane	ug/l	< 5		< 5	< 5	< 5	
Bromomethane	ug/l	< 5		< 5	< 5	< 5	
Trichlorofluoromethane	ug/l	< 5		< 5	< 5	< 5	
1,1-Dichloroethene		< 5		< 5	< 5	< 5	
1,1-Dichioroethene MTBE	ug/l ug/l	< 10		< 10	< 10	< 5 < 10	
trans-1,2-Dichloroethene	ug/l	< 5		< 10 < 5	< 10 < 5	< 10 < 5	
1,1-Dichloroethane	ug/l	< 5 < 5		< 5 < 5	< 5 < 5	< 5 < 5	
cis-1,2-Dichloroethene	ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 16	
2,2-Dichloropropane	ug/l	< 5		< 5	< 5 < 5	16 < 5	
Chloroform	ug/l	< 5		< 5	< 5	< 5	
Bromochloromethane	ug/l	< 10		< 10	< 10	< 10	
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	<u> </u>	<u> </u>	
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	<u> </u>	<u> </u>	
1,2-Dichloroethane	ug/l	< 10			< 10	< 10	
Benzene	ug/l	< 1	ISO17025		< 10	< 10	
1,2-Dichloropropane	ug/l				< 5		
Trichloroethene	ug/l	< 5	ISO17025	7	<u> </u>	60	
Bromodichloromethane	ug/l	< 5	ISO17025	/ < 5	< 5	< 5	
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
TAME	ug/l	< 5	ISO17025		< 5	< 5	
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025		< 5	< 5	
Toluene	ug/l	< 5	ISO17025		< 5	< 5	
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,1,2-Trichloroethane	ug/l	< 10			< 10	< 10	
1,3-Dichloropropane	ug/l	< 5	ISO17025		< 5	< 5	
Tetrachloroethene	ug/l	< 5	ISO17025		< 5	< 5	
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025		< 5	< 5	
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
m,p-Xylene	ug/l	< 10		< 10	< 10	< 10	
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Styrene	ug/l	< 5	ISO17025		< 5	< 5	
Bromoform	ug/l	< 10		< 10	< 10	< 10	
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane	,	< 10		< 10	< 10	< 10	
1,2,3-Trichloropropane		< 5	ISO17025		< 5	< 5	
n-Propylbenzene	_	< 5	ISO17025	< 5	< 5	< 5	
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ug/l

Bromobenzene

2-Chlorotoluene

4-Chlorotoluene

tert-Butylbenzene

sec-Butylbenzene

p-Isopropyltoluene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,2-Dichlorobenzene

Hexachlorobutadiene

,2-Dibromo-3-chloropropane

n-Butylbenzene

1,3,5-Trimethylbenzene

1,2,4-Trimethylbenzene





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-50529

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 21/10/2016

		<u> </u>		
Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF		Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	•	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	
Water	UF		Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
	_		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	
Water	F	C12-C16, C16-C21, C21-C40)		E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	-	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	1 1	Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	·	Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
	UF		Low heat with persulphate addition followed by IR detection	E110
Water Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E110
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>





QTS Environmental Ltd

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QTS Environmental Report No: 16-50816

Site Reference: Ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 24/10/2016

Sample Scheduled Date: 24/10/2016

Report Issue Number: 1

Reporting Date: 28/10/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CR

Authorised by:

Russell Jarvis

Associate Director of Client Services





4480

Vater Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-50816	Date Sampled	17/10/16	17/10/16	21/10/16						
DSM Demolition Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Ex BA Tubes Redditch	TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/	DSM10726/DIS/3						
		9	9							
Project / Job Ref: C10726	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: 78347	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 28/10/2016	QTSE Sample No	234853	234854	234855						

Order No: 78347			Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 28/10/2	2016	Q٦	TSE Sample No	234853	234854	234855	
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Vinyl Chloride		< 5	ISO17025	< 5	< 5	< 5	
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
, MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	
trans-1,2-Dichloroethene		< 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloroethane		< 5	ISO17025	< 5	< 5	< 5	
cis-1,2-Dichloroethene	J.	< 5	ISO17025	< 5	< 5	1644	
2,2-Dichloropropane		< 5	ISO17025	< 5	< 5	< 5	
Chloroform		< 5	ISO17025	< 5	< 5	< 5	
Bromochloromethane		< 10	ISO17025	< 10	< 10	< 10	
1,1,1-Trichloroethane	J,	< 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloropropene		< 5	ISO17025	< 5	< 5	< 5	
Carbon Tetrachloride		< 5	ISO17025	< 5	< 5	< 5	
1,2-Dichloroethane	J.	< 10	ISO17025	< 10	< 10	< 10	
Benzene	J,	< 1	ISO17025	< 1	< 1	< 1	
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5	10530	
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
TAME	ug/l	< 5	ISO17025	< 5	< 5	< 5	
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Toluene		< 5	ISO17025	< 5	< 5	< 5	
trans-1,3-Dichloropropene	J.		ISO17025	< 5	< 5	< 5	
1,1,2-Trichloroethane	_	< 10	ISO17025	< 10	< 10	< 10	
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5	23	
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,2-Dibromoethane		< 5	ISO17025	< 5	< 5	< 5	
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
m,p-Xylene		< 10	ISO17025	< 10	< 10	< 10	
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Bromoform	ug/l	< 10	ISO17025	< 10	< 10	< 10	
Isopropylbenzene		< 5	ISO17025	< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane		< 10	ISO17025	< 10	< 10	39	
1,2,3-Trichloropropane		< 5	ISO17025	< 5	< 10 < 5	< 5	
n-Propylbenzene		< 5	ISO17025	< 5	< 5	< 5 < 5	
Bromobenzene	ug/l	< 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
1,3,5-Trimethylbenzene	ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
4-Chlorotoluene	<u>.</u>	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
tert-Butylbenzene	5,	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
1,2,4-Trimethylbenzene	5,	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
sec-Butylbenzene		< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
	5,	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
p-Isopropyltoluene		< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	
1,3-Dichlorobenzene	Ű,	< 5 < 5	ISO17025	< 5 < 5			
1,4-Dichlorobenzene	Ű,	< 5 < 5		< 5 < 5	< 5 < 5	< 5	
n-Butylbenzene			ISO17025 ISO17025			< 5	
1,2-Dichlorobenzene	 	< 5		< 5	< 5	< 5	
.,2-Dibromo-3-chloropropane		< 10	ISO17025	< 10	< 10	< 10	
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5	< 5	





4480

QTS Environmental Report No: 16-50816

DSM Demolition Ltd

Site Reference: Ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 28/10/2016

		<u> </u>		
Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF		Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	•	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	
Water	UF		Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
	_		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	
Water	F	C12-C16, C16-C21, C21-C40)		E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	-	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	1 1	Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	·	Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
	UF		Low heat with persulphate addition followed by IR detection	E110
Water Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E110
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>





QTS Environmental Ltd

Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN

ME1/2JN **t:** 01622 850410

russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-51121

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 31/10/2016

Sample Scheduled Date: 31/10/2016

Report Issue Number: 1

Reporting Date: 03/11/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elyrine-gole



m,p-Xylene

Bromoform

Isopropylbenzene

n-Propylbenzene

Bromobenzene

2-Chlorotoluene

4-Chlorotoluene

tert-Butylbenzene

sec-Butylbenzene

p-Isopropyltoluene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,2-Dichlorobenzene

Hexachlorobutadiene

,2-Dibromo-3-chloropropane

n-Butylbenzene

1,1,2,2-Tetrachloroethane

1,2,3-Trichloropropane

1,3,5-Trimethylbenzene

1,2,4-Trimethylbenzene

o-Xylene

Styrene

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



4480

Water Analysis Certifica	ate - Volatile Organ	ic Com	pounds (VOC)				
QTS Environmental Repor	rt No: 16-51121		Date Sampled	24/10/16	24/10/16		
DSM Demolition Ltd		Time Sampled		None Supplied	None Supplied		
Site Reference: ex BA Tu	bes Redditch	TP / BH No		DSM10726/RA/7/	DSM10726/RA/8/		
				10	10		
Project / Job Ref: C1072	6		Additional Refs	None Supplied	None Supplied		
Order No: 78347			Depth (m)	None Supplied	None Supplied		
Reporting Date: 03/11/2	2016	Q.	TSE Sample No	235933	235934		
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5		
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5		
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10		
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Chloroform	ug/l	< 5	ISO17025	< 5	< 5		
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10		
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dichloroethane		< 10	ISO17025	< 10	< 10		
Benzene		< 1	ISO17025		< 1		
1,2-Dichloropropane		< 5	ISO17025	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Bromodichloromethane				< 5	< 5		
Dibromomethane			ISO17025	< 5	< 5		
TAME	ug/l		ISO17025	< 5	< 5		
cis-1,3-Dichloropropene			ISO17025	< 5	< 5		
Toluene			ISO17025	< 5	< 5		
trans-1,3-Dichloropropene				< 5	< 5		
1,1,2-Trichloroethane			ISO17025	< 10			
1,3-Dichloropropane				< 5	< 5		
Tetrachloroethene	51				< 5		
Dibromochloromethane	5,			< 5	< 5		
1,2-Dibromoethane	5,				< 5		
Chlorobenzene	<u> </u>			< 5	< 5		
1,1,1,2-Tetrachloroethane	S.				< 5		
Ethyl Benzene		< 5		< 5	< 5		
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Soil	Analysis	Certificate -	Methodology	& Miscellaneous	Information
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QTS Environmental Report No: 16-51121

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 03/11/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of $1,5$ diphenylcarbazide followed by cc	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid: liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF		Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	` '	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>







QTS Environmental Ltd

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QTS Environmental Report No: 16-51394

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 07/11/2016

Sample Scheduled Date: 07/11/2016

Report Issue Number: 1

Reporting Date: 11/11/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole



n-Butylbenzene

1,2-Dichlorobenzene

Hexachlorobutadiene

2-Dibromo-3-chloropropane

ug/l

ug/

ug/l

< 5

< 5

< 10

ISO17025

ISO17025

ISO17025

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



Water Analysis Certificate - Volatile Organic Compounds (VOC QTS Environmental Report No: 16-51394 **Date Sampled** 31/10/16 31/10/16 DSM Demolition Ltd Time Sampled None Supplied None Supplied Site Reference: ex BA Tubes Redditch TP / BH No DSM10726/RA/7/ DSM10726/RA/8/ 1: Project / Job Ref: C10726 Additional Refs None Supplied None Supplied Order No: 78347 Depth (m) None Supplied None Supplied Reporting Date: 11/11/2016 QTSE Sample No 236940 236941 Determinand Unit RL Accreditation Dichlorodifluoromethane ug/ < 5 ISO17025 Vinyl Chloride ISO17025 uq/ ISO17025 Chloromethane < 5 < 5 < 5 ug/ ISO17025 Chloroethane ug/ < 5 Bromomethane ug/ < 5 ISO17025 < 5 < " Trichlorofluoromethane ug/ < 5 ISO17025 < 5 < 5 ISO17025 1,1-Dichloroethene ug/ < 10 ISO17025 < 10 < 10 uq/ trans-1,2-Dichloroethene ISO17025 < 5 ua/ < 5 1,1-Dichloroethane < 5 ISO17025 < 5 ug/ < 5 cis-1,2-Dichloroethene ug/ < 5 ISO17025 < 5 < " 2,2-Dichloropropane < 5 ISO17025 < 5 ug/l < 5 ISO17025 Chloroform ug/l Bromochloromethane < 10 ISO17025 < 10 < 10 uq/ ISO17025 1,1,1-Trichloroethane < 5 < 5 < 5 ug/l ISO1702 1,1-Dichloropropene ug/ < 5 < 5 < 5 Carbon Tetrachloride ug/ < 5 ISO17025 < 5 < 1 1,2-Dichloroethane < 10 ISO17025 < 10 < 10 ug/ Benzene ug/l ISO17025 1,2-Dichloropropane < 5 ISO17025 <! <! ug/ Trichloroethene < 5 ISO17025 ug/ < 5 < 5 Bromodichloromethane < 5 ISO17025 ug/ < 5 < 5 Dibromomethane ug/ < 5 ISO17025 < 5 < 5 TAME ug/ < 5 ISO17025 cis-1,3-Dichloropropene < 5 ISO17025 ug/ Toluene ug/ < 5 ISO17025 <! <! trans-1,3-Dichloropropene < 5 ISO17025 < 5 < 5 ug/ 1,1,2-Trichloroethane < 10 ISO17025 < 10 < 10 ug/ 1,3-Dichloropropane ug/ < 5 ISO17025 < 1 < 1 Tetrachloroethene ug/ < 5 ISO17025 Dibromochloromethane ISO17025 ug/l 1,2-Dibromoethane < 5 ISO17025 < 5 < 5 ug/ ISO17025 Chlorobenzene < 5 ug/ < 5 1,1,1,2-Tetrachloroethane ISO17025 < 5 ug/ < 5 < 5 Fthyl Benzene ua/ < 5 ISO17025 < 5 < 1 m,p-Xylene ug/ < 10 ISO17025 < 10 < 10 < 5 ISO17025 < 5 o-Xylene ug/ Styrene ug/ ISO17025 Bromoform < 10 ISO17025 < 10 < 10 ug/ ISO17025 Isopropylbenzene ug/ < 5 1,1,2,2-Tetrachloroethane < 10 ISO17025 ua/ < 10 < 10 ISO17025 1,2,3-Trichloropropane ug/ < 5 < 5 < 5 n-Propylbenzene < 5 ISO17025 ug/ Bromobenzene < 5 ISO17025 < 5 < 5 ug/ 2-Chlorotoluene < 5 ISO17025 <! ug/ < 5 1,3,5-Trimethylbenzene < 5 ISO17025 ug/ < 5 < " 4-Chlorotoluene ug/ < 5 ISO17025 < 5 < 5 tert-Butylbenzene ug/ < 5 ISO17025 < 5 < ! 1,2,4-Trimethylbenzene < 5 ISO17025 ug/ < 5 sec-Butylbenzene ug/l ISO17025 < 5 ISO17025 < 5 < 5 p-Isopropyltoluene ug/ ISO17025 1,3-Dichlorobenzene < 5 ug/ < 5 1,4-Dichlorobenzene ug/ < 5 ISO17025 < 5 < 5

< 5

< 10

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Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-51394
DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 11/11/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF		Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR determination	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of DAH compounds by concentration through SPE cartridge, collection in	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethan	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	ÜF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key





QTS Environmental Ltd

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Kent
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QTS Environmental Report No: 16-51731

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 15/11/2016

Sample Scheduled Date: 15/11/2016

Report Issue Number: 1

Reporting Date: 18/11/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CR

Authorised by:

Russell Jarvis

Associate Director of Client Services





4480

Water Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-51731	Date Sampled	07/11/16	07/11/16	14/11/16	14/11/16	14/11/16				
DSM Demolition Ltd	Time Sampled	None Supplied								
Site Reference: ex BA Tubes Redditch	TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/	DSM10726/RA/7/	DSM10726/RA/8/	DSM10726/DIS/4				
		12	12	13	13					
Project / Job Ref: C10726	Additional Refs	None Supplied								
Order No: 78347	Depth (m)	None Supplied								
Reporting Date: 18/11/2016	QTSE Sample No	238229	238230	238231	238232	238233				

Order No: 78347			Depth (m)	None Supplied				
Reporting Date: 18/11/2016			TSE Sample No	238229	238230	238231	238232	238233
Determinand	Unit	RL						
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	5.	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	11
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	4443
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chloroform	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Carbon Tetrachloride		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	23880
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
TAME	ug/l	< 5	ISO17025	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Toluene	J,		ISO17025	< 5	< 5	< 5		
trans-1,3-Dichloropropene		< 5	ISO17025	< 5	< 5	< 5		< 5
1,1,2-Trichloroethane	<u>. </u>	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	43
Dibromochloromethane	ug/l	< 5		< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Ethyl Benzene	5,	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
m,p-Xylene		< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Bromoform	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
Isopropylbenzene		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	<u> </u>	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
1,2,3-Trichloropropane		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
n-Propylbenzene		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
4-Chlorotoluene	5,	< 5	ISO17025	< 5	< <u>5</u>	< 5	< 5	< 5
tert-Butylbenzene	5.	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
sec-Butylbenzene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
p-Isopropyltoluene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	5.	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
n-Butylbenzene		< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	<u>, </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
.,2-Dibromo-3-chloropropane	<u> </u>		ISO17025	< 10	< 10			< 10
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-51731

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 18/11/2016

		<u> </u>		
Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF		Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	•	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	
Water	UF		Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
	_		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	
Water	F	C12-C16, C16-C21, C21-C40)		E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	-	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	1 1	Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	·	Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
	UF		Low heat with persulphate addition followed by IR detection	E110
Water Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E110
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>





QTS Environmental Ltd

Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN

t: 01622 850410 russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-51974

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 21/11/2016

Sample Scheduled Date: 21/11/2016

Report Issue Number: 1

Reporting Date: 24/11/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elyrine-gole





4480

Water Analysis Certificate - Volatile Organic Compounds (VOC)									
QTS Environmental Report No: 16-51974	Date Sampled	21/11/16	21/11/16	21/11/16					
DSM Demolition Ltd	Time Sampled	None Supplied	None Supplied	None Supplied					
Site Reference: ex BA Tubes Redditch	TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/	DSM10726/DIS/5					
		14	14						
Project / Job Ref: C10726	Additional Refs	None Supplied	None Supplied	None Supplied					
Order No: 78347	Depth (m)	None Supplied	None Supplied	None Supplied					
Reporting Date: 24/11/2016	QTSE Sample No	239316	239317	239318					

Peterminand Under Dichlorodifluoromethane Under Chloromethane Unde	it RL / < 5 / < 5	ISO17025	239316	239317	239318	
Dichlorodifluoromethane u Vinyl Chloride u Chloromethane u	/ < 5 / < 5	ISO17025				
Dichlorodifluoromethane u Vinyl Chloride u Chloromethane u	/ < 5 / < 5	ISO17025				
Vinyl Chloride u Chloromethane u	/l < 5		_1			
Chloromethane u	"		< 5	< 5	< 5	
	/l < 5	ISO17025	< 5	< 5	< 5	
		ISO17025	< 5	< 5	< 5	
Chloroethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Bromomethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Trichlorofluoromethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloroethene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
MTBE u	ı/l < 10	ISO17025	< 10	< 10	< 10	
trans-1,2-Dichloroethene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloroethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
cis-1,2-Dichloroethene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
2,2-Dichloropropane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Chloroform u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Bromochloromethane u	ı/l < 10	ISO17025	< 10	< 10	< 10	
1,1,1-Trichloroethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
1,1-Dichloropropene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Carbon Tetrachloride u	ı/l < 5	ISO17025	< 5	< 5	< 5	
1,2-Dichloroethane u	ı/l < 10	ISO17025	< 10	< 10	< 10	
Benzene u	ı/l < 1	ISO17025	< 1	< 1	< 1	
1,2-Dichloropropane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Trichloroethene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Bromodichloromethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Dibromomethane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
TAME u	ı/l < 5	ISO17025	< 5	< 5	< 5	
cis-1,3-Dichloropropene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Toluene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
trans-1,3-Dichloropropene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
1,1,2-Trichloroethane u	/l < 10	ISO17025	< 10	< 10	< 10	
1,3-Dichloropropane u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Tetrachloroethene u	ı/l < 5	ISO17025	< 5	< 5	< 5	
Dibromochloromethane u	ı/l < 5		< 5	< 5	< 5	
1,2-Dibromoethane u	ı/l < 5		< 5	< 5	< 5	
Chlorobenzene u	ı/l < 5		< 5	< 5	< 5	
1,1,1,2-Tetrachloroethane u			< 5	< 5	< 5	
Ethyl Benzene u			< 5	< 5	< 5	
m,p-Xylene u			< 10	< 10	< 10	
o-Xylene u	_		< 5	< 5	< 5	
Styrene u			< 5	< 5	< 5	
Bromoform u			< 10	< 10	< 10	
Isopropylbenzene u			< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane u			< 10	< 10	< 10	
1,2,3-Trichloropropane u			< 5	< 5	< 5	
n-Propylbenzene u			< 5	< 5	< 5	
Bromobenzene u			< 5	< 5	< 5	
2-Chlorotoluene u			< 5	< 5	< 5	
1,3,5-Trimethylbenzene u			< 5	< 5	< 5	
4-Chlorotoluene u			< 5	< 5	< 5	
tert-Butylbenzene u	_		< 5	< 5	< 5	
1,2,4-Trimethylbenzene u			< 5	< 5	< 5	
sec-Butylbenzene u			< 5	< 5	< 5	
p-Isopropyltoluene u			< 5	< 5	< 5	
1,3-Dichlorobenzene u			< 5	< 5	< 5	
1,4-Dichlorobenzene u			< 5	< 5	< 5	
n-Butylbenzene u			< 5	< 5	< 5	
1,2-Dichlorobenzene u			< 5	< 5	< 5	
	/ < 10		< 10	< 10	< 10	
Hexachlorobutadiene u	/l < 5	ISO17025	< 5	< 5	< 5	





Soil Analysis Certificate - Methodology & Miscellaneous	Information
---	--------------------

QTS Environmental Report No: 16-51974

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 24/11/2016

Matrica	Analmaad	Determine and	Dailed Mathead Description	Madaad
Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F			E109
Leachate	'		Determination of Ca and Mg by ICP-MS followed by calculation Based on National Rivers Authority leaching test 1994	E301
Leachate	•	·	Based on BS EN 12457 Pt1, 2, 3	E301
Water	F			E102
Water	F		Determination of metals by filtration followed by ICP-MS Determination of liquid:liquid extraction with hexane followed by GI-FID	E102
Water	F	, ,		E104
Water	UF		Determination of nitrate by filtration & analysed by ion chromatography Determination of phenols by distillation followed by colorimetry	E109
vvatei	Ul-	Monoriyane Phenor	Determination of DAH compounds by concentration through SPE cartridge, collection in	LIZI
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F		Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF		Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>





QTS Environmental Ltd

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QTS Environmental Report No: 16-52476

Site Reference: ex BA Tubes, Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 06/12/2016

Sample Scheduled Date: 06/12/2016

Report Issue Number: 1

Reporting Date: 09/12/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elyrice-gole



2-Dibromo-3-chloropropane

Hexachlorobutadien

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



Water Analysis Certificate - Volatile Organic Compounds (VOC QTS Environmental Report No: 16-52476 **Date Sampled** 28/11/16 28/11/16 28/11/16 05/12/16 05/12/16 DSM Demolition Ltd Time Sampled None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: ex BA Tubes, Redditch TP / BH No DSM10726/RA/7/ DSM10726/RA/8/ DSM10726/DIS/6 DSM10726/RA/7/ DSM10726/RA/8/ Project / Job Ref: C10726 Additional Refs None Supplied None Supplied None Supplied None Supplied None Supplied Order No: 78347 Depth (m) None Supplied None Supplied None Supplied None Supplied None Supplied Reporting Date: 09/12/2016 QTSE Sample No 241547 241546 241548 241549 241550 Determinand Unit RL Accreditation Dichlorodifluoromethane ug/ < 5 ISO17025 < 5 Vinyl Chloride ISO17025 uq/ Chloromethane < 5 ISO17025 < 5 < 5 < 5 < ! ug/ ISO1702 Chloroethane ug/ < 5 Bromomethane ug/ < 5 ISO17025 < 5 < 5 Trichlorofluoromethane ug/ < 5 ISO17025 < 5 < 5 < 5 < 5 < 5 1,1-Dichloroethene ug/ ISO17025 < 5 < 10 ISO17025 < 10 < 10 < 10 < 10 < 10 uq/ trans-1,2-Dichloroethene ISO17025 < 5 < 5 ua/ < 5 1,1-Dichloroethane < 5 ISO17025 < 5 ug/ < 5 < 5 < 5 < 5 cis-1,2-Dichloroethene ug/ < 5 ISO17025 < 5 < " < " < 5 < 5 2,2-Dichloropropane < 5 ISO17025 < 5 < 5 < 5 ug/ < 5 < 5 ISO17025 Chloroform ug/ Bromochloromethane < 10 ISO17025 < 10 < 10 < 10 < 10 < 10 uq/ ISO17025 < 5 1,1,1-Trichloroethane < 5 < 5 < 5 < 5 ug/ < 5 ISO1702 1,1-Dichloropropene ug/ < 5 < 5 < 5 < 5 < 5 < 5 Carbon Tetrachloride ug/ < 5 ISO17025 < 5 < -< -< 5 1,2-Dichloroethane < 10 ISO17025 < 10 < 10 < 10 < 10 < 10 ug/ Benzene ISO17025 ug/ 1,2-Dichloropropane < 5 ISO17025 <! <! < 5 < < ! ug/ Trichloroethene < 5 ISO17025 ug/ <! < 5 < 5 < ! < 5 Bromodichloromethane < 5 ISO17025 ug/ < 5 < 5 < 5 < 5 < 5 Dibromomethane ug/ < 5 ISO17025 < 5 < 5 < 5 < 5 < 5 TAME ug/ < 5 ISO17025 < 5 cis-1,3-Dichloropropene < 5 ISO17025 ug/ Toluene < 5 ISO17025 <u><</u> 5 ug/ <! trans-1,3-Dichloropropene < 5 ISO17025 < 5 < 5 < 5 < ! < ! ug/ < 10 ISO17025 < 10 < 10 < 10 < 10 1,1,2-Trichloroethane ug/ < 101,3-Dichloropropane ug/ < 5 ISO17025 < 1 < 1 < -< -< 5 Tetrachloroethene ug/ < 5 ISO17025 Dibromochloromethane ISO17025 < 5 ug/l 1,2-Dibromoethane < 5 ISO17025 < 5 < 5 < 5 < 5 ug/ <! < 5 Chlorobenzene < 5 ISO17025 ug/ <! ISO17025 1,1,1,2-Tetrachloroethane < 5 ug/ < 5 < 5 < 5 < 5 < 5 Fthyl Benzene ua/ < 5 ISO17025 < 1 < 1 < -< -< m,p-Xylene ug/ < 10 ISO17025 < 10 < 10 < 10 < 10 < 10 < 5 ISO17025 o-Xylene ug/ < 5 Styrene ug/ ISO17025 < 5 Bromoform < 10 ISO17025 < 10 < 10 < 10 < 10 < 10 uq/ Isopropylbenzene ISO17025 ug/ 1,1,2,2-Tetrachloroethane < 10 ISO17025 ua/ < 10 < 10 < 10 < 10 < 10 1,2,3-Trichloropropane ug/ < 5 ISO17025 < 5 < 5 < 5 < 5 < 5 n-Propylbenzene < 5 ISO17025 ug/ Bromobenzene < 5 ISO17025 < 5 < 5 < 5 < 5 < 5 ug/ < 5 2-Chlorotoluene < 5 ISO17025 < 5 uq/ <! 1,3,5-Trimethylbenzene < 5 ISO17025 ug/ < " < " < 5 < 1 < 5 4-Chlorotoluene ug/ < 5 ISO17025 <! < 5 < 5 < 5 < 5 tert-Butylbenzene ug/ < 5 ISO17025 < ! < 5 < 5 1,2,4-Trimethylbenzene < 5 ISO17025 ug/ < 5 < 5 sec-Butylbenzene ISO17025 ug/ < 5 p-Isopropyltoluene ISO17025 < 5 < 5 < 5 uq/ ISO17025 1,3-Dichlorobenzene < 5 ug/ <! 1,4-Dichlorobenzene ug/ < 5 ISO17025 < 5 < 5 < 5 < 5 < 5 n-Butylbenzene ug/l < 5 ISO17025 < 5 < ! < 5 < 5 < r 1,2-Dichlorobenzene < 5 ug/ ISO17025

< 10

< 10

< 10

< 10

< 10

< 10

ug/

ISO17025





Water Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 16-52476 Date Sampled 05/12/16

DSM Demolition Ltd Time Sampled None Supplied

Site Reference: ex BA Tubes, Redditch TP / BH No DSM10726/DIS/7

Project / Job Ref: C10726 Additional Refs None Supplied Order No: 78347 Depth (m) None Supplied Reporting Date: 09/12/2016 QTSE Sample No 241551

Order No: 78347			Depth (m)	None Supplied		
Reporting Date: 09/12/2	2016	Q	TSE Sample No	241551		
Determinand	Unit	RL	Accreditation			
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5		
Vinyl Chloride	ug/l	< 5	ISO17025	< 5		
Chloromethane	ug/l	< 5	ISO17025	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5		
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5		
MTBE	ug/l	< 10	ISO17025	< 10		
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5		
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5		
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5		
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5		
Chloroform	ug/l	< 5	ISO17025	< 5		
Bromochloromethane		< 10	ISO17025	< 10		
	ug/l	< 5	ISO17025	< 5		
1,1,1-Trichloroethane	ug/l		ISO17025			
1,1-Dichloropropene	ug/l	< 5		< 5		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5		
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10		
Benzene	ug/l	< 1	ISO17025	< 1		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5		
Bromodichloromethane	ug/l	< 5	ISO17025	< 5		
Dibromomethane	ug/l	< 5	ISO17025	< 5		
TAME	ug/l	< 5	ISO17025	< 5		
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5		
Toluene	ug/l	< 5	ISO17025	< 5		
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5		
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10		
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5		
Dibromochloromethane	ug/l	< 5	ISO17025	< 5		
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5		
Chlorobenzene	ug/l	< 5	ISO17025	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5		
Ethyl Benzene	ug/l	< 5	ISO17025	< 5		
m,p-Xylene	ug/l	< 10	ISO17025	< 10		
o-Xylene	ug/l	< 5	ISO17025	< 5		
Styrene	ug/l	< 5	ISO17025	< 5		
Bromoform	ug/l	< 10	ISO17025	< 10		
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	1	
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10		
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5 < 5	 	
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	 	
1,3,5-Trimethylbenzene		< 5	ISO17025		 	
	ug/l	< 5		< 5	1	
4-Chlorotoluene tert-Butylbenzene	ug/l	< 5 < 5	ISO17025 ISO17025	< 5	-	
,	ug/l			< 5	-	
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5		
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5		
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5		
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	ļ	
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5		
n-Butylbenzene	ug/l	< 5	ISO17025	< 5		
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5		
.,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10		
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5		





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-52476
DSM Demolition Ltd

Site Reference: ex BA Tubes, Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 09/12/2016

Matrix	Analysed	Determinand	Brief Method Description	Method
	On			No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF		Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR deter	
Water	UF		Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
			Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	
Water	F	C12-C16, C16-C21, C21-C40)		E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of intrace by intraction a analysed by foil circumstagraphy Determination of phenois by distillation followed by colorimetry	E121
Water		,	Determination of PAH compounds by concentration through SPE cartridge, collection in	
Water	F	PAH - Speciated (EPA 16)	dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethan	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	рН	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluono Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF			E111
water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
		TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for	
Water	F		C8 to C35. C5 to C8 by headspace GC-MS	E104
		C12-C16, C16-C21, C21-C35)	co to east, as to co by freedaspace de Fis	
		TPH LQM (ali: C5-C6, C6-C8, C8-C10,		
Water	F	C10-C12, C12-C16, C16-C35, C35-C44,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for	E104
water	'	aro: C5-C7, C7-C8, C8-C10, C10-C12,	C8 to C44. C5 to C8 by headspace GC-MS	LIUT
		C12-C16, C16-C21, C21-C35, C35-C44)		
Water	UF	VOCa	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF			E101
Water	UF	VPH (C0-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	EIUI

Key





QTS Environmental Ltd

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russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-53082

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 19/12/2016

Sample Scheduled Date: 19/12/2016

Report Issue Number: 1

Reporting Date: 21/12/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elyriae-gole





Water Analysis Certificate - Volatile Organic Compounds (VOC)
QTS Environmental Report No: 16-53082 Date Sampled Date Sampled Time Sampled 12/12/16 12/12/16 08/12/16 DSM Demolition Ltd None Supplied None Supplied None Supplied Site Reference: ex BA Tubes Redditch TP / BH No DSM10726/RA/7/ DSM10726/RA/8/ DSM10726/DIS/9 Project / Job Ref: C10726 Additional Refs None Supplied None Supplied None Supplied Order No: 78347 Depth (m) None Supplied None Supplied None Supplied

Reporting Date: 21/12/2	2016	Q ⁻	TSE Sample No	244153	244154	244155		
	1							
Determinand	Unit		Accreditation				•	
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10		
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chloroform	ug/l	< 5	ISO17025 ISO17025	< 5	< 5 < 10	< 5 < 10		
Bromochloromethane	ug/l	< 10	ISO17025	< 10				
1,1,1-Trichloroethane	ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
1,1-Dichloropropene Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10		
Benzene	ug/l	< 10	ISO17025	< 10	< 10	< 10		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5 < 5	< 5 < 5	< 5		
Bromodichloromethane	ug/l ug/l	< 5	ISO17025	< 5	< 5	< 5		
Dibromomethane	-	< 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
TAME	ug/l	< 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Toluene	ug/l ug/l	< 5	ISO17025	< 5	< 5	< 5		
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,1,2-Trichloroethane	-	< 10	ISO17025	< 10	< 10	< 10		
1,3-Dichloropropane	ug/l ug/l	< 5	ISO17025	< 10 < 5	< 5	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10		
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Bromoform	ug/l	< 10	ISO17025	< 10	< 10	< 10		
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10		
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,2,4-Trimethylbenzene		< 5	ISO17025	< 5	< 5	< 5		
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
n-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10	< 10	< 10		
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5	< 5		





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 16-53082
DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 21/12/2016

Matrix	Analysed	Determinand	Brief Method Description	Method
маспх	On	Determinand	Brief Method Description	No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	RTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF		Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF		Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR determination of DOC by filtration followed by IR determination followed by IR determ	E110
Water	UF		Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid: liquid extraction with hexane followed by GC-FID	E104
			Determination of liquid: liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	
Water	F	C12-C16, C16-C21, C21-C40)		E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F.		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SDE cartridge, collection in	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethan	E108
Water	UF		Gravimetrically determined through liquid: liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of redox potential by electrometre mediatement Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,		E104
Water	F	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key







QTS Environmental Ltd

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QTS Environmental Report No: 17-53388

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 09/01/2017

Sample Scheduled Date: 09/01/2017

Report Issue Number: 1

Reporting Date: 13/01/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services



1,2-Dichlorobenzene

,2-Dibromo-3-chloropropane

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



				. 0-0 050 .			
Water Analysis Certifica	te - Volatile Organ	ic Con	nounds (VOC)	1			
QTS Environmental Repor			Date Sampled	03/01/17	03/01/17		
DSM Demolition Ltd			Time Sampled	None Supplied			
Site Reference: ex BA Tubes Redditch			TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/		
				19	19		
Project / Job Ref: C10720	6		Additional Refs	None Supplied	None Supplied		
Order No: 78347		Depth (m)		None Supplied	None Supplied		
Reporting Date: 13/01/2	017	Q	TSE Sample No	245478	245479		
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5		< 5	< 5		
Vinyl Chloride	ug/l	< 5		< 5	< 5		
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Bromomethane	ug/l	< 5		< 5	< 5		
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10		
trans-1,2-Dichloroethene 1,1-Dichloroethane	ug/l ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5		
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5 < 5	< 5 < 5		
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Chloroform	ug/l	< 5	ISO17025	< 5	< 5		
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10		
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
Benzene	ug/l	< 1	ISO17025	< 1	< 1		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Bromodichloromethane	ug/l	< 5		< 5	< 5		
Dibromomethane TAME	ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5		
cis-1,3-Dichloropropene	ug/l ug/l	< 5		< 5	< 5		
Toluene	ug/l	< 5		< 5	< 5		
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
1,3-Dichloropropane	ug/l	< 5	IS017025	< 5	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5		
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5		
m,p-Xylene o-Xylene	ug/l	< 10 < 5	ISO17025 ISO17025	< 10 < 5	< 10 < 5		
Styrene	ug/l ug/l	< 5 < 5	ISO17025	< 5	< 5 < 5		
Bromoform	ug/l			< 10	< 10		
Isopropylbenzene	ug/l	< 5		< 5	< 5		
1,1,2,2-Tetrachloroethane	ug/l	< 10		< 10	< 10		
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5		
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,2,4-Trimethylbenzene sec-Butylbenzene	ug/l	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5		
p-Isopropyltoluene	ug/l ug/l	< 5 < 5		< 5	< 5 < 5		
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5		< 5	< 5		
n-Butylbenzene	ug/l	< 5		< 5	< 5		
1.2-Dichlorobenzene	ug/l	< 5			< 5		

ISO17025

ISO17025 ISO17025

< 10

< 10

ug/l

ug/l

< 10





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 17-53388

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 13/01/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Manada dala Dia anal		E121
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	r E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key







QTS Environmental Ltd

Unit 1
Rose Lane Industrial Estate
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Lenham Heath
Kent
ME17 2JN
t: 01622 850410

russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 17-53662

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 16/01/2017

Sample Scheduled Date: 16/01/2017

Report Issue Number: 1

Reporting Date: 20/01/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services





Water Analysis Certifica		ic Com								
QTS Environmental Repor	t No: 17-53662		Date Sampled	09/01/17	09/01/17	09/01/17	10/01/17			
DSM Demolition Ltd			Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied			
Site Reference: ex BA Tubes Redditch			TP / BH No	DSM10726/RA/7/ 20	DSM10726/RA/8/ 19	DSM10726/DIS/1 0	DSM10726/Dirty/ R8			
Project / Job Ref: C10726	6	Additional Refs		None Supplied	None Supplied	None Supplied	None Supplied			
Order No: 78347			Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied			
Reporting Date: 20/01/2	017	Q.	TSE Sample No	246601	246602	246603	246604			
Determinand	Unit	RL	Accreditation							
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5	< 5	318			
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10			
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	10440			
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Chloroform	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10			
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	·		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10			
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1			
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
TAME	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,1,2-Trichloroethane	ug/l	< 10 < 5	ISO17025	< 10	< 10	< 10	< 10			
1,3-Dichloropropane Tetrachloroethene	ug/l	< 5	ISO17025 ISO17025	< 5 < 5	< 5	< 5	< 5 < 5			
Dibromochloromethane	ug/l ug/l	< 5	ISO17025	< 5	< 5 < 5	< 5 < 5	< 5 < 5			
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10			
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Bromoform	ug/l		ISO17025	< 10	< 10	< 10	< 10			
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10			
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
p-Isopropyltoluene	ug/l	< 5	IS017025	< 5	< 5	< 5	< 5			
1,3-Dichlorobenzene	ug/l	< 5	ISO17025 ISO17025	< 5	< 5	< 5	< 5			
1,4-Dichlorobenzene n-Butylbenzene	ug/l ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	< 5 < 5			
1,2-Dichlorobenzene	ug/l ug/l	< 5 < 5	ISO17025	< 5	< 5	< 5	< 5 < 5			
,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10			
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5			
i icadellioi obutadielle	ug/i	\)	1551/025	\)	\)	\)	\)			





Soil Analysis Certificate - Methodology & Miscellaneous Information QTS Environmental Report No: 17-53662

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 20/01/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Manada dala Dia anal		E121
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	r E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key





QTS Environmental Ltd

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QTS Environmental Report No: 17-53780

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 18/01/2017

Sample Scheduled Date: 18/01/2017

Report Issue Number: 1

Reporting Date: 24/01/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elyrine-gole



Hexachlorobutadiene

.,2-Dibromo-3-chloropropane

ug/l

ug/l

< 10

< 5

ISO17025

ISO17025

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



4480

QTS Environmental Report			pounds (VOC) Date Sampled	16/01/17	16/01/17	16/01/17	17/01/17	
OSM Demolition Ltd	. NO: 17-33760		Time Sampled	None Supplied				
Site Reference: ex BA Tub	os Bodditch		•		None Supplied			
oite Reference: ex ba lub	es Redaitch		IP / BH NO	DSM10726/RA/7/	DSM10/20/KA/8/	DSM10/26/DIS/1	DSM10726/Dirty/ R2	
Project / Job Ref: C10726		^	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 78347			Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 24/01/20	117	01	SE Sample No	247137	247138	247139	247140	
Reporting Date. 24/01/20)1/	Ų	SE Sample No	2 4 /13/	24/130	24/139	247140	
Determinand	Unit	RL	Accreditation					
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	478	
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5 < 5	< 5	< 5	
Chloroform	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
1,1,1-Trichloroethane		< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1-Dichloropropene	ug/l ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Carbon Tetrachloride		< 5	ISO17025	< 5	< 5 < 5	< 5	< 5	
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
Benzene	ug/l	< 1	ISO17025					
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 1 < 5	< 1 < 5	< 1	< 1 < 5	
Trichloroethene	ug/l	< 5				< 5		
Bromodichloromethane	ug/l	< 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5	< 5 < 5	311	
	ug/l	< 5					< 5	
Dibromomethane TAME	ug/l		ISO17025	< 5	< 5	< 5	< 5	
	ug/l	< 5 < 5	ISO17025	< 5	< 5	< 5	< 5	
cis-1,3-Dichloropropene	ug/l	< 5 < 5	ISO17025	< 5	< 5	< 5	< 5	
Toluene	ug/l	< 5 < 5	ISO17025	< 5	< 5	< 5	< 5	
trans-1,3-Dichloropropene	ug/l		ISO17025	< 5	< 5	< 5	< 5	
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
1,3-Dichloropropane Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromoform	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,2,4-Trimethylbenzene	ug/l			< 5	< 5			
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
n-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
.2-Dibromo-3-chloropropane	ua/l	< 10	ISO17025	< 10	< 10	< 10	< 10	

< 10

< 5

< 10

< 5

< 10

< 5

< 10

< 5





Soil Analysis Certificate - Methodology	& Miscellaneous Information
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QTS Environmental Report No: 17-53780

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 24/01/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of $1,5$ diphenylcarbazide followed by cc	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid: liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF		Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	` '	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>







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QTS Environmental Report No: 17-54714

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 07/02/2017

Sample Scheduled Date: 07/02/2017

Report Issue Number: 1

Reporting Date: 13/02/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymere-gole





1120

Water Analysis Certifica	ate - Volatile Organ	ic Com	pounds (VOC	1				
QTS Environmental Repor		<u> </u>	Date Sampled		30/01/17	30/01/17	06/02/17	06/02/17
DSM Demolition Ltd	THO: 17 54714		Time Sampled					
Site Reference: ex BA Tul	hes Redditch		-	DSM10726/RA/7/				
Site Reference: ex BA Tu	DCS Reduiter		II / BIT NO	23	23	3	24	24 DSM10720710-707
Project / Job Ref: C1072	6		Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 78347	<u> </u>		Depth (m)		None Supplied	None Supplied		
Reporting Date: 13/02/2	2017	O.	TSE Sample No		251299	• •		
110po.tg 2 acc. 10 / 0 1 / 1		~		231230	231233	231300	231301	231302
Determinand	Unit	RL	Accreditation					
Dichlorodifluoromethane	ug/l	< 5		< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
cis-1,2-Dichloroethene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Chloroform	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	
1,1,1-Trichloroethane	ug/l	< 5		< 5	< 5	< 5	< 5	
1,1-Dichloropropene	<u> </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	
Carbon Tetrachloride	5.	< 5		< 5	< 5	< 5	< 5	
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10		
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane Trichloroethene		< 5 < 5		< 5				
Bromodichloromethane	5.	< 5 < 5		< 5	< 5 < 5	< 5		
Dibromomethane	ug/l	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
TAME	ug/l	< 5	ISO17025	< 5	< 5 < 5	< 5	< 5	
cis-1,3-Dichloropropene	ug/l ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5		
trans-1,3-Dichloropropene		< 5		< 5	< 5	< 5	< 5	
1,1,2-Trichloroethane		< 10	ISO17025	< 10	< 10	< 10		
1,3-Dichloropropane	J,	< 5	ISO17025	< 5	< 5	< 5	< 5	
Tetrachloroethene	Ç.	< 5	ISO17025	< 5	< 5	< 5	< 5	
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	S.	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
o-Xylene	<u>. </u>	< 5	ISO17025	< 5	< 5	< 5	< 5	
Styrene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Bromoform		< 10		< 10	< 10	< 10	< 10	
Isopropylbenzene		< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane		< 10	ISO17025	< 10	< 10	< 10		
1,2,3-Trichloropropane		< 5	ISO17025	< 5	< 5	< 5		
n-Propylbenzene		< 5	ISO17025	< 5	< 5	< 5		
Bromobenzene 2-Chlorotoluene	<u>.</u>	< 5 < 5	ISO17025 ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
1,3,5-Trimethylbenzene	J,	< 5 < 5	ISO17025	< 5 < 5	< 5 < 5	< 5 < 5		
4-Chlorotoluene	<u> </u>	< 5		< 5 < 5	< 5 < 5	<u> </u>		
tert-Butylbenzene	51	< 5		< 5	< 5	< 5		
1,2,4-Trimethylbenzene	<u> </u>	< 5		< 5		< 5		
sec-Butylbenzene		_						
p-Isopropyltoluene	ug/l	< 5		< 5				
1,3-Dichlorobenzene		< 5		< 5	< 5	< 5		
1,4-Dichlorobenzene	<u> </u>	< 5		< 5		< 5		
n-Butylbenzene	<u> </u>	< 5		< 5				
1,2-Dichlorobenzene	Ç.	< 5		< 5				
.,2-Dibromo-3-chloropropane		< 10		< 10				
Hovachlorobutadiono	ug/l	_ 5	TCO1702E		4.5			

ug/l

Hexachlorobutadiene

< 5

ISO17025

< 5

< 5

< 5

< 5

< 5





4480

Soil A	nalysis	Certificate ·	- Methodology	& Miscellaneous	Information
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QTS Environmental Report No: 17-54714

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726 Order No: 78347

Reporting Date: 13/02/2017

Matrix	Analysed	Determinand	Brief Method Description	Method
	On			No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12,	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
		C12-C16, C16-C21, C21-C40)	·	
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	·	Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>





QTS Environmental Ltd

Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN

t: 01622 850410 russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 17-55395

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 21/02/2017

Sample Scheduled Date: 21/02/2017

Report Issue Number: 1

Reporting Date: 27/02/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymere-gole



,2-Dibromo-3-chloropropane

Hexachlorobutadiene

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



4480

Water Analysis Certifica		ic Com						
QTS Environmental Repor	t No: 17-55395		Date Sampled	13/02/17	13/02/17	13/02/17	20/02/17	
DSM Demolition Ltd	OSM Demolition Ltd		Time Sampled					
Site Reference: ex BA Tul	bes Redditch		TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/	DSM10726/DIS/7	DSM10726/RA/7/	DSM10726/RA/8/
				25	25	/14	26	26
Project / Job Ref: C1072	6		Additional Refs	None Supplied				
Order No: 78347			Depth (m)		• • •		• • • • • • • • • • • • • • • • • • • •	
Reporting Date: 27/02/2	.017	Q.	TSE Sample No	254330	254331	254332	254333	254334
D. L	1111	D 1	A 111 - 11					
Determinand			Accreditation		_	_	-	1 -
Dichlorodifluoromethane	ug/l	< 5		< 5		< 5		
Vinyl Chloride Chloromethane	5,	< 5 < 5		< 5	< 5	< 5	< 5	
Chloroethane	ug/l	< 5 < 5		< 5	< 5	< 5	< 5	
Bromomethane	ug/l ug/l	< 5		< 5 < 5	< 5 < 5	< 5 < 5	< 5 < 5	
Trichlorofluoromethane	ug/l	< 5		< 5	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5		< 5	< 5	< 5	< 5	
MTBE	ug/l	< 10		< 10	< 10	< 10	< 10	
trans-1,2-Dichloroethene		< 5		< 5	< 5	< 5	< 5	
1,1-Dichloroethane	ug/l	< 5		< 5	< 5	< 5		
cis-1,2-Dichloroethene		< 5		< 5	< 5	< 5	< 5	
2,2-Dichloropropane	ug/l	< 5		< 5	< 5	< 5		
Chloroform	ug/l	< 5		< 5	< 5	< 5	< 5	
Bromochloromethane	ug/l	< 10		< 10	< 10	< 10	< 10	
1,1,1-Trichloroethane		< 5		< 5	< 5	< 5	< 5	
1,1-Dichloropropene		< 5		< 5	< 5	< 5	< 5	
Carbon Tetrachloride		< 5		< 5	< 5	< 5	< 5	
1,2-Dichloroethane	5,	< 10		< 10	< 10	< 10		
Benzene		< 1		< 1		< 1		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Trichloroethene	ug/l	< 5		< 5	< 5	< 5	< 5	
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
TAME	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/l	< 5		< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5		< 5	< 5	< 5	< 5	
Dibromochloromethane	<u> </u>	< 5		< 5	< 5	< 5	< 5	
1,2-Dibromoethane	<u> </u>	< 5		< 5	< 5	< 5	< 5	
Chlorobenzene	51	< 5	ISO17025	< 5	< 5	< 5	< 5	
1,1,1,2-Tetrachloroethane	<u> </u>	< 5		< 5	< 5	< 5	< 5	
Ethyl Benzene	5,	< 5	ISO17025	< 5	< 5	< 5	< 5	
m,p-Xylene	-	< 10		< 10	< 10	< 10	< 10	
o-Xylene	5.	< 5	ISO17025	< 5	< 5	< 5	< 5	
Styrene		< 5		< 5	< 5	< 5	< 5	
Bromoform	ug/l	< 10		< 10	< 10	< 10	< 10	
Isopropylbenzene		< 5		< 5	< 5	< 5	< 5	
1,1,2,2-Tetrachloroethane 1,2,3-Trichloropropane	<u> </u>	< 10 < 5		< 10 < 5	< 10	< 10 < 5	< 10 < 5	
n-Propylbenzene	<u> </u>	< 5 < 5		< 5 < 5	< 5 < 5	< 5 < 5	< 5 < 5	
Bromobenzene	ug/l ug/l	< 5 < 5		< 5 < 5	<u> </u>	<u> </u>	< 5	
2-Chlorotoluene		< 5		< 5	< 5	< 5		
1,3,5-Trimethylbenzene	<u>.</u>	< 5		< 5	< 5	< 5	< 5	
4-Chlorotoluene	<u>. </u>	< 5		< 5	< 5	< 5		
tert-Butylbenzene	5			< 5	< 5	< 5		
1,2,4-Trimethylbenzene				< 5				
sec-Butylbenzene		< 5		< 5		< 5		
p-Isopropyltoluene	<u> </u>	< 5		< 5		< 5		
1,3-Dichlorobenzene		< 5		< 5	< 5	< 5		
1,4-Dichlorobenzene	J,	< 5		< 5		< 5		
n-Butylbenzene	Š	< 5		< 5	< 5	< 5		
1,2-Dichlorobenzene	<u>. </u>	< 5		< 5		< 5		
2-Dibromo-3-chloropropane	ua/l	< 10	TS017025	< 10	< 10	< 10		

< 10

< 5

< 10

< 5

ug/l

ISO17025

ISO17025

< 10

< 5

< 10

< 5

< 10

< 5

< 10

< 5



1,2-Dichlorobenzene

Hexachlorobutadiene

,2-Dibromo-3-chloropropane

n-Butylbenzene

ug/l

ug/l

ug/l

ug/l

< 5

< 5

< 10

< 5

ISO17025

ISO17025

ISO17025

ISO17025

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



4480

			iei	: 01622 8504	.10		
Water Analysis Certificate	e - Volatile Organi	ic Comp	ounds (VOC)				
QTS Environmental Report			Date Sampled	16/02/17			
DSM Demolition Ltd		7	Time Sampled				
Site Reference: ex BA Tube	es Redditch		•	DSM10726/DIS/1			
Project / Job Ref: C10726		A	dditional Refs	None Supplied			
Order No: 78347			Depth (m)	None Supplied			
Reporting Date: 27/02/20:	17	OT	SE Sample No				
, , ,							
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5			
Vinyl Chloride	ug/l	< 5	ISO17025	< 5			
Chloromethane	ug/l	< 5	ISO17025	< 5			
Chloroethane	ug/l	< 5	ISO17025	< 5			
Bromomethane	ug/l	< 5	ISO17025	< 5			
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5			
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5			
MTBE	ug/l	< 10	ISO17025	< 10			
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5			l
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5			l
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5			l
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Chloroform	ug/l	< 5	ISO17025	< 5			
Bromochloromethane	ug/l	< 10	ISO17025	< 10			
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5			
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5			
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5			
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10			
Benzene	ug/l	< 1	ISO17025	< 1			
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Trichloroethene	ug/l	< 5	ISO17025	< 5			
Bromodichloromethane	ug/l	< 5	ISO17025	< 5			
Dibromomethane	ug/l	< 5	ISO17025	< 5			
TAME	ug/l	< 5	ISO17025	< 5			
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5			
Toluene	ug/l	< 5	ISO17025	< 5			
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5			
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10			
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5			
Tetrachloroethene	ug/l	< 5	ISO17025	< 5			
Dibromochloromethane	ug/l	< 5	ISO17025	< 5			
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5			
Chlorobenzene	ug/l	< 5	ISO17025	< 5			
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5			
Ethyl Benzene	ug/l	< 5	ISO17025	< 5			
m,p-Xylene	ug/l	< 10	ISO17025	< 10			l
o-Xylene	ug/l	< 5	ISO17025	< 5			
Styrene	ug/l	< 5	ISO17025	< 5			
Bromoform	ug/l	< 10	ISO17025	< 10			
Isopropylbenzene	ug/l	< 5	ISO17025	< 5			
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10			
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5			
n-Propylbenzene	ug/l	< 5	ISO17025	< 5			
Bromobenzene	ug/l	< 5	ISO17025	< 5			
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5			
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5			
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5			
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5			
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5			
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5			
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5			
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5			
1,4-Dichlorobenzene	ug/l	< 5	ISO17025				
n-Butylhenzene	ug/l	<u> </u>	ISO17025				

< 5

< 5

< 5

< 10





4480

Soil	Analysis	Certificate -	Methodology	& Miscellaneous	Information
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QTS Environmental Report No: 17-55395

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 27/02/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of $1,5$ diphenylcarbazide followed by cc	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid: liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF		Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	` '	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF		Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>

F Filtered UF Unfiltered







QTS Environmental Ltd

Unit 1
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ME17 2JN

t: 01622 850410 russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 17-55728

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 28/02/2017

Sample Scheduled Date: 28/02/2017

Report Issue Number: 1

Reporting Date: 06/03/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services





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ater Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 17-55728	Date Sampled	27/02/17	27/02/17							
DSM Demolition Ltd	Time Sampled	None Supplied	None Supplied							
Site Reference: ex BA Tubes Redditch	TP / BH No	DSM10726/RA/7/	DSM10726/RA/8/							
		27	27			i				
Project / Job Ref: C10726	Additional Refs	None Supplied	None Supplied							
Order No: 78347	Depth (m)	None Supplied	None Supplied							
Reporting Date: 06/03/2017	QTSE Sample No	255486	255487							

Order No: 78347			Depth (m)	None Supplied	None Supplied		
Reporting Date: 06/03/2	2017	Q٦	SE Sample No	255486	255487		
				-			
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
Vinyl Chloride		< 5	ISO17025	< 5	< 5		-
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5		
				-			_
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5		
Trichlorofluoromethane	J.	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
MTBE	ug/l	< 10	ISO17025	< 10	< 10		
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5		
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Chloroform		< 5	ISO17025	< 5	< 5		
Bromochloromethane		< 10	ISO17025	< 10	< 10		
1,1,1-Trichloroethane	J,	< 5	ISO17025	< 5	< 5		
1,1-Dichloropropene		< 5	ISO17025	< 5	< 5		-
Carbon Tetrachloride	J.	< 5	ISO17025	< 5			
	5,				< 5		-
1,2-Dichloroethane	5,	< 10	ISO17025	< 10	< 10		
Benzene	5,	< 1	ISO17025	< 1	< 1		
1,2-Dichloropropane		< 5	ISO17025	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5		
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5		
TAME	ug/l	< 5	ISO17025	< 5	< 5		
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Toluene		< 5	ISO17025	< 5	< 5		
trans-1,3-Dichloropropene	,		ISO17025	< 5	< 5		
1,1,2-Trichloroethane	_	< 10	IS017025	< 10	< 10		
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dibromoethane		< 5	ISO17025	< 5			
Chlorobenzene	J.				< 5		+
	ug/l	< 5	ISO17025	< 5	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5		
m,p-Xylene		< 10	ISO17025	< 10	< 10		
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5		
Styrene	ug/l	< 5	ISO17025	< 5	< 5		
Bromoform	ug/l	< 10	ISO17025	< 10	< 10		
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,2,2-Tetrachloroethane		< 10	ISO17025	< 10	< 10		
1,2,3-Trichloropropane		< 5	ISO17025	< 5	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5		
2-Chlorotoluene		< 5	ISO17025	< 5	< 5		1
1,3,5-Trimethylbenzene	<u> </u>	< 5	ISO17025	< 5	< 5	 	
4-Chlorotoluene	-	< 5	ISO17025	< 5	< 5 < 5		+
	Ū.		ISO17025				+
tert-Butylbenzene	5,	< 5		< 5	< 5	———	
1,2,4-Trimethylbenzene		< 5	ISO17025	< 5	< 5		
sec-Butylbenzene		< 5	ISO17025	< 5	< 5		
p-Isopropyltoluene		< 5	ISO17025	< 5	< 5		
1,3-Dichlorobenzene		< 5	ISO17025	< 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
n-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dichlorobenzene		< 5	ISO17025	< 5	< 5		
,2-Dibromo-3-chloropropane		< 10	ISO17025	< 10	< 10		
Hexachlorobutadiene	5,		ISO17025	< 5			
	<i>-9/</i> ·			. 5	. 0	<u> </u>	_





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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-55728

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 06/03/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF		Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	•	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	
Water	UF		Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
	_		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	
Water	F	C12-C16, C16-C21, C21-C40)		E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F		Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	-	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	1 1	Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	·	Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
	UF		Low heat with persulphate addition followed by IR detection	E110
Water Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E110
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>

F Filtered UF Unfiltered





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QTS Environmental Report No: 17-56172

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 09/03/2017

Sample Scheduled Date: 09/03/2017

Report Issue Number: 1

Reporting Date: 15/03/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services



.,2-Dibromo-3-chloropropane

Hexachlorobutadiene

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



4480

Water Analysis Cartif	40 Valatila 0	- C	mauria (1/00)				
Water Analysis Certifica		ic Com	<u> </u>		06/00/47		
QTS Environmental Repor	t No: 17-56172		Date Sampled	06/03/17	06/03/17		
DSM Demolition Ltd			Time Sampled	None Supplied	None Supplied		
Site Reference: ex BA Tul	bes Redditch		TP / BH No	DSM10726 / RA / 7 / 28	DSM10726 / RA / 8 / 28		
Project / Job Ref: C1072	6	Additional Refs		None Supplied	None Supplied		
Order No: 78347			Depth (m)	None Supplied	None Supplied		
Reporting Date: 15/03/2	.017	Q	TSE Sample No	257322	257323		
Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	5,	< 5		< 5	< 5		
Vinyl Chloride	ug/l	< 5		< 5	< 5		
Chloromethane	ug/l	< 5		< 5	< 5		
Chloroethane	ug/l	< 5		< 5	< 5		
Bromomethane	ug/l	< 5		< 5	< 5		
Trichlorofluoromethane	ug/l	< 5		< 5	< 5		
1,1-Dichloroethene	ug/l	< 5		< 5	< 5		
MTBE	ug/l	< 10		< 10	< 10		
trans-1,2-Dichloroethene	ug/l	< 5		< 5	< 5		
1,1-Dichloroethane	<u> </u>	< 5		< 5	< 5	 	
cis-1,2-Dichloroethene	<u> </u>	< 5		< 5	< 5	 	
2,2-Dichloropropane	<u> </u>	< 5		< 5	< 5	 	
Chloroform Bromochloromethane	ug/l	< 5		< 5	< 5	 	
1,1,1-Trichloroethane	ug/l	< 10 < 5		< 10	< 10		
, , , , , , , , , , , , , , , , , , ,	j,	< 5 < 5		< 5	< 5		
1,1-Dichloropropene Carbon Tetrachloride		< 5 < 5		< 5 < 5	< 5		
1,2-Dichloroethane	5,			< 10	< 5 < 10		
Benzene	J,			< 10			
1,2-Dichloropropane	ug/l	< 5		< 5	< 1 < 5		
Trichloroethene	ug/l	< 5		< 5	< 5		
Bromodichloromethane	ug/l	< 5		< 5	< 5		
Dibromomethane	ug/l	< 5		< 5	< 5		
TAME	ug/l	< 5		< 5	< 5		
cis-1,3-Dichloropropene	ug/l	< 5		< 5	< 5		
Toluene	ug/l	< 5		< 5	< 5		
trans-1,3-Dichloropropene		< 5		< 5	< 5		
1,1,2-Trichloroethane		< 10		< 10	< 10		
1,3-Dichloropropane		< 5		< 5	< 5		
Tetrachloroethene		< 5		< 5	< 5		
Dibromochloromethane	_	< 5	ISO17025	< 5	< 5		
1,2-Dibromoethane		< 5	ISO17025	< 5	< 5		
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,1,2-Tetrachloroethane		< 5	ISO17025	< 5	< 5		
Ethyl Benzene		< 5	ISO17025	< 5	< 5		
m,p-Xylene	<u>.</u>	< 10		< 10	< 10		
o-Xylene	5.	< 5	ISO17025	< 5	< 5		
Styrene	<u> </u>	< 5	ISO17025	< 5	< 5		
Bromoform	ug/l	< 10		< 10	< 10		
Isopropylbenzene	<u> </u>	< 5	ISO17025	< 5	< 5		
1,1,2,2-Tetrachloroethane	<u> </u>	< 10		< 10	< 10		
1,2,3-Trichloropropane	<u> </u>	< 5	ISO17025	< 5	< 5		
n-Propylbenzene	<u> </u>	< 5		< 5	< 5		
Bromobenzene	5,	< 5		< 5	< 5	 	
2-Chlorotoluene	<u> </u>	< 5		< 5	< 5	 	
1,3,5-Trimethylbenzene	<u>. </u>	< 5		< 5	< 5	 	
4-Chlorotoluene	5,	< 5		< 5	< 5	 	
tert-Butylbenzene	<u>.</u>	< 5		< 5	< 5	 	
1,2,4-Trimethylbenzene				< 5	< 5	 	
sec-Butylbenzene	0.	< 5 < 5		< 5 < 5	< 5		
p-Isopropyltoluene 1,3-Dichlorobenzene		< 5 < 5		< 5 < 5	< 5 < 5	 	
1,3-Dichlorobenzene		< 5 < 5		< 5 < 5	< 5 < 5	 	
n-Butylbenzene	J.	< 5 < 5		< 5 < 5	< 5 < 5		
1,2-Dichlorobenzene	J.			< 5 < 5	< 5 < 5	 	
2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10	< 10		

ISO17025

ISO17025

< 10

< 5

ug/l

< 10

< 5





Soil Analysis Certificate - Methodology & Miscellaneous Informati	on
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QTS Environmental Report No: 17-56172

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Reporting Date: 15/03/2017

Matrix	Analysed	Determinand	Brief Method Description	Method
	On			No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F		Determination of cations by filtration followed by ICP-MS	E102
Water	UF		Determination using a COD reactor followed by colorimetry	E112
Water	F		Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F		Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12,	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
		C12-C16, C16-C21, C21-C40)	·	
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	·	Based on National Rivers Authority leaching test 1994	E301
Leachate	F		Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F		Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	F118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

<u>Key</u>

F Filtered **UF Unfiltered**





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QTS Environmental Report No: 17-56937

Site Reference: ex BA Tubes Redditch

Project / Job Ref: C10726

Order No: 78347

Sample Receipt Date: 27/03/2017

Sample Scheduled Date: 27/03/2017

Report Issue Number: 1

Reporting Date: 30/03/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis Associate Director of Client Services





Water Analysis Certifica		ic Com	pounds (VOC))			
QTS Environmental Repor			Date Sampled		20/03/17		
DSM Demolition Ltd			Time Sampled	,,	None Supplied		
Site Reference: ex BA Tul	has Dadditch			DSM10726/RA/7/			
Site Reference: ex ba fui	bes Reduitell	/ 511 140		29	29		
Project / Job Ref: C1072	6		Additional Refs	None Supplied	None Supplied		
Order No: 78347			Depth (m)	None Supplied	None Supplied		
Reporting Date: 30/03/2	0017	0	TSE Sample No	260281	260282		
reporting Date: 30/03/2	.017		ISE Sumple No	200201	200202		
Determinand	Unit	RL	Accreditation	(hs)	(hs)		
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5		
Vinyl Chloride	•	< 5	ISO17025	< 5	< 5		
Chloromethane	ug/l ug/l	< 5	ISO17025	< 5	< 5		
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5		
Trichlorofluoromethane	•	< 5	ISO17025	< 5	< 5		
1,1-Dichloroethene	ug/l ug/l	< 5	ISO17025	< 5	< 5		
1,1-Dichioroetherie MTBE	•	< 10	ISO17025	< 10	< 10		
trans-1,2-Dichloroethene	ug/l ug/l	< 10	ISO17025	< 10	< 10		1
1,1-Dichloroethane	ug/l ug/l	< 5	ISO17025		< 5 < 5		
cis-1,2-Dichloroethene	•	< 5	ISO17025	< 5 < 5	< 5 < 5		
2,2-Dichloropropane	ug/l	< 5 < 5	ISO17025	< 5	< 5		
2,2-Dichioropropane Chloroform	ug/l ug/l	< 5 < 5	ISO17025	< 5	< 5 < 5		
Bromochloromethane	ug/l ug/l	< 10	ISO17025	< 10	< 10		
1,1,1-Trichloroethane	•	< 5	ISO17025	< 5			
1,1,1-Trichloroethane	ug/l ug/l	< 5 < 5	ISO17025	< 5	< 5 < 5		
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
Benzene	ug/l	< 10	ISO17025	< 10	< 10		
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5		
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5		
TAME	ug/l	< 5		< 5	< 5		
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
Toluene	ug/l	< 5	ISO17025	< 5	< 5		
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10		
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5		
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5		
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5		
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5		
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	< 5		
m,p-Xylene	ug/l	< 10	ISO17025	< 10	< 10		
o-Xylene	ug/l	< 5	ISO17025	< 5	< 5		
Styrene	ug/l	< 5	ISO17025	< 5	< 5		
Bromoform	ug/l	< 10	ISO17025	< 10	< 10		
Isopropylbenzene	•			< 5	< 5		
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10		
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5		
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5		
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5		
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5		
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5		
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5		
n-Butylbenzene	ug/l	< 5 < 5	ISO17025	< 5	< 5 < 5		
1,2-Dichlorobenzene	ug/l	< 10	ISO17025 ISO17025	< 5 < 10	< 10		
.,2-Dibromo-3-chloropropane Hexachlorobutadiene	ug/l ua/l	< 10			< 10 < 5		
	. , , , , , , , , , , , , , , , , , , ,		13011075	< 0	< 7		





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 17-56937

DSM Demolition Ltd

Site Reference: ex BA Tubes Redditch Project / Job Ref: C10726 Order No: 78347 Reporting Date: 30/03/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF		Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F		Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by	E104
Water	F		Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F		Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F		Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F		Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F		Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Manada dala Dia anal		E121
Water	F	PAH - Speciated (EPA 16)	Determination of phenois by distillation followed by colorimetry Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethal	r E108
Water	UF		Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF		Determination of pH by electrometric measurement	E107
Water	F		Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF		Determination of redox potential by electrometric measurement	E113
Water	F		Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulnhide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF		Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F		Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered UF Unfiltered



Appendix E – Validation Samples

Tested at 1 per 10m linear length on walls and 1 per grid square on bases Summary of Soil Validation



Area	1

Square	 nents	Further Actions / Comments	Test	Test	Depth	Sample	Grid	Date
A	icitis	Tarther Actions y Comments			•	•		Dute
02/09/2016 A1 AREAI/WF1 3.5-4 16-48868 PASS 02/09/2016 A2 AREAI/WF2 3.5-4 16-48868 PASS 02/09/2016 A2 AREAI/WF2 3.5-4 16-48868 PASS 02/09/2016 B1 AREAI/WF2 3.5-4 16-48868 PASS 02/09/2016 B1 B1 BASE 4 16-48868 PASS 02/09/2016 B2 B2 BASE 4 16-48868 PASS 05/09/2016 A3 AREAI/WF3 3.5-4 16-48868 PASS 05/09/2016 A3 AREAI/WF3 3.5-4 16-48868 PASS 05/09/2016 A3 AREAI/WF4 3.5-4 16-48868 PASS 05/09/2016 A3 AREAI/WF4 3.5-4 16-48868 PASS 06/09/2016 A4 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AS BASE			Result	Certificate	(,	Number	Square	
02/09/2016			PASS	16-48868	3.5-4	AREA1/NF1	A1	02/09/2016
02/09/2016			PASS	16-48868	3.5-4	AREA1/WF1	A1	02/09/2016
02/09/2016			PASS	16-48868	4	A1 BASE	A1	02/09/2016
02/09/2016 B1 AREAI/NF2 3.5-4 16-48868 PASS 02/09/2016 B1 B1 8ASE 4 16-48868 PASS 02/09/2016 B2 B2 BASE 4 16-48868 PASS 05/09/2016 A3 AREA1/WF3 3.5-4 16-48868 PASS 05/09/2016 A3 ASBASE 4 16-48868 PASS 06/09/2016 A4 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A4 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 ASBASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 09/09/2016 B6 A6 BASE 4			PASS	16-48868	3.5-4	AREA1/WF2	A2	02/09/2016
02/09/2016 B1 AREA1/NF2 3.5-4 16-48868 PASS 02/09/2016 B1 B1 BASE 4 16-48868 PASS 02/09/2016 B2 82 BASE 4 16-48868 PASS 05/09/2016 A3 AREA1/WF3 3.5-4 16-48868 PASS 05/09/2016 A3 A3 BASE 4 16-48868 PASS 06/09/2016 A4 AREA1/WF3 3.5-4 16-48868 PASS 06/09/2016 A4 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 A SBASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 09/09/2016 A6 AREA 1/WF6 3.5			PASS	16-48868	4	A2 BASE	A2	02/09/2016
02/09/2016 B2 B2 BASE 4 16-48868 PASS 05/09/2016 A3 AREAI/WF3 3.5-4 16-48868 PASS 05/09/2016 B3 A3 BASE 4 16-48868 PASS 06/09/2016 A4 AREAI/WF4 3.5-4 16-48868 PASS 06/09/2016 A5 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AS BASE 4 16-48868 PASS 06/09/2016 A5 AS BASE 4 16-48868 PASS 06/09/2016 B5 BS BASE 4 16-48868 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A7 AREAI I/WF7 3.5-4 <td></td> <td></td> <td>PASS</td> <td>16-48868</td> <td>3.5-4</td> <td>AREA1/NF2</td> <td></td> <td></td>			PASS	16-48868	3.5-4	AREA1/NF2		
02/09/2016 B2 B2 BASE 4 16-48868 PASS 05/09/2016 A3 AREAI/WF3 3.5-4 16-48868 PASS 05/09/2016 B3 A3 BASE 4 16-48868 PASS 06/09/2016 A4 AREAI/WF4 3.5-4 16-48868 PASS 06/09/2016 A5 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AREAI/WF5 3.5-4 16-48868 PASS 06/09/2016 A5 AS BASE 4 16-48868 PASS 06/09/2016 A5 AS BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A7 AREAI/WF7 3.5-4			PASS	16-48868				
05/09/2016 A3 A3 BASE 4 16-48868 PASS 05/09/2016 B3 B3 BASE 4 16-48868 PASS 06/09/2016 A4 AREA1/WF4 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A4 A4 BASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 06/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 AREA 1/WF6 3.5-4 16-49272 PASS 09/09/2016 A7 A7 BASE 4 16-49272 PASS 09/09/2016 A7 AREA 1/WF7 3.5-4 <			PASS	16-48868	4	B2 BASE	В2	
05/09/2016 A3 A3 BASE 4 16-48868 PASS 05/09/2016 B3 B3 BASE 4 16-48868 PASS 06/09/2016 A4 AREA1/WF4 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A4 A4 BASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 06/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 AREA 1/WF6 3.5-4 16-49272 PASS 09/09/2016 A7 A7 BASE 4 16-49272 PASS 09/09/2016 A7 AREA 1/WF7 3.5-4 <			PASS	16-48868	3.5-4	AREA1/WF3	A3	05/09/2016
06/09/2016 A4 AREA1/WF4 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A4 A4 BASE 4 16-48868 PASS 06/09/2016 A5 AS BASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A7 A7 BASE 4 16-49272 PASS 09/09/2016 A7 A7 BASE 4 16-49272 PASS 09/09/2016 A7 AREA I/WF7 3.5-4 16-49272 PASS 09/09/2016 B8 B8 BASE 4 16-49272 PASS 09/09/2016 A8 AREA I/WF8 3.5-4 <			PASS	16-48868	4	A3 BASE	A3	
06/09/2016 A4 AREA1/WF4 3.5-4 16-48868 PASS 06/09/2016 A5 AREA1/WF5 3.5-4 16-48868 PASS 06/09/2016 A4 A4 BASE 4 16-48868 PASS 06/09/2016 B4 B4 BASE 4 16-48868 PASS 06/09/2016 B5 B5 BASE 4 16-48868 PASS 09/09/2016 A6 A6 BASE 4 16-48868 PASS 09/09/2016 A6 A6 BASE 4 16-49272 PASS 09/09/2016 A6 AREA I/WF6 3.5-4 16-49272 PASS 09/09/2016 A7 ARBASE 4 16-49272 PASS 09/09/2016 A7 ARBASE 4 16-49272 PASS 09/09/2016 A7 ARBASE 4 16-49272 PASS 09/09/2016 B7 B7 BASE 4 16-49272 PASS 09/09/2016 A8 A8BASE 4 16-49272			PASS	16-48868	4	B3 BASE		
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09/09/2016 A7 A7 BASE 4 16-49272 PASS 09/09/2016 A7 AREA 1/WF7 3.5-4 16-49272 PASS 09/09/2016 B7 B7 BASE 4 16-49272 PASS 09/09/2016 A8 A8 BASE 4 16-49272 PASS 09/09/2016 B8 B8 BASE 4 16-49272 PASS 09/09/2016 B8 AREA 1/SF1 2.5-3.5 16-49272 PASS 16/09/2016 A8 AREA 1/SF2 2.5-3.5 16-49272 PASS 16/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE								
09/09/2016 A7 AREA 1/WF7 3.5-4 16-49272 PASS 09/09/2016 B7 B7 BASE 4 16-49272 PASS 09/09/2016 A8 A8 BASE 4 16-49272 PASS 09/09/2016 B8 B8 BASE 4 16-49272 PASS 16/09/2016 A8 AREA 1/SF1 2.5-3.5 16-49272 PASS 16/09/2016 A8 AREA 1/SF2 2.5-3.5 16-49272 PASS 16/09/2016 B8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 16/09/2016 C4 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
09/09/2016 B7 B7 BASE 4 16-49272 PASS 09/09/2016 A8 A8 BASE 4 16-49272 PASS 09/09/2016 A8 AREA 1/WF8 3.5-4 16-49272 PASS 09/09/2016 B8 B8 BASE 4 16-49272 PASS 16/09/2016 A8 AREA 1/SF1 2.5-3.5 16-49272 PASS 16/09/2016 B8 AREA 1/SF2 2.5-3.5 16-49272 PASS 15/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE<								
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09/09/2016 A8 AREA 1/WF8 3.5-4 16-49272 PASS 09/09/2016 B8 B8 BASE 4 16-49272 PASS 16/09/2016 A8 AREA 1/SF1 2.5-3.5 16-49272 PASS 16/09/2016 B8 AREA 1/SF2 2.5-3.5 16-49272 PASS 16/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 16/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7								
09/09/2016 B8 B8 BASE 4 16-49272 PASS 16/09/2016 A8 AREA 1/SF1 2.5-3.5 16-49272 PASS 16/09/2016 B8 AREA 1/SF2 2.5-3.5 16-49272 PASS 16/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8								
16/09/2016 A8 AREA 1/SF1 2.5-3.5 16-49272 PASS 16/09/2016 B8 AREA 1/SF2 2.5-3.5 16-49272 PASS 16/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
16/09/2016 B8 AREA 1/SF2 2.5-3.5 16-49272 PASS 16/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
16/09/2016 C8 AREA 1/SF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
15/09/2016 C1 AREA 1/NF3 2.5-3.5 16-49272 PASS 15/09/2016 C1 C1 BASE 3.5-4 16-49272 PASS 15/09/2016 C2 C2 BASE 3.5-4 16-49272 PASS 15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
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15/09/2016 C3 C3 BASE 3.5-4 16-49272 PASS 15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
15/09/2016 C4 C4 BASE 3.5-4 16-49272 PASS 16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
16/09/2016 C5 C5 BASE 3.5-4 16-49272 PASS 16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
16/09/2016 C6 C6 BASE 3.5-4 16-49272 PASS 16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
16/09/2016 C7 C7 BASE 3.5-4 16-49272 PASS 16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
16/09/2016 C8 C8 BASE 3.5-4 16-49272 PASS 19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
19/09/2016 D1 AREA 1/NF4 2.5-3.5 16-49729 PASS								
19/09/2016 D1 D1 BASE 3.5-4 10-49/49 PASS			PASS	16-49729	3.5-4	D1 BASE	D1	19/09/2016
20/09/2016 D2 D2 BASE 3.5-4 16-49729 PASS								
20/09/2016 D3 D3 BASE 3.5-4 16-49729 PASS								
20/09/2016 D4 D4 BASE 3.5-4 16-49729 PASS								
21/09/2016 D5 D5 BASE 3.5-4 16-49729 PASS								
21/09/2016 D6 D6 BASE 3.5-4 16-49729 PASS								
22/09/2016 D7 D7 BASE 3.5-4 16-49729 PASS								
22/09/2016 D8 D8 BASE 3.5-4 16-49729 PASS								
23/09/2016 D8 AREA 1/SF4 2.5-3.5 16-49729 PASS								
26/09/2016 E1 AREA 1/NF5 2.5m-3.5m 16-49810 PASS								
26/09/2016 E1 E1 BASE 3.5m-4m 16-49810 PASS						·		
26/09/2016 E2 E2 BASE 3.5m-4m 16-49810 PASS								

Tested at 1 per 10m linear length on walls and 1 per grid square on bases Summary of Soil Validation



Δrea	1
Area	ı

Date	Grid	Sample	Depth	Test	Test	Further Actions / Comments
Date		Number	(m)	Certificate	Result	Turtilei Actions / Comments
	Square	Number	(111)	Certificate	Result	
26/09/2016	E3	E3 BASE	3.5m-4m	16-49810	PASS	
27/09/2016	E4	E4 BASE	3.5m-4m	16-49810	PASS	
27/09/2016	E5	E5 BASE	3.5m-4m	16-49810	PASS	
27/09/2016	E6	E6 BASE	3.5m-4m	16-49810	PASS	
27/09/2016	E7	E7 BASE	3.5m-4m	16-49810	PASS	
23/09/2016	E8	E8 BASE	3.5m-4m	16-49810	PASS	
23/09/2016	E8	AREA 1/SF5	2.5m-3.5m	16-49810	PASS	
30/09/2016	F1	AREA 1/NF6	2.5m-3.5m	16-50174	PASS	
30/09/2016	F1	F1 BASE	3.5m-4m	16-50174	PASS	
		F2 BASE	3.5m-4m	16-50174	PASS	
30/09/2016	F2		3.5m-4m	16-50174	PASS	
30/09/2016	F3	F3 BASE	3.5m-4m	16-50174		
30/09/2016	F4	F4 BASE	3.5m-4m	16-50174	PASS	
05/10/2016		F5 BASE	3.5m-4m	16-50174	PASS	
06/10/2016		F6 BASE	3.5m-4m	16-50174	PASS	
06/10/2016		F7 BASE	3.5m-4m	16-50174	PASS	
05/10/2016		F8 BASE	2.5m-3.5m	16-50174	PASS	
05/10/2016		AREA 1/SF6			PASS	
17/10/2016	G1	AREA 1/NF7	2.5m-3.5m	16-50793	PASS	
17/10/2016	G1	G1 BASE	3.5m-4m	16-50793	PASS	
17/10/2016	G2	G2 BASE	3.5m-4m	16-50793	PASS	
17/10/2016	G3	G3 BASE	3.5m-4m	16-50793	PASS	
17/10/2016	G4	G4 BASE	3.5m-4m	16-50793	PASS	
18/10/2016	G5	G5 BASE	3.5m-4m	16-50793	PASS	
18/10/2016	G6	G6 BASE	3.5m-4m	16-50793	PASS	
18/10/2016	G7	G7 BASE	3.5m-4m	16-50793	PASS	
19/10/2016		G8 BASE	3.5m-4m	16-50793	PASS	
19/10/2016	G8	AREA 1/SF7	2.5m-3.5m	16-50793	PASS	
19/10/2016		H8 BASE	3.5m-4m	16-50793	PASS	
19/10/2016	H8	AREA 1/SF8	2.5m-3.5m	16-50793	PASS	
19/10/2016		H7 BASE	3.5m-4m	16-50793	PASS	
19/10/2016		H6 BASE	3.5m-4m	16-50793	PASS	
20/10/2016	18	I8 BASE	3.5m-4m	16-50793	PASS	
20/10/2016	18	AREA 1/SF9	2.5m-3.5m	16-50793	PASS	
20/10/2016	18	AREA 1/EF8	2.5m-3.5m	16-50793	PASS	
20/10/2016	17	I7 BASE	3.5m-4m	16-50793	PASS	
20/10/2016	17	AREA 1/EF7	2.5m-3.5m	16-50793	PASS	
24/10/2016	H3	H3 BASE	3.5m-4m	16-50916	PASS	
24/10/2016	H4	H4 BASE	3.5m-4m	16-50916	PASS	
24/10/2016	H5	H5 BASE	3.5m-4m	16-50916	PASS	
25/10/2016	15	I5 BASE	3.5m-4m	16-50916	PASS	
25/10/2016		I6 BASE	3.5m-4m	16-50916	PASS	
21/10/2016		AREA 1/EF1	2.5m-3.5m	16-50916	PASS	
21/10/2016	G2	AREA 1/EF2	2.5m-3.5m	16-50916	PASS	
24/10/2016	Н3	AREA 1/EF3	2.5m-3.5m	16-50916	PASS	
25/10/2016	H4	AREA 1/EF4	2.5m-3.5m	16-50916	PASS	
25/10/2016	15	AREA 1/EF5	2.5m-3.5m	16-50916	PASS	
25/10/2016	16	AREA 1/EF6	2.5m-3.5m	16-50916	PASS	

Maximum concentration:8.86Minimum concentration:BLDLAverage concentration:0.4

AREA 1 Date Sampled Sample No Depth (m) QTSE Sample No				02/09/2016 Area1/NF1 2.50 - 3.50 226316	02/09/2016 Area1/WF1 2.50 - 3.50 226317	02/09/2016 Area1/WF2 2.50 - 3.50 226318	02/09/2016 Area1/WF3 2.50 - 3.50 226319	02/09/2016 Area1/WF4 2.50 - 3.50 226320	02/09/2016 Area1/WF5 2.50 - 3.50 226321	02/09/2016 A1 Base 3.50 - 4.00 226322	02/09/2016 A2 base 3.50 - 4.00 226323	02/09/2016 A3 Base 3.50 - 4.00 226324	02/09/2016 A4 Base 3.50 - 4.00 226325	02/09/2016 A5 Base 3.50 - 4.00 226326	02/09/2016 Area1/NF2 2.50 - 3.50 226327	02/09/2016 B1 Base 3.50 - 4.00 226328	02/09/2016 B2 Base 3.50 - 4.00 226329	02/09/2016 B3 Base 3.50 - 4.00 226330	02/09/2016 B4 Base 3.50 - 4.50 226331	02/09/2016 B5 Base 3.50 - 4.00 226332
VOC	Units	Limit of detection	Accreditation Status																	
TCE	ug/kg	< 5	MCERTS	< 5	7	< 5	10	7	61	29	< 5	< 5	< 5	170	< 5	< 5	23	9	9	< 5
Date Sampled Sample No Depth (m) QTSE Sample No		Limit of	Accreditation	09/09/2016 AREA1/WF6 2.50 - 3.50 228076	09/09/2016 A6 BASE 3.50 - 4.00 228077	09/09/2016 B6 BASE 3.50 - 4.00 228078	09/09/2016 AREA1/WF7 2.50 - 3.50 228079	09/09/2016 A7 BASE 3.50 - 4.00 228080	09/09/2016 B7 BASE 3.50 - 4.00 228081	09/09/2016 AREA1/WF8 2.50 - 3.50 228082	09/09/2016 A8 BASE 3.50 - 4.00 228083	09/09/2016 B8 BASE 3.50 - 4.00 228084	16/09/2016 AREA1/SF1 2.50 - 3.50 228087	16/09/2016 AREA1/SF2 2.50 - 3.50 228088	16/09/2016 AREA1/SF3 2.50 - 3.50 228089	15/09/2016 AREA1/NF3 2.50 - 3.50 228090	15/09/2016 C1 BASE 3.50 - 4.00 228091	15/09/2016 C2 BASE 3.50 - 4.00 228092	15/09/2016 C3 BASE 3.50 - 4.00 228093	15/09/2016 C4 BASE 3.50 - 4.00 228094
VOC	Units	detection	Status	_	_	_	_	_	_	4.0		_	_	_			_	_	_	
TCE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5	12	6	< 5	< 5	7	< 5	< 5	< 5	< 5	< 5	16
Date Sampled Sample No Depth (m) QTSE Sample No				16/09/2016 C5 BASE 3.50 - 4.00 228095	16/09/2016 C6 BASE 3.50 - 4.00 228096	16/09/2016 C7 BASE 3.50 - 4.00 228097	16/09/2016 C8 BASE 3.50 - 4.00 228098	23/09/2016 Area 1/SF4 2.50-3.50 229785	19/09/2016 Area 1/NF4 2.50-3.50 229786	19/09/2016 D1 BASE 3.50-4.00 229787	20/09/2016 D2 BASE 3.50-4.00 229788	20/09/2016 D3 BASE 3.50-4.00 229789	20/09/2016 D4 BASE 3.50-4.00 229790	21/09/2016 D5 BASE 3.50-4.00 229791	21/09/2016 D6 BASE 3.50-4.00 229792	22/09/2016 D7 BASE 3.50-4.00 229793	22/09/2016 D8 BASE 3.50-4.00 229794	23/09/2016 Area 1/SF5 2.50 - 3.50 230185	26/09/2016 Area 1/NF5 2.50 - 3.50 230186	26/09/2016 E1 Base 3.50 - 4.00 230187
voc	Units	Limit of detection	Accreditation Status																	
TCE	ug/kg	< 5	MCERTS	< 5	< 5	20	< 5	< 5	8	14	30	622	< 5	< 5	1386	< 5	< 5	< 5	67	67
Date Sampled Sample No Depth (m) QTSE Sample No				26/09/2016 E2 Base 3.50 - 4.00 230188	26/09/2016 E3 Base 3.50 - 4.00 230189	27/09/2016 E4 Base 3.50 - 4.00 230190	27/09/2016 E5 Base 3.50 - 4.00 230191	27/09/2016 E6 Base 3.50 - 4.00 230192	27/09/2016 E7 Base 3.50 - 4.00 230193	23/09/2016 E8 Base 3.50 - 4.00 230194	30/09/2016 Area 1 / NF6 2.50 - 3.50 231639	30/09/2016 F1 Base 3.50 - 4.00 231640	30/09/2016 F2 Base 3.50 - 4.00 231641	30/09/2016 F3 Base 3.50 - 4.00 231642	30/09/2016 F4 Base 3.50 - 4.00 231643	05/10/2016 F5 Base 3.50 - 4.00 231644	06/10/2016 F6 Base 3.50 - 4.00 231645	06/10/2016 F7 Base 3.50 - 4.00 231646	05/10/2016 F8 Base 3.50 - 4.00 231647	05/10/2016 Area 1 / SF6 2.50 - 3.50 231648
VOC TCE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	34	97	697	69	45	30	29	< 5	< 5	< 5	< 5	6	< 5	13	< 5	7	< 5
Date Sampled Sample No Depth (m) QTSE Sample No				17/10/2016 AREA 1/NF7 2.50 - 3.50 234716	17/10/2016 G1 BASE 3.50 - 4.00 234717	17/10/2016 G2 BASE 3.50 - 4.00 234718	17/10/2016 G3 BASE 3.50 - 4.00 234719	17/10/2016 G4 BASE 3.50 - 4.00 234720	18/10/2016 G5 BASE 3.50 - 4.00 234721	18/10/2016 G6 BASE 3.50 - 4.00 234722	18/10/2016 G7 BASE 3.50 - 4.00 234723	19/10/2016 G8 BASE 3.50 - 4.00 234724	19/10/2016 AREA 1/SF7 2.50 - 3.00 234725	19/10/2016 H8 BASE 3.50 - 4.00 234726	19/10/2016 AREA 1/SF8 2.50 - 3.50 234727	19/10/2016 H7 BASE 3.50 - 4.00 234728	19/10/2016 H6 BASE 3.50 - 4.00 234729	20/10/2016 I8 BASE 3.50 - 4.00 234730	20/10/2016 AREA 1/SF9 2.50 - 3.50 234731	20/10/2016 AREA 1/EF8 2.50 - 3.50 234732
VOC	Units	Limit of detection	Accreditation Status																	
TCE	ug/kg	< 5	MCERTS	13	8	8	10	17	50	11	< 5	10	8859	23	122	10	10	2054	117	629
Date Sampled Sample No Depth (m) QTSE Sample No				20/10/2016 I7 BASE 3.50 - 4.00 234733	20/10/2016 AREA 1/EF7 2.50 - 3.50 234734	24/10/2016 H3 Base 3.50 - 4.00 235200	24/10/2016 H4 Base 3.50 - 4.00 235201	24/10/2016 H5 Base 3.50 - 4.00 235202	25/10/2016 I5 Base 3.50 - 4.00 235203	25/10/2016 I6 Base 3.50 - 4.00 235204	21/10/2016 Area 1 / EF1 2.50 - 3.50 235205	21/10/2016 Area 1 / EF2 2.50 - 3.50 235206	24/10/2016 Area 1 / EF3 2.50 - 3.50 235207	25/10/2016 Area 1 / EF4 2.50 - 3.50 235208	25/10/2016 Area 1 / EF5 2.50 - 3.50 235209	25/10/2016 Area 1 / EF6 2.50 - 3.50 235210				
VOC TCE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	341	350	1624	160	< 5	< 5	< 5	3025	1185	9	95	< 5	81				
VOC TCE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	MAX 8859.0	MIN 6.0	AVERAGE 400.50	Remedial Target 35	>RT 0	In ug/kg 35000											

Tested at 1 per 10m linear length on walls and 1 per grid square on bases Summary of Soil Validation





Date	Grid	Sample	Depth	Test	Test	Further Actions / Comments
	Square	Number	(m)	Certificate	Result	· ·
	·		, ,			
27/10/2016	K1	AREA 2/NF1	2.5m-3.5m	16-51122	PASS	
27/10/2016	K1	AREA 2/WF1	2.5m-3.5m	16-51122	PASS	
27/10/2016	K1	K1 BASE	3.5m-4m	16-51122	PASS	
01/11/2016	K2	AREA 2/WF2	2.5m-3.5m	16-51393	PASS	
01/11/2016	K2	K2 BASE	3.5m-4m	16-51393	PASS	
01/11/2016	К3	AREA 2/WF3	2.5m-3.5m	16-51393	PASS	
01/11/2016	К3	K3 BASE	3.5m-4m	16-51393	PASS	
01/11/2016	K4	AREA 2/WF4	2.5m-3.5m	16-51393	PASS	
01/11/2016	K4	K4 BASE	3.5m-4m	16-51393	PASS	
08/11/2016	K5	AREA 2/WF5	2.5m-3.5m	16-51730	PASS	
08/11/2016	L6	AREA 2/WF6	2.5m-3.5m	16-51730	PASS	
08/11/2016	L7	AREA 2/WF7	2.5m-3.5m	16-51730	PASS	
08/11/2016	L8	AREA 2/WF8	2.5m-3.5m	16-51730	PASS	
08/11/2016	L8	AREA 2/SF1	2.5m-3.5m	16-51730	PASS	
14/11/2016	K5	K5 BASE	3.5m-4m	16-51730	PASS	
14/11/2016	L1	AREA 2/NF2	2.5m-3.5m	16-51730	PASS	
14/11/2016	L1	L1 BASE	3.5m-4m	16-51730	PASS	
14/11/2016	L2	L2 BASE	3.5m-4m	16-51730	PASS	
14/11/2016	L3	L3 BASE	3.5m-4m	16-51730	PASS	
15/11/2016	L4	L4 BASE	3.5m-4m	16-51959	PASS	
15/11/2016	L5	L5 BASE	3.5m-4m	16-51959	PASS	
15/11/2016	L6	L6 BASE	3.5m-4m	16-51959	PASS	
15/11/2016	L7	L7 BASE	3.5m-4m	16-51959	PASS	
15/11/2016	L8	L8 BASE	3.5m-4m	16-51959	PASS	
15/11/2016	L8	AREA 2/SF2	2.5m-3.5m	16-51959	PASS	
28/11/2016	M1	AREA 2/NF3	2.5m-3.5m	16-52472	PASS	
28/11/2016	M1	M1 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	M2	M2 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	M3	M3 BASE	3.5m-4m	16-52472	PASS	
06/12/2016	M4	M4 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	M5	M5 BASE	3.5m-4m	16-52716	PASS	
28/11/2016	M6	M6 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	M7	M7 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	M8	M8 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	M8	AREA 2/SF3	2.5m-3.5m	16-52472	PASS	
28/11/2016	N1	AREA 2/NF4	2.5m-3.5m	16-52472	PASS	
28/11/2016	N1	N1 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	N2	N2 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	N3	N3 BASE	3.5m-4m	16-52472	PASS	
06/12/2016	N4	N4 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	N5	N5 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	N6	N6 BASE	3.5m-4m	16-52716	PASS	
28/11/2016	N7	N7 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	N8	N8 BASE	3.5m-4m	16-52472	PASS	
28/11/2016	N8	AREA 2/SF4	2.5m-3.5m	16-52472	PASS	
29/11/2016	08	AREA 2/SF5	2.5m-3.5m	16-52472	PASS	
29/11/2016	08	O8 BASE	3.5m-4m	16-52472	PASS	
06/12/2016	07	O7 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	P8	AREA 2/SF6	2.5m-3.5m	16-52716	PASS	

Tested at 1 per 10m linear length on walls and 1 per grid square on bases Summary of Soil Validation





Date	Grid Square	Sample Number	Depth (m)	Test Certificate	Test Result	Further Actions / Comments
	·		,			
06/12/2016	P8	P8 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	P7	P7 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	01	O1 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	01	AREA 2/NF5	2.5m-3.5m	16-52716	PASS	
06/12/2016	02	O2 BASE	3.5m-4m	16-52716	PASS	
06/12/2016	03	O3 BASE	3.5m-4m	16-52716	PASS	
08/12/2016	04	O4 BASE	3.5m-4m	16-52716	PASS	
08/12/2016	O 5	O5 BASE	3.5m-4m	16-52716	PASS	
08/12/2016	06	O6 BASE	3.5m-4m	16-52716	PASS	
04/01/2017	P1	P1 BASE	3.5m-4m	17-53382	PASS	
04/01/2017	P1	AREA 2/NF6	2.5m-3.5m	17-53382	PASS	
04/01/2017	P2	P2 BASE	3.5m-4m	17-53382	PASS	
04/01/2017	P3	P3 BASE	3.5m-4m	17-53382	PASS	
04/01/2017	P4	P4 BASE	3.5m-4m	17-53382	PASS	
04/01/2017	P5	P5 BASE	3.5m-4m	17-53382	PASS	
04/01/2017	P6	P6 BASE	3.5m-4m	17-53382	PASS	
12/01/2017	Q1	AREA 2/NF7	2.5m-3.5m	17-53641	PASS	
12/01/2017	Q1	Q1 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q2	Q2 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q3	Q3 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q4	Q4 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q5	Q5 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q6	Q6 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q7	Q7 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q8	Q8 BASE	3.5m-4m	17-53641	PASS	
12/01/2017	Q8	AREA 2/SF7	2.5m-3.5m	17-53641	PASS	
17/01/2017	R3	R3 BASE	3.5m-4m	17-53778	PASS	
17/01/2017	R4	R4 BASE	3.5m-4m	17-53778	PASS	
17/01/2017	R5	R5 BASE	3.5m-4m	17-53778	PASS	
17/01/2017	R6	R6 BASE	3.5m-4m	17-53778	PASS	
17/01/2017	R7	R7 BASE	3.5m-4m	17-53778	PASS	
17/01/2017	R8	R8 BASE	3.5m-4m	17-53778	PASS	
17/01/2017	R8	AREA 2/SF8	2.5m-3.5m	17-53778	PASS	
25/01/2017	R2	R2 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	R1	R1 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	R1	AREA 2/NF8	2.5m-3.5m	17-54303	PASS	
25/01/2017	S8	S8 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	S8	AREA 2/SF9	2.5m-3.5m	17-54303	PASS	
25/01/2017	S7	S7 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	S6	S6 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	\$5 \$5	S5 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	S4	S4 BASE	3.5m-4m	17-54303	PASS	
25/01/2017	S 3	S3 BASE	3.5m-4m	17-54303	PASS	
08/02/2017	S1	S1 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	S1	AREA 2/NF9	2.5m-3.5m	17-54958	PASS	
08/02/2017	S2	S2 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	T1	T1 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	T2	T2 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	T3	T3 BASE	3.5m-4m	17-54958	PASS	

Tested at 1 per 10m linear length on walls and 1 per grid square on bases Summary of Soil Validation





Date	Grid	Sample	Depth	Test	Test	Further Actions / Comments
	Square	Number	(m)	Certificate	Result	
08/02/2017	T4	T4 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	T5	T5 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	Т6	T6 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	T7	T7 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	Т8	T8 BASE	3.5m-4m	17-54958	PASS	
08/02/2017	T1	AREA 2/NF10	2.5m-3.5m	17-54958	PASS	
08/02/2017	Т8	AREA 2/SF10	2.5m-3.5m	17-54958	PASS	
08/02/2017	T1	AREA 2/EF1	2.5m-3.5m	17-54958	PASS	
08/02/2017	T2	AREA 2/EF2	2.5m-3.5m	17-54958	PASS	
08/02/2017	Т3	AREA 2/EF3	2.5m-3.5m	17-54958	PASS	
08/02/2017	T4	AREA 2/EF4	2.5m-3.5m	17-54958	PASS	
08/02/2017	T5	AREA 2/EF5	2.5m-3.5m	17-54958	PASS	
08/02/2017	Т6	AREA 2/EF6	2.5m-3.5m	17-54958	PASS	
08/02/2017	T7	AREA 2/EF7	2.5m-3.5m	17-54958	PASS	
08/02/2017	Т8	AREA 2/EF8	2.5m-3.5m	17-54958	PASS	

Maximum concentration:9.311Minimum concentration:BLDLAverage concentration:1.036

Α	R	Е	Α	2	

D: S: D	REA 2 ate Sampled ample No epth (m) TSE Sample No				27/10/2016 Area 2/NF1 2.50 - 3.50 235936	27/10/2016 Area 2/WF1 2.50 - 3.50 235937	27/10/2016 K1 Base 3.50 - 4.00 235938	04/11/2016 Area 2/WF2 2.50 - 3.50 236934	04/11/2016 Area 2/WF3 2.50 - 3.50 236935	04/11/2016 Area 2/WF4 2.50 - 3.50 236936	04/11/2016 K2 base 3.50 - 4.00 236937	04/11/2016 K3 Base 3.50 - 4.00 236938	04/11/2016 K4 Base 3.50 - 4.00 236939	08/11/2016 Area 2/WF5 2.50 - 3.50 238219	08/11/2016 Area 2/WF6 2.50 - 3.50 238220	08/11/2016 Area 2/WF7 2.50 - 3.50 238221	08/11/2016 Area 2/WF8 2.50 - 3.50 238222	08/11/2016 Area 2/SF1 2.50 - 3.50 238223	14/11/2016 K5 Base 3.50 - 4.00 238224	14/11/2016 Area 2/NF2 2.50 - 3.50 238225	14/11/2016 L1 Base 3.50 - 4.00 238226
	OC CE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	1451	413	944	244	< 5	41	310	21	756	27	36	31	19	81	24	303	42
Sa D	ate Sampled ample No epth (m) TSE Sample No		l instant	A dia - di	14/11/2016 L2 Base 3.50 - 4.00 238227	14/11/2016 L3 Base 3.50 - 4.00 238228	15/11/2016 L4 Base 3.50 - 4.00 239243	15/11/2016 L5 Base 3.50 - 4.00 239244	15/11/2016 L6 Base 3.50 - 4.00 239245	15/11/2016 L7 Base 3.50 - 4.00 239246	15/11/2016 L8 Base 3.50 - 4.00 239247	15/11/2016 Area 2/SF2 2.50 - 3.50 239248	28/11/2016 Area 2/NF3 2.50 - 3.50 241515	28/11/2016 M1 Base 3.50 - 4.00 241516	28/11/2016 M2 Base 3.50 - 4.00 241517	28/11/2016 M3 Base None Supplied 241518	28/11/2016 M6 Base 3.50 - 4.00 241519	28/11/2016 M7 Base 3.50 - 4.00 241520	28/11/2016 M8 Base 3.50 - 4.00 241521	28/11/2016 Area 2/SF3 2.50 - 3.50 241522	28/11/2016 Area 2/NF4 2.50 - 3.50 241523
	OC CE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	510	2190	6670	4796	5887	9311	6516	4552	7260	8270	1436	4383	17	8930	26	27	335
Sa D	ate Sampled ample No epth (m) TSE Sample No		Limit of	Accreditation	28/11/2016 N1 Base 3.50 - 4.00 241524	28/11/2016 N2 Base 3.50 - 4.00 241525	28/11/2016 N3 Base 3.50 - 4.00 241526	28/11/2016 N7 Base 3.50 - 4.00 241527	28/11/2016 N8 Base 3.50 - 4.00 241528	28/11/2016 Area 2/SF4 2.50 - 3.50 241529	29/11/2016 Area 2/SF5 2.50 - 3.50 241533	29/11/2016 O8 Base 3.50 - 4.00 241534	06/12/2016 M4 Base 3.50 - 4.00 242373	06/12/2016 M5 Base 3.50 - 4.00 242374	06/12/2016 N4 Base 3.50 - 4.00 242375	06/12/2016 N5 Base 3.50 - 4.00 242376	06/12/2016 N6 Base 3.50 - 4.00 242377	06/12/2016 O7 Base 3.50 - 4.00 242378	06/12/2016 P7 Base 3.50 - 4.00 242379	06/12/2016 P8 Base 3.50 - 4.00 242380	06/12/2016 Area 2/SF6 2.50 - 3.50 242381
	OC CE	Units ug/kg	detection < 5	Status MCERTS	452	164	2582	108	16	22	19	17	20	101	35	15	12	11	< 5	11	< 5
Sa D	ate Sampled ample No epth (m) TSE Sample No				06/12/2016 O1 Base 3.50 - 4.00 242382	06/12/2016 O2 Base 3.50 - 4.00 242383	06/12/2016 O3 Base 3.50 - 4.00 242384	06/12/2016 Area 2/NF5 2.50 - 3.50 242385	08/12/2016 O4 Base 3.50 - 4.00 242386	08/12/2016 O5 Base 3.50 - 4.00 242387	08/12/2016 O6 Base 3.50 - 4.00 242388	04/01/2017 P1 Base 3.50 - 4.00 245448	04/01/2017 P2 Base 3.50 - 4.00 245449	04/01/2017 P3 Base 3.50 - 4.00 245450	04/01/2017 P4 Base 3.50 - 4.00 245451	04/01/2017 P5 Base 3.50 - 4.00 245452	04/01/2017 P6 Base 3.50 - 4.00 245453	04/01/2017 Area 2/NF6 2.50 - 3.50 245454	12/01/2017 Q1 BASE 3.50 - 4.00 246451	12/01/2017 Q2 BASE 3.50 - 4.00 246452	12/01/2017 Q3 BASE 3.50 - 4.00 246453
	OC CE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	468	818	248	< 5	1817	2158	137	73	690	18	40	9	48	25	199	45	34
Sa D	ate Sampled ample No epth (m) TSE Sample No				12/01/2017 Q4 BASE 3.50 - 4.00 246454	12/01/2017 Q5 BASE 3.50 - 4.00 246455	12/01/2017 Q6 BASE 3.50 - 4.00 246456	12/01/2017 Q7 BASE 3.50 - 4.00 246457	12/01/2017 Q8 BASE 3.50 - 4.00 246458	12/01/2017 AREA2/NF7 2.50 - 3.50 246459	12/01/2017 AREA2/SF7 2.50 - 3.50 246460	17/01/2017 R8 Base 3.50 - 4.00 247126	17/01/2017 Area 2 / SF8 2.50 - 3.50 247127	17/01/2017 R7 Base 3.50 - 4.00 247128	17/01/2017 R6 Base 3.50 - 4.00 247129	17/01/2017 R5 Base 3.50 - 4.00 247130	17/01/2017 R4 Base 3.50 - 4.00 247131	17/01/2017 R3 Base 3.50 - 4.00 247132	25/01/2017 R2 Base 3.50 - 4.00 249388	25/01/2017 R1 Base 3.50 - 4.00 249389	25/01/2017 Area 2/NF8 2.50 - 3.50 249390
	OC CE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	1000	445	32	< 5	< 5	26	< 5	271	227	352	73	293	579	5762	42	255	431
Sa D	ate Sampled ample No epth (m) TSE Sample No				25/01/2017 S8 Base 3.50 - 4.00 249391	25/01/2017 Area 2/SF9 2.50 - 3.50 249392	25/01/2017 S7 Base 3.50 - 4.00 249393	25/01/2017 S6 Base 3.50 - 4.00 249394	25/01/2017 S5 Base 3.50 - 4.00 249395	25/01/2017 S4 Base 3.50 - 4.00 249396	25/01/2017 S3 Base 3.50 - 4.00 249397	08/02/2017 S1 Base 3.50 - 4.00 252467	08/02/2017 Area 2/NF9 2.50 - 3.50 252468	08/02/2017 S2 Base 3.50 - 4.00 252469	08/02/2017 T1 Base 3.50 - 4.00 252470	08/02/2017 T2 Base 3.50 - 4.00 252471	08/02/2017 T3 Base 3.50 - 4.00 252472	08/02/2017 T4 Base 3.50 - 4.00 252473	08/02/2017 T5 Base 3.50 - 4.00 252474	08/02/2017 T6 Base 3.50 - 4.00 252475	08/02/2017 T7 Base 3.50 - 4.00 252476
	OC CE	Units ug/kg	Limit of detection < 5	Accreditation Status MCERTS	13	183	56	155	14	89	494	739	2893	482	103	182	500	614	483	240	367
Sa D Q V	ate Sampled ample No epth (m) TSE Sample No OC	Units	Limit of detection	Accreditation Status	08/02/2017 T8 Base 3.50 - 4.00 252477	08/02/2017 Area 2/NF10 2.50 - 3.50 252478	08/02/2017 Area 2/SF10 2.50 - 3.50 252479	08/02/2017 Area 2/EF1 2.50 - 3.50 252480	08/02/2017 Area 2/EF2 2.50 - 3.50 252481	08/02/2017 Area 2/EF3 2.50 - 3.50 252482	08/02/2017 Area 2/EF4 2.50 - 3.50 252483	08/02/2017 Area 2/EF5 2.50 - 3.50 252484	08/02/2017 Area 2/EF6 2.50 - 3.50 252485	08/02/2017 Area 2/EF7 2.50 - 3.50 252486	08/02/2017 Area 2/EF8 2.50 - 3.50 252487						
V	oc	ug/kg Units	< 5 Limit of detection	MCERTS Accreditation Status	289 MAX	155 MIN	355 AVERAGE	154	108 Remedial Target	217 > RT	1970 In ug/kg	2655	57	105	88						
T	CE	ug/kg	< 5	MCERTS	9311.0	9.0	1036.03	TCE	35	0	35000										



Appendix F – Laboratory certificates





G & J Geoenvironmental Consultants Ltd 35-37 High Street

35-37 High Street Barrow-upon-Soar Loughborough Leicestershire

LE12 8PY

Gareth Thornton

QTS Environmental Ltd Unit 1

Rose Lane Industrial Estate

Rose Lane

Lenham Heath

Kent

ME17 2JN **t:** 01622 850410

russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-47533

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 03/08/2016

Sample Scheduled Date: 03/08/2016

Report Issue Number: 2

Reporting Date: 10/08/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate						
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16	02/08/16	02/08/16	02/08/16	02/08/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU1	SFU2	SFU3	SFU4	SFU5
Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 10/08/2016	QTSE Sample No	220750	220751	220752	220753	220754

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	8	5	4	7	8
Barium (Ba)	mg/kg	< 5	NONE	189	180	104	134	145
Beryllium (Be)	mg/kg	< 0.5	NONE	1.3	1.2	0.7	1.2	0.9
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	46	40	22	36	28
Copper (Cu)	mg/kg	< 4	MCERTS	20	15	11	16	14
Lead (Pb)	mg/kg	< 3	MCERTS	21	4	7	7	10
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	39	37	16	28	23
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	48	41	29	41	36
Zinc (Zn)	mg/kg	< 3	MCERTS	81	60	48	57	51

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)

Page 2 of 13





Soil Analysis Certificate										
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU6								
Group)										
Project / Job Ref: GJ079	Additional Refs	Composite								
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 10/08/2016	QTSE Sample No	220755								

Determinand	Unit	RL	Accreditation			
Arsenic (As)	mg/kg	< 2	MCERTS	5		
Barium (Ba)	mg/kg	< 5	NONE	80		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	21		
Copper (Cu)	mg/kg	< 4	MCERTS	11		
Lead (Pb)	mg/kg	< 3	MCERTS	12		
Mercury (Hg)	mg/kg	< 1	NONE	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	16		
Selenium (Se)	mg/kg	< 3	NONE	< 3		
Vanadium (V)	mg/kg	< 2	NONE	25		
Zinc (Zn)	mg/kg	< 3	MCERTS	40		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs	Soil Analysis Certificate - Speciated PAHs											
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16	02/08/16	02/08/16	02/08/16	02/08/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU1	SFU2	SFU3	SFU4	SFU5						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied										
Reporting Date: 10/08/2016	QTSE Sample No	220750	220751	220752	220753	220754						

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - Speciated PAHs											
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16									
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU6									
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite									
Order No: 138	Depth (m)	None Supplied									
Reporting Date: 10/08/2016	QTSE Sample No	220755	•								

Determinand	Unit	RL	Accreditation	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6





Soil Analysis Certificate - TPH CWG Banded											
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16	02/08/16	02/08/16	02/08/16	02/08/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU1	SFU2	SFU3	SFU4	SFU5					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite					
Order No: 138	Depth (m)	None Supplied									
Reporting Date: 10/08/2016	QTSE Sample No	220750	220751	220752	220753	220754					

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





Soil Analysis Certificate - TPH CWG Bande	Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16									
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU6									
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite									
Order No: 138	Depth (m)	None Supplied									
Reporting Date: 10/08/2016	QTSE Sample No	220755									

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





Soil Analysis Certificate - BTEX / MTBE	<i>1</i> · · · · · · · · · · · · · · · · · · ·											
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16	02/08/16	02/08/16	02/08/16	02/08/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU1	SFU2	SFU3	SFU4	SFU5						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied										
Reporting Date: 10/08/2016	QTSE Sample No	220750	220751	220752	220753	220754						

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





Soil Analysis Certificate - BTEX / MTBE							
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied					
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU6					
Francis Group)							
Project / Job Ref: GJ079	Additional Refs	Composite					
Order No: 138	Depth (m)	None Supplied					
Reporting Date: 10/08/2016	QTSE Sample No	220755					

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





Soil Analysis Certificate - Volatile Organic Compounds (VOC)									
Date Sampled	02/08/16	02/08/16	02/08/16	02/08/16	02/08/16				
Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied				
TP / BH No	SFU1	SFU2	SFU3	SFU4	SFU5				
Additional Refs	Composite	Composite	Composite	Composite	Composite				
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied				
QTSE Sample No	220750	220751	220752	220753	220754				
	Date Sampled Time Sampled TP / BH No Additional Refs Depth (m)	Date Sampled 02/08/16 Time Sampled None Supplied TP / BH No SFU1 Additional Refs Composite Depth (m) None Supplied	Date Sampled 02/08/16 02/08/16 Time Sampled None Supplied None Supplied TP / BH No SFU1 SFU2 Additional Refs Composite Composite Depth (m) None Supplied None Supplied	Date Sampled 02/08/16 02/08/16 02/08/16 Time Sampled None Supplied None Supplied None Supplied TP / BH No SFU1 SFU2 SFU3 Additional Refs Composite Composite Composite Depth (m) None Supplied None Supplied None Supplied	Date Sampled 02/08/16 02/08/16 02/08/16 02/08/16 Time Sampled None Supplied None Supplied None Supplied None Supplied TP / BH No SFU1 SFU2 SFU3 SFU4 Additional Refs Composite Composite Composite Composite Depth (m) None Supplied None Supplied None Supplied None Supplied				

Reporting Date: 10/08/2	010		I SE Sample No	220750	220751	220752	220753	220754
Determinand	Unit	ÐΙ	Accreditation					
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chloromethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Chloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromomethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chloroform	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene Carbon Tetrachloride	ug/kg ug/kg	< 10 < 5	MCERTS MCERTS	< 10 < 5				
1,2-Dichloroethane	ug/kg ug/kg	< 5	MCERTS	< 5 < 5	< 5 < 5	< 5 < 5	< 5	< 5 < 5
Benzene	ug/kg ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	
Dibromomethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
TAME	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS MCERTS	< 5	< 5	< 5	< 5	< 5 < 2
Ethyl Benzene m,p-Xylene	ug/kg ug/kg	< 2 < 2	MCERTS	< 2 < 2	< 2 < 2	< 2 < 2	< 2 < 2	< 2
o-Xylene	ug/kg ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Styrene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromoform	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Bromobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
tert-Butylbenzene	ug/kg	< 5		< 5	< 5	< 5		
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene 1,4-Dichlorobenzene	ug/kg	< 5 < 5	MCERTS MCERTS	< 5 < 5				
n-Butylbenzene	ug/kg	< 5 < 5	MCERTS	< 5 < 5				
1,2-Dichlorobenzene	ug/kg ug/kg	< 5 < 5	MCERTS	< 5 20	< 5 < 5	< 5 < 5	< 5 < 5	< 5 < 5
,2-Dibromo-3-chloropropane	ug/kg ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	
oao. noi obatadiche	ug/kg	` 0		` ' '	` 3	\ 3		` J





Soil Analysis Certificate - Volatile Organic Compounds (VOC)							
QTS Environmental Report No: 16-47533	Date Sampled	02/08/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied					
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU6					
Francis Group)							
Project / Job Ref: GJ079	Additional Refs	Composite					
Order No: 138	Depth (m)	None Supplied					
Reporting Date: 10/08/2016	QTSE Sample No	220755	•				

Reporting Date. 1070072			I 3L Sample No	220755		
Determinand	Unit	RL	Accreditation			
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5		
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5		
Chloromethane	ug/kg	< 10	MCERTS	< 10		
Chloroethane	ug/kg	< 5	MCERTS	< 5		
Bromomethane	ug/kg	< 10	MCERTS	< 10		
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5		
1,1-Dichloroethene	ug/kg ug/kg	< 5	MCERTS	< 5		
MTBE	ug/kg	< 5	MCERTS	< 5		
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5		
1.1-Dichloroethane	ug/kg	< 5	MCERTS	< 5		
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5		
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5		
Chloroform	ug/kg	< 5	MCERTS	< 5		
Bromochloromethane	ug/kg	< 5	MCERTS	< 5		
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5		
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10		
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5		
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5		
Benzene	ug/kg ug/kg	< 2	MCERTS	< 2		
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5		
Trichloroethene	ug/kg ug/kg	< 5	MCERTS			
Bromodichloromethane	ug/kg ug/kg	< 5	MCERTS	< 5 < 5		
Dibromomethane	ug/kg ug/kg	< 5	MCERTS	< 5 < 5		
TAME	ug/kg ug/kg	< 5 < 5	MCERTS	< 5 < 5		
cis-1,3-Dichloropropene	0 0	< 5	MCERTS	< 5 < 5		
Toluene	ug/kg ug/kg	< 5	MCERTS			
trans-1,3-Dichloropropene	0 0	< 5	MCERTS	< 5		
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 5 < 10		
1,1,2-Trichloroethane	ug/kg ug/kg	< 10	MCERTS	< 10 < 5		
Tetrachloroethene	ug/kg ug/kg	< 5	MCERTS	< 5 < 5		
Dibromochloromethane	ug/kg ug/kg	< 5	MCERTS	< 5 < 5		
	0 0	< 5	MCERTS	< 5 < 5		
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5 < 5		
Chlorobenzene 1,1,1,2-Tetrachloroethane	ug/kg ug/kg	< 5	MCERTS	< 5 < 5		
Ethyl Benzene	ug/kg ug/kg	< 2	MCERTS	< 2		
	0 0	< 2	MCERTS			
m,p-Xylene o-Xylene	ug/kg ug/kg	< 2	MCERTS	< 2		
Styrene	0 0	< 5	MCERTS	< 2		
	ug/kg	< 10	MCERTS	< 5 < 10		
Bromoform	ug/kg ug/kg	< 10 < 5	MCERTS		1	
Isopropylbenzene 1,1,2,2-Tetrachloroethane	0 0	< 5	MCERTS	< 5 < 5	1	
1,1,2,2-Tetrachioroethane	ug/kg	< 5 < 5	MCERTS		1	
n-Propylbenzene	ug/kg ug/kg	< 5 < 5	MCERTS	< 5 < 5		
	0 0	< 5 < 5	MCERTS		1	
Bromobenzene 2-Chlorotoluene	ug/kg			< 5		
	ug/kg	< 5 < 5	MCERTS MCERTS	< 5		
1,3,5-Trimethylbenzene	ug/kg			< 5		
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5		
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5		
1,2,4-Trimethylbenzene	ug/kg	< 5 < 5	MCERTS	< 5 < 5		
sec-Butylbenzene	ug/kg		MCERTS			
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5		
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5		
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5		
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5		
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5		
,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10		
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5		





Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 16-47533

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 10/08/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
220750	SFU1	Composite	None Supplied	17.3	Red clay
220751	SFU2	Composite	None Supplied	15.3	Red clay
220752	SFU3	Composite	None Supplied	13.3	Brown clay
220753	SFU4	Composite	None Supplied	13	Red clay
220754	SFU5	Composite	None Supplied	14.1	Red clay
220755	SFU6	Composite	None Supplied	11	Red clay with stones

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm t/S}$ Unsuitable Sample $^{\rm t/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-47533
G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)
Project / Job Ref: GJ079

Order No: 138 Reporting Date: 10/08/2016

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

D Dried AR As Received





LE12 8PY



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QTS Environmental Report No: 16-48570

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 30/08/2016

Sample Scheduled Date: 30/08/2016

Report Issue Number: 2

Reporting Date: 06/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis Associate Director of Client Services





Soil Analysis Certificate									
QTS Environmental Report No: 16-48570	Date Sampled	24/08/16	24/08/16	26/08/16	26/08/16	26/08/16			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU7	SFU8	SFU9	SFU10	SFU11			
Group)									
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite			
Order No: 138	Depth (m)	None Supplied							
Reporting Date: 06/09/2016	QTSE Sample No	225208	225209	225210	225211	225212			

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	6	6	7	13	7
Barium (Ba)	mg/kg	< 5	NONE	232	228	107	173	100
Beryllium (Be)	mg/kg	< 0.5	NONE	1.1	1.1	0.8	1	0.7
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	44	40	24	32	21
Copper (Cu)	mg/kg	< 4	MCERTS	11	13	12	16	13
Lead (Pb)	mg/kg	< 3	MCERTS	4	5	12	15	12
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	47	43	21	32	19
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	41	39	33	45	30
Zinc (Zn)	mg/kg	< 3	MCERTS	62	66	51	72	45

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate									
QTS Environmental Report No: 16-48570	Date Sampled	26/08/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU12							
Group)									
Project / Job Ref: GJ079	Additional Refs	Composite							
Order No: 138	Depth (m)	None Supplied							
Reporting Date: 06/09/2016	QTSE Sample No	225213							

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	9			
Barium (Ba)	mg/kg	< 5	NONE	141			
Beryllium (Be)	mg/kg	< 0.5	NONE	0.8			
W/S Boron	mg/kg	< 1	NONE	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	27			
Copper (Cu)	mg/kg	< 4	MCERTS	12			
Lead (Pb)	mg/kg	< 3	MCERTS	8			
Mercury (Hg)	mg/kg	< 1	NONE	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	29			
Selenium (Se)	mg/kg	< 3	NONE	< 3			
Vanadium (V)	mg/kg	< 2	NONE	33			
Zinc (Zn)	mg/kg	< 3	MCERTS	55	·		·

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs										
QTS Environmental Report No: 16-48570	Date Sampled	24/08/16	24/08/16	26/08/16	26/08/16	26/08/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU7	SFU8	SFU9	SFU10	SFU11				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 06/09/2016	QTSE Sample No	225208	225209	225210	225211	225212				

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6		< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - Speciated PAHs										
QTS Environmental Report No: 16-48570	Date Sampled	26/08/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU12								
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite								
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 06/09/2016	QTSE Sample No	225213								

Determinand	Unit	RL	Accreditation	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6





Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 16-48570	Date Sampled	24/08/16	24/08/16	26/08/16	26/08/16	26/08/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU7	SFU8	SFU9	SFU10	SFU11				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 06/09/2016	QTSE Sample No	225208	225209	225210	225211	225212				

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





Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 16-48570	Date Sampled	26/08/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU12								
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite								
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 06/09/2016	QTSE Sample No	225213								

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





Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-48570	Date Sampled	24/08/16	24/08/16	26/08/16	26/08/16	26/08/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU7	SFU8	SFU9	SFU10	SFU11
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 06/09/2016	QTSE Sample No	225208	225209	225210	225211	225212

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





Soil Analysis Certificate - BTEX / MTBE	Soil Analysis Certificate - BTEX / MTBE								
QTS Environmental Report No: 16-48570	Date Sampled	26/08/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU12							
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	Composite							
Order No: 138	Depth (m)	None Supplied							
Reporting Date: 06/09/2016	QTSE Sample No	225213							

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





Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-48570	Date Sampled	24/08/16	24/08/16	26/08/16	26/08/16	26/08/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU7	SFU8	SFU9	SFU10	SFU11				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 06/09/2016	QTSE Sample No	225208	225209	225210	225211	225212				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Soil Analysis Certificate - Volatile Organic Compounds (VOC)									
QTS Environmental Report No: 16-48570	Date Sampled	26/08/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU12							
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	Composite							
Order No: 138	Depth (m)	None Supplied							
Reporting Date: 06/09/2016	QTSE Sample No	225213							

Determinand	Unit	RL	Accreditation			
Trichloroethene	ug/kg	< 5	MCERTS	< 5		





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-48570	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 06/09/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
225208	SFU7	Composite	None Supplied	10.7	Red clay
225209	SFU8	Composite	None Supplied	5.1	Brown clay
225210	SFU9	Composite	None Supplied	11.6	Brown clay with stones
225211	SFU10	Composite	None Supplied	10.2	Brown clay with stones
225212	SFU11	Composite	None Supplied	10.3	Brown clay with stones
225213	SFU12	Composite	None Supplied	12.1	Brown clay with stones

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm U/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-48570
G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)
Project / Job Ref: GJ079

Order No: 138
Reporting Date: 06/09/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-48868

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 07/09/2016

Sample Scheduled Date: 07/09/2016

Report Issue Number: 1

Reporting Date: 13/09/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-48868	Date Sampled	02/09/16	02/09/16	02/09/16	02/09/16	02/09/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	Area1/NF1	Area1/WF1	Area1/WF2	Area1/WF3	Area1/WF4				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied								
Order No: 138	Depth (m)	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50				
Reporting Date: 13/09/2016	QTSE Sample No	226316	226317	226318	226319	226320				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	7	< 5	10	7





Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-48868	Date Sampled	02/09/16	02/09/16	02/09/16	02/09/16	02/09/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	Area1/WF5	A1 Base	A2 base	A3 Base	A4 Base				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied								
Order No: 138	Depth (m)	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00				
Reporting Date: 13/09/2016	QTSE Sample No	226321	226322	226323	226324	226325				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	61	29	< 5	< 5	< 5





Soil Analysis Certificate - Volatile Organic Compounds (VOC) OTS Environmental Report No: 16-48868
G & J Geoenvironmental Consultants Ltd Date Sampled 02/09/16 02/09/16 02/09/16 02/09/16 02/09/16 Time Sampled None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No A5 Base Area1/NF2 B1 Base B2 Base B3 Base Francis Group) None Supplied Project / Job Ref: GJ079 Additional Refs None Supplied None Supplied None Supplied None Supplied 3.50 - 4.00 226330 Order No: 138 Depth (m) 3.50 - 4.00 226329 3.50 - 4.00 2.50 - 3.50 226327 3.50 - 4.00 226328 Reporting Date: 13/09/2016 QTSE Sample No 226326

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	170	< 5	< 5	23	9





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)				
QTS Environmental Report No: 16-48868	Date Sampled	02/09/16	02/09/16		
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Nash Road, Redditch (St	TP / BH No	B4 Base	B5 Base		
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied		
Order No: 138	Depth (m)	3.50 - 4.50	3.50 - 4.00		
Reporting Date: 13/09/2016	QTSE Sample No	226331	226332		

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	9	< 5		





Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 16-48868

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 13/09/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
226316	Area1/NF1	None Supplied	2.50 - 3.50	19.1	Brown sandy clay
226317	Area1/WF1	None Supplied	2.50 - 3.50	20.4	Brown sandy clay
226318	Area1/WF2	None Supplied	2.50 - 3.50	19.1	Brown sandy clay
226319	Area1/WF3	None Supplied	2.50 - 3.50	20.9	Brown sandy clay
226320	Area1/WF4	None Supplied	2.50 - 3.50	15.1	Brown gravelly clay
226321	Area1/WF5	None Supplied	2.50 - 3.50	17.3	Brown gravelly clay
226322	A1 Base	None Supplied	3.50 - 4.00	19.7	Brown sandy clay
226323	A2 base	None Supplied	3.50 - 4.00	19.5	Brown sandy clay
226324	A3 Base	None Supplied	3.50 - 4.00	21.2	Brown gravelly sand
226325	A4 Base	None Supplied	3.50 - 4.00	13.6	Brown gravelly clay
226326	A5 Base	None Supplied	3.50 - 4.00	20.1	Brown clay
226327	Area1/NF2	None Supplied	2.50 - 3.50	18.1	Brown clay
226328	B1 Base	None Supplied	3.50 - 4.00	18.8	Brown clay
226329	B2 Base	None Supplied	3.50 - 4.00	20.7	Brown sandy clay
226330	B3 Base	None Supplied	3.50 - 4.00	20.9	Brown gravelly clay
226331	B4 Base	None Supplied	3.50 - 4.50	18.6	Brown gravelly clay
226332	B5 Base	None Supplied	3.50 - 4.00	20.3	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm I/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-48868
G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)
Project / Job Ref: GJ079

Order No: 138 Reporting Date: 13/09/2016

Soil AR Chromium - Heavaier Selable Determination of existing soil by again serged disposition followed by ICP-OTS E002 Determination of existing is not by again region disposition followed by ICP-OTS E002 Determination of existing is not by again region disposition followed by ICP-OTS E002 Determination of existing is not by again region disposition followed by Co-OTS E002 Determination of existing is not by again region disposition in whether a managed by ice chromatography (1906) and RR Cyronide - Compared to the Individual by a Cyronide - Compared - Individual by a Cyronide - Individual by Cyr	Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil AR	Soil		Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	
Soil AR Chronikum - Hoxavolem Carlo Chronikum - Hoxavolem Carlo Chronikum - Hoxavolem Carlo Carl	Soil	AR			E001
Soil AR Cycarbon Housewaler Chromium is all by extraction in water then by addiffication, addition of 5. dishembers by colorimetry 5. 50 1 AR Cycarbon From the Soil by destination followed by colorimetry 5. 50 1 AR Cycarbon From Soil By Cycar	Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil AR Cycarbon Housewaler Chromium is all by extraction in water then by addiffication, addition of 5. dishembers by colorimetry 5. 50 1 AR Cycarbon From the Soil by destination followed by colorimetry 5. 50 1 AR Cycarbon From Soil By Cycar	Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil AR Cyanido Complete Complete Cyanido Complete Cyanido	Soil	AR		Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	E016
Soil D Oychokeane Extractable Matter (EM) Caramider (EM) Caramider (EM) determination of total cyanidae by distillation followed by colorimetry E015	Soil	AR	Cyanide - Complex		E015
Soil AR Diesel Range Organics (CIC) C-20 Determination of hesene/accinence extractable hydrocarbons by CG-FID E004	Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil AR Diesel Range Organics (C10 - C24) Determination of hexane/acetone extractable hydrocarbons by C6-FID E004	Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil AR Electrical Conductivity Bedermentation of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement (1997) Soil AR Electrical Conductivity Bedermentation of electrical conductivity by addition of water followed by eC-MS (1997) Soil AR EPH CID - C40) Determination of elemental sulphur by solvent extraction followed by eC-MS (1997) Soil AR EPH TEXAS (C6-C6, C8-C10, C10-C12) Determination of actions/hexane extractible hydrocarbons by C6-FID (1907) Soil AR (1907) EPH TEXAS (C6-C6, C8-C10, C10-C12) Determination of actions/hexane extractible hydrocarbons by C6-FID (1907) Soil D Fundes Water Solvable Determination of actions/hexane extractible hydrocarbons by C6-FID (1907) Soil D FOC (Fraction Organic Carbon) Soil D Magnesium - Water Solvable Determination of organic carbon by oddising with potassium dichromate followed by (1907) Soil D Magnesium - Water Solvable Determination of organic carbon by oddising with potassium dichromate followed by (1907) Soil D Magnesium - Water Solvable Determination of metals by agus registed by grawfaction with water followed by ICP-OES (1907) Soil AR Mintra - Water Solvable Determination of metals by agus registed hydrocarbons by C6-FID fractionating with SPE (1907) Soil AR Mintra - Water Solvable (1907) Soil AR PAH - Speciated (EPA 10) Soil AR PAH -	Soil	D			E011
Soil AR Electrical Conductivity betermination of electrical conductivity by addition of water followed by electrometric measurement E023 Soil AR Electrical Conductivity by Determination of electrical conductivity by addition of water followed by electrometric measurement E023 Soil AR EPH C10 – C40) Determination of elemental suphrur by solvent extraction followed by CC-MS E040 Soil AR EPH EXAS (C6-C8, C8-C10, C10-C12, Determination of acotone/hexane extractable hydrocarbons by CC-FID To C8 to C40. C6 to C8 by C0-C12-C16, C16-C21, C21-C40, Entermination of acotone/hexane extractable hydrocarbons by CC-FID for C8 to C40. C6 to C8 by C0-C12-C16, C16-C21, C21-C40, Entermination of acotone/hexane extractable hydrocarbons by CC-FID for C8 to C40. C6 to C8 by C0-C12-C16, C16-C21, C21-C40, Entermination of acotone/hexane extractable hydrocarbons by CC-FID for C8 to C40. C6 to C8 by C0-C12-C16, C16-C21, C21-C40, Entermination of Ente	Soil	AR	Diesel Range Organics (C10 - C24)		E004
Soil D Elemental Sulphur Determination of elemental sulphur by solvent extraction followed by GC-MS	Soil	AR	Electrical Conductivity		E022
Soil AR EPH (C10 - C40) Determination of acotone/hexane extractable hydrocarbons by GC-FID E004	Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil AR EPH Product ID Determination of actore/hexane extractable hydrocarbons by GC-FID (10 ct) 2. Determination of actore/hexane extractable hydrocarbons by GC-FID (10 ct) 2. Determination of actore/hexane extractable hydrocarbons by GC-FID for GL	Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil AR	Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	
Soil D Fluoride - Water Soluble Canaly Determination of Fluoride by extraction with water & analysed by ion chromatography Determination of Fluoride by extraction with water & analysed by ion chromatography Determination of Fluoride by extraction with water & possible canaly Determination of the property of the prope	Soil	AR			E004
Determination of fraction of organic carbon by oxidising with potassium dichromate followed by concentration of fraction of organic carbon by oxidising with potassium dichromate followed by titration with irror (II) subplate carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the sample and sample being ignited in a muffle content of the sample and inten	C12-C16, C16-C21, C21-C40) headspace GC-MS		C12-C16, C16-C21, C21-C40)	headspace GC-MS	E004
Determination of fraction of organic carbon by oxidising with potassium dichromate followed by concentration of fraction of organic carbon by oxidising with potassium dichromate followed by titration with irror (II) subplate carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the carbon from the sample being ignited in a muffle content of the sample and sample being ignited in a muffle content of the sample and inten	Soil	Soil D Fluoride - Water Soluble Determination of Fluoride by extraction with water & analysed by ion chromatography		Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil D Magnesium - Water Soluble Determination of water soluble magnesium by extraction with water followed by ICP-OES	Soil	D		Determination of fraction of organic carbon by oxidising with potassium dichromate followed by	E010
Soil D Magnesium - Water Soluble Determination of water soluble magnesium by extraction with water followed by ICP-OES E025	Soil	D	Loss on Ignition @ 450oC		E019
Soil AR Mineral Oil (C10 - C40) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE E004	Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil AR Mineral Uli (19 - C40) Cartridge Soil AR Moisture Content: determined gravimetrically Soil D Nitrate - Water Soluble (2:1) Determination of nitrate by extraction with water & analysed by ion chromatography E009 Soil AR PAH - Speciated (EPA 16) Soil AR PAH - Speciated (EPA 16) Soil AR PCB - 7 Congeners Soil D Petroleum Ether Extract (PEE) Soil AR Penols - Total (monohydric) Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards Soil AR Penols - Total (monohydric) Determination of PAH compounds by extraction with petroleum ether E011 Soil AR Phenols - Total (monohydric) Determination of pH by addition of water followed by electrometric measurement E007 Soil AR Phenols - Total (monohydric) Determination of pH by addition of water followed by electrometric measurement E007 Soil D Sulphate (as S04) - Water Soluble (2:1) Soil D Sul	Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil D Nitrate - Water Soluble (2:1) Determination of PAH compounds by extraction with water & analysed by ion chromatography (2:0) Determination of PAH compounds by extraction with water & analysed by ion chromatography (2:0) Determination of Organic matter by oxidising with potassium dichromate followed by titration with potassium dichromate followed by titration with potassium dichromate followed by Co-MS (2:0) Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the user of surrogate and internal standards (2:0) Determination of PAH compounds by extraction with acetone and hexane followed by GC-MS (2:0) Determination of PAH compounds by extraction with acetone and hexane followed by GC-MS (2:0) Determination of PAH compounds by extraction with acetone and hexane followed by GC-MS (2:0) Determination of PAH compounds by extraction with acetone and hexane followed by GC-MS (2:0) Determination of PAH compounds by extraction with acetone and hexane followed by GC-MS (2:0) Determination of PAH compounds by extraction with acetone and hexane followed by GC-MS (2:0) Determination of PAH compounds by extraction with pater between the pater of PAH compounds by GC-MS (2:0) Determination of PAH compounds by extraction with pater between the pater by Economic pater pater by Economic pater pater by Economic pater	Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE	E004
Determination of ritrate by extraction with water & analysed by ion chromatography (E009 Formation of particle by extraction with water & analysed by ion chromatography (I) sulphate (EPA 16)	Soil	AR	Moisture Content		F003
Determination of organic matter by oxidising with potassium dichromate followed by titration with brond (II) sulphate Determination of organic matter by oxidising with potassium dichromate followed by GC-MS E008					
Soil AR PAH - Speciated (EPA 16) Soil AR PCB - 7 Congeners Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards Soil D Petroleum Ether Extract (PEE) Gravimetrically determined through extraction with petroleum ether E011 Soil AR Phenols - Total (monohydric) Soil AR Phenols - Total (monohydric) Determination of PB by extraction with petroleum ether E011 Soil D Phosphate - Water Soluble (2:1) Determination of pH by addition of water followed by celorometric measurement E027 Soil D Phosphate - Water Soluble (2:1) Determination of phenols by distillation followed by colorimetry E029 Soil D Sulphate (as SO4) - Total Determination of phenols by distillation followed by colorimetry E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water of sulphate by extraction with water of lolowed by ICP-OES E014 Soil AR Sulphide Potential Soluble Sulphate by extraction with water of lolowed by ICP-OES E014 Soil AR Thiocyanate (as SCN) Soil AR Thiocyanate (as SCN) Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene TOTAL Organic Carbon (TOC) TOTA	Soil	D		Determination of organic matter by oxidising with potassium dichromate followed by titration with	E010
Soil AR PCB - 7 Congeners Determination of PCB by extraction with acetone and hexane followed by GC-MS E008 Soil D Petroleum Ether Extract (PEE) Gravimetrically determined through extraction with petroleum ether E017 Soil AR Phenols - Total (monohydric) Determination of PDB by addition of water followed by electrometric measurement E007 Soil AR Phenols - Total (monohydric) Determination of phenols by distillation followed by colorimetry E021 Soil D Phosphate - Water Soluble (2:1) Determination of phenols by distillation followed by colorimetry E029 Soil D Sulphate (as SO4) - Total Determination of total sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of total sulphate by extraction with water followed by ICP-OES E013 Soil AR Sulphide Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble by a sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphur - Total Determination of sulphate by extraction with water followed by ICP-OES E018 Soil AR Sulphur - Total Determination of sulphate by extraction with available by CP-OES E018 Determination of sulphate by extraction with available by CP-OES E018 Determination of sulphate by extraction with available by CP-OES E018 Determination of sulphate by extraction with available by CP-OES E018 Determination of sulphate by E019 Determination of sulphate by E01	Soil	AR	PAH - Speciated (EPA 16)		E005
Soil D Petroleum Ether Extract (PEE) Gravimetrically determined through extraction with petroleum ether E011	Soil	AR	PCB - 7 Congeners		E008
Soil AR	Soil	D			E011
Soil D Phosphate - Water Soluble (2:1) Determination of phosphate by extraction with water & analysed by ion chromatography	Soil	AR			E007
Soil D Sulphate (as SO4) - Total Determination of total sulphate by extraction with 10% HCI followed by ICP-OES E013 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil AR Sulphide Sulphur - Total Determination of sulphate by extraction with water followed by ICP-OES E014 Soil D Sulphur - Total Determination of sulphide by distillation followed by colorimetry E018 Soil AR Sulphur - Total Determination of sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene E011 Soil D Total Organic Carbon (TOC) Total Organic Carbon (TOC) For IPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21	Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of sulphate by extraction with water & analysed by ion chromatography E009 Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry E018 Soil AR Sulphur - Total Determination of sulphide by distillation followed by colorimetry E024 Soil AR Sulphur - Total Determination of sulphide by distillation followed by ICP-OES E024 Soil AR Sulphur - Total Determination of sulphide by distillation followed by extraction with aqua-regia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Total Organic Carbon (TOC) For Interview of the properties of the propert	Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil D Sulphate (as SO4) - Water Soluble (2:1) Determination of water soluble sulphate by extraction with water followed by ICP-OES E014 Soil AR Sulphide Determination of sulphide by distillation followed by colorimetry E018 Sulphur - Total Determination of sulphide by distillation followed by colorimetry E018 Sulphur - Total Determination of total sulphur by extraction with agua-regia followed by ICP-OES E024 Soil AR Sulphur - Total Determination of total sulphur by extraction with agua-regia followed by ICP-OES E024 Soil AR Thiocyanate (as SCN) Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS Soil D Toluene Extractable Matter (TEM) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C21-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C21-C35) TPH LOM (ali: C5-C6, C6-C8, C3-C10, C10-C12, C10-C12, C11-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, C5 to C8 by headspace GC-MS Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E004	Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil AR Sulphide Sulphide Determination of sulphide by distillation followed by colorimetry Soil D Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR SVCC SC-MS Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in acetone and hexane followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate Soil AR THE LOW (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOW (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44) Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E004	Soil	D			
Soil AR Sulphur - Total Determination of total sulphur by extraction with aqua-regia followed by ICP-OES E024 Soil AR Svoc Soil AR Thiocyanate (as SCN) Soil D Toluene Extractable Matter (TEM) Gravimetrically determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Total Organic Carbon (TOC) Soil D Total Organic Carbon (TOC) Find C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) AR TH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C23, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16,					
Soil AR Thiocyanate (as SCN) Soil AR Thiocyanate (as SCN) Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Total Organic Carbon (TOC) Total Organic Carbon (TOC) AR TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) AR TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) AR TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C10-					
Soil AR Thiocyanate (as SCN) Soil D Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Soil D Total Organic Carbon (TOC) Soil AR THY CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C12-C12, C12-C16, C16-C21, C21-C35) AR TH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) Soil AR TH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) Soil AR TH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E004 E005 E007 E007 E007 E008 E009 E00	Soil	D	Sulphur - Total		E024
Soil AR Toluene Extractable Matter (TEM) Gravimetrically determined through extraction with toluene Soil D Total Organic Carbon (TOC) Total Organic Carbon (TOC) Total Organic Carbon (TOC) Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) AR TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C	Soil	AR	SVOC	GC-MS	E006
Soil D Total Organic Carbon (TOC) Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35) AR TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C35) AR C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44) Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E004	Soil	AR	, ,	addition of ferric nitrate followed by colorimetry	E017
Soil AR TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) AR TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) TPH LOM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C35, C35-C44) Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE art ridge for C8 to C44. C5 to C8 by headspace GC-MS E004 C12-C16, C16-C21, C21-C35, C35-C44) Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E001	Soil	D			E011
Soil AR C10-C12, C12-C16, C16-C21, C21-C34, Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE art of C5-C7, C7-C8, C8-C10, C10-C12, C12-C35) TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C10-C12, C12-C16, C16-C35, C35-C44, Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE art of C10-C12, C12-C16, C16-C35, C35-C44, Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE art of C10-C12, C12-C16, C16-C21, C21-C35, C35-C44, C31-C35, C35-C44, C31-C35, C35-C44, C31-C35, C35-C34, C31-C35, C35-C34, C31-C35, C35-C34, C31-C35, C31-C	Soil	D	Total Organic Carbon (TOC)		E010
Soil AR C10-C12, C12-C16, C16-C35, C35-C44, Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE aro: C5-C7, C7-C8, C8-C10, C10-C12, cartridge for C8 to C44. C5 to C8 by headspace GC-MS c12-C16, C16-C21, C21-C35, C35-C44) Soil AR VOCs Determination of volatile organic compounds by headspace GC-MS E001	Soil	AR	C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12,	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
			C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	cartridge for C8 to C44. C5 to C8 by headspace GC-MS	
	Soil	AR			E001

D Dried AR As Received





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russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-49272

Nash Road, Redditch (Saint Francis Group) **Site Reference:**

GJ079 Project / Job Ref:

Order No: PO~138

Sample Receipt Date: 19/09/2016

Sample Scheduled Date: 19/09/2016

Report Issue Number: 1

Reporting Date: 22/09/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CO

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 16-49272	Date Sampled	09/09/16	09/09/16	09/09/16	09/09/16	09/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (Saint	TP / BH No	AREA1/WF6	A6 BASE	B6 BASE	AREA1/WF7	A7 BASE
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	None Supplied				
Order No: PO~138	Depth (m)	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00
Reporting Date: 22/09/2016	QTSE Sample No	228076	228077	228078	228079	228080

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Tel: 01622 850410

Soil Analysis Certificate - Volatile Organic (Compounds (VOC)					
QTS Environmental Report No: 16-49272	Date Sampled	09/09/16	09/09/16	09/09/16	09/09/16	14/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (Saint	TP / BH No	B7 BASE	AREA1/WF8	A8 BASE	B8 BASE	SFU13
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	COMPOSITE
Order No: PO~138	Depth (m)	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	None Supplied
Reporting Date: 22/09/2016	QTSE Sample No	228081	228082	228083	228084	228085

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	12	6	< 5	< 5





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 16-49272	Date Sampled	14/09/16	16/09/16	16/09/16	16/09/16	15/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU14	AREA1/SF1	AREA1/SF2	AREA1/SF3	AREA1/NF3
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	COMPOSITE	None Supplied	None Supplied	None Supplied	None Supplied
Order No: PO~138	Depth (m)	None Supplied	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50
Reporting Date: 22/09/2016	QTSE Sample No	228086	228087	228088	228089	228090

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	63	< 5	7	< 5	< 5





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-49272	Date Sampled	15/09/16	15/09/16	15/09/16	15/09/16	16/09/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (Saint	TP / BH No	C1 BASE	C2 BASE	C3 BASE	C4 BASE	C5 BASE					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	None Supplied									
Order No: PO~138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00					
Reporting Date: 22/09/2016	QTSE Sample No	228091	228092	228093	228094	228095					

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	16	< 5





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)									
QTS Environmental Report No: 16-49272	Date Sampled	16/09/16	16/09/16	16/09/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (Saint	TP / BH No	C6 BASE	C7 BASE	C8 BASE						
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	None Supplied						
Order No: PO~138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 22/09/2016	QTSE Sample No	228096	228097	228098						

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	< 5	20	< 5	





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-49272	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (Saint Francis Group)	
Project / Job Ref: GJ079	
Order No: PO~138	
Reporting Date: 22/09/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
228076	AREA1/WF6	None Supplied	2.50 - 3.50	13.4	Light brown clay with stones
228077	A6 BASE	None Supplied	3.50 - 4.00	12.3	Light brown clay with stones
228078	B6 BASE	None Supplied	3.50 - 4.00	11.8	Light brown clay with stones
228079	AREA1/WF7	None Supplied	2.50 - 3.50	11.8	Light brown clay with stones
228080	A7 BASE	None Supplied	3.50 - 4.00	10	Light brown clay
228081	B7 BASE	None Supplied	3.50 - 4.00	12.9	Light brown clay
228082	AREA1/WF8	None Supplied	2.50 - 3.50	10.4	Brown clay with brick and concrete
228083	A8 BASE	None Supplied	3.50 - 4.00	9.8	Brown clay with stones
228084	B8 BASE	None Supplied	3.50 - 4.00	11.4	Light brown clay with stones
228085	SFU13	COMPOSITE	None Supplied	11.5	Light brown clay
228086	SFU14	COMPOSITE	None Supplied		Brown clay with stones
228087	AREA1/SF1	None Supplied	2.50 - 3.50	11.3	Light brown clay with stones
228088	AREA1/SF2	None Supplied	2.50 - 3.50	14.4	Light brown clay
228089	AREA1/SF3	None Supplied	2.50 - 3.50	11.6	Light brown clay with stones
228090	AREA1/NF3	None Supplied	2.50 - 3.50	19.3	Light brown clay
228091	C1 BASE	None Supplied	3.50 - 4.00	19.5	Light brown clay
228092	C2 BASE	None Supplied	3.50 - 4.00	18.9	Light brown clay
228093	C3 BASE	None Supplied	3.50 - 4.00	20.1	Light brown clay
228094	C4 BASE	None Supplied	3.50 - 4.00	15.2	Light brown clay
228095	C5 BASE	None Supplied	3.50 - 4.00	17.9	Light brown clay
228096	C6 BASE	None Supplied	3.50 - 4.00	17.1	Light brown clay
228097	C7 BASE	None Supplied	3.50 - 4.00	12.4	Light brown clay with stones
228098	C8 BASE	None Supplied	3.50 - 4.00	14.1	Light brown clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-49272

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079 Order No: PO~138

Reporting Date: 22/09/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-49729

Site Reference: Nash Road, Redditch (St. Francis Group)

Project / Job Ref: GJ079

Order No: PO~138

Sample Receipt Date: 28/09/2016

Sample Scheduled Date: 28/09/2016

Report Issue Number: 1

Reporting Date: 04/10/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CO

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-49729	Date Sampled	23/09/16	19/09/16	19/09/16	20/09/16	20/09/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St.	TP / BH No	Area 1/SF4	Area 1/NF4	D1 BASE	D2 BASE	D3 BASE					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	None Supplied									
Order No: PO~138	Depth (m)	2.50-3.50	2.50-3.50	3.50-4.00	3.50-4.00	3.50-4.00					
Reporting Date: 04/10/2016	QTSE Sample No	229785	229786	229787	229788	229789					

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	8	14	30	622





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-49729	Date Sampled	20/09/16	21/09/16	21/09/16	22/09/16	22/09/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St.	TP / BH No	D4 BASE	D5 BASE	D6 BASE	D7 BASE	D8 BASE						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: PO~138	Depth (m)	3.50-4.00	3.50-4.00	3.50-4.00	3.50-4.00	3.50-4.00						
Reporting Date: 04/10/2016	QTSE Sample No	229790	229791	229792	229793	229794						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	1386	< 5	< 5





Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 16-49729

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St. Francis Group)

Project / Job Ref: GJ079

Order No: PO~138

Reporting Date: 04/10/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
229785	Area 1/SF4	None Supplied	2.50-3.50	18	Light brown clay
229786	Area 1/NF4	None Supplied	2.50-3.50	17.5	Light brown clay
229787	D1 BASE	None Supplied	3.50-4.00	17.2	Light brown clay
229788	D2 BASE	None Supplied	3.50-4.00	12.8	Light brown clay
229789	D3 BASE	None Supplied	3.50-4.00	15	Light brown clay
229790	D4 BASE	None Supplied	3.50-4.00	12.3	Light brown clay
229791	D5 BASE	None Supplied	3.50-4.00	14.8	Light brown clay
229792	D6 BASE	None Supplied	3.50-4.00	16.3	Red clay
229793	D7 BASE	None Supplied	3.50-4.00	13.6	Red clay
229794	D8 BASE	None Supplied	3.50-4.00	12.4	Light brown clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-49729

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St. Francis Group)

Project / Job Ref: GJ079 Order No: PO~138

Reporting Date: 04/10/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-49810

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 30/09/2016

Sample Scheduled Date: 30/09/2016

Report Issue Number: 1

Reporting Date: 06/10/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate						
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/06	28/09/16	28/09/16	28/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU15	SFU16	W1/T1.1	W1/T2.1	W1/T3.1
Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 06/10/2016	QTSE Sample No	230195	230196	230197	230198	230199

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	5	4	8	9	6
Barium (Ba)	mg/kg	< 5	NONE	113	79	140	165	116
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	0.5	0.7	0.9	0.6
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	24	14	20	23	16
Copper (Cu)	mg/kg	< 4	MCERTS	16	9	12	13	10
Lead (Pb)	mg/kg	< 3	MCERTS	9	5	13	14	8
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	22	13	18	21	14
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	32	18	31	37	22
Zinc (Zn)	mg/kg	< 3	MCERTS	48	28	48	59	38

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate					
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/16	28/09/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W2/T4.1	W2/T5.1	W2/T6.1	
Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 06/10/2016	QTSE Sample No	230200	230201	230202	

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	5	10	5	
Barium (Ba)	mg/kg	< 5	NONE	105	201	223	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.8	1	1.1	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	27	24	42	
Copper (Cu)	mg/kg	< 4	MCERTS	11	19	11	
Lead (Pb)	mg/kg	< 3	MCERTS	8	8	5	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	24	23	50	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	30	45	37	
Zinc (Zn)	mg/kg	< 3	MCERTS	46	48	63	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/06	28/09/16	28/09/16	28/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU15	SFU16	W1/T1.1	W1/T2.1	W1/T3.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 06/10/2016	QTSE Sample No	230195	230196	230197	230198	230199

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Tel: 01622 850410

Soil Analysis Certificate - Speciated PAHs									
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/16	28/09/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied					
Site Reference: Nash Road, Redditch (St	TP / BH No	W2/T4.1	W2/T5.1	W2/T6.1					
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite					
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied					
Reporting Date: 06/10/2016	QTSE Sample No	230200	230201	230202					

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	





Soil Analysis Certificate - TPH CWG Bande	d					
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/06	28/09/16	28/09/16	28/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU15	SFU16	W1/T1.1	W1/T2.1	W1/T3.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 06/10/2016	QTSE Sample No	230195	230196	230197	230198	230199

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	1.60	3.83	0.47	4.28	0.37
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	5	10	4
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	27	41	26
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	44	52	48
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	76	107	82
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	4	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	6	21	8
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	18	35	23
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	20	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	24	82	31
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	100	190	112





Soil Analysis Certificate - TPH CWG Bande	d				
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/16	28/09/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St	TP / BH No	W2/T4.1	W2/T5.1	W2/T6.1	
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 06/10/2016	QTSE Sample No	230200	230201	230202	

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.26	0.08	0.14	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	14	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	24	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	38	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	3	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	11	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	52	< 42	< 42	





Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/06	28/09/16	28/09/16	28/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU15	SFU16	W1/T1.1	W1/T2.1	W1/T3.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 06/10/2016	QTSE Sample No	230195	230196	230197	230198	230199

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	17	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	72	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	54	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Soil Analysis Certificate - BTEX / MTBE					
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/16	28/09/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St	TP / BH No	W2/T4.1	W2/T5.1	W2/T6.1	
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 06/10/2016	QTSE Sample No	230200	230201	230202	

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





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic	ioil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-49810	Date Sampled	23/09/16	26/09/16	26/09/16	26/09/16	26/09/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 1/SF5	Area 1/NF5	E1 Base	E2 Base	E3 Base						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: 138	Depth (m)	2.50 - 3.50	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 06/10/2016	QTSE Sample No	230185	230186	230187	230188	230189						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	67	67	34	97





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-49810	Date Sampled	27/09/16	27/09/16	27/09/16	27/09/16	23/09/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	E4 Base	E5 Base	E6 Base	E7 Base	E8 Base						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 06/10/2016	QTSE Sample No	230190	230191	230192	230193	230194						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	697	69	45	30	29





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/06	28/09/16	28/09/16	28/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU15	SFU16	W1/T1.1	W1/T2.1	W1/T3.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 06/10/2016	QTSE Sample No	230195	230196	230197	230198	230199

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	1860	3703	434	4035	349





Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-49810	Date Sampled	28/09/16	28/09/16	28/09/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	W2/T4.1	W2/T5.1	W2/T6.1							
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied							
Reporting Date: 06/10/2016	QTSE Sample No	230200	230201	230202							

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	219	67	116	





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-49810	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 06/10/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
230185	Area 1/SF5	None Supplied	2.50 - 3.50	13.9	Light brown clay
230186	Area 1/NF5	None Supplied	2.50 - 3.50	14.9	Light brown clay
230187	E1 Base	None Supplied	3.50 - 4.00	15.7	Light brown clay
230188	E2 Base	None Supplied	3.50 - 4.00	14.4	Light brown clay
230189	E3 Base	None Supplied	3.50 - 4.00	18.9	Light brown clay with stones
230190	E4 Base	None Supplied	3.50 - 4.00	14.9	Light brown clay
230191	E5 Base	None Supplied	3.50 - 4.00	16.8	Light brown clay
230192	E6 Base	None Supplied	3.50 - 4.00	14.2	Light brown clay with stones
230193	E7 Base	None Supplied	3.50 - 4.00	11.3	Light brown clay
230194	E8 Base	None Supplied	3.50 - 4.00	21	Light brown clay
230195	SFU15	Composite	None Supplied	12.9	Light brown clay with stones
230196	SFU16	Composite	None Supplied	10.3	Light brown clay with stones
230197	W1/T1.1	Composite	None Supplied	10.1	Brown clay with stones and concrete
230198	W1/T2.1	Composite	None Supplied	12	Brown clay with stones
230199	W1/T3.1	Composite	None Supplied	9.9	Brown clay with stones
230200	W2/T4.1	Composite	None Supplied	11.9	Light brown clay with stones
230201	W2/T5.1	Composite	None Supplied	13.1	Light brown clay with stones
230202	W2/T6.1	Composite	None Supplied	18.7	Light brown clay

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm U/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-49810

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 06/10/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-50174

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 10/10/2016

Sample Scheduled Date: 10/10/2016

Report Issue Number: 1

Reporting Date: 14/10/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate					
QTS Environmental Report No: 16-50174	Date Sampled	05/10/16	05/10/16	05/10/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU 17	SFU 18	SFU 19	
Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 14/10/2016	QTSE Sample No	231649	231650	231651	

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	5	5	3	
Barium (Ba)	mg/kg	< 5	NONE	98	123	88	
Beryllium (Be)	mg/kg	< 0.5	NONE	1	1.1	0.9	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	41	44	43	
Copper (Cu)	mg/kg	< 4	MCERTS	12	13	10	
Lead (Pb)	mg/kg	< 3	MCERTS	6	4	3	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	38	40	39	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	38	43	32	
Zinc (Zn)	mg/kg	< 3	MCERTS	56	58	52	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs					
QTS Environmental Report No: 16-50174	Date Sampled	05/10/16	05/10/16	05/10/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU 17	SFU 18	SFU 19	
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 14/10/2016	QTSE Sample No	231649	231650	231651	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	0 0			< 1.6	< 1.6	< 1.6	





Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 16-50174	Date Sampled	05/10/16	05/10/16	05/10/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU 17	SFU 18	SFU 19						
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 14/10/2016	QTSE Sample No	231649	231650	231651						

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





Soil Analysis Certificate - BTEX / MTBE										
QTS Environmental Report No: 16-50174	Date Sampled	05/10/16	05/10/16	05/10/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU 17	SFU 18	SFU 19						
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 14/10/2016	QTSE Sample No	231649	231650	231651						

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





0/09/16 30/09/16 30/09/16 30/09/16 30/09/16
upplied None Supplied None S

QTS Environmental Report No: 16-50174	Date Sampled	30/09/16	30/09/16	30/09/16	30/09/16	30/09/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 1 / NF6	F1 Base	F2 Base	F3 Base	F4 Base
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	None Supplied				
Order No: 138	Depth (m)	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00
Reporting Date: 14/10/2016	QTSE Sample No	231639	231640	231641	231642	231643

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	6

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

Soil Analysis Certificate - Volatile Organic Compounds (VOC)



Francis Group)

Order No: 138

Project / Job Ref: GJ079

Reporting Date: 14/10/2016

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



3.50 - 4.00

231647

2.50 - 3.50

231648

Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 16-50174 **Date Sampled** 05/10/16 06/10/16 06/10/16 05/10/16 05/10/16 Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No F6 Base F5 Base F7 Base F8 Base Area 1 / SF6 **Additional Refs** None Supplied None Supplied None Supplied None Supplied None Supplied

3.50 - 4.00

231645

3.50 - 4.00

231646

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	13	< 5	7	< 5

3.50 - 4.00

231644

Depth (m)

QTSE Sample No





Tel: 01622 850410

Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-50174	Date Sampled	05/10/16	05/10/16	05/10/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St Francis Group)	TP / BH No	SFU 17	SFU 18	SFU 19						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 14/10/2016	QTSE Sample No	231649	231650	231651						

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-50174	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 14/10/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
231639	Area 1 / NF6	None Supplied	2.50 - 3.50	14.8	Light brown clay
231640	F1 Base	None Supplied	3.50 - 4.00	15.7	Light brown clay
231641	F2 Base	None Supplied	3.50 - 4.00	15.8	Light brown clay with stones
231642	F3 Base	None Supplied	3.50 - 4.00	15.2	Light brown clay
231643	F4 Base	None Supplied	3.50 - 4.00	12.2	Light brown clay with stones
231644	F5 Base	None Supplied	3.50 - 4.00	18.9	Light brown clay
231645	F6 Base	None Supplied	3.50 - 4.00	17.8	Light brown clay
231646	F7 Base	None Supplied	3.50 - 4.00	18.2	Light brown clay
231647	F8 Base	None Supplied	3.50 - 4.00	17.6	Light brown clay
231648	Area 1 / SF6	None Supplied	2.50 - 3.50	14.5	Light brown clay
231649	SFU 17	Composite	None Supplied	15.8	Light brown clay with stones
231650	SFU 18	Composite	None Supplied	16.7	Light brown clay
231651	SFU 19	Composite	None Supplied	18.8	Light brown clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-50174

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 14/10/2016

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

D Dried AR As Received





LE12 8PY



QTS Environmental Ltd

Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-50793

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 24/10/2016

Sample Scheduled Date: 24/10/2016

Report Issue Number: 1

Reporting Date: 28/10/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate										
QTS Environmental Report No: 16-50793	Date Sampled	20/10/16	20/10/16	20/10/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (Saint Francis	TP / BH No	SFU 20	SFU 21	SFU 22						
Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 28/10/2016	QTSE Sample No	234735	234736	234737						

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	6	6	12	
Barium (Ba)	mg/kg	< 5	NONE	124	172	189	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.8	1	1.1	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	18	28	32	
Copper (Cu)	mg/kg	< 4	MCERTS	19	19	19	
Lead (Pb)	mg/kg	< 3	MCERTS	23	11	17	
Mercury (Hg)	mg/kg	< 1	NONE	2.4	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	16	24	28	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	32	35	48	
Zinc (Zn)	mg/kg	< 3	MCERTS	67	51	70	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs											
QTS Environmental Report No: 16-50793	Date Sampled	20/10/16	20/10/16	20/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU 20	SFU 21	SFU 22							
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied							
Reporting Date: 28/10/2016	QTSE Sample No	234735	234736	234737							

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	





Soil Analysis Certificate - TPH CWG Banded	Soil Analysis Certificate - TPH CWG Banded											
QTS Environmental Report No: 16-50793	Date Sampled	20/10/16	20/10/16	20/10/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU 20	SFU 21	SFU 22								
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied								
Reporting Date: 28/10/2016	QTSE Sample No	234735	234736	234737								

Determinand	Unit	RL	Accreditation				_	
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.40	0.49	0.31		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	6		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	9		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	9		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	78		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	102		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	42		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	42		
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	145		





Soil Analysis Certificate - BTEX / MTBE	Soil Analysis Certificate - BTEX / MTBE											
QTS Environmental Report No: 16-50793	Date Sampled	20/10/16	20/10/16	20/10/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU 20	SFU 21	SFU 22								
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied								
Reporting Date: 28/10/2016	QTSE Sample No	234735	234736	234737								

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





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)												
QTS Environmental Report No: 16-50793	Date Sampled	17/10/16	17/10/16	17/10/16	17/10/16	17/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied											
Site Reference: Nash Road, Redditch (Saint	TP / BH No	AREA 1/NF7	G1 BASE	G2 BASE	G3 BASE	G4 BASE							
Francis Group)													
Project / Job Ref: GJ079	Additional Refs	None Supplied											
Order No: 138	Depth (m)	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00							
Reporting Date: 28/10/2016	QTSE Sample No	234716	234717	234718	234719	234720							

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	13	8	8	10	17





Soil Analysis Certificate - Volatile Organic (Soil Analysis Certificate - Volatile Organic Compounds (VOC)												
QTS Environmental Report No: 16-50793	Date Sampled	18/10/16	18/10/16	18/10/16	19/10/16	19/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied											
Site Reference: Nash Road, Redditch (Saint	TP / BH No	G5 BASE	G6 BASE	G7 BASE	G8 BASE	AREA 1/SF7							
Francis Group)													
Project / Job Ref: GJ079	Additional Refs	None Supplied											
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	2.50 - 3.00							
Reporting Date: 28/10/2016	QTSE Sample No	234721	234722	234723	234724	234725							

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	50	11	< 5	10	8859
				0				





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)												
QTS Environmental Report No: 16-50793	Date Sampled	19/10/16	19/10/16	19/10/16	19/10/16	20/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied											
Site Reference: Nash Road, Redditch (Saint	TP / BH No	H8 BASE	AREA 1/SF8	H7 BASE	H6 BASE	18 BASE							
Francis Group)													
Project / Job Ref: GJ079	Additional Refs	None Supplied											
Order No: 138	Depth (m)	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00							
Reporting Date: 28/10/2016	QTSE Sample No	234726	234727	234728	234729	234730							

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	23	122	10	10	2054





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 16-50793 Date Sampled 20/10/16 20/10/16 20/10/16 20/10/16 20/10/16 Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (Saint TP / BH No AREA 1/SF9 AREA 1/EF8 17 BASE AREA 1/EF7 SFU 20 Francis Group) None Supplied Project / Job Ref: GJ079 Additional Refs None Supplied Composite None Supplied None Supplied Order No: 138 Depth (m) None Supplied 2.50 - 3.50 234731 2.50 - 3.50 234732 3.50 - 4.00 234733 2.50 - 3.50 234734 QTSE Sample No Reporting Date: 28/10/2016 234735

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	117	629	341	350	342





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)				
QTS Environmental Report No: 16-50793	Date Sampled	20/10/16	20/10/16		
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU 21	SFU 22		
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite		
Order No: 138	Depth (m)	None Supplied	None Supplied		
Reporting Date: 28/10/2016	QTSE Sample No	234736	234737		

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	457	266		





Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 16-50793

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 28/10/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
234716	AREA 1/NF7	None Supplied	2.50 - 3.50	10	Light brown gravelly clay
234717	G1 BASE	None Supplied	3.50 - 4.00	11.3	Light brown gravelly clay
234718	G2 BASE	None Supplied	3.50 - 4.00	12.7	Light brown gravelly clay
234719	G3 BASE	None Supplied	3.50 - 4.00	17.4	Light brown clay
234720	G4 BASE	None Supplied	3.50 - 4.00	16.2	Light brown sandy clay
234721	G5 BASE	None Supplied	3.50 - 4.00	15.1	Light brown sandy clay
234722	G6 BASE	None Supplied	3.50 - 4.00	16	Light brown sandy clay
234723	G7 BASE	None Supplied	3.50 - 4.00	16.6	Light brown clay
234724	G8 BASE	None Supplied	3.50 - 4.00	15.1	Light brown gravelly clay
234725	AREA 1/SF7	None Supplied	2.50 - 3.00	12	Light brown clay with stones
234726	H8 BASE	None Supplied	3.50 - 4.00	14.8	Light brown gravelly clay
234727	AREA 1/SF8	None Supplied	2.50 - 3.50	19.2	Light brown gravelly clay
234728	H7 BASE	None Supplied	3.50 - 4.00	13	Light brown gravelly clay
234729	H6 BASE	None Supplied	3.50 - 4.00	14	Light brown gravelly clay
234730	I8 BASE	None Supplied	3.50 - 4.00	16.6	Light brown clay with stones
234731	AREA 1/SF9	None Supplied	2.50 - 3.50	14.5	Light brown clay
234732	AREA 1/EF8	None Supplied	2.50 - 3.50	19.2	Light brown sandy clay
234733	17 BASE	None Supplied	3.50 - 4.00	16.4	Light brown gravelly clay
234734	AREA 1/EF7	None Supplied	2.50 - 3.50	15.2	Light brown gravelly clay with stones
234735	SFU 20	Composite	None Supplied	6.3	Light brown gravelly clay with stones
234736	SFU 21	Composite	None Supplied	13.5	Light brown clay
234737	SFU 22	Composite	None Supplied	12.1	Light brown gravelly clay with stones

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm VS}$ Unsuitable Sample $^{\rm WS}$





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-50793
G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)
Project / Job Ref: GJ079

Order No: 138
Reporting Date: 28/10/2016

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

D Dried AR As Received







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QTS Environmental Report No: 16-50916

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 26/10/2016

Sample Scheduled Date: 26/10/2016

Report Issue Number: 1

Reporting Date: 01/11/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-50916	Date Sampled	24/10/16	24/10/16	24/10/16	25/10/16	25/10/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (Saint	TP / BH No	H3 Base	H4 Base	H5 Base	I5 Base	I6 Base					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	None Supplied									
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00					
Reporting Date: 01/11/2016	QTSE Sample No	235200	235201	235202	235203	235204					

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	1624	160	< 5	< 5	< 5





Soil Analysis Certificate - Volatile Organic (Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-50916	Date Sampled	21/10/16	21/10/16	24/10/16	25/10/16	25/10/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (Saint	TP / BH No	Area 1 / EF1	Area 1 / EF2	Area 1 / EF3	Area 1 / EF4	Area 1 / EF5					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	None Supplied									
Order No: 138	Depth (m)	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50					
Reporting Date: 01/11/2016	QTSE Sample No	235205	235206	235207	235208	235209					

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	3025	1185	9	95	< 5





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)				
QTS Environmental Report No: 16-50916	Date Sampled	25/10/16			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied			
Site Reference: Nash Road, Redditch (Saint	TP / BH No	Area 1 / EF6			
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	None Supplied			
Order No: 138	Depth (m)	2.50 - 3.50			
Reporting Date: 01/11/2016	QTSE Sample No	235210	•		

Determinand	Unit	RL	Accreditation			
Trichloroethene	ug/kg	< 5	MCERTS	81		





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-50916	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (Saint Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 01/11/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
235200	H3 Base	None Supplied	3.50 - 4.00	16.8	Light brown clay
235201	H4 Base	None Supplied	3.50 - 4.00	19.3	Red clay
235202	H5 Base	None Supplied	3.50 - 4.00	15.7	Light brown clay
235203	I5 Base	None Supplied	3.50 - 4.00	8.5	Light brown sand with stones
235204	I6 Base	None Supplied	3.50 - 4.00	10.4	Light brown sandy clay with stones
235205	Area 1 / EF1	None Supplied	2.50 - 3.50	14.9	Light brown clay
235206	Area 1 / EF2	None Supplied	2.50 - 3.50	14.6	Light brown clay
235207	Area 1 / EF3	None Supplied	2.50 - 3.50	15.7	Light brown clay
235208	Area 1 / EF4	None Supplied	2.50 - 3.50	11.3	Light brown clay with stones
235209	Area 1 / EF5	None Supplied	2.50 - 3.50	16.6	Red clay
235210	Area 1 / EF6	None Supplied	2.50 - 3.50	12.6	Brown clay with brick

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm I/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-50916
G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)
Project / Job Ref: GJ079

Order No: 138
Reporting Date: 01/11/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by agua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble		E025
Soil	D	Metals		E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	iron (11) suipnate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR		Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	рН	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D		Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D		Gravimetrically determined through extraction with toluene	E011
Soil	D		Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34,	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)		E004
Soil	AR		Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received





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QTS Environmental Report No: 16-51122

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 31/10/2016

Sample Scheduled Date: 31/10/2016

Report Issue Number: 1

Reporting Date: 03/11/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate											
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W3/T7.1	W3/T8.1	W3/T9.1	W3/T10.1	W3/T11.1					
Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite					
Order No: 138	Depth (m)	None Supplied									
Reporting Date: 03/11/2016	QTSE Sample No	235939	235940	235941	235942	235943					

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	3	7	4	< 2	2
Barium (Ba)	mg/kg	< 5	NONE	119	133	134	99	89
Beryllium (Be)	mg/kg	< 0.5	NONE	1.1	1	0.8	0.8	0.8
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	41	32	28	29	25
Copper (Cu)	mg/kg	< 4	MCERTS	29	26	25	23	25
Lead (Pb)	mg/kg	< 3	MCERTS	30	16	51	9	9
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	43	31	27	30	25
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	40	43	34	31	28
Zinc (Zn)	mg/kg	< 3	MCERTS	79	76	68	51	52

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content





Soil Analysis Certificate											
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W4/T12.1	W4/T13.1	W4/T14.1	W4/T15.1	W4/T16.1					
Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite					
Order No: 138	Depth (m)	None Supplied									
Reporting Date: 03/11/2016	QTSE Sample No	235944	235945	235946	235947	235948					

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	5	4	< 2	3	< 2
Barium (Ba)	mg/kg	< 5	NONE	155	113	95	95	119
Beryllium (Be)	mg/kg	< 0.5	NONE	1	0.8	0.8	0.7	1.1
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	33	28	24	26	43
Copper (Cu)	mg/kg	< 4	MCERTS	25	34	22	20	26
Lead (Pb)	mg/kg	< 3	MCERTS	10	7	4	6	5
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	31	27	22	24	41
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	39	36	28	29	40
Zinc (Zn)	mg/kg	< 3	MCERTS	58	49	44	40	57

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

Analysis carried out on the dried sample is corrected for the stone content $% \left(1\right) =\left(1\right) \left(1\right$





Soil Analysis Certificate										
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W4/T17.1	SFU 23							
Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied							
Reporting Date: 03/11/2016	QTSE Sample No	235949	235950							

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	4	3		
Barium (Ba)	mg/kg	< 5	NONE	133	101		
Beryllium (Be)	mg/kg	< 0.5	NONE	1.1	1		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	37	44		
Copper (Cu)	mg/kg	< 4	MCERTS	30	24		
Lead (Pb)	mg/kg	< 3	MCERTS	6	6		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	33	39		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	47	37		
Zinc (Zn)	mg/kg	< 3	MCERTS	59	58		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content





Soil Analysis Certificate - Speciated PAHs												
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	W3/T7.1	W3/T8.1	W3/T9.1	W3/T10.1	W3/T11.1						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied										
Reporting Date: 03/11/2016	QTSE Sample No	235939	235940	235941	235942	235943						

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





Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T12.1	W4/T13.1	W4/T14.1	W4/T15.1	W4/T16.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 03/11/2016	QTSE Sample No	235944	235945	235946	235947	235948

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.74
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.33
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - Speciated PAHs					
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16		
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T17.1	SFU 23		
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite		
Order No: 138	Depth (m)	None Supplied	None Supplied		
Reporting Date: 03/11/2016	QTSE Sample No	235949	235950		

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	0.15	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6		





Soil Analysis Certificate - TPH CWG Banded	Soil Analysis Certificate - TPH CWG Banded												
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied											
Site Reference: Nash Road, Redditch (St	TP / BH No	W3/T7.1	W3/T8.1	W3/T9.1	W3/T10.1	W3/T11.1							
Francis Group)													
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite							
Order No: 138	Depth (m)	None Supplied											
Reporting Date: 03/11/2016	QTSE Sample No	235939	235940	235941	235942	235943							

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	2.72	35.80	3.83	5.31	21.10
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	4	5	19	8	14
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	8	9	51	20	39
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	5	6	58	19	40
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	56	132	51	115
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	7	2	6
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	7	8	36	11	27
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	11	7	62	16	38
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	106	29	72
Total >C5 - C35	mg/kg	< 42	NONE	< 42	71	238	80	187





Soil Analysis Certificate - TPH CWG Banded												
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T12.1	W4/T13.1	W4/T14.1	W4/T15.1	W4/T16.1						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied										
Reporting Date: 03/11/2016	QTSE Sample No	235944	235945	235946	235947	235948						

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.47	0.32	0.49	6.28	0.22
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	18	< 2	23	15	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	87	15	157	71	119
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	171	25	362	111	1019
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	14	< 3	47	< 3	58
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	48	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	290	40	637	204	1196
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	3	< 2	5	3	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	25	< 2	30	14	22
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	63	< 2	67	38	265
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	6	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	97	< 21	102	55	286
Total >C5 - C35	mg/kg	< 42	NONE	387	< 42	739	259	1483





Soil Analysis Certificate - TPH CWG Banded											
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T17.1	SFU 23								
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied								
Reporting Date: 03/11/2016	QTSE Sample No	235949	235950								

Determinand	Unit	RL	Accreditation			
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	2.02	3.40	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	19	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	109	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	193	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	24	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	347	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	4	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	24	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	26	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	53	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	400	< 42	





Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W3/T7.1	W3/T8.1	W3/T9.1	W3/T10.1	W3/T11.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 03/11/2016	QTSE Sample No	235939	235940	235941	235942	235943

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	19	25	71
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	55	77	217
o-xylene	ug/kg	< 2	MCERTS	11	11	144	90	244
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T12.1	W4/T13.1	W4/T14.1	W4/T15.1	W4/T16.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 03/11/2016	QTSE Sample No	235944	235945	235946	235947	235948

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	24	< 2	< 2	38	< 2
p & m-xylene	ug/kg	< 2	MCERTS	33	< 2	3	57	< 2
o-xylene	ug/kg	< 2	MCERTS	85	9	9	153	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Soil Analysis Certificate - BTEX / MTBE					
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16		
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T17.1	SFU 23		
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite		
Order No: 138	Depth (m)	None Supplied	None Supplied		
Reporting Date: 03/11/2016	QTSE Sample No	235949	235950		

Determinand	Unit	RL	Accreditation				
Benzene	ug/kg	< 2	MCERTS	< 2	< 2		
Toluene	ug/kg	< 5	MCERTS	< 5	< 5		
Ethylbenzene	ug/kg	< 2	MCERTS	99	< 2		
p & m-xylene	ug/kg	< 2	MCERTS	203	< 2		
o-xylene	ug/kg	< 2	MCERTS	168	< 2		
MTBE	ug/kg	< 5	MCERTS	< 5	< 5		





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 2/NF1	Area 2/WF1	K1 Base	W3/T7.1	W3/T8.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	None Supplied	Composite	Composite
Order No: 138	Depth (m)	2.50 - 3.50	2.50 - 3.50	3.50 - 4.00	None Supplied	None Supplied
Reporting Date: 03/11/2016	QTSE Sample No	235936	235937	235938	235939	235940

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	1451	413	944	2381	30490



QTS Environmental Report No: 16-51122

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St

Francis Group)

Order No: 138

Project / Job Ref: GJ079

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



Composite

None Supplied

Composite

None Supplied

Soil Analysis Certificate - Volatile Organic Compounds (VOC) **Date Sampled** 27/10/16 27/10/16 27/10/16 27/10/16 27/10/16 Time Sampled None Supplied None Supplied None Supplied None Supplied None Supplied TP / BH No W3/T9.1 W3/T10.1 W4/T12.1 W4/T13.1 W3/T11.1

Composite

None Supplied

Composite

None Supplied

Reporting Date: 03/11/2016 QTSE Sample No			235941	235942	235943	235944	235945	
Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	3371	5019	20100	473	318

Composite

None Supplied

Additional Refs

Depth (m)





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic	oil Analysis Certificate - Volatile Organic Compounds (VOC)												
QTS Environmental Report No: 16-51122	Date Sampled	27/10/16	27/10/16	27/10/16	27/10/16	27/10/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied											
Site Reference: Nash Road, Redditch (St	TP / BH No	W4/T14.1	W4/T15.1	W4/T16.1	W4/T17.1	SFU 23							
Francis Group)													
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite							
Order No: 138	Depth (m)	None Supplied											
Reporting Date: 03/11/2016	QTSE Sample No	235946	235947	235948	235949	235950							

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	444	5994	215	289	7 7 8 6





Soil Analysis Certificate - Sample Descriptions

OTS Environmental Report No: 16-51122

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 03/11/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
235936	Area 2/NF1	None Supplied	2.50 - 3.50	20.4	Brown gravelly clay
235937	Area 2/WF1	None Supplied	2.50 - 3.50	13.8	Brown gravelly clay
235938	K1 Base	None Supplied	3.50 - 4.00	19.5	Brown gravelly clay
235939	W3/T7.1	Composite	None Supplied	14.4	Brown gravelly clay
235940	W3/T8.1	Composite	None Supplied	13.9	Brown gravelly clay
235941	W3/T9.1	Composite	None Supplied	12.3	Brown gravelly clay
235942	W3/T10.1	Composite	None Supplied	13.5	Brown gravelly clay with stones
235943	W3/T11.1	Composite	None Supplied	12.9	Brown gravelly clay
235944	W4/T12.1	Composite	None Supplied	7.8	Light brown gravelly clay
235945	W4/T13.1	Composite	None Supplied	15.5	Brown gravelly clay
235946	W4/T14.1	Composite	None Supplied	10.7	Brown gravelly clay
235947	W4/T15.1	Composite	None Supplied	12.7	Brown gravelly clay
235948	W4/T16.1	Composite	None Supplied	14	Brown gravelly clay
235949	W4/T17.1	Composite	None Supplied	12	Brown gravelly clay
235950	SFU 23	Composite	None Supplied	19.4	Brown clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-51122

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 03/11/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-51393

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 07/11/2016

Sample Scheduled Date: 07/11/2016

Report Issue Number: 1

Reporting Date: 11/11/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CO

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic	oil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-51393	Date Sampled	04/11/16	04/11/16	04/11/16	04/11/16	04/11/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 2/WF2	Area 2/WF3	Area 2/WF4	K2 base	K3 Base						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: 138	Depth (m)	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 11/11/2016	QTSE Sample No	236934	236935	236936	236937	236938						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	244	< 5	41	310	21





oil Analysis Certificate - Volatile Organic Compounds (VOC)							
QTS Environmental Report No: 16-51393	Date Sampled	04/11/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied					
Site Reference: Nash Road, Redditch (St	TP / BH No	K4 Base					
Francis Group)							
Project / Job Ref: GJ079	Additional Refs	None Supplied					
Order No: 138	Depth (m)	3.50 - 4.00					
Reporting Date: 11/11/2016	QTSE Sample No	236939					

Determinand	Unit	RL	Accreditation			
Trichloroethene	ug/kg	< 5	MCERTS	756		





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-51393	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 11/11/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
236934	Area 2/WF2	None Supplied	2.50 - 3.50	12.4	Light brown sandy clay
236935	Area 2/WF3	None Supplied	2.50 - 3.50	15.2	Light brown clay
236936	Area 2/WF4	None Supplied	2.50 - 3.50	14.4	Light brown sandy clay
236937	K2 base	None Supplied	3.50 - 4.00	18	Brown clay
236938	K3 Base	None Supplied	3.50 - 4.00	14.6	Light brown clay
236939	K4 Base	None Supplied	3.50 - 4.00	15.8	Light brown sandy clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-51393

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 11/11/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-51730

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 15/11/2016

Sample Scheduled Date: 15/11/2016

Report Issue Number: 1

Reporting Date: 21/11/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

NO CO

Authorised by:

Russell Jarvis

Associate Director of Client Services





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

oil Analysis Certificate - Volatile Organic Compounds (VOC)									
QTS Environmental Report No: 16-51730	Date Sampled	08/11/16	08/11/16	08/11/16	08/11/16	08/11/16			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 2/WF5	Area 2/WF6	Area 2/WF7	Area 2/WF8	Area 2/SF1			
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	None Supplied							
Order No: 138	Depth (m)	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50	2.50 - 3.50			
Reporting Date: 21/11/2016	QTSE Sample No	238219	238220	238221	238222	238223			

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	27	36	31	19	81





oil Analysis Certificate - Volatile Organic Compounds (VOC)									
QTS Environmental Report No: 16-51730	Date Sampled	14/11/16	14/11/16	14/11/16	14/11/16	14/11/16			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 2/K5 Base	Area 2/NF2	Area 2/L1 Base	Area 2/L2 Base	Area 2/L3 Base			
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Order No: 138	Depth (m)	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00			
Reporting Date: 21/11/2016	QTSE Sample No	238224	238225	238226	238227	238228			

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	24	303	42	510	2190





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-51730	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 21/11/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
238219	Area 2/WF5	None Supplied	2.50 - 3.50	11.5	Brown clay with stones and concrete
238220	Area 2/WF6	None Supplied	2.50 - 3.50	8.1	Brown sandy clay with stones and brick
238221	Area 2/WF7	None Supplied	2.50 - 3.50	7.9	Brown sandy gravel with stones and brick
238222	Area 2/WF8	None Supplied	2.50 - 3.50	8.4	Brown sandy clay with stones
238223	Area 2/SF1	None Supplied	2.50 - 3.50	9.8	Brown sandy gravel with stones
238224	Area 2/K5 Base	None Supplied	3.50 - 4.00	12.2	Light brown sand
238225	Area 2/NF2	None Supplied	2.50 - 3.50	12.1	Light brown clayey sand with stones
238226	Area 2/L1 Base	None Supplied	3.50 - 4.00	11.5	Light brown clayey sand with stones
238227	Area 2/L2 Base	None Supplied	3.50 - 4.00	15.1	Red clay
238228	Area 2/L3 Base	None Supplied	3.50 - 4.00	10.7	Light brown clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-51730

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 21/11/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-51959

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 21/11/2016

Sample Scheduled Date: 21/11/2016

Report Issue Number: 1

Reporting Date: 25/11/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate	oil Analysis Certificate									
QTS Environmental Report No: 16-51959	Date Sampled	16/11/16	16/11/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU24	SFU25							
Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied							
Reporting Date: 25/11/2016	QTSE Sample No	239249	239250							

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	6	6		
Barium (Ba)	mg/kg	< 5	NONE	107	129		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.5	0.6		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	14	17		
Copper (Cu)	mg/kg	< 4	MCERTS	10	12		
Lead (Pb)	mg/kg	< 3	MCERTS	6	10		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	11	13		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	29	37		
Zinc (Zn)	mg/kg	< 3	MCERTS	29	37		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content





Soil Analysis Certificate - Speciated PAHs	Soil Analysis Certificate - Speciated PAHs										
QTS Environmental Report No: 16-51959	Date Sampled	16/11/16	16/11/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU24	SFU25								
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied								
Reporting Date: 25/11/2016	QTSE Sample No	239249	239250								

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6		





Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 16-51959	Date Sampled	16/11/16	16/11/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU24	SFU25							
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied							
Reporting Date: 25/11/2016	QTSE Sample No	239249	239250							

Determinand	Unit	RL	Accreditation			
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.13	0.07	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	





Soil Analysis Certificate - BTEX / MTBE	Soil Analysis Certificate - BTEX / MTBE										
QTS Environmental Report No: 16-51959	Date Sampled	16/11/16	16/11/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU24	SFU25								
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied								
Reporting Date: 25/11/2016	QTSE Sample No	239249	239250								

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





Tel: 01622 850410

oil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-51959	Date Sampled	15/11/16	15/11/16	15/11/16	15/11/16	15/11/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	L4 Base	L5 Base	L6 Base	L7 Base	L8 Base				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied								
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00				
Reporting Date: 25/11/2016	QTSE Sample No	239243	239244	239245	239246	239247				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	6670	4796	5887	9311	6516





Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-51959	Date Sampled	15/11/16	16/11/16	16/11/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St	TP / BH No	Area 2/SF2	SFU24	SFU25						
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied	Composite	Composite						
Order No: 138	Depth (m)	2.50 - 3.50	None Supplied	None Supplied						
Reporting Date: 25/11/2016	QTSE Sample No	239248	239249	239250						

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	4552	115	57	





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-51959	
G & J Geoenvironmental Consultants Ltd]
Site Reference: Nash Road, Redditch (St Francis Group)]
Project / Job Ref: GJ079]
Order No: 138]
Reporting Date: 25/11/2016]

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
239243	L4 Base	None Supplied	3.50 - 4.00	18.7	Red clay
239244	L5 Base	None Supplied	3.50 - 4.00	15.5	Red clay
239245	L6 Base	None Supplied	3.50 - 4.00	17	Red clay
239246	L7 Base	None Supplied	3.50 - 4.00	17.9	Red clay
239247	L8 Base	None Supplied	3.50 - 4.00	16.5	Red clay
239248	Area 2/SF2	None Supplied	2.50 - 3.50	15.1	Red clay
239249	SFU24	Composite	None Supplied	9.9	Brown clay with stones
239250	SFU25	Composite	None Supplied	9.4	Brown clay with stones

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-51959

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 25/11/2016

Matrix	Analysed	Determinand	Brief Method Description	Method
Coil	On	Doron Water Caluble	Determination of water caluble baran in call by 2.1 bet water extract followed by ICD OFS	No F012
Soil Soil	D AR		Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES Determination of BTEX by headspace GC-MS	E012 E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by for -023 Determination of chloride by extraction with water & analysed by ion chromatography	E002
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	E016
Soil	AR	Cyanida - Compley	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D		Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	(11) suipnate	E010
Soil	AR	PAH - Speciated (EPA 16)	use of surrogate and internal standards	E005
Soil	AR	9	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR		Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR		Determination of phenols by distillation followed by colorimetry	E021
Soil	D		Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D D		Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil Soil	D D		Determination of sulphate by extraction with water & analysed by ion chromatography Determination of water soluble sulphate by extraction with water followed by ICP-OES	E009 E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E014 E018
Soil	D AR	Sulphur - Total	Determination of total sulphur by extraction with agua-regia followed by ICP-OFS	E018
Soil	AR	SVOC	Determination of total sulphul by extraction with aqua-regia followed by ICF-OLS Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TFM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR		Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received





Leicestershire

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QTS Environmental Report No: 16-52472

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 05/12/2016

Sample Scheduled Date: 05/12/2016

Report Issue Number: 1

Reporting Date: 09/12/2016

Authorised by:

Russell Jarvis

Associate Director of Client Services

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elynne-yole





Soil Analysis Certificate										
QTS Environmental Report No: 16-52472	Date Sampled	23/11/16	23/11/16	23/11/16	23/11/16	29/11/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU26	SFU27	SFU28	SFU29	SFU30				
Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 09/12/2016	QTSE Sample No	241511	241512	241513	241514	241530				

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	2	10	6	5	4
Barium (Ba)	mg/kg	< 5	NONE	117	201	132	134	132
Beryllium (Be)	mg/kg	< 0.5	NONE	1.1	1	1	1	1.2
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	41	27	39	40	49
Copper (Cu)	mg/kg	< 4	MCERTS	17	19	18	18	18
Lead (Pb)	mg/kg	< 3	MCERTS	16	8	25	12	5
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	41	24	38	40	55
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	36	29	34	34	41
Zinc (Zn)	mg/kg	< 3	MCERTS	78	52	74	75	65

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate									
QTS Environmental Report No: 16-52472	Date Sampled	29/11/16	29/11/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	SFU31	SFU32						
Group)									
Project / Job Ref: GJ079	Additional Refs	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied						
Reporting Date: 09/12/2016	QTSE Sample No	241531	241532						

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	3	3		
Barium (Ba)	mg/kg	< 5	NONE	110	137		
Beryllium (Be)	mg/kg	< 0.5	NONE	1.2	1.2		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	49	48		
Copper (Cu)	mg/kg	< 4	MCERTS	19	18		
Lead (Pb)	mg/kg	< 3	MCERTS	6	5		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	57	55		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	42	40	·	
Zinc (Zn)	mg/kg	< 3	MCERTS	67	65		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 16-52472	Date Sampled	23/11/16	23/11/16	23/11/16	23/11/16	29/11/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU26	SFU27	SFU28	SFU29	SFU30
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 09/12/2016	QTSE Sample No	241511	241512	241513	241514	241530

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - Speciated PAHs									
QTS Environmental Report No: 16-52472	Date Sampled	29/11/16	29/11/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU31	SFU32						
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied						
Reporting Date: 09/12/2016	QTSE Sample No	241531	241532						

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	·	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	·	





Soil Analysis Certificate - TPH CWG Banded QTS Environmental Report No: 16-52472 G & J Geoenvironmental Consultants Ltd Date Sampled 23/11/16 23/11/16 23/11/16 23/11/16 29/11/16 Time Sampled None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No SFU26 SFU27 SFU28 SFU29 SFU30 Francis Group)
Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Composite Composite Depth (m) Order No: 138 None Supplied None Supplied None Supplied None Supplied None Supplied Reporting Date: 09/12/2016 QTSE Sample No 241511 241512 241513

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	0.43	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	25	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	835	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	861	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	19	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	484	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	503	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	1364	< 42	< 42





Soil Analysis Certificate - TPH CWG Bande	Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 16-52472	Date Sampled	29/11/16	29/11/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU31	SFU32								
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied								
Reporting Date: 09/12/2016	QTSE Sample No	241531	241532								

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





Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-52472	Date Sampled	23/11/16	23/11/16	23/11/16	23/11/16	29/11/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU26	SFU27	SFU28	SFU29	SFU30
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 09/12/2016	QTSE Sample No	241511	241512	241513	241514	241530

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
				0 -				





Soil Analysis Certificate - BTEX / MTBE					
QTS Environmental Report No: 16-52472	Date Sampled	29/11/16	29/11/16		
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU31	SFU32		
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite		
Order No: 138	Depth (m)	None Supplied	None Supplied		
Reporting Date: 09/12/2016	QTSE Sample No	241531	241532		

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





Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-52472	Date Sampled	23/11/16	23/11/16	23/11/16	23/11/16	28/11/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU26	SFU27	SFU28	SFU29	Area 2/NF3				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	None Supplied				
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	2.50 - 3.50				
Reporting Date: 09/12/2016	QTSE Sample No	241511	241512	241513	241514	241515				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	21	23	406	23	7260





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-52472	Date Sampled	28/11/16	28/11/16	28/11/16	28/11/16	28/11/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (St	TP / BH No	M1 Base	M2 Base	M3 Base	M6 Base	M7 Base						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	Composite	None Supplied	None Supplied						
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	None Supplied	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 09/12/2016	QTSE Sample No	241516	241517	241518	241519	241520						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	8270	1436	4383	17	8930





Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-52472	Date Sampled	28/11/16	28/11/16	28/11/16	28/11/16	28/11/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	M8 Base	Area 2/SF3	Area 2/NF4	N1 Base	N2 Base				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied								
Order No: 138	Depth (m)	3.50 - 4.00	2.50 - 3.50	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00				
Reporting Date: 09/12/2016	QTSE Sample No	241521	241522	241523	241524	241525				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	26	27	335	452	164





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-52472	Date Sampled	28/11/16	28/11/16	28/11/16	28/11/16	29/11/16					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St	TP / BH No	N3 Base	N7 Base	N8 Base	Area 2/SF4	SFU30					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	Composite					
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	2.50 - 3.50	None Supplied					
Reporting Date: 09/12/2016	QTSE Sample No	241526	241527	241528	241529	241530					

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	2582	108	16	22	23





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)										
QTS Environmental Report No: 16-52472	Date Sampled	29/11/16	29/11/16	29/11/16	29/11/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (St	TP / BH No	SFU31	SFU32	Area 2/SF5	O8 Base						
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	None Supplied	None Supplied						
Order No: 138	Depth (m)	None Supplied	None Supplied	2.50 - 3.50	3.50 - 4.00						
Reporting Date: 09/12/2016	QTSE Sample No	241531	241532	241533	241534						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	21	30	19	17	





Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 16-52472

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 09/12/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
\$ 241511	SFU26	Composite	None Supplied	18.3	Red sandy gravel
\$ 241512	SFU27	Composite	None Supplied	15.7	Red clay
\$ 241513	SFU28	Composite	None Supplied	14.8	Red clayey gravel
\$ 241514	SFU29	Composite	None Supplied	15	Red clayey gravel
241515	Area 2/NF3	None Supplied	2.50 - 3.50	13.5	Light grey clayey gravel with stones
241516	M1 Base	None Supplied	3.50 - 4.00	17.3	Red clayey gravel with stones
241517	M2 Base	None Supplied	3.50 - 4.00	12.8	Red clayey gravel
241518	M3 Base	Composite	None Supplied		Red clay
241519	M6 Base	None Supplied	3.50 - 4.00		Red clayey sand
241520	M7 Base	None Supplied	3.50 - 4.00	14.4	Red clay with stones
241521	M8 Base	None Supplied	3.50 - 4.00	20.9	Red clay
241522	Area 2/SF3	None Supplied	2.50 - 3.50	22.1	Red clay
241523	Area 2/NF4	None Supplied	2.50 - 3.50	19	Red clay
241524	N1 Base	None Supplied	3.50 - 4.00	18.2	Red clay
241525	N2 Base	None Supplied	3.50 - 4.00	17.1	Red clay
241526	N3 Base	None Supplied	3.50 - 4.00	18.8	Red clay
241527	N7 Base	None Supplied	3.50 - 4.00	19.9	Red clay
241528	N8 Base	None Supplied	3.50 - 4.00	19.1	Red clay
241529	Area 2/SF4	None Supplied	2.50 - 3.50	18.4	Red clay
241530	SFU30	Composite	None Supplied	15.7	Red clayey sand
241531	SFU31	Composite	None Supplied	20.5	Red clayey sand
241532	SFU32	Composite	None Supplied	23.3	Red clayey sand
241533	Area 2/SF5	None Supplied	2.50 - 3.50	19.9	Brown clay
241534	O8 Base	None Supplied	3.50 - 4.00	15.6	Brown clay

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm U/S}$

\$ samples exceeded recommended holding times





Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-52472
G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)
Project / Job Ref: GJ079

Order No: 138 Reporting Date: 09/12/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-52716

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 09/12/2016

Sample Scheduled Date: 09/12/2016

Report Issue Number: 1

Reporting Date: 15/12/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

co co

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate	Soil Analysis Certificate										
QTS Environmental Report No: 16-52716	Date Sampled	08/12/16	08/12/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (Saint Francis	TP / BH No	SFU33	SFU34								
Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied								
Reporting Date: 15/12/2016	QTSE Sample No	242389	242390								

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	< 2	5		
Barium (Ba)	mg/kg	< 5	NONE	70	115		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7	1.4		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	22	55		
Copper (Cu)	mg/kg	< 4	MCERTS	18	19		
Lead (Pb)	mg/kg	< 3	MCERTS	8	6		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	18	60		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	28	46		
Zinc (Zn)	mg/kg	< 3	MCERTS	44	70		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs	Soil Analysis Certificate - Speciated PAHs									
QTS Environmental Report No: 16-52716	Date Sampled	08/12/16	08/12/16							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU33	SFU34							
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied							
Reporting Date: 15/12/2016	QTSE Sample No	242389	242390							

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6		





Soil Analysis Certificate - TPH CWG Banded			Soil Analysis Certificate - TPH CWG Banded											
QTS Environmental Report No: 16-52716	Date Sampled	08/12/16	08/12/16											
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied											
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU33	SFU34											
Francis Group)														
Project / Job Ref: GJ079	Additional Refs	Composite	Composite											
Order No: 138	Depth (m)	None Supplied	None Supplied											
Reporting Date: 15/12/2016	QTSE Sample No	242389	242390											

Determinand	Unit	RL	Accreditation			
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	1.86	0.15	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	





Soil Analysis Certificate - BTEX / MTBE	Soil Analysis Certificate - BTEX / MTBE										
QTS Environmental Report No: 16-52716	Date Sampled	08/12/16	08/12/16								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU33	SFU34								
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied								
Reporting Date: 15/12/2016	QTSE Sample No	242389	242390								

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





Soil Analysis Certificate - Volatile Organic (oil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-52716	Date Sampled	06/12/16	06/12/16	06/12/16	06/12/16	06/12/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (Saint Francis Group)	TP / BH No	M4 Base	M5 Base	N4 Base	N5 Base	N6 Base						
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 15/12/2016	QTSE Sample No	242373	242374	242375	242376	242377						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	20	101	35	15	12





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-52716	Date Sampled	06/12/16	06/12/16	06/12/16	06/12/16	06/12/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (Saint	TP / BH No	O7 Base	P7 Base	P8 Base	Area 2/SF6	O1 Base						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00						
Reporting Date: 15/12/2016	QTSE Sample No	242378	242379	242380	242381	242382						

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	11	< 5	11	< 5	468





Soil Analysis Certificate - Volatile Organic	Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 16-52716	Date Sampled	06/12/16	06/12/16	06/12/16	08/12/16	08/12/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied										
Site Reference: Nash Road, Redditch (Saint	TP / BH No	O2 Base	O3 Base	Area 2/NF5	O4 Base	O5 Base						
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	None Supplied										
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00						
Reporting Date: 15/12/2016	QTSE Sample No	242383	242384	242385	242386	242387						

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	818	248	1817	2158





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)				
QTS Environmental Report No: 16-52716	Date Sampled	08/12/16	08/12/16	08/12/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (Saint	TP / BH No	O6 Base	SFU33	SFU34	
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	None Supplied	Composite	Composite	
Order No: 138	Depth (m)	3.50 - 4.00	None Supplied	None Supplied	
Reporting Date: 15/12/2016	QTSE Sample No	242388	242389	242390	

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	137	1747	86	





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-52716	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (Saint Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 15/12/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
242373	M4 Base	None Supplied	3.50 - 4.00	22.3	Red clay
242374	M5 Base	None Supplied	3.50 - 4.00	22.4	Red clay
242375	N4 Base	None Supplied	3.50 - 4.00	21.7	Red clay
242376	N5 Base	None Supplied	3.50 - 4.00	22	Red clay
242377	N6 Base	None Supplied	3.50 - 4.00	21.1	Red clay
242378	O7 Base	None Supplied	3.50 - 4.00	18.8	Red clay
242379	P7 Base	None Supplied	3.50 - 4.00	18.8	Red clay
242380	P8 Base	None Supplied	3.50 - 4.00	19.1	Red clay
242381	Area 2/SF6	None Supplied	2.50 - 3.50	18.9	Red clay
242382	O1 Base	None Supplied	3.50 - 4.00	15.6	Red clay with stones
242383	O2 Base	None Supplied	3.50 - 4.00	18.1	Red clay
242384	O3 Base	None Supplied	3.50 - 4.00	17	Red clay
242385	Area 2/NF5	None Supplied	2.50 - 3.50	16.7	Red clay
242386	O4 Base	None Supplied	3.50 - 4.00	21.9	Red clay
242387	O5 Base	None Supplied	3.50 - 4.00	23.7	Red clay
242388	O6 Base	None Supplied	3.50 - 4.00	23.6	Red clay
242389	SFU33	Composite	None Supplied	14.4	Light brown clay
242390	SFU34	Composite	None Supplied	23.1	Red clay

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm U/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-52716

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 15/12/2016

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

D Dried AR As Received





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QTS Environmental Report No: 16-52964

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 15/12/2016

Sample Scheduled Date: 15/12/2016

Report Issue Number: 1

Reporting Date: 21/12/2016

Authorised by:

Kevin Old

Associate Director of Laboratory

co co

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate										
QTS Environmental Report No: 16-52964	Date Sampled	13/12/16	13/12/16	13/12/16	13/12/16	13/12/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (Saint Francis	TP / BH No	SFU35	SFU36	SFU37	W5/T18.1	W5/T19.1				
Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 21/12/2016	QTSE Sample No	243587	243588	243589	243590	243591				

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	8	6	4	8	7
Barium (Ba)	mg/kg	< 5	NONE	51	52	52	79	129
Beryllium (Be)	mg/kg	< 0.5	NONE	1.1	1.2	1.2	0.9	0.9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	32	32	34	24	24
Copper (Cu)	mg/kg	< 4	MCERTS	16	16	17	23	25
Lead (Pb)	mg/kg	< 3	MCERTS	13	10	10	9	5
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	27	28	29	22	23
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	25	29	32	32	26
Zinc (Zn)	mg/kg	< 3	MCERTS	72	76	76	49	47

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Analysis carried out on the area sample is correct

Subcontracted analysis (S)





Soil Analysis Certificate QTS Environmental Report No: 16-52964 13/12/16 **Date Sampled** 13/12/16 13/12/16 G & J Geoenvironmental Consultants Ltd Time Sampled None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (Saint Francis TP / BH No W5/T20.1 W5/T21.1 W5/T22.1 Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Order No: 138 None Supplied Depth (m) None Supplied None Supplied Reporting Date: 21/12/2016 **QTSE Sample No** 243592 243593 243594

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	2	6	6	
Barium (Ba)	mg/kg	< 5	NONE	130	113	129	
Beryllium (Be)	mg/kg	< 0.5	NONE	1	0.9	1	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	24	24	26	
Copper (Cu)	mg/kg	< 4	MCERTS	25	26	25	
Lead (Pb)	mg/kg	< 3	MCERTS	5	7	8	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	23	23	23	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	26	25	28	
Zinc (Zn)	mg/kg	< 3	MCERTS	46	50	53	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs										
QTS Environmental Report No: 16-52964	Date Sampled	13/12/16	13/12/16	13/12/16	13/12/16	13/12/16				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU35	SFU36	SFU37	W5/T18.1	W5/T19.1				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 21/12/2016	QTSE Sample No	243587	243588	243589	243590	243591				

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg			< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - Speciated PAHs										
QTS Environmental Report No: 16-52964	Date Sampled	13/12/16	13/12/16	13/12/16						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (Saint	TP / BH No	W5/T20.1	W5/T21.1	W5/T22.1						
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 21/12/2016	QTSE Sample No	243592	243593	243594						

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	





Tel: 01622 850410

Soil Analysis Certificate - TPH CWG Banded										
Date Sampled	13/12/16	13/12/16	13/12/16	13/12/16	13/12/16					
Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied					
TP / BH No	SFU35	SFU36	SFU37	W5/T18.1	W5/T19.1					
Additional Refs	Composite	Composite	Composite	Composite	Composite					
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied					
QTSE Sample No	243587	243588	243589	243590	243591					
	Date Sampled Time Sampled TP / BH No Additional Refs Depth (m)	Date Sampled 13/12/16 Time Sampled None Supplied TP / BH No SFU35 Additional Refs Composite Depth (m) None Supplied	Date Sampled13/12/1613/12/16Time SampledNone SuppliedNone SuppliedTP / BH NoSFU35SFU36Additional RefsCompositeCompositeDepth (m)None SuppliedNone Supplied	Date Sampled13/12/1613/12/1613/12/16Time SampledNone SuppliedNone SuppliedNone SuppliedTP / BH NoSFU35SFU36SFU37Additional RefsCompositeCompositeCompositeDepth (m)None SuppliedNone SuppliedNone Supplied	Date Sampled13/12/1613/12/1613/12/1613/12/16Time SampledNone SuppliedNone SuppliedNone SuppliedNone SuppliedTP / BH NoSFU35SFU36SFU37W5/T18.1Additional RefsCompositeCompositeCompositeCompositeDepth (m)None SuppliedNone SuppliedNone SuppliedNone Supplied					

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	7.17	0.86
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42





Soil Analysis Certificate - TPH CWG Banded	k				
QTS Environmental Report No: 16-52964	Date Sampled	13/12/16	13/12/16	13/12/16	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (Saint	TP / BH No	W5/T20.1	W5/T21.1	W5/T22.1	
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 21/12/2016	QTSE Sample No	243592	243593	243594	

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	2.27	1.03	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	





Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-52964	Date Sampled	13/12/16	13/12/16	13/12/16	13/12/16	13/12/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU35	SFU36	SFU37	W5/T18.1	W5/T19.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 21/12/2016	QTSE Sample No	243587	243588	243589	243590	243591

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





Soil Analysis Certificate - BTEX / MTBE QTS Environmental Report No: 16-52964 **Date Sampled** 13/12/16 13/12/16 13/12/16 G & J Geoenvironmental Consultants Ltd **Time Sampled** None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (Saint TP / BH No W5/T20.1 W5/T21.1 W5/T22.1 Francis Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Order No: 138 Depth (m) None Supplied None Supplied None Supplied Reporting Date: 21/12/2016 **QTSE Sample No** 243593 243592 243594

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





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 16-52964	Date Sampled	13/12/16	13/12/16	13/12/16	13/12/16	13/12/16
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (Saint	TP / BH No	SFU35	SFU36	SFU37	W5/T18.1	W5/T19.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 21/12/2016	QTSE Sample No	243587	243588	243589	243590	243591

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	7135	815





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 16-52964 **Date Sampled** 13/12/16 13/12/16 13/12/16 G & J Geoenvironmental Consultants Ltd **Time Sampled** None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (Saint TP / BH No W5/T21.1 W5/T22.1 W5/T20.1 Francis Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Order No: 138 Depth (m) None Supplied None Supplied None Supplied Reporting Date: 21/12/2016 **QTSE Sample No** 243592 243593 243594

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	2137	1009	40	





Soil Analysis Certificate - Sample Descriptions

OTS Environmental Report No: 16-52964

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 21/12/2016

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
243587	SFU35	Composite	None Supplied	21.5	Brown gravelly clay
243588	SFU36	Composite	None Supplied	21.2	Brown gravelly clay
243589	SFU37	Composite	None Supplied	21.2	Brown gravelly clay
243590	W5/T18.1	Composite	None Supplied	15.6	Brown gravelly clay
243591	W5/T19.1	Composite	None Supplied	16.4	Brown gravelly clay
243592	W5/T20.1	Composite	None Supplied	16.5	Brown gravelly clay
243593	W5/T21.1	Composite	None Supplied	15.4	Brown gravelly clay
243594	W5/T22.1	Composite	None Supplied	16.4	Brown gravelly clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-52964

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Saint Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 21/12/2016

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

D Dried **AR As Received**





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QTS Environmental Report No: 17-53382

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 09/01/2017

Sample Scheduled Date: 09/01/2017

Report Issue Number: 1

Reporting Date: 13/01/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-53382 **Date Sampled** 04/01/17 04/01/17 04/01/17 04/01/17 04/01/17 Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No P5 Base P1 Base P2 Base P3 Base P4 Base Francis Group) Project / Job Ref: GJ079 **Additional Refs** None Supplied None Supplied None Supplied None Supplied None Supplied Order No: 138 Depth (m) 3.50 - 4.00 3.50 - 4.00 3.50 - 4.00 3.50 - 4.00 3.50 - 4.00 Reporting Date: 13/01/2017 **QTSE Sample No** 245448 245449 245450 245451 245452

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	73	690	1 ×	40	9





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-53382 **Date Sampled** 04/01/17 04/01/17 **Time Sampled** G & J Geoenvironmental Consultants Ltd None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No P6 Base Area 2/NF6 Francis Group) Project / Job Ref: GJ079 **Additional Refs** None Supplied None Supplied Order No: 138 Depth (m) 3.50 - 4.00 2.50 - 3.50 Reporting Date: 13/01/2017 **QTSE Sample No** 245453 245454

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	48	25		





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-53382	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 13/01/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
245448	P1 Base	None Supplied	3.50 - 4.00	23.1	Brown clay
245449	P2 Base	None Supplied	3.50 - 4.00	22.3	Brown clay
245450	P3 Base	None Supplied	3.50 - 4.00	16.4	Brown clay
245451	P4 Base	None Supplied	3.50 - 4.00	11.3	Brown clay
245452	P5 Base	None Supplied	3.50 - 4.00	19.6	Brown clay
245453	P6 Base	None Supplied	3.50 - 4.00	20.7	Brown clay
245454	Area 2/NF6	None Supplied	2.50 - 3.50	22.4	Brown clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-53382

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 13/01/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	7	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
			Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	
Soil Soil	AR D	C12-C16, C16-C21, C21-C40)	headspace GC-MS	E004 E009
3011	U	Fidolide - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography Determination of fraction of organic carbon by oxidising with potassium dichromate followed by	E009
Soil	D	FOC (Fraction Organic Carbon)	titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	,	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	рН	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of total sulphate by extraction with 10% HCI followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D		Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	svoc	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
C = ''	2		Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	
Soil	D	Total Organic Carbon (TOC)	(II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received





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QTS Environmental Report No: 17-53641

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 16/01/2017

Sample Scheduled Date: 16/01/2017

Report Issue Number: 1

Reporting Date: 20/01/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate - Volatile Organic	il Analysis Certificate - Volatile Organic Compounds (VOC)									
QTS Environmental Report No: 17-53641	Date Sampled	12/01/17	12/01/17	12/01/17	12/01/17	12/01/17				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	Q1 BASE	Q2 BASE	Q3 BASE	Q4 BASE	Q5 BASE				
Francis Group)										
Project / Job Ref: GJ079	Additional Refs	None Supplied								
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00				
Reporting Date: 20/01/2017	QTSE Sample No	246451	246452	246453	246454	246455				

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	199	45	34	1000	445





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic	il Analysis Certificate - Volatile Organic Compounds (VOC)								
QTS Environmental Report No: 17-53641	Date Sampled	12/01/17	12/01/17	12/01/17	12/01/17	12/01/17			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	Q6 BASE	Q7 BASE	Q8 BASE	AREA2/NF7	AREA2/SF7			
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	None Supplied							
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	2.50 - 3.50	2.50 - 3.50			
Reporting Date: 20/01/2017	QTSE Sample No	246456	246457	246458	246459	246460			

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	32	< 5	< 5	26	< 5





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-53641	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 20/01/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
246451	Q1 BASE	None Supplied	3.50 - 4.00	14.9	Red sandy clay with stones
246452	Q2 BASE	None Supplied	3.50 - 4.00	17.5	Red sandy clay with stones
246453	Q3 BASE	None Supplied	3.50 - 4.00	17.2	Red sandy clay
246454	Q4 BASE	None Supplied	3.50 - 4.00	18.3	Red sandy clay
246455	Q5 BASE	None Supplied	3.50 - 4.00	15.4	Red sandy clay
246456	Q6 BASE	None Supplied	3.50 - 4.00	17.1	Red sandy clay
246457	Q7 BASE	None Supplied	3.50 - 4.00	18.6	Red sandy clay
246458	Q8 BASE	None Supplied	3.50 - 4.00	16.8	Red sandy clay
246459	AREA2/NF7	None Supplied	2.50 - 3.50	15.8	Red sandy clay
246460	AREA2/SF7	None Supplied	2.50 - 3.50	17.4	Red sandy clay

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm I/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-53641

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 20/01/2017

Matrix	Analysed	Determinand	Brief Method Description	Method
Soil	On D	Paran Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	No E012
Soil	AR		Determination of BTEX by headspace GC-MS	E012
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	E016
Soil	AR	Cvanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR		Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D		Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	C12-C16, C16-C21, C21-C40)		E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Turnace	E019
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR		Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	(11) suipnate	E010
Soil	AR	PAH - Speciated (EPA 16)	use of surrogate and internal standards	E005
Soil	AR	· ·	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR		Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR		Determination of phenols by distillation followed by colorimetry	E021
Soil Soil	D D		Determination of phosphate by extraction with water & analysed by ion chromatography Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E009 E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with agua-regia followed by ICP-OFS	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR		Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received





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QTS Environmental Report No: 17-53778

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 18/01/2017

Sample Scheduled Date: 18/01/2017

Report Issue Number: 1

Reporting Date: 24/01/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate - Volatile Organic	il Analysis Certificate - Volatile Organic Compounds (VOC)								
QTS Environmental Report No: 17-53778	Date Sampled	17/01/17	17/01/17	17/01/17	17/01/17	17/01/17			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	R8 Base	Area 2 / SF8	R7 Base	R6 Base	R5 Base			
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	None Supplied							
Order No: 138	Depth (m)	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00			
Reporting Date: 24/01/2017	QTSE Sample No	247126	247127	247128	247129	247130			

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	271	227	352	73	293





THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Soil Analysis Certificate - Volatile Organic Compounds (VOC)											
QTS Environmental Report No: 17-53778	Date Sampled	17/01/17	17/01/17	17/01/17	17/01/17	17/01/17					
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied									
Site Reference: Nash Road, Redditch (St	TP / BH No	R4 Base	R3 Base	SFU38	SFU39	SFU40					
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	None Supplied	None Supplied	Composite	Composite	Composite					
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	None Supplied	None Supplied	None Supplied					
Reporting Date: 24/01/2017	QTSE Sample No	247131	247132	247133	247134	247135					

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	579	5762	270	135	171





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-53778	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 24/01/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
247126	R8 Base	None Supplied	3.50 - 4.00	18.6	Red clay
247127	Area 2 / SF8	None Supplied	2.50 - 3.50	19.1	Red clay
247128	R7 Base	None Supplied	3.50 - 4.00	18.6	Red clay
247129	R6 Base	None Supplied	3.50 - 4.00	21.4	Red clay
247130	R5 Base	None Supplied	3.50 - 4.00	20.7	Red clay
247131	R4 Base	None Supplied	3.50 - 4.00	18.6	Red clay
247132	R3 Base	None Supplied	3.50 - 4.00	13	Brown sandy clay with stones
247133	SFU38	Composite	None Supplied	14.5	Brown clayey sand with stones
247134	SFU39	Composite	None Supplied	14.6	Brown clay with stones
247135	SFU40	Composite	None Supplied	15	Brown clay with stones

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$ Unsuitable Sample $^{\rm I/S}$





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-53778

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 24/01/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
			Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	
Soil	AR	Chromium - Hexavalent	1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Flemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
			Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	
Soil	AR	C12-C16, C16-C21, C21-C40)		E004
Soil	D		Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
			Determination of fraction of organic carbon by oxidising with notassium dichromate followed by	
Soil	D	FOC (Fraction Organic Carbon)	titration with iron (II) sulphate Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle	E010
Soil	D	Loss on Ignition @ 450oC	furnace	E019
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Wetais	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	·	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR		Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	(11) sulpnate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	рН	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCI followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of total sulphur by extraction with aqua-regia followed by TCI -OLS Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	aro: C5-C7, C7-C8, C8-C10, C10-C12,		
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR		Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received





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QTS Environmental Report No: 17-54167

Site Reference: Nash Road, Redditch (Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 18/01/2017

Sample Scheduled Date: 26/01/2017

Report Issue Number: 1

Reporting Date: 01/02/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate										
QTS Environmental Report No: 17-54167	Date Sampled	17/01/17	17/01/17	17/01/17						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch (Francis Group)	TP / BH No	SFU41	SFU42	SFU43						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 01/02/2017	QTSE Sample No	248811	248812	248813						

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	3	5	3	
Barium (Ba)	mg/kg	< 5	NONE	69	105	98	
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	0.6	0.6	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	16	25	24	
Copper (Cu)	mg/kg	< 4	MCERTS	10	14	12	
Lead (Pb)	mg/kg	< 3	MCERTS	6	10	9	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	16	21	21	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	23	37	33	
Zinc (Zn)	mg/kg	< 3	MCERTS	35	53	46	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs										
QTS Environmental Report No: 17-54167	Date Sampled	17/01/17	17/01/17	17/01/17						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch	TP / BH No	SFU41	SFU42	SFU43						
(Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 01/02/2017	OTSF Sample No	248811	248812	248813						

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	





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Soil Analysis Certificate - TPH CWG Banded										
QTS Environmental Report No: 17-54167	Date Sampled	17/01/17	17/01/17	17/01/17						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch	TP / BH No	SFU41	SFU42	SFU43						
(Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 01/02/2017	QTSE Sample No	248811	248812	248813						

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.11	0.09	0.08	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	





Soil Analysis Certificate - BTEX / MTBE										
QTS Environmental Report No: 17-54167	Date Sampled	17/01/17	17/01/17	17/01/17						
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied						
Site Reference: Nash Road, Redditch	TP / BH No	SFU41	SFU42	SFU43						
(Francis Group)										
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite						
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied						
Reporting Date: 01/02/2017	QTSE Sample No	248811	248812	248813						

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





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-54167 **Date Sampled** 17/01/17 17/01/17 17/01/17 **Time Sampled** G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch TP / BH No SFU43 SFU41 SFU42 (Francis Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Order No: 138 Depth (m) None Supplied None Supplied None Supplied Reporting Date: 01/02/2017 **QTSE Sample No** 248811 248812 248813

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	91	58		





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-54167	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 01/02/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
248811	SFU41	Composite	None Supplied	12.8	Light brown clay with stones
248812	SFU42	Composite	None Supplied	13.7	Brown clay with stones
248813	SFU43	Composite	None Supplied	13.9	Light brown clay with stones

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-54167

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 01/02/2017

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

D Dried **AR As Received**





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QTS Environmental Ltd

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Rose Lane
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ME17 2JN **t**: 01622 850410

russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 17-54303

Site Reference: Nash Road, Reditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 30/01/2017

Sample Scheduled Date: 30/01/2017

Report Issue Number: 1

Reporting Date: 03/02/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate - Volatile Organic	ioil Analysis Certificate - Volatile Organic Compounds (VOC)								
QTS Environmental Report No: 17-54303	Date Sampled	25/01/17	25/01/17	25/01/17	25/01/17	25/01/17			
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied							
Site Reference: Nash Road, Reditch (St	TP / BH No	R2 Base	R1 Base	Area 2/NF8	S8 Base	Area 2/SF9			
Francis Group)									
Project / Job Ref: GJ079	Additional Refs	None Supplied							
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	2.50 - 3.50	3.50 - 4.00	2.50 - 3.50			
Reporting Date: 03/02/2017	QTSE Sample No	249388	249389	249390	249391	249392			

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	42	255	431	13	183





Tel: 01622 850410

Soil Analysis Certificate - Volatile Organic Compounds (VOC)								
QTS Environmental Report No: 17-54303	Date Sampled	25/01/17	25/01/17	25/01/17	25/01/17	25/01/17		
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied						
Site Reference: Nash Road, Reditch (St	TP / BH No	S7 Base	S6 Base	S5 Base	S4 Base	S3 Base		
Francis Group)								
Project / Job Ref: GJ079	Additional Refs	None Supplied						
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00		
Reporting Date: 03/02/2017	QTSE Sample No	249393	249394	249395	249396	249397		

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	56	155	14	89	494





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-54303	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Reditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 03/02/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
249388	R2 Base	None Supplied	3.50 - 4.00	23.7	Red clay
249389	R1 Base	None Supplied	3.50 - 4.00	6.8	Red clay
249390	Area 2/NF8	None Supplied	2.50 - 3.50	24.9	Red clay
249391	S8 Base	None Supplied	3.50 - 4.00	24.2	Red clay
249392	Area 2/SF9	None Supplied	2.50 - 3.50	22.7	Red clay
249393	S7 Base	None Supplied	3.50 - 4.00	22.6	Red clay
249394	S6 Base	None Supplied	3.50 - 4.00	21.7	Red clay
249395	S5 Base	None Supplied	3.50 - 4.00	21.2	Red clay
249396	S4 Base	None Supplied	3.50 - 4.00	18	Red clay
249397	S3 Base	None Supplied	3.50 - 4.00	20	Red clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-54303

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Reditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 03/02/2017

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

D Dried AR As Received



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QTS Environmental Report No: 17-54958

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 13/02/2017

Sample Scheduled Date: 13/02/2017

Report Issue Number: 1

Reporting Date: 17/02/2017

Authorised by:

Russell Jarvis

Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Ela Mysiara

Inorganics & ICP Section Head

Elymone-gole





Soil Analysis Certificate						
QTS Environmental Report No: 17-54958	Date Sampled	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W6/T23.1	W6/T24.1	W6/T25.1	SFU44	SFU45
Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 17/02/2017	QTSE Sample No	252488	252489	252490	252491	252492

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	6	5	4	6	4
Barium (Ba)	mg/kg	< 5	NONE	80	108	80	73	65
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	0.6	< 0.5	1.2	1.1
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	15	18	12	35	33
Copper (Cu)	mg/kg	< 4	MCERTS	10	11	7	10	9
Lead (Pb)	mg/kg	< 3	MCERTS	9	10	9	10	9
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	12	16	10	31	29
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	25	32	20	31	28
Zinc (Zn)	mg/kg	< 3	MCERTS	30	40	30	74	68

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-54958	Date Sampled	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W6/T23.1	W6/T24.1	W6/T25.1	SFU44	SFU45
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 17/02/2017	QTSE Sample No	252488	252489	252490	252491	252492

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - TPH CWG Bande	oil Analysis Certificate - TPH CWG Banded									
QTS Environmental Report No: 17-54958	Date Sampled	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17				
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied								
Site Reference: Nash Road, Redditch (St Francis Group)	TP / BH No	W6/T23.1	W6/T24.1	W6/T25.1	SFU44	SFU45				
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite				
Order No: 138	Depth (m)	None Supplied								
Reporting Date: 17/02/2017	QTSE Sample No	252488	252489	252490	252491	252492				

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.36	0.35	0.10	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	12	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42



Reporting Date: 17/02/2017

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



252491

252492

Soil Analysis Certificate - BTEX / MTBE QTS Environmental Report No: 17-54958 **Date Sampled** 08/02/17 08/02/17 08/02/17 08/02/17 08/02/17 None Supplied G & J Geoenvironmental Consultants Ltd **Time Sampled** None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St W6/T25.1 TP / BH No W6/T23.1 W6/T24.1 SFU44 SFU45 Francis Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Composite Composite Order No: 138 Depth (m) None Supplied None Supplied None Supplied None Supplied None Supplied

252488

252489

252490

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

QTSE Sample No



Order No: 138

Reporting Date: 17/02/2017

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



3.50 - 4.00

252470

3.50 - 4.00

252471

3.50 - 4.00

252469

2.50 - 3.50

252468

Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-54958 **Date Sampled** 08/02/17 08/02/17 08/02/17 08/02/17 08/02/17 Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No S1 Base Area 2/NF9 S2 Base T1 Base T2 Base Francis Group) Project / Job Ref: GJ079 **Additional Refs** None Supplied None Supplied None Supplied None Supplied None Supplied

3.50 - 4.00

252467

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	739	2893	482	103	182

Depth (m)

QTSE Sample No





Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 17-54958	Date Sampled	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	T3 Base	T4 Base	T5 Base	T6 Base	T7 Base
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	None Supplied				
Order No: 138	Depth (m)	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00	3.50 - 4.00
Reporting Date: 17/02/2017	QTSE Sample No	252472	252473	252474	252475	252476

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	500	614	483	240	367





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-54958 **Date Sampled** 08/02/17 08/02/17 08/02/17 08/02/17 08/02/17 Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No T8 Base Area 2/SF10 Area 2/EF2 Area 2/NF10 Area 2/EF1 Francis Group) Project / Job Ref: GJ079 **Additional Refs** None Supplied None Supplied None Supplied None Supplied None Supplied Order No: 138 Depth (m) 3.50 - 4.00 2.50 - 3.50 2.50 - 3.50 2.50 - 3.50 2.50 - 3.50 Reporting Date: 17/02/2017 **QTSE Sample No** 252479 252480 252481 252477 252478

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	289	155	355	154	108





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-54958 **Date Sampled** 08/02/17 08/02/17 08/02/17 08/02/17 08/02/17 Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No Area 2/EF3 Area 2/EF4 Area 2/EF5 Area 2/EF6 Area 2/EF7 Francis Group) Project / Job Ref: GJ079 **Additional Refs** None Supplied None Supplied None Supplied None Supplied None Supplied Order No: 138 Depth (m) 2.50 - 3.50 2.50 - 3.50 2.50 - 3.50 2.50 - 3.50 2.50 - 3.50 Reporting Date: 17/02/2017 **QTSE Sample No** 252484 252485 252486 252482 252483

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	217	1970	2655	57	105





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-54958 **Date Sampled** 08/02/17 08/02/17 08/02/17 08/02/17 08/02/17 Time Sampled None Supplied G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St Area 2/EF8 W6/T25.1 TP / BH No W6/T23.1 W6/T24.1 SFU44 Francis Group) Project / Job Ref: GJ079 **Additional Refs** None Supplied Composite Composite Composite Composite Order No: 138 Depth (m) 2.50 - 3.50 None Supplied None Supplied None Supplied None Supplied Reporting Date: 17/02/2017 **QTSE Sample No** 252487 252488 252489 252490 252491

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	88	340	343	96	32



Order No: 138

Reporting Date: 17/02/2017

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



Soil Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 17-54958 Date Sampled 08/02/17 September 17-54958 Date Sampled None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No SFU45 Francis Group)

Project / Job Ref: GJ079 Additional Refs Composite

Determinand	Unit	RL	Accreditation			
Trichloroethene	ug/kg	< 5	MCERTS	32		

None Supplied

252492

Depth (m)

QTSE Sample No





Soil Analysis Certificate - Sample Descriptions

OTS Environmental Report No: 17-54958

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 17/02/2017

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
252467	S1 Base	None Supplied	3.50 - 4.00	16.9	Red clay
252468	Area 2/NF9	None Supplied	2.50 - 3.50	15.4	Red clay
252469	S2 Base	None Supplied	3.50 - 4.00	16.3	Red clay
252470	T1 Base	None Supplied	3.50 - 4.00	15.5	Light brown sand
252471	T2 Base	None Supplied		15.1	Light brown sand
252472	T3 Base	None Supplied	3.50 - 4.00	17.9	Light brown sandy clay
252473	T4 Base	None Supplied	3.50 - 4.00	15.8	Red clay
252474	T5 Base	None Supplied	3.50 - 4.00	16.2	Red clay
252475	T6 Base	None Supplied		17.7	Red clay
252476	T7 Base	None Supplied		19	Red clay
252477	T8 Base	None Supplied		19.4	Red clay
252478	Area 2/NF10	None Supplied	2.50 - 3.50	15.1	Red sand
252479	Area 2/SF10	None Supplied	2.50 - 3.50	19.3	Red clay
252480	Area 2/EF1	None Supplied	2.50 - 3.50	15.3	Red sand
252481	Area 2/EF2	None Supplied	2.50 - 3.50	14.4	Red sand
252482	Area 2/EF3	None Supplied	2.50 - 3.50	15.4	Red sand
252483	Area 2/EF4	None Supplied	2.50 - 3.50	15.6	Red clay
252484	Area 2/EF5	None Supplied	2.50 - 3.50	17.1	Red clay
252485	Area 2/EF6	None Supplied	2.50 - 3.50	18.9	Red clay
252486	Area 2/EF7	None Supplied	2.50 - 3.50	20	Red clay
252487	Area 2/EF8	None Supplied	2.50 - 3.50	17.3	Red clay
& 252488	W6/T23.1	Composite	None Supplied	9.4	Brown sandy clay with stones
& 252489	W6/T24.1	Composite	None Supplied	10.3	Brown sandy clay with stones
& 252490	W6/T25.1	Composite	None Supplied		Brown sandy clay with stones
& 252491	SFU44	Composite	None Supplied	19.5	Red clay with stones
& 252492	SFU45	Composite		16.7	Red clay

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm I/S}$

& samples received in inappropriate containers for hydrocarbon analysis





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-54958

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 17/02/2017

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

D Dried AR As Received



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QTS Environmental Report No: 17-55729

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 28/02/2017

Sample Scheduled Date: 28/02/2017

Report Issue Number: 1

Reporting Date: 06/03/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate					
QTS Environmental Report No: 17-55729	Date Sampled	None Supplied	None Supplied	None Supplied	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W7/T26.1	W7/T27.1	W7/T28.1	
Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 06/03/2017	QTSE Sample No	255491	255492	255493	

Determinand	Unit	RL	Accreditation				
Arsenic (As)	mg/kg	< 2	MCERTS	6	7	7	
Barium (Ba)	mg/kg	< 5	NONE	141	151	152	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	0.8	0.6	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	18	22	18	
Copper (Cu)	mg/kg	< 4	MCERTS	18	19	15	
Lead (Pb)	mg/kg	< 3	MCERTS	41	20	10	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	16	20	15	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	32	42	34	
Zinc (Zn)	mg/kg	< 3	MCERTS	59	61	46	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs					
QTS Environmental Report No: 17-55729	Date Sampled	None Supplied	None Supplied	None Supplied	
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Nash Road, Redditch (St	TP / BH No	W7/T26.1	W7/T27.1	W7/T28.1	
Francis Group)					
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied	
Reporting Date: 06/03/2017	QTSE Sample No	255491	255492	255493	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	





Soil Analysis Certificate - TPH CWG Bande	Soil Analysis Certificate - TPH CWG Banded											
QTS Environmental Report No: 17-55729	Date Sampled	None Supplied	None Supplied	None Supplied								
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied								
Site Reference: Nash Road, Redditch (St	TP / BH No	W7/T26.1	W7/T27.1	W7/T28.1								
Francis Group)												
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite								
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied								
Reporting Date: 06/03/2017	QTSE Sample No	255491	255492	255493								

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	1.21	0.47	0.46	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	





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Soil Analysis Certificate - BTEX / MTBE	Soil Analysis Certificate - BTEX / MTBE										
QTS Environmental Report No: 17-55729	Date Sampled	None Supplied	None Supplied	None Supplied							
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied							
Site Reference: Nash Road, Redditch (St	TP / BH No	W7/T26.1	W7/T27.1	W7/T28.1							
Francis Group)											
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite							
Order No: 138	Depth (m)	None Supplied	None Supplied	None Supplied							
Reporting Date: 06/03/2017	QTSE Sample No	255491	255492	255493							

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





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-55729 **Date Sampled** None Supplied None Supplied None Supplied Time Sampled G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St TP / BH No W7/T27.1 W7/T28.1 W7/T26.1 Francis Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Order No: 138 Depth (m) None Supplied None Supplied None Supplied Reporting Date: 06/03/2017 **QTSE Sample No** 255491 255492 255493

Determinand	Unit	RL	Accreditation				
Trichloroethene	ug/kg	< 5	MCERTS	1182	454	443	





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-55729	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 06/03/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
\$ 255491	W7/T26.1	Composite	None Supplied	10.4	Brown sandy clay with stones
\$ 255492	W7/T27.1	Composite	None Supplied	11.7	Brown sandy clay with brick
\$ 255493	W7/T28.1	Composite	None Supplied	14.1	Brown clayey sand with stones

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

\$ samples exceeded recommended holding times





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-55729

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 06/03/2017

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

D Dried AR As Received



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QTS Environmental Report No: 17-56163

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Sample Receipt Date: 09/03/2017

Sample Scheduled Date: 09/03/2017

Report Issue Number: 1

Reporting Date: 15/03/2017

Authorised by:

Kevin Old

Associate Director of Laboratory

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Russell Jarvis

Associate Director of Client Services





Soil Analysis Certificate						
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W8 / T29.1	W8 / T30.1	W8 / T31.1	W8 / T32.1	W8 / T33.1
Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257271	257272	257273	257274	257275

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	5	7	7	8	9
Barium (Ba)	mg/kg	< 5	NONE	129	173	170	201	236
Beryllium (Be)	mg/kg	< 0.5	NONE	0.5	0.7	0.7	0.9	0.9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	15	21	20	27	27
Copper (Cu)	mg/kg	< 4	MCERTS	11	19	20	22	21
Lead (Pb)	mg/kg	< 3	MCERTS	38	79	102	89	62
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	11	17	15	20	21
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	23	31	29	36	44
Zinc (Zn)	mg/kg	< 3	MCERTS	59	94	88	131	148

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate						
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St Francis	TP / BH No	W8 / T34.1	W9 / T35.1	W9 / T36.1	W10 / T37.1	W10 / T38.2
Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257276	257277	257278	257279	257280

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	10	108	82	29	9
Barium (Ba)	mg/kg	< 5	NONE	205	300	280	473	231
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	0.9	0.8	1.5	0.9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	0.7	0.5	0.2	0.5
Chromium (Cr)	mg/kg	< 2	MCERTS	25	21	16	33	27
Copper (Cu)	mg/kg	< 4	MCERTS	21	9	7	31	38
Lead (Pb)	mg/kg	< 3	MCERTS	72	11	9	38	118
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	20	16	12	32	21
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	37	49	43	106	36
Zinc (Zn)	mg/kg	< 3	MCERTS	107	37	33	102	174

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C Analysis carried out on the dried sample is corrected for the stone content

Subcontracted analysis (S)





Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W8 / T29.1	W8 / T30.1	W8 / T31.1	W8 / T32.1	W8 / T33.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257271	257272	257273	257274	257275

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.14	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.14	0.15	0.36	0.17	0.21
Pyrene	mg/kg	< 0.1	MCERTS	0.14	0.14	0.32	0.17	0.20
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.13	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.15	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.18	0.11	0.13
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.11	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W8 / T34.1	W9 / T35.1	W9 / T36.1	W10 / T37.1	W10 / T38.2
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257276	257277	257278	257279	257280

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	< 0.1	< 0.1	0.26
Pyrene	mg/kg	< 0.1	MCERTS	0.22	< 0.1	< 0.1	< 0.1	0.24
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	< 0.1	< 0.1	0.18
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Soil Analysis Certificate - TPH CWG Bande	d					
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St Francis Group)	TP / BH No	W8 / T29.1	W8 / T30.1	W8 / T31.1	W8 / T32.1	W8 / T33.1
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257271	257272	257273	257274	257275

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.29	0.05	0.14	0.15	0.24
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	6	3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42





Soil Analysis Certificate - TPH CWG Bande	d					
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W8 / T34.1	W9 / T35.1	W9 / T36.1	W10 / T37.1	W10 / T38.2
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257276	257277	257278	257279	257280

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	0.13	< 0.05	< 0.05	< 0.05	1.52
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	14
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	20
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	10	18
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	129	405
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	139	458
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	4
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	7
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	5	< 3	< 3	< 3	11
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	42	< 10	< 10	26	287
Aromatic (C5 - C35)	mg/kg	< 21	NONE	47	< 21	< 21	26	309
Total >C5 - C35	mg/kg	< 42	NONE	47	< 42	< 42	165	767





4480

Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W8 / T29.1	W8 / T30.1	W8 / T31.1	W8 / T32.1	W8 / T33.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257271	257272	257273	257274	257275

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	16	28	10	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	6	12	5	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Tel: 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W8 / T34.1	W9 / T35.1	W9 / T36.1	W10 / T37.1	W10 / T38.2
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257276	257277	257278	257279	257280

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	24
p & m-xylene	ug/kg	< 2	MCERTS	8	< 2	< 2	< 2	85
o-xylene	ug/kg	< 2	MCERTS	5	< 2	< 2	< 2	61
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5





Tel: 01622 850410

Soil Analysis Certificate - Volatile Organic	Compounds (VOC)					
QTS Environmental Report No: 17-56163	Date Sampled	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
G & J Geoenvironmental Consultants Ltd	Time Sampled	None Supplied				
Site Reference: Nash Road, Redditch (St	TP / BH No	W8 / T29.1	W8 / T30.1	W8 / T31.1	W8 / T32.1	W8 / T33.1
Francis Group)						
Project / Job Ref: GJ079	Additional Refs	Composite	Composite	Composite	Composite	Composite
Order No: 138	Depth (m)	None Supplied				
Reporting Date: 15/03/2017	QTSE Sample No	257271	257272	257273	257274	257275

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	209	53	126	139	225





Soil Analysis Certificate - Volatile Organic Compounds (VOC) QTS Environmental Report No: 17-56163 **Date Sampled** 08/03/17 08/03/17 08/03/17 08/03/17 08/03/17 Time Sampled None Supplied G & J Geoenvironmental Consultants Ltd None Supplied None Supplied None Supplied None Supplied Site Reference: Nash Road, Redditch (St W8 / T34.1 W10 / T37.1 W10 / T38.2 TP / BH No W9 / T35.1 W9 / T36.1 Francis Group) Project / Job Ref: GJ079 **Additional Refs** Composite Composite Composite Composite Composite None Supplied Order No: 138 Depth (m) None Supplied None Supplied None Supplied None Supplied Reporting Date: 15/03/2017 **QTSE Sample No** 257276 257277 257278 257279 257280

Determinand	Unit	RL	Accreditation					
Trichloroethene	ug/kg	< 5	MCERTS	113	< 5	< 5	13	688





Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 17-56163	
G & J Geoenvironmental Consultants Ltd	
Site Reference: Nash Road, Redditch (St Francis Group)	
Project / Job Ref: GJ079	
Order No: 138	
Reporting Date: 15/03/2017	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
257271	W8 / T29.1	Composite	None Supplied	12	Brown clayey sand with stones
257272	W8 / T30.1	Composite	None Supplied	12.3	Brown sandy gravel with stones
257273	W8 / T31.1	Composite	None Supplied	12	Brown sandy gravel with stones and brick
257274	W8 / T32.1	Composite	None Supplied	12.7	Brown sandy gravel with concrete and stones
257275	W8 / T33.1	Composite	None Supplied	15.2	Brown sandy clay with stones and brick
257276	W8 / T34.1	Composite	None Supplied	13.7	Brown sandy gravel with stones
257277	W9 / T35.1	Composite	None Supplied	22.3	Light brown clay with stones
257278	W9 / T36.1	Composite	None Supplied	20	Light brown clay
257279	W10 / T37.1	Composite	None Supplied	23.1	Blue clay
257280	W10 / T38.2	Composite	None Supplied	15.8	Brown sandy clay

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





Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-56163

G & J Geoenvironmental Consultants Ltd

Site Reference: Nash Road, Redditch (St Francis Group)

Project / Job Ref: GJ079

Order No: 138

Reporting Date: 15/03/2017

Matrix	Analysed On	Determinand	Brief Method Description	
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D		Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR		Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	•	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
			Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	
Soil Soil	AR D	C12-C16, C16-C21, C21-C40)	headspace GC-MS	E004 E009
3011	U	Fidoriue - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography Determination of fraction of organic carbon by oxidising with potassium dichromate followed by	E009
Soil	D	FOC (Fraction Organic Carbon)	titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	,	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	рН	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of total sulphate by extraction with 10% HCI followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E018
Soil	D		Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
C = !!	2		Determination of organic matter by oxidising with potassium dichromate followed by titration with iron	
Soil	D	Total Organic Carbon (TOC)	(II) sulphate	E010
Soil	AR		Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	C5-C7, C7-C8, C8-C10, C10-C12, C12- C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried AR As Received