



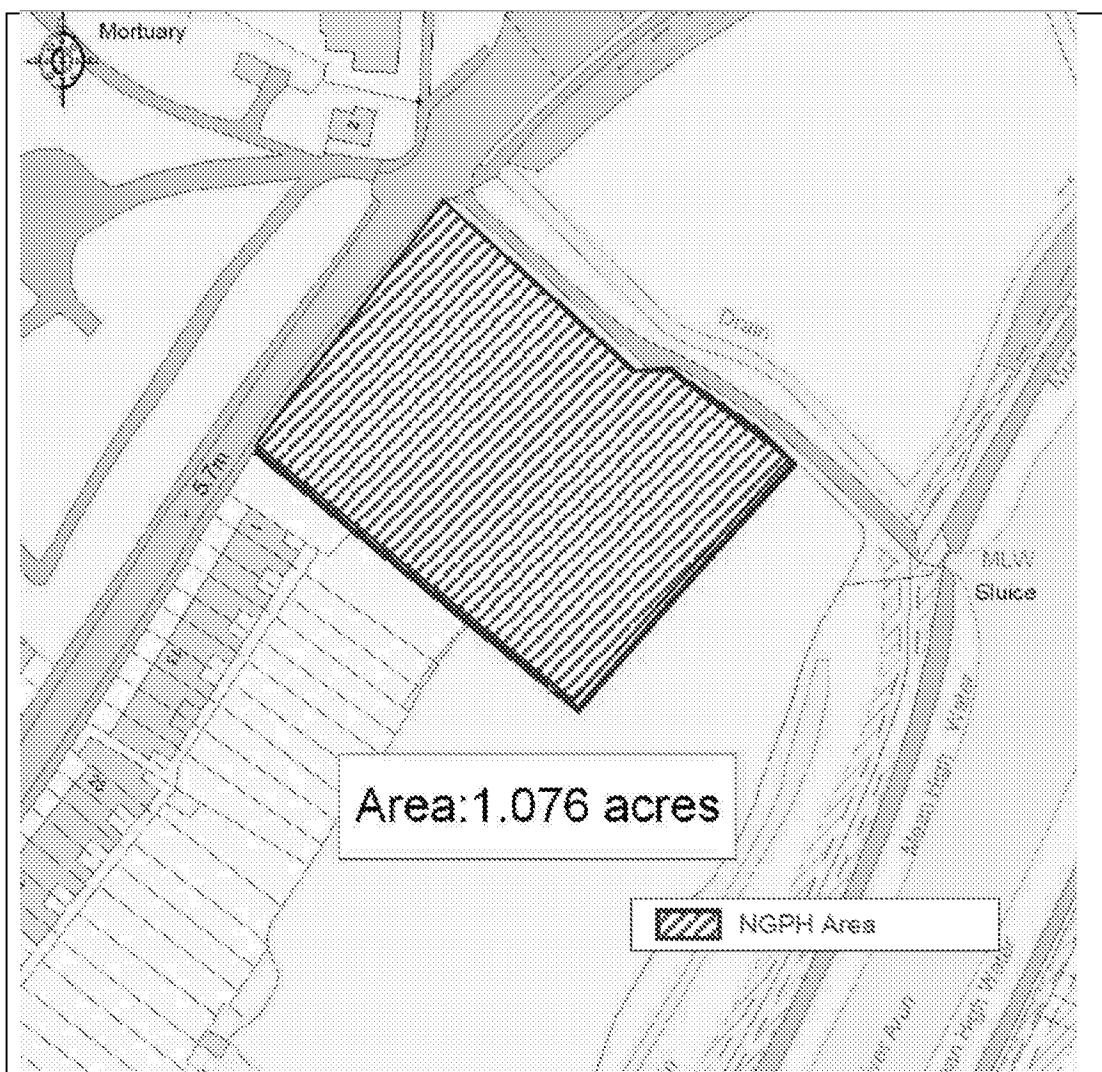
FORD ROAD, ARUNDEL
NATIONAL GRID PROPERTY
HOLDINGS

R1820/21/5111

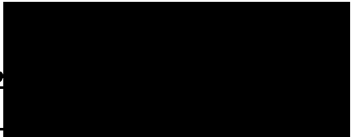
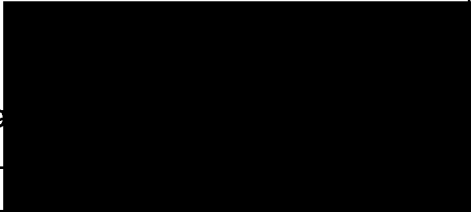
REMEDIATION VERIFICATION
REPORT

REV 1

SEPTEMBER 2021



Site Address:	Ford Road, Arundel, West Sussex BN18 9DX	NGP Document Tracking Code	
Report Title	Ford Road, Arundel – Remediation Verification Report		
Report Type:	Contamination	Retention Period	
Site Code	2551	Author (Company)	Celtic Technologies
Report Date	September 2021	Factual/Interpretative	Factual
Draft / Final	Draft	H & S File?	Yes
Work Stage	Remediation		
Brief description of contents	Remediation verification data.		
Access Permitted	NGP Land Regeneration Team	NGP Contact	Samantha Rendell

Client:	National Grid Property Holdings
Report Number:	R1820/21/5111
Report Title:	Ford Road, Arundel Remediation Verification Report
Report Status:	Rev 1
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The report is only valid when it is used in its entirety.

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1.0 INTRODUCTION AND OBJECTIVES

Celtic EnGlobe (Celtic) has been commissioned by National Grid Property Holdings (NGPH) to produce a verification report of the remediation works undertaken by Celtic at the former Gasworks Site, Ford Road, Arundel, West Sussex (the 'site'). The location of the site is shown on Drawing D1820/5111/A1, Appendix A.

The site has a long history of town gas production and as a result of its historical use, a legacy of soil and groundwater contamination was present along with remnant in-ground foundations/obstruction associated with former process buildings/plant. Various investigations have been undertaken at the site, together with a phase of risk mitigation design, leading to a 'Remediation Implementation and Verification Plan' (report ref, R1820/21/5045 rev2, by Celtic March 2021) being produced and agreed with the regulators as part of planning application ref: AB/45/21/PL. The primary objective of the remediation works was to render the site suitable for 'Commercial Open Storage' use.

This Verification Report is required to satisfy condition 4 of the Decision Notice for the planning application. In addition, Celtic produced a 'Construction Management Plan' (report ref: R1820/21/5089 rev0), June 2021 detailing the management aspects to be carried out and Condition 6 of the Decision Notice required that works proceeded in accordance with this document. This Verification Report will therefore demonstrate that this has been complied with. The works were also undertaken in line with the CL:AIRE Definition of Waste: Development Industry Code of Practice, 2011 (DoWCoP) and this report will also provide sufficient data and records to demonstrate that site originating materials have been suitably re-used on-site in accordance with the materials management plan and DoWCoP requirements.

1.1 Site Details

The site is situated approximately 40 m northwest of the River Arun. The site is owned by NGPH, is currently unoccupied and comprises secure vacant land. The site is an approximately rectangular shaped area of land covering approximately 0.44 hectares (Ha). The site has a postal address of Former Holder Station, Ford Road, Arundel BN18 9DX and is located at approximate National Grid Reference 501308E, 106749N.

The site can be accessed from Ford Road off an access track which runs along the north-eastern site boundary. Two pairs of secure metal gates allow access to the site. The original pair are located approximately two thirds of the way along the access track and an additional pair, which are situated closer to Ford Road and were constructed as part of the remediation works, to allow suitable access to the site for heavy goods vehicles (HGVs).

An electricity sub-station is located on the north-eastern site boundary adjacent to the original site entrance. No other above ground structures or buildings are present on the site.

The site gently slopes from northwest to southeast with an approximate elevation of 2.5 m above ordnance datum (mAOD) in the southeast rising to approximately 4 mAOD in the northwest. The site is generally level with surrounding land, except for residential properties to the west of the site which are raised above the site level by approximately 2 m. The pre-works site surface comprised approximately 15% tarmac, with the remainder comprising of either gravel, wood chippings or bare earth. The post works surface comprises approximately 10% tarmac, with the remainder comprising a

'Type 1' capping layer. Chain-link fencing forms the site boundary and secures the site from unauthorised access.

Site location and surrounding areas are presented in Appendix A of this report (Drawing D1820/5111/A1).

1.2 Neighbouring Land

The site is surrounded by a combination of residential properties, grazing land and a cemetery as follows:

- Southwest: Residential houses with gardens;
- Southeast: Private grazing land with the River Arun behind;
- Northwest: Ford Road, beyond which is a cemetery; and
- Northeast: an access track leading off Ford Road, beyond which is a small surface water drain (which runs towards the River Arun via a sluice gate), and private grazing land.

1.3 Historical Development

The site was operated as a gasworks from at least 1840, expanding in the west circa 1899, and in the south and southeast in circa 1937. It is understood that the gasworks continued operation until the mid-20th century.

The historical features are denoted on Drawing D1820/5111/A2, Appendix A.

In summary, the historical gasworks structures comprised up to 4 No. gasholders, a Retort House, including chimney/ tank, a Boiler House, condensers, governor compound, liquor/ tar tanks, and associated offices and stores.

The gasworks structures were widespread across the site, however, they are concentrated in the northeastern corner, where two of the four former gasholders were located, along with the retort house, including chimney and the liquor/ tar tank.

1.4 Previous Investigations at the Site

The following reports (redacted to remove interpretative information) have been provided to Celtic by NGPH and these reports contain background information detailing ground conditions, hydrogeology, contamination testing and previous phases of works:

- British Gas Environmental Liability Report, Report ref. E5347/LR860.NL/gp, Atkins April 1994;
- Environmental Assessment Site Investigation, Final Factual Report, Report ref. A71430/GTG.20000078/R002rev1/December2000, Atkins December 2000;
- Environmental Groundwater Monitoring Letter Report, Ford Road, Arundel, Mentor No. 015162, Report ref. A71430/GTG.20000078/Arundel/R004rev0/mg, Atkins July 2001;

- Ford Road, Arundel (Site No. 2551) Site Investigation Report, Report ref. 5104362/GTG.20100923/Arundel2011/R001v0, Atkins October 2011;
- Detailed Quantitative Risk Assessment, Report Ref. 5104362/GTG.20100923/2012/R002v1, Atkins October 2012;
- Site Information, Report Ref. 5156428/R001/V4, Atkins July 2019; and
- Supplementary Site Investigation, Factual Report, Ford Road, Arundel, Report ref. R1820/20/5043, Celtic Technologies Ltd. December 2020.

The locations of intrusive investigation trial pits/trenches, boreholes, vapour monitoring positions etc. are shown on Drawing D1820/5111/A2, Appendix A.

1.5 Project Key Personnel

The key personnel and organisations involved in the remediation project are included within Table 1.

Table 1 – Key Contacts

Name	Role / Responsibility	Organisation
Sam Rendell	Land Regeneration Manager – Client	National Grid Property Holdings
Lucy Hay	NEC3 Project Manager / Principal Designer	Atkins
Steve Gronow	Principal Contractor Project Manager	Celtic
Christian Davies	Site Manager	Celtic
Teja Hayrer	CDM Advisor	RSK
Sion Yao	Cost Consultant	AECOM
Charlotte McGill	Community Relations Advisor	Grayling
Neil Crowther	Head of Planning	Arun District Council
Sub-Contractor	Role	
BPH Plant	Plant Hire	
Avoia Maa	Utilities Surveying	
EnQuin	Asbestos Consultant	
i2 Analytical	Laboratory Chemical Analysis	

1.6 Geology, Hydrogeology and Hydrology

1.6.1 Geology

The geology in the vicinity of the site is identified on the British Geological Survey (BGS) Sheet 317, Chichester and is understood to comprise the Spetisbury Chalk Member overlain by 2 to 5 m of clay, silt, sand and gravel alluvium (Raised Marine Deposits) associated with the River Arun.

A summary of the geology beneath the site, based upon published geology and the results of previous intrusive investigations, is provided in Table 2.

Table 2 – Summary of Published and Previously Identified Geology

Stratum	Description	Proven thickness range m	Additional Detail
Made Ground	Variable across the site, but generally comprised firm, sandy, gravelly clay and fine to medium, gravelly, clayey sand with frequent concrete, brick, chalk and flint gravels and fragments of clinker, coal, wood and metal.	0.0 – 2.7	Greatest depths in the areas that were recorded to be formerly occupied by gas holders and pipes.*
Alluvium	Stiff, silty, very gravelly clay or clayey gravel.	0.7 – 5.1	Locally absent
Chalk (Spetisbury Chalk)	Structureless fine chalk composed of gravels and chalk cobbles in a soft off white/grey clay matrix.	>3.8 – >7.6	Base not proven
*Note: A reported depth of Made Ground at BH202 (7.2 m) is very thick compared to the rest of the site, although the borehole log notes that ‘possibly becoming natural below 4.5 m.			

The encountered thickness of the Raised Marine Deposits is relatively thin, locally absent, in the northern site area, with the Chalk relatively close to the surface. This is consistent with the published geology that shows the Raised Marine Deposits thinning to the west.

The Spetisbury Chalk Member is the uppermost Chalk unit; this means the site is underlain by a significant thickness of Chalk strata (i.e. the whole Chalk sequence believed to be 250 m to 300 m thick). The shallow Chalk is described as *Structureless fine chalk composed of gravels and chalk cobbles in a soft off-white/grey clay matrix*. Silts/clays of the Lambeth Group outcrop to the south and west (where they overlay the Chalk).

1.6.2 Hydrogeology

The hydrogeology of the area and site is detailed in previous investigation reports and a summary of the information is provided below.

The site has a very shallow groundwater that is typically encountered at depths in the range 1 m to 3 m below ground level (mbgl); the water table has been well documented by the site investigation works to be heavily influenced by tidal fluctuations in the River Arun (discussed further below).

The Raised Marine Deposits are classified by the EA as a Secondary A Superficial Aquifer, with the Chalk classified as a Principal Bedrock Aquifer; the site does not lie within any EA defined groundwater source protection zones. The closest licensed groundwater abstraction is approximately 0.75 km to the northwest; this abstraction appears to be associated with a trout fish farm and is likely to be drawing groundwater from the Chalk.

The Chalk aquifer is locally partly confined by the Raised Marine Deposits, which are generally clayey, but is unconfined to the west and northwest of the site. Further south the Lambeth strata confine the chalk. The drainage ditches to the south of the site are likely to be partly perched on the Raised Marine Deposits and are probably hydraulically isolated from the Chalk aquifer, although some of the ditches do show some tidal fluctuation.

The net direction of near surface groundwater flow below the site is easterly with shallow groundwater discharging to the River Arun; groundwater enters the site from the west/northwest.

Surface infiltration down through the site will contribute some additional flow to the groundwater exiting the site eastwards towards the Arun.

1.6.3 Hydrology

There is a 300 mm diameter concrete surface water drain bisecting the site running from the southwest to the northeast. The drain is approximately 1.3 m deep and there are two access chambers on-site. The drain discharges to a surface water ditch to the northeast of the site. The drainage ditch is located approximately 5 m from the northeastern site boundary and flows in a south easterly direction discharging into the River Arun via a sluice gate.

The River Arun is located approximately 40 m southeast of the site. The river is tidally influenced in the local area and generally flows in a southerly direction discharging to the English Channel at Littlehampton ~6 km south of the site (note: river flow can be reversed when the tide is rising). The river is tidal for more than 20 km from the coast. The tidal channel is ~35 m wide at the location of the site. The River Arun at Arundel is within the 'Arun Lower' EA operational catchment and is classified as a 'transitional waterbody' at Arundel, which reflects its estuarine tidal nature.

The land to the west of Ford Road is at a higher elevation and ground levels then rise steadily to the northwest. The low-level plain along the Arun west bank is drained by a series of ditches. One of these flows southeast close to the northeastern site boundary and this ditch has a 'sluice gate' where it discharges into the River Arun. Another ditch (flowing south), originates between the site and the river and joins a network of other ditches to the south of the site. The ditch to the north may have been a natural stream (based on OS contour arrangement); the ditches to the south are probably mainly artificial features.

Away from the river, a network of generally southerly flowing streams drain the land to the south and east of the site where the Lambeth Group and London Clay strata overlie the Chalk; further north, where the Chalk outcrops (or is present below superficial head deposits), there are few surface water features.

The long-term water level of the Arun at Arundel Queen St Bridge (0.7 km upstream) is generally between -0.4 and 3.2 mAOD. The highest identified recorded level in Arundel is 3.7 mAOD (December 2013).

Much of the southern/western site areas are currently within an EA defined Flood Zone 3 for planning purposes, with a limited area in Flood Zone 2 and the remainder in Flood Zone 1 (viewed online January 2021 at <https://flood-map-for-planning.service.gov.uk>). There is a flood defence berm along the western Arun bank (marked on the flood mapping).

1.7 Identified Contamination

The various investigations carried out to date generally identified widespread low-level gasworks contamination within the Made Ground, with more elevated concentrations recorded towards the north and east of the site associated with the identified former gasworks features. Further deeper contamination encountered within the Alluvium and Chalk has also been found to be focused in the northeastern area of site where sources of non aqueous phase liquid (NAPL) may be present. A summary of the identified contamination is provided below:

- Inorganic and organic contaminated shallow soils across the whole of the site; and
- Hydrocarbon / NAPL impacted soils and perched water in the gasworks process areas in and around former structures (mainly in the north and east, but with localised impact in other areas of the site).

The relevant pollutant linkages (RPLs) through which identified contaminants of concern could impact upon sensitive human health and controlled water receptors are summarised within Tables 3 and 4.

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Table 3 – Human Health RPLs and Preliminary Risk Evaluation

Source Materials Averaging Areas On-Site Uses Workers & Residents	Human Health RPLs	Consequence	Likelihood	Preliminary Risk Evaluation	Detailed Risk Assessment Approach
Verified Cover	Surface cover (Soils and hardstand)	Not Required: Not a contamination source			
Soil	Outdoor vapour inhalation	Mild	Low	Low Risk	CLEA Soil & Vapour Source Modelling
Groundwater GW		Mild	Low	Low Risk	CLEA Groundwater Source Modelling
Residential Use Immediately Adjacent					
Verified Cover	Surface cover (Soils and hardstand)	Not Required: Not a contamination source			
Boundary Zone Soil-B & Soil-VapB	Indoor vapour inhalation (lateral migration)	Medium	Likely	Moderate Risk	CLEA Soil & Vapour Source Modelling
Boundary Zone Groundwater GW-B	Outdoor vapour inhalation	Medium	Likely	Moderate Risk	CLEA Groundwater Source Modelling

Table 4 – Controlled Waters RPLs and Preliminary Risk Evaluation

Source Materials Averaging Areas	Controlled Waters RPLs	Consequence	Likelihood	Preliminary Risk Evaluation	Detailed Risk Assessment Approach
Verified Cover	Surface cover (Soils and hardstand)	Not Required: Not a contamination source			
Soil / Soil Leachate Soil & Soil-L	Soil Leaching to groundwater Lateral groundwater flow	Medium	Likely	Moderate Risk	Calculate SOIL/SOIL-L SACs
Groundwater GW	Lateral groundwater flow	Medium	Likely	Moderate Risk	Calculate GW SACs

2.0 REMEDIATION WORKS UNDERTAKEN

2.1 Preliminary Works

The following preliminary works were undertaken:

- Submission of Planning Application for remedial works (AB/45/21/PL);
- Regulatory engagement and agreement of the Remediation Implementation and Verification Report (R1820/21/5045 rev2);
- Preparation of Construction Phase Health and Safety Plan in line with Construction (Design and Management) Regulations 2015;
- Discussion with utility providers to agree any protection/mitigation requirements to protect existing services;
- Discussion with sewerage undertakers to agree a suitable foul sewer discharge consent;
- EA Permit (EPR/AP3195FG) deployment to cover remedial treatment activities;
- Completion of materials management plan (MMP) in compliance with CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP) and declaration by Qualified Person;
- Production and agreement of Construction Management Plan (Report ref: R1820/21/5049 rev0); and
- Application and agreement of Section 61 (Control of Pollution Act 194) consent for works on construction sites.

Copies of all regulatory correspondence is included within Appendix B.

2.2 Initial Site Set-up / Compound and Pedestrian Access Routes

Celtic mobilised to site on 7th June 2021 and established a site compound and welfare area including offices, canteen, decontamination unit / changing room, toilets, stores. The site compound included parking and barrier fencing was erected to segregate pedestrians from vehicles. Additional CCTV security measures were also established.

The site compound was situated on the existing tarmac hardstand in the eastern corner of the site, with access maintained via the existing gates. An additional set of access gates were established in the northeastern corner to allow appropriate site access for heavy goods vehicles. Traffic management during the project was controlled with access gates being kept closed when not in use. Suitable site signage was established around the site and details of the works communicated via site notices and local letter drops.

A utilities survey was undertaken across site with known and potential services being sprayed up on-site and surveyed for inclusion on site plans. A copy of the utilities survey is provided on drawing D1820/5111/A3.

2.3 Remediated Areas

The site was notionally divided into four areas, according to historic usage, risk factors and likely ground conditions to be encountered. The site was further divided into nominal 10 m x 10 m grids to aid the tracking of material movements and recording of validation data. The designated remediation areas and grid plan are illustrated on Drawing D1820/5111/A4, Appendix A.

Due to the on-site surface water drain and vulnerability to pollution, Celtic allowed a 1 m easement on either side of the drain. No excavation works were undertaken within this easement area in order to minimise the risk of damage and potential contaminant migration to the surface water receptors. A designated vehicular crossing point was established to provide a suitable running layer for vehicular access.

Photographs of the works progress are presented with Appendix C.

2.3.1 Area 1 (Orange Hatch) – Approximately 1,200 m²

Area 1 formerly accommodated the gas governor (feature no. 19 on D1820/5111/A2, Appendix A), which comprised a rectangular area between approx. 0.6 to 0.9 m higher than the surrounding area. This raised area was initially reduced to the surrounding ground level with material being stockpiled adjacently and tested for its suitability for re-use. No obvious visual or olfactory signs of contamination were present within this material.

Below ground cast iron pipework and concrete foundations, which were known to be present in this area, were then excavated and segregated. Two of the concrete structures contained old car tyres, which were segregated and loaded into a skip for off-site disposal. Small amounts of perched water were present within some of these structures but at insufficient quantities to warrant any de-watering. A small amount (<0.5 m³) of black stained material was also evident within one structure and was segregated and stockpiled on an impermeable membrane for later treatment.

The existing concrete gasholder base (feature no. 15 on D1820/5111/A2, Appendix A) was found to be at approximately 2 mAOD and was left in-situ. Excavation around the base (as well as historic investigation data) indicated that the slab was on top of natural alluvium with no obvious visual or olfactory signs of contamination.

Following receipt of laboratory analysis of stockpile materials originating from this area, the materials were re-used and levelled out across the whole of Area 1.

Existing redundant surface water pipework connections were found to be present at the locations of the surface water drain access chambers. A 100 mm pipe was found to enter each chamber from the south (originating from the former gas governor structures within Area 1). The pipework was removed during the excavations in Area 1 and the remaining stubs were grouted up with concrete to prevent any pathway potential.

2.3.2 Area 2 (Yellow Hatch) – Approximately 220 m²

Area 2 represents a 5 m wide strip along the southwest boundary of the site, where more stringent remedial criteria was applied due to its location adjacent to neighbouring residential properties. Made ground was found to be approximately 1.2 m thick across this area. No obvious visual or olfactory signs

of contamination were present within this made ground material and it was sampled and scheduled for laboratory testing before being replaced and backfilled within Area 2. The subsequent analysis results confirmed its acceptability.

2.3.3 Area 3 (Green Hatch) – Approximately 1,000 m²

Area 3 accommodates a shallow infilled gasholder base (feature no. 8 on D1820/5111/A2, Appendix A), which remains in-situ at approximately 2.5 mAOD. Excavation around the base (as well as historic investigation data) indicated that the slab was on top of natural alluvium with no obvious visual or olfactory signs of contamination. A small amount (<0.5 m³) of black stained material was encountered on top of the concrete slab at its northern edge and this material was segregated and stockpiled for subsequent treatment.

A square brick foundation, approximately 1 m² was encountered on the northern edge of the former gasholder base and was removed down to the level of the gasholder base. The remaining foundation has been left in-situ as there was no obvious visual or olfactory signs of contamination.

The remaining part of Area 3 was excavated to prove natural ground, which was approximately 1.2 m below ground level and the excavated made ground materials were subject to sampling and testing to demonstrate suitability for re-use. The materials were re-used within the same area and subsequent analysis results confirmed its acceptability.

2.3.4 Area 4 (Red Hatch) – Approximately 1,300 m²

Area 4, representing the northeast of the site, was identified as accommodating the most gasworks infrastructure and contamination at the site. Prior to the main excavation works, the area designated to accommodate the water treatment plant (Grid ref. F4) was excavated and made ground materials checked for visual and olfactory evidence of contamination. A small amount of hydrocarbon contaminated material (~0.5 m³) was encountered, segregated and stockpiled for later treatment. In addition, several cast iron former gas pipes were encountered and removed. Pipework exiting the site on the northeast boundary was surveyed and are included on drawing D1820/5111/A7, Appendix A. Natural alluvial material was found at approximately 1.7 mAOD.

The excavation works then re-commenced in Area 4, following the completion of Area 3, in grid reference D5 and E5 and were extended to approximately 1.5 to 1.7 mbgl, equating to approximately 1.2 to 1.4 mAOD. Cast iron pipes were also removed from E5. Excavated material exhibited some visual evidence of contamination within D5 and was therefore segregated and subjected to stabilisation treatment prior to being placed back into this area.

Excavation cells D1 and E1 (as shown on D1820/5111/A5, Appendix A) then commenced and progressed southwards towards D4 and E4. A former below ground gasholder (identified as feature no. 4 on D1820/5111/A2, Appendix A) was known to be present in this area and was found to be backfilled with much tar-stained timber, which was deemed unsuitable for on-site treatment. These timber materials were excavated and stockpiled separately on an impermeable membrane and covered over to minimise fugitive emissions and risk of cross contamination. The remaining materials from the gasholder were excavated and temporarily stockpiled adjacent to the gasholder. The base of the gasholder was found to be at approximately 1.8 mAOD and comprised a clay dumping on top of a concrete base. The gasholder walls were constructed of brick and were found to be already partially demolished. Excavation works further reduced the brick walls to a level of approximately 2.8 mAOD. The excavated materials were put back into the gasholder together with stabilisation additives, which

were then mixed in and levelled off. Areas D2, E1 and E2, outside of the gasholder, were further excavated to approximately 0.8 mAOD, as there was much visual evidence of contamination. There were also several brick walls within these areas, which remain in-situ between approximately 0.8 to 2.8 mAOD, and their locations are illustrated on drawing D1820/5111/A7 within Appendix A. The excavated materials were subject to stabilisation prior to being backfilled across these areas. Excavation works in E1 also exposed and damaged an unknown pot-ended gas pipe, which was immediately repaired following a call-out to Southern Gas Networks (SGN). The gas service was found to be live and comprised a 25 mm diameter polyethylene (PE) with a pot-end attached from a historic disconnection. The pipe was not shown on previous utility plans or on the SGN database. Celtic recorded its position, which is illustrated on drawing D1820/5111/A7, Appendix A.

Areas D3 and D4 were found to be less impacted, with the made ground not exhibiting any significant signs of contamination. Areas E3 and E4 contained a lot of foundations (which were removed) and an area of hydrocarbon contamination, which extended to approximately 3 mbgl (approx. 0.4 mAOD). Contaminated materials were subject to stabilisation and replaced back into these excavation voids.

The final section of excavation was then undertaken comprising F1 to F3. A further circular former below ground gasholder structure (feature no. 1 on D1820/5111/A2, Appendix A) was known to be present within F1 and this was found to comprise a brick structure approximately 6 m in diameter extending approximately 2.5 mbgl (approximately 1.2 mAOD). Materials within this structure were heavily impacted with much tar staining and were subject to stabilisation treatment. Areas F2 and F3 were less impacted with excavations extending to approximately 2.2 mAOD. Cast iron pipes were also removed from these areas to mitigate any future pathway potential.

2.4 Stabilisation Treatment

Stabilisation treatment was identified as the most effective and appropriate technique to deploy at the site. The aim of the treatment was to reduce the mobility of the contaminants of concern to mitigate potential risk to controlled waters. Ordinary Portland cement (OPC) and pulverized fuel ash (PFA) were the chosen additives to be used at the site, following a bench scale feasibility test. The amount of additives chosen to be used for the treatment works were 4% OPC and 8% PFA.

Mechanical segregation of non-treatable material such as wood, metal, plastic and oversize concrete/brick/masonry was undertaken. The treatment works were then undertaken at site by mixing the contaminated soils with the stabilisation additives and leaving them to harden in-situ. Following excavation, the volumes of materials requiring treatment, together with the necessary tonnage of OPC and PFA were calculated. The OPC was mixed with water on-site using a large grout pan and delivered to the treatment area using hydraulic pumps and pipework. The additives were thoroughly mixed with the contaminated soils and levelled off in-situ to harden.

Samples were retrieved on a minimum of one sample per 250 m³ basis and subject to strength, durability and leachability testing. The assessment of sample durability and leaching characteristics were made in accordance with EA NEN 7375 and the derived leaching rates compared to the site's remedial criteria. The stabilisation tank test data is presented within Appendix D (to follow).

A summary of the materials, which were treated during the works, including their source, volume and re-use area are included within Table 5. The stabilised materials were typically capped with a minimum

of 0.5 m of (made ground) material which has been subject to validation testing against the site remedial criteria.

Table 5 – Stabilisation Summary

Date	Batch #	Sample Ref	Excavated Grid Ref	Backfilled Grid Ref	Depth placed (mbgl)	Volume of soil treated (m ³)	OPC added (tonnes)	PFA added (tonnes)
13/07/2021	1		D1	D1	2.0-0.5	40.00	3.00	6.00
13/07/2021	2		D1	D1	2.0-0.5	40.00	3.00	6.00
13/07/2021	3	Batch 3	D1	D1	2.0-0.5	40.00	3.00	6.00
13/07/2021	4		D1	D1	2.0-0.5	40.00	3.00	6.00
13/07/2021	5		D1	D5	1.7-1.2	20.00	1.50	3.00
14/07/2021	6		E3/E4	D1	2.0-0.5	40.00	3.00	6.00
14/07/2021	7		E3/E4	D1	2.0-0.5	40.00	3.00	6.00
14/07/2021	8		E3/E4	D1	2.0-0.5	40.00	3.00	6.00
15/07/2021	9		D2	E2	3.0-0.5	40.00	3.00	6.00
15/07/2021	10	Batch 10	D2	E2	3.0-0.5	20.00	1.50	3.00
15/07/2021	11		E2	D2	2.5-1.0	40.00	3.00	6.00
16/07/2021	12		F2	D2	2.5-1.0	40.00	3.00	6.00
16/07/2021	13		F2	F2	3.0-0.5	40.00	3.00	6.00
19/07/2021	14		E2	E2	3.0-0.5	40.00	3.00	6.00
19/07/2021	15		F2	F2	3.0-0.5	40.00	3.00	6.00
20/07/2021	16	Batch 16	D2	E2	3.0-0.5	40.00	3.00	6.00
20/07/2021	17		D2	E2	3.0-0.5	40.00	3.00	6.00
20/07/2021	18		D2	E2	3.0-0.5	40.00	3.00	6.00
20/07/2021	19		F1	E2	3.0-0.5	40.00	3.00	6.00
20/07/2021	20		F1	F1	3.0-0.5	40.00	3.00	6.00
20/07/2021	21		F1	F1	3.0-0.5	40.00	3.00	6.00
21/07/2021	22		F1	F1	3.0-0.5	40.00	3.00	6.00
21/07/2021	23		E1	E1	3.0-0.5	40.00	3.00	6.00
21/07/2021	24	Batch 24	E1	E1	3.0-0.5	40.00	3.00	6.00
21/07/2021	25		E1/F1	F1	3.0-0.5	40.00	3.00	6.00
21/07/2021	26		F1	F1	3.0-0.5	40.00	3.00	6.00
21/07/2021	27		F1	F1	3.0-0.5	40.00	3.00	6.00
22/07/2021	28	Batch 28	F1	F1	3.0-0.5	40.00	3.00	6.00
22/07/2021	29		F1	F1	3.0-0.5	40.00	3.00	6.00

2.5 Volumes of Materials

Based on the actual remedial areas and depths of excavation, the volumes that were excavated, treated, re-used, imported and disposed off-site are presented within Table 6.

Table 6 – Actual Volumes of Materials

Source	Approximate Volume (m ³)
Area 1 Excavation	1,000
Area 2 Excavation	264
Area 3 Excavation	1,200
Area 4 Excavation	2,300
Hardstand materials	120
S/S Treatment Volume	1,120
Re-use on site	4,640
Disposal off-site	124
Capping Layer	1,210 (1,966 tonnes)

2.6 Remedial Criteria

As detailed within the RIP report, soil and soil leachate remedial criteria for human health and controlled waters were derived and are summarised in Tables 7 and 8.

Table 7 – Soil Remedial Criteria in mg/kg

Substance	Site Wide Unsaturated Zone Soils	Boundary Strip (Area 2) Unsaturated Zone Soils
Sum Σ TPH	5,000	1,000
TPH Aliphatic C5-C6	Via Σ TPH	650
TPH Aliphatics C8-C10		440
TPH Aromatics C8-C10		500
Benzene	2,900	4
Sum Σ TEX	Via Σ TPH	500
Phenols	1,200	1,200
Sum Σ 16-PAH	5,000	1,000
Benzo[a]pyrene	92	92
Fluoranthene	400	400
Indeno[123-cd]pyrene	680	680
Naphthalene	4,600	260
Easily Liberatable Cyanide	250	250

Table 8 – Leachate remedial criteria in mg/l

Substance	Site Wide Porewater Criteria
TPH Aliphatics C8-C10	2,500 ⁽¹⁾
TPH Aliphatics C10-C12	4,300 ⁽¹⁾
TPH Aromatic C8-C10	2,000 ⁽¹⁾
TPH Aromatic C10-C12	2,000 ⁽¹⁾
TPH Aromatic C12-C16	2,000 ⁽¹⁾
TPH Aromatic C16-C21	2,000 ⁽¹⁾
TPH Aromatic C21-C35	2,400 ⁽¹⁾
TPH Aromatic C35-C44	2,400 ⁽¹⁾
Benzene	2,000 ⁽¹⁾
Phenols	1,600
Benzo[b]fluoranthene	6.9 ⁽¹⁾
Benzo[k]fluoranthene	7.4 ⁽¹⁾
Benzo[ghi]perylene	0.74 ⁽¹⁾
Benzo[a]pyrene	0.041 ⁽¹⁾
Fluoranthene	1.3 ⁽¹⁾
Indeno[123-cd]pyrene	0.45 ⁽¹⁾
Naphthalene	400 ⁽¹⁾
Anthracene	21 ⁽¹⁾
Easily Liberatable Cyanide	200

(1) above theoretical saturation limits

2.7 Unexpected Contamination

There was no unexpected contamination encountered during the remedial works. It was expected that former gaswork structures would have been backfilled with typical gasworks wastes and this site was no exception. The tyres were probably the only exception, but these were not found to present any additional risk to human health or the wider environment; and were segregated and placed within a designated skip for off-site disposal. The tarry wood within the former gasholder structure (within Area 3) was the only other material, which could not be treated and this was segregated and appropriately stored on-site, prior to its off-site disposal.

2.8 Groundwater Treatment

A groundwater treatment system was established on-site to deal with any non-aqueous phase liquid (NAPL) and perched waters encountered during the remediation works. However, there was no NAPL recorded during any of the groundwater monitoring rounds and insufficient perched water to pump. A sump, comprising a 3 m long 600 mm diameter perforated pipe, was installed within the northeast area to further monitor and facilitate any NAPL recovery works if necessary. No NAPL was recorded within the sump and, on completion of the remediation works, the pipe was removed and the area backfilled. The small pockets of perched waters, which were found within the remnant structures, did not exhibit significant NAPL and were not of sufficient volume that they could be feasibly pumped out or treated. On completion of the treatment and backfill works, the groundwater treatment system was decommissioned and demobilised from site.

2.9 Asbestos Within Soils

An asbestos risk assessment was undertaken as part of the initial health and safety documentation which deemed the works to be non-notifiable. During the works small fragments of asbestos bonded cement were encountered and was collected and double bagged, by appropriately trained (CAT B) operatives. Approximately 10 kg was collected and these materials were subsequently collected by a licensed waste contractor for appropriate off-site disposal. Waste transfer records can be found within Appendix E.

Asbestos reassurance air monitoring was undertaken throughout the remediation, with no discernible findings, and this data can be found within Appendix H.

2.10 Human Health Capping Layer

Following remediation, all areas were backfilled with site won verified materials and covered using 300 mm of a 'Type 1' granular capping layer (sourced from Torr quarry, Somerset), overlying an orange geotextile alert barrier. Backfilled materials and capping layer were placed in appropriate layers and compacted to provide a minimum 'California Bearing Ratio' (CBR) value of 5% at top of capping. CBR tests were carried out using a 450 mm plate at a frequency of 1 test per 400 m². This equated to 10 tests across site. The primary aim of the capping layer is to mitigate potential future risks to human health and nuisance exposure and the objectives are to:

- Reduce the potential for dust, vapour and odour emissions impacting on site neighbours;
- Prevent site workers and visitors from coming into direct dermal contact with residual soil contamination and mitigate ingestion and inhalation pathways; and
- Provide a surface which is suitable for the intended open storage end-use.

3.0 VERIFICATION DATA

3.1 Verification Test Plan

The verification test plan was designed to provide a regime of testing to demonstrate:

- That residual contaminants meet the remedial criteria and do not pose an unacceptable risk to human health or the wider environment;
- That materials have been appropriately treated and that remedial criteria have been achieved;
- That only appropriate materials have been imported to site; and
- That site originating materials are suitable for re-use.

3.2 Excavation Extents

Verification sampling of excavation extents were undertaken on the following basis:

- Base of excavation where Made Ground remained below unsaturated zone (equivalent to high tide water table) at a frequency of 1 sample per 100 m², generally equivalent to one sample per 10 m x 10 m grid or where gross contamination is present, at a frequency of one sample per 20 m²; and
- Boundary face of excavations at a frequency of 1 sample per 10 linear metres of excavation face.

Sample references used a format of the grid reference as a prefix and then the boundary orientation as a suffix. For example, the sample reference F1 NE would signify that the sample was retrieved from grid reference F1 and from the northeast boundary. A depth would also be attributed to the depth that the sample was retrieved from.

The verification sampling data is included within Appendix H. Samples were retrieved from the boundaries of all excavation works as illustrated on drawing D1820/5111/A5. A total of 27 samples were retrieved from the perimeter boundaries of excavation, with a further 10 samples retrieved from excavation boundaries along the on-site surface water drain to confirm residual concentrations in the vicinity of the drain. A further sample was retrieved from the base of E4 at 3 m depth due to the presence of residual Made Ground at the interface of the groundwater. All sample results were found to comply with the remedial criteria and visual observations found no significant contamination to be present at the site boundaries.

3.3 Material Re-Use

Verification sampling was undertaken on material re-use at a frequency of one sample per 100 m³.

Samples were sent for solid chemical analysis as per Table 10 and results compared against the remedial criteria in Table 7. Sample references used a format of the grid reference as a prefix and then the word re-use as a suffix. For example the sample reference 'C3 re-use' would be the representative sample retrieved from the material re-used within grid reference C3.

All material sampled and subsequently re-used on-site was found to comply with the remediation criteria. The works were undertaken in accordance with the declared materials management plan with no deviation requirements and in accordance with the CL:AIRE DoWCoP. The material re-use chemical analysis data is included within Appendix G.

3.4 S/S Treatment

In order to demonstrate that the stabilised soils meet the remedial targets for the site, samples of treated soil were recovered at a rate of 1 sample of 250 m³ and allowed to cure for 28 days in moulds kept at ambient temperatures. Following curing, the samples were subject to leachability tank testing in order to demonstrate the post-stabilisation immobilisation of the contaminants of concern. Testing was also undertaken to demonstrate the strength and durability of the stabilised material.

Samples taken for validation purposes were recovered from the treated material after blending with S/S additives, prior to any initial set or hardening occurring. The stabilisation¹⁹ tank test data is presented within Appendix D (to follow).

3.5 Waste Disposal

Waste materials were disposed off-site to appropriately licensed facilities. A desk-top check of the disposal facilities Environmental Permits / Exemptions and waste carrier details was undertaken prior to the waste movements. A check was also undertaken by following a wagon to ensure it went to the appropriate destination. The standard industrial classification (SIC) code for these activities was 39.00 (Remediation activities and other waste management services). A summary of the waste disposed off-site is provided within Table 9 and waste documentation is included within Appendix F (Export Data).

Table 9 – Summary of Waste Disposal

Waste Carrier	Waste Destination	Type of Waste & EWC	Volume / Tonnage
South Coast Skips CBDU44059	Ford, Arundel BN18 0BS WP3095HU/V002	Green Waste (vegetation) 200201	4 no. loads (91.8 m ³)
South Coast Skips CBDU44059	Ford, Arundel BN18 0BS WP3095HU/V002	Bricks / Concrete 170107	8 loads (80 m ³)
Matthews Sussex CBDU147665	Knepp Castle Estate WEX 197027	Bricks / Concrete 170107	2 loads (20 m ³)
Robert Hopkins CBDU80960	Bullock Street, West Midlands B70 7HE ZP3527SL	Tarry wood (hazardous) 200137	1 load (8 tonnes)
Shield CBDU96863	Unit 6 Frobisher Industrial Centre, Budds Lane, Romsey SO51 0EZ EPR/HB3308XU	Asbestos (hazardous) 170605	10 kg
Norris CBDU89511	Station Approach, Orpington BR5 2NB KP3695HU/V002	Car tyres 160103	1 load (86 tyres)
Norris CBDU89511	Station Approach, Orpington BR5 2NB KP3695HU/V002	Mixed construction 160103	6.76 tonnes
RM Pettett CBDU85928	Jury Lane, Chichester PO20 7PX AB3503ZA/T001	Metals	5.5 tonnes

3.6 Capping Layer

Samples were recovered from imported materials used for the capping layer at a frequency of one sample per 100 m³ with a minimum of three samples per source. Samples were sent for solid chemical analysis as per Table 10 and results compared against the remedial criteria in Table 7. A total of fourteen samples were retrieved and all results were found to comply with the remediation criteria.

The capping layer was also subject to on-site 450 mm plate CBR tests at a frequency of one test per 400 m², with an aim to achieve a minimum CBR value of 5%. Ten tests were undertaken, and all achieved the minimum 5% requirement.

The capping layer sampling data and plate bearing test results are included within Appendix G.

3.7 Groundwater Quality

Groundwater monitoring was undertaken prior to the start of excavation works, during excavation works and following remediation works, from the available on-site monitoring boreholes, to ensure groundwater concentrations of contaminants of concern do not present an unacceptable risk to controlled waters. Samples were recovered from the available boreholes and scheduled for liquid chemical analysis as per Table 11. The results from the sampling do not indicate any significant trends over the course of the remediation works. The groundwater data is included within Appendix E. During the remediation excavation works, several boreholes were decommissioned and removed as they inhibited access to remediate the areas. The boreholes decommissioned during the works included BH101s, BH101d, BH102, BH203 and BH204. Boreholes remaining at the site, following remediation works include BH201, BH202, BH104 and BH105.

3.8 Disposal to Foul Sewer

A discharge consent was agreed with Southern Water with established criteria; however, as mentioned previously, no water was treated or discharged during the works.

3.9 Chemical Analysis Testing Suites

The following tables provide the chemical analysis suites scheduled for solids (soils) and groundwater during the remediation works.

Table 10 – Testing Suites Solids

Grouping	Constituent COCs
Phenols	2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol; 2,4-Dichlorophenol; 2,4-Dimethylphenol; 2-Chlorophenol; 2-Methylphenol; 2-Nitrophenol; 4-Chloro-3-methylphenol; 4-Methylphenol; total phenols.
Metals	Arsenic, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc.
PAHs	Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene.
BTEX	Benzene, Toluene, Ethylbenzene, p&m-xylene, o-xylene.
Cyanide	Free Cyanide, Complex Cyanide, Total Cyanide.
TPH	Speciated Aliphatic and Aromatic Hydrocarbons.
General inorganics	pH, Electrical Conductivity, Total Sulphate (as SO ₄), Sulphide, Total Chloride, Ammonium as NH ₄ , Total Organic Carbon.
Asbestos	Asbestos ID, Asbestos quantification (for positive ID).

Table 11 – Testing Suites Groundwater

Grouping	Constituent COCs
Phenols	Catechol, Resorcinol, Ethylphenol & dimethylphenol, Cresols, Naphthols, Isopropylphenol, Phenol, Trimethylphenols, Total Phenols.
Metals	Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc.
PAHs	Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene.
BTEX	Benzene, Toluene, Ethylbenzene, p&m-xylene, o-xylene.
Cyanide	Free cyanide, complex cyanide, total cyanide.
TPH	Speciated aliphatic and aromatic hydrocarbons.
General inorganics	pH, Electrical Conductivity, Sulphate (as SO ₄), Sulphide, Chloride, Ammonium as NH ₄ , Total Organic Carbon, Total Suspended Solids.

In terms of quality assurance (QA) and quality control (QC), during groundwater sampling, a duplicate sample was retrieved (BH105a) during the 15/6/2021 monitoring event and field blanks (FB1 and FB2) were tested during the 7/7/2021 and 4/8/2021 monitoring events. A comparison of the duplicate sample results (BH105 and BH105a) does not indicate any significant deviations. The field blank sampling involved the filling up of sample containers with (laboratory provided) de-ionised water during the regular sampling, to check any handling/cross contamination issues. The results indicate trace concentrations of ammoniacal nitrogen (as NH₄) and metals, which the laboratory have confirmed are linked to the particular water used and not to the accuracy or sensitivity of the laboratory result or contamination in the field. A Naphthalene concentration of 0.62 µg/l (compared to a laboratory detection limit of 0.01 µg/l) was also reported and is higher than that reported by the laboratory in their blank tests from the same source (and is routinely below their detection limit). The laboratory has confirmed that the data has been checked and found to be correctly integrated. This analyte can be picked up in the field and this concentration is therefore attributed to the samples' handling on-site.

4.0 ENVIRONMENTAL MONITORING UNDERTAKEN

In order to address and manage potential nuisance emissions, mitigation and monitoring measures were deployed during the works. These mitigation and monitoring measures were agreed with the relevant regulatory bodies as part of Celtic's deployment of their Environmental Permit, planning consent (including the Construction Management Plan) and Section 61 (of the Control of Pollution Act 194) consent for works on construction sites. The environmental boundary monitoring point locations are illustrated on drawing D1820/5111/A4 within Appendix A. The following sections describe the agreed mitigation and monitoring requirements.

4.1 Dust

Site and weather conditions were continually assessed throughout the works and mitigation measures were dynamically deployed to prevent the generation of dust as far as practicable. The presence of dust was visually assessed and also measured using on-site instrumentation on an ongoing daily basis. Dust monitoring (frisbee type) gauges were established at the site boundaries, which recorded dust settlement on fortnightly basis and also allowed directional analysis to be undertaken.

Dust mitigation measures were pro-actively undertaken as part of the normal site operations included:

- Deployment of fixed and mobile canon and spray misting units, designed specifically to suppress dust generation;
- Traffic routes were sprayed with water, using a towable water bowser fitted with a spray bar, to prevent potential dust generation and were subject to routine and regular inspection;
- The speed limit for the site was limited to 5 mph to minimise the potential generation of debris/dust; and
- Dust netting and fencing was erected across areas of site to further mitigate risks of cross boundary migration.

The results of the field monitoring together with the frisbee gauge data are included within Appendix H. There were no exceedances of the site criteria for dust during the remedial works.

4.2 Vapours and Gases

Monitoring of volatile organic compounds (VOCs) was undertaken throughout the course of site works. A calibrated Photo Ionisation Detection meter (PID meter) was used for this purpose and the results of the monitoring are included within Appendix H.

Monitoring was carried out twice a day (AM and PM) at the boundary monitoring points and the 15-minute average for each location as well as maximum concentration was recorded. Typically, the monitoring was only undertaken once on a Friday as site works were usually terminated at midday to allow for staff travel time. There were no instances where elevated concentrations (above 0.0 parts per million) were detected.

4.3 Odour

Odour monitoring (olfactory sniff test) was undertaken twice daily at the boundary monitoring locations. This was undertaken by the site manager and was occasionally double checked by another member of site staff and the NEC3 Supervisor to check their opinion and manage the risk of desensitisation. Odour intensity and extent were measured and recorded on a 0-5 scale where:

Odour Intensity

- 0 – No detectable odour;
- 1 – Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 – Moderate odour (distinct odour detected while standing still);
- 3 – Moderately strong odour (detectable while walking & breathing normally, possibly offensive);
- 4 – Strong odour (bearable, but offensive odour);
- 5 – Very strong odour (very offensive possibly causing nausea).

Odour Extent

- 0 – No detectable odour;
- 1 – Local & transient (only during brief periods when wind drops or blows);
- 2 – Transient as above, but detected away from boundary);
- 3 – Persistent, but fairly localized;
- 4 – Persistent and pervasive up to 50 m from boundary;
- 5 – Persistent and widespread (odour detected >50 m from boundary).

The trigger criteria were as follows:

- **Action Levels** were set at 2 or above for intensity and extent at which point odour reduction measures should be put in place. This includes covering of stockpiles, limiting area of open excavations and deodorising sprays.
- **Stop Work Levels** shall be set at 3 or above for intensity and extent at which point works will cease until the odour problem can be rectified.

Celtic proactively deployed odour management measures by limiting the time that excavations were open, covering stockpiles of potentially odorous materials and deploying odour suppressing foam onto contaminated materials.

Levels of 1 for odour intensity (faint) and extent (local) were recorded along the northern boundary along Ford Road on a few days during the excavation and treatment of the contaminated soils in the northern corner of the site. Records of the odour monitoring can be found within Appendix H.

4.4 Monitoring/ Control of Noise and Vibration

Best practicable means of noise control were applied during the remediation works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors arising from the remediation activities.

Celtic completed the works in accordance with a submitted Section 61 document and deployed mitigation measures as required. Mitigation and planning included the following:

- Restricting site working hours to 08:00 – 18:00 Monday to Friday;
- Positioning treatment activities as far away from sensitive receptors as reasonably practicable;
- Restricting the movement of plant and positioning haul routes away from the sensitive northwest and southwest site boundaries;
- Selecting plant and machinery in good working order and less than 3 years old and, where available, using quiet and low vibration equipment; and
- Vehicles and plant were maintained in a good and effective working order and operated in a manner to minimise noise emissions.

Noise monitoring was carried out by Celtic on a twice daily basis at the designated environmental monitoring points as per the other monitoring regimes. The monitoring was carried out using a calibrated and certified Decibel Noise Meter.

A 15 minute LAeq, or equivalent continuous sound pressure level, of 70 decibels (dB) was predicted at the site boundary and an action level of >73 dB was agreed where works would cease and require further mitigation measures. There were no instances when the noise exceeded the 15 minute LAeq at the monitoring locations during the course of the works. There was no vibration monitoring requirements identified during the remediation works. Records of the noise monitoring can be found within Appendix H.

4.5 Asbestos Monitoring

Background, reassurance, asbestos air monitoring was undertaken on a weekly basis during excavation works and was completed by a specialist 3rd party sub-contractor (enQuin Environmental) with all results provided on the day of testing to allow a proactive and immediate review and response based on any identified elevated concentrations.

The monitoring was undertaken at the same boundary monitoring locations as the other environmental monitoring and was also undertaken within the site welfare compound and within the cabs of on-site machines (excavator and dumper).

There were no instances of fibres being recorded above the control limit of 0.01 fibres/ml – cm³. Records of the reassurance air monitoring can be found within Appendix H.

5.0 FINAL SITE CONDITIONS

5.1 Potential Constraints

The site has been left in a safe and secure manner and handed back to the Client. The site is deemed to be appropriate for the intended agreed end use of 'Commercial Open Storage'. There remains however, several features which may represent potential constraints to future site use.

The concrete (former gasholder) base (feature no. 8 on D1820/5111/A2, Appendix A) in the western corner of site has been left in-situ at approximately 2.5 mAOD. The concrete (former gasholder) base (feature no. 15 on D1820/5111/A2, Appendix A) in the southern corner of site has been left in-situ at approximately 2 mAOD. The concrete (former gasholder) base (feature no. 4 on D1820/5111/A2, Appendix A) on the northwestern boundary has been left in-situ at approximately 1.8 mAOD and its brick walls remain in-situ from approximately 2.8 mAOD. Further brick walls are present to the southeast, as shown on drawing D1820/5111/A7 Appendix A, which are present between approximately 0.8 to 2.8 mAOD.

Stabilised materials are present within the areas as shown on drawing D1820/5111/A7, Appendix A and these will be encountered approximately 0.8 to 1 m below the current site levels. The level of the stabilised material is at approximately 2.9 to 3.1 mAOD in the northern part of the site and at approximately 2.5 to 2.7 mAOD in the central area of the site.

The 300 mm diameter concrete surface water drain and two access chambers are present across the central area of the site. Remnant cast iron pipework exiting the site is also present along the northeastern and northwestern boundaries as illustrated on drawing D1820/5111/A7, Appendix A.

A live electrical sub-station (currently operated by SSE) is present on the northeastern boundary with high voltage as well as low voltage cables exiting the sub-station below ground on its southeastern side and crossing under the site access gate before turning and veering north and northwest along the verge of the current access track (towards Ford Road), as illustrated on drawing D1820/5111/A3, Appendix A.

A pot-ended low pressure (25 mm PE) gas pipe is also present below ground near the northwestern site boundary. The gas pipe is not shown on any SGN plans and was not identified prior to the remediation works. Celtic only became aware of its presence when it was struck during the course of the remediation works (as described within Section 2.3.4) and was immediately repaired by SGN. No metallic strips were evident and its presence was not identified during utilities surveying. The position of the pipe is approximately 10 m in from the northeast site boundary gate and 1.2 m in from the internal northwest boundary fence. Its depth is approximately 0.8 m below ground level or 3.2 mAOD and its location is illustrated on drawing D1820/5111/A6.

Groundwater monitoring boreholes are also present on-site as shown on drawing D1820/5111/A6. The remaining boreholes are denoted as BH104, BH105, BH201 & BH202. There is not considered to be a requirement for further groundwater monitoring as part of these remediation works; however, they have been left in place for the time being should any future monitoring requirements be identified.

5.2 Post Remediation Risk Assessment

All materials re-used on-site comply with the remedial criteria and are deemed to be suitable for re-use as per the Remediation Implementation and Verification Plan (report ref, R1820/21/5045 rev2, by Celtic March 2021). The Materials Management Plan was adhered to with no deviations from initial proposals. The remediation works are therefore deemed to comply with the CL:AIRE DoWCoP.

The relevant pollutant linkages for the continued 'commercial open storage' use of the site are deemed to have been successfully addressed by the remediation works undertaken. Based on the collected lines of evidence presented within this report, the remediation criteria and objectives have been successfully achieved.

The capping layer has been appropriately placed and will just need to be appropriately maintained should any works on-site compromise it. Appropriate maintenance of the perimeter fencing will also be required to ensure the ongoing security of the site.

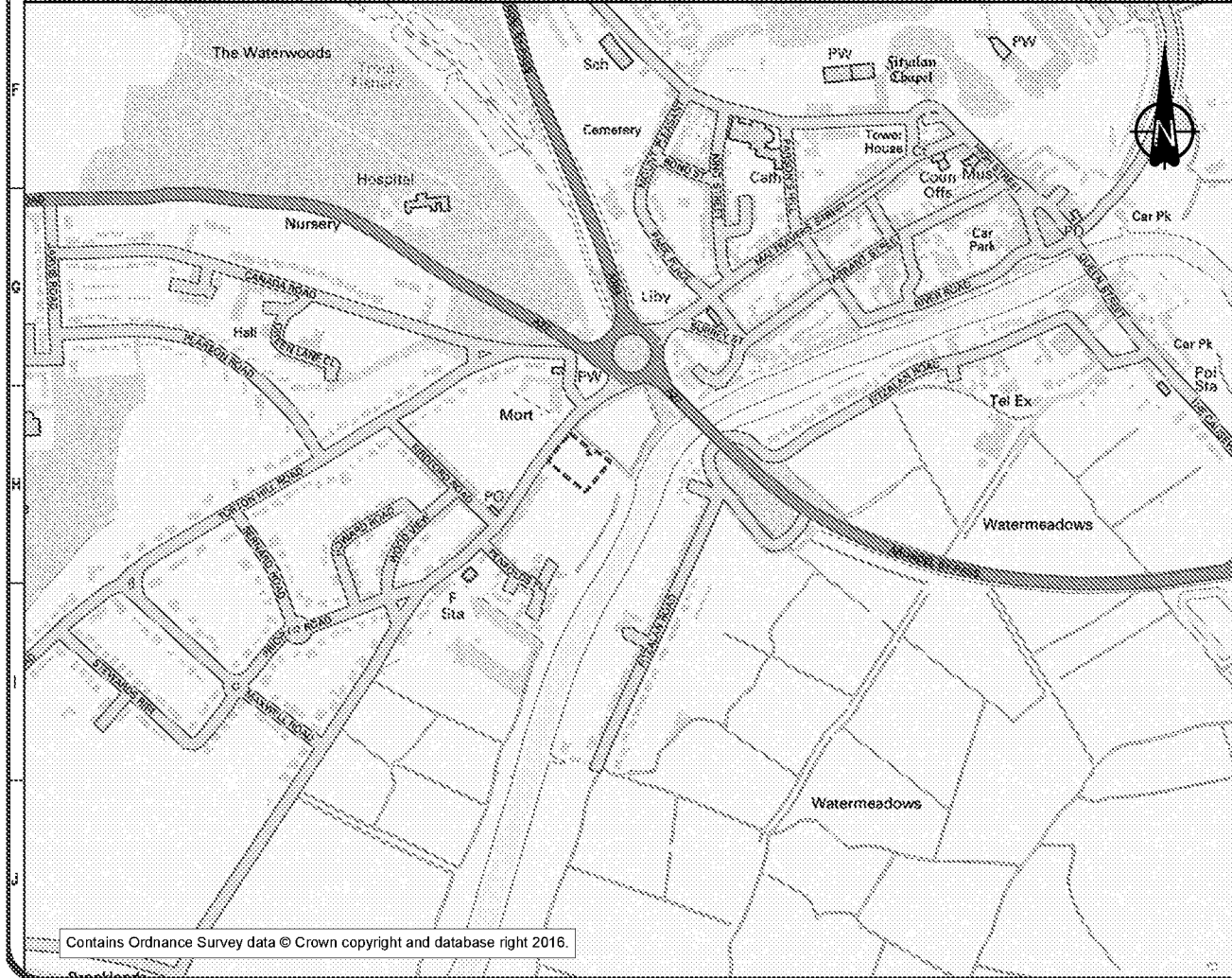
APPENDICES

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APPENDIX B	REGULATORY CORRESPONDENCE
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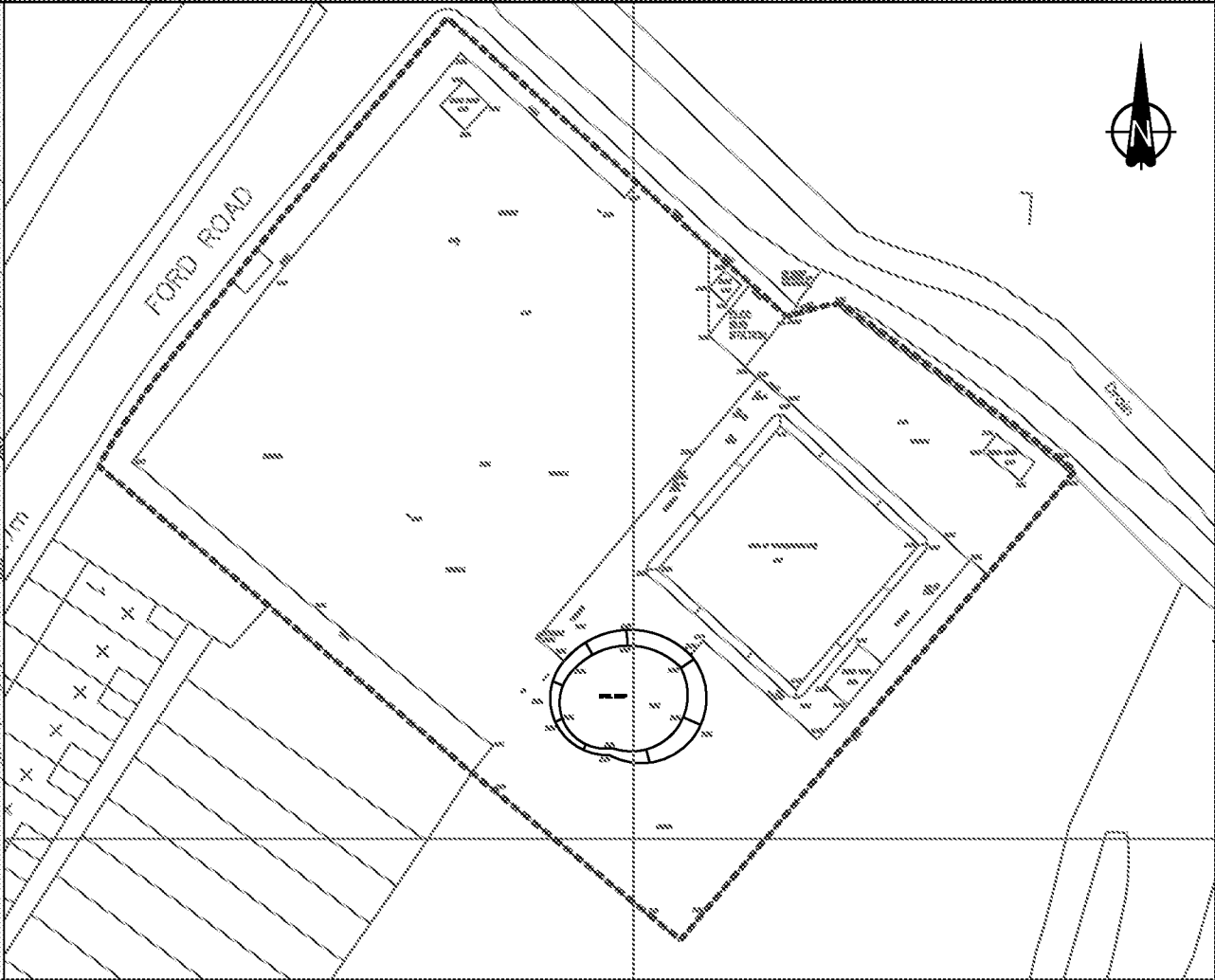
APPENDIX A DRAWINGS



Google 2018



Contains Ordnance Survey data © Crown copyright and database right 2016.



Legend

National Grid Property Holdings Ltd
Site Boundary

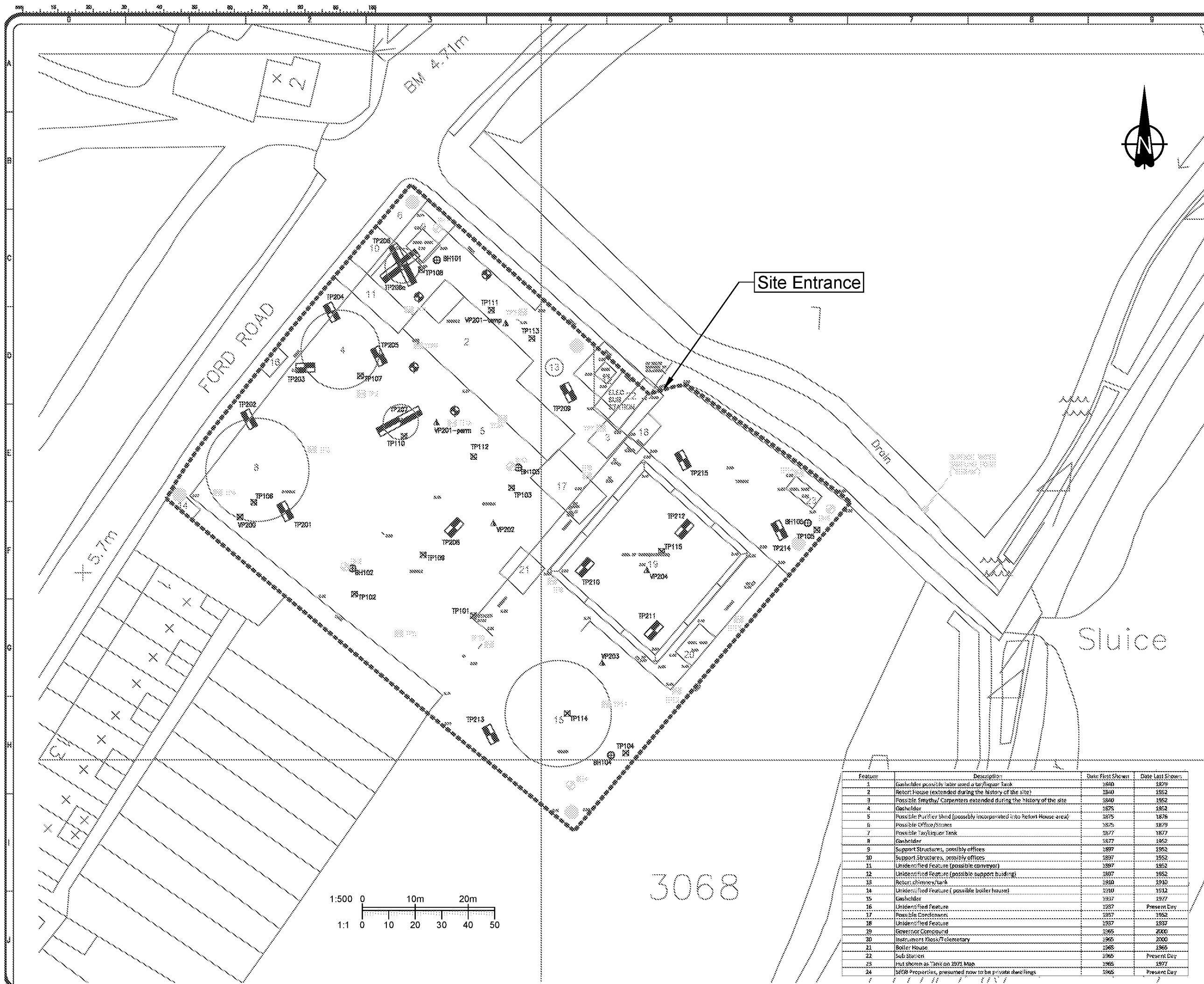
0 First Issue 08.09.21
REV / COMMENT DATE

Celtic
enGlobe
Columbus House
Village Way
Cardiff
CF15 7NE
029 2036 8636
enquiries@celtic-ld.com
www.celtic-ld.com

Client
nationalgrid

Project
Arundel Gas Works
Ford Road, Arundel
Title
Site Location Plan

Drawn by JS	Checked SG	Date 08.09.21	Authorised Date
Original Scale N.T.S	Date 08.09.21	Rev 0	Paper A3
Drawing Number D1820/5011/A1			



- Legend
- National Grid Property Holdings Site Boundary
 - Celtic Trial Pit
 - Celtic Borehole Location
 - 2000 Atkins Borehole Location
 - 2000 Atkins Trial Pit Location
 - 2000 Trial Trench Location
 - 2011 Atkins Borehole Location
 - 2011 Atkins Trial Pit Location
 - 2011 Vapour Well
 - Historical Features

0	First Issue	08.09.21
REV	COMMENT	DATE

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nationalgrid

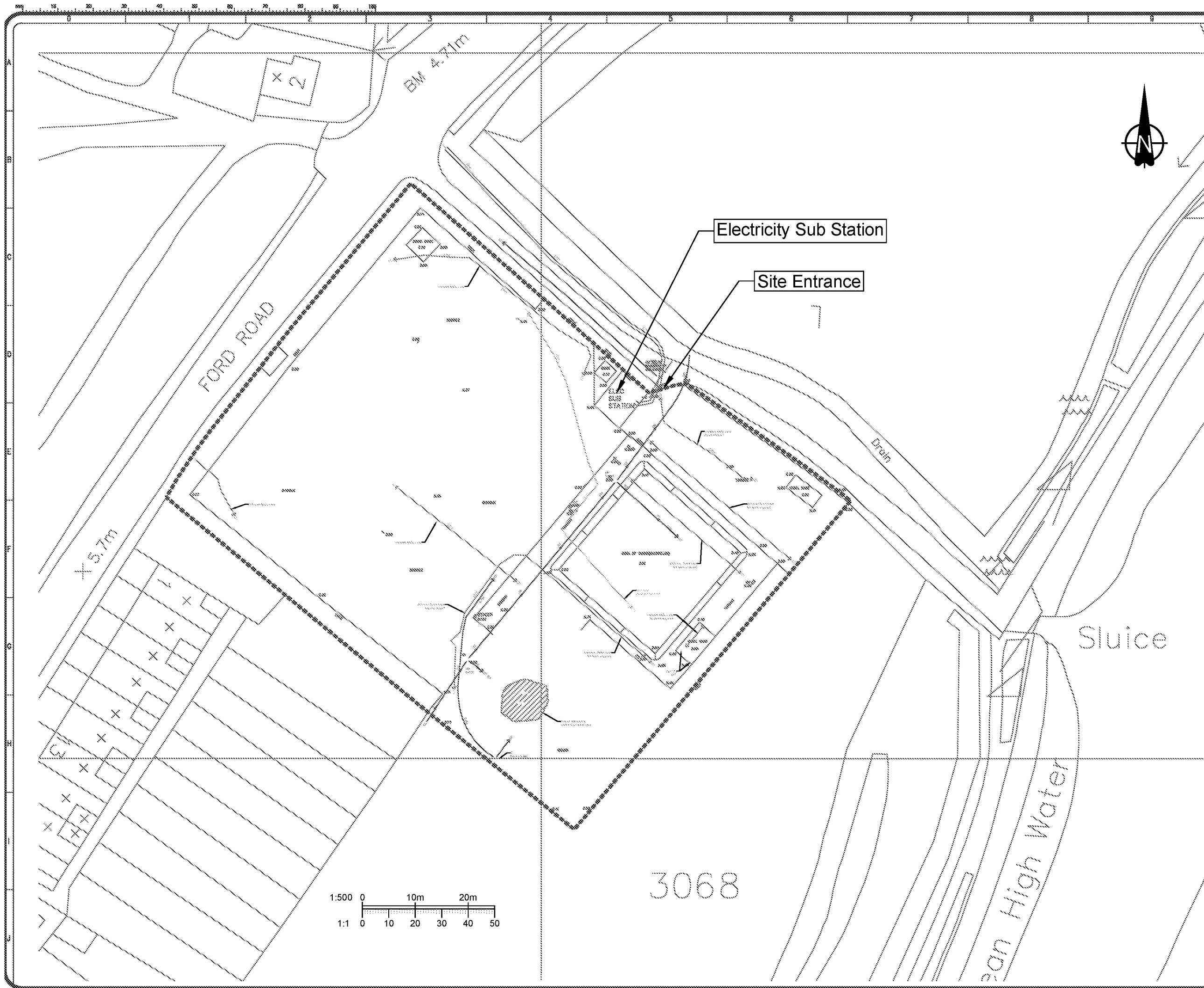
Project
Arundel Gas Works
Ford Road, Arundel

Title
Historical Features and
Investigation Locations

Drawn by JS	Checked SG	Date 08.09.21	Authorised Date
Original Scale 1:500	Date 08.09.21	Rev 0	Paper A3
Drawing Number D1820/5011/A2			

Feature	Description	Date First Shown	Date Last Shown
1	Gasholder possibly later used a tar/liquor tank	1840	1879
2	Retort House (extended during the history of the site)	1840	1952
3	Possible Smythys/ Carpenters extended during the history of the site	1840	1952
4	Gasholder	1875	1952
5	Possible Purifier Shed (possibly incorporated into Retort House area)	1875	1876
6	Possible Office/Stores	1875	1879
7	Possible Tar/Liquor Tank	1877	1877
8	Gasholder	1877	1952
9	Support Structures, possibly offices	1897	1952
10	Support Structures, possibly offices	1897	1952
11	Unidentified Feature (possible conveyor)	1897	1952
12	Unidentified Feature (possible support building)	1897	1952
13	Retort chimney/tank	1910	1910
14	Unidentified Feature (possible boiler house)	1910	1912
15	Gasholder	1917	1917
16	Unidentified Feature	1917	Present Day
17	Possible Condensers	1917	1952
18	Unidentified Feature	1917	1917
19	Governor Compound	1965	2000
20	Instrument Poles/Telemetry	1965	2000
21	Boiler House	1965	1965
22	Sub Station	1965	Present Day
23	Hut shown as Tank on 1971 Map	1965	1977
24	SGS Properties, presumed now to be private dwellings	1965	Present Day

3068



Legend

- National Grid Property Holdings Site Boundary
- Foul Drainage
- Surface Drainage
- Combined Drainage
- Electricity
- Electricity High Voltage
- Electricity Low Voltage
- Gas
- Ground Probing Radar
- Water
- Cable Television
- Close Circuit Television
- Communication
- British Telecom
- Compressed Air
- Offset Fill-Line
- Oil Pipe
- Pipe
- Ventilation
- Fuel Line
- Vapour Recovery
- Gauge Line
- Telemetry
- Fibre Optics
- Unknown
- Fence
- Edge of Canopy
- Gully Run

0	First Issue	08.09.21
REV	COMMENT	DATE



Columbus House
Village Way
Cardiff
CF15 7NE
029 2036 8636

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www.celtic-ld.com

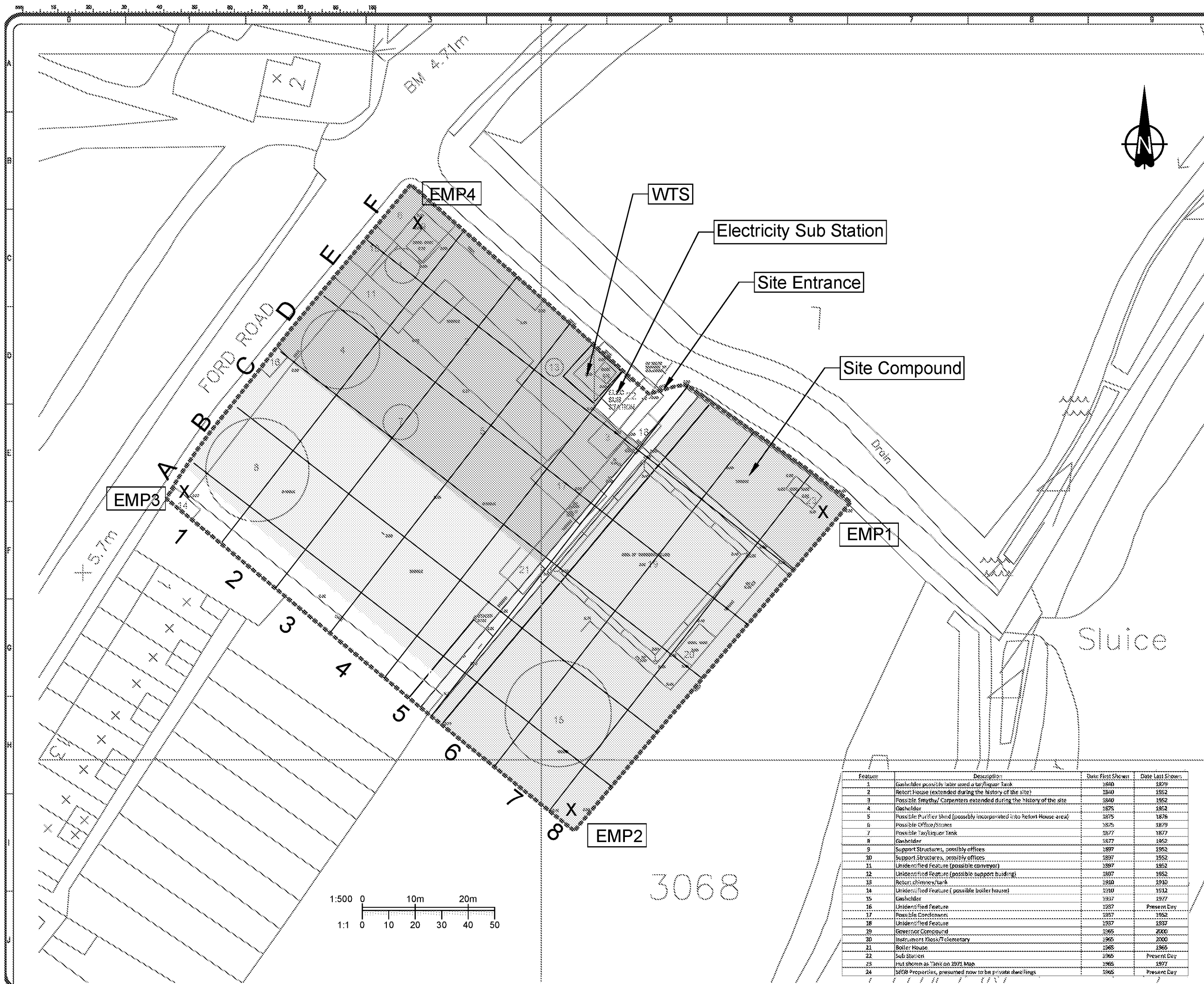
Client
nationalgrid

Project
Arundel Gas Works
Ford Road, Arundel

Title
Utilities Survey

Drawn by JS	Checked SG	Date 08.09.21	Authorised Date
Original Scale 1:500	Date 08.09.21	Rev 0	Paper A3

Drawing Number
D1820/5011/A3



- Legend
- National Grid Property Holdings Site Boundary
 - Site Compound
 - Water Treatment System
 - Area 1
 - Area 2
 - Area 3
 - Area 4
 - Surface Water Easement
 - Historical Features
 - X Environmental Monitoring Point Locations (EMP)

0 First Issue 08.09.21
REV / COMMENT DATE

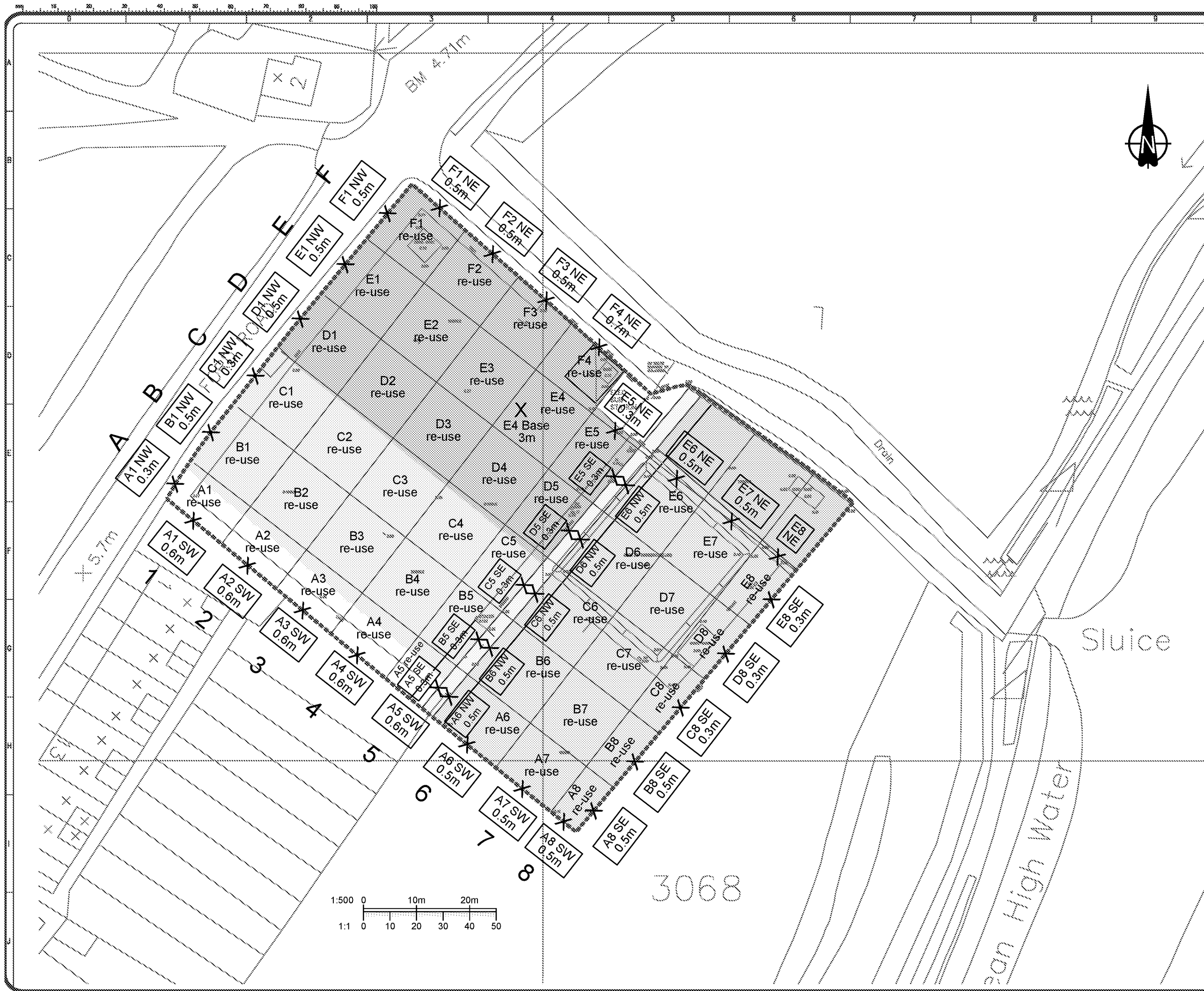
Celtic
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Cardiff
CF15 7NE
029 2036 8636
enquiries@celtic-ld.com
www.celtic-ld.com

Client
nationalgrid

Project
Arundel Gas Works
Ford Road, Arundel
Title
Remedial Areas with Grid

Drawn by
JS
Checked Date
SG 08.09.21
Original Scale
1:500
Date
08.09.21
Rev
0
Paper
A3
Drawing Number
D1820/5011/A4

Feature	Description	Date First Shown	Date Last Shown
1	Gasholder possibly later used a tar/liquor tank	1840	1879
2	Retort House (extended during the history of the site)	1840	1952
3	Possible Smythys/ Carpenters extended during the history of the site	1840	1952
4	Gasholder	1875	1952
5	Possible Purifier Shed (possibly incorporated into Retort House area)	1875	1876
6	Possible Office/Stores	1875	1879
7	Possible Tar/Liquor Tank	1877	1877
8	Gasholder	1877	1952
9	Support Structures, possibly offices	1897	1952
10	Support Structures, possibly offices	1897	1952
11	Unidentified Feature (possible conveyor)	1897	1952
12	Unidentified Feature (possible support building)	1897	1952
13	Retort chimney/tank	1910	1910
14	Unidentified Feature (possible boiler house)	1910	1912
15	Gasholder	1917	1977
16	Unidentified Feature	1927	Present Day
17	Possible Condensers	1937	1952
18	Unidentified Feature	1937	1937
19	Generator Compound	1965	2000
20	Instrument Poles/Telemetry	1965	2000
21	Boiler House	1965	1965
22	Sub Station	1965	Present Day
23	Hut shown as Tank on 1971 Map	1965	1977
24	SGS Properties, presumed now to be private dwellings	1965	Present Day



Legend

- National Grid Property Holdings Site Boundary
- Site Compound
- Water Treatment System
- Area 1
- Area 2
- Area 3
- Area 4
- Surface Water Easement

0 First Issue 08.09.21
REV / COMMENT DATE



Columbus House
Village Way
Cardiff
CF15 7NE
029 2036 8636

enquiries@celtic-ld.com
www.celtic-ld.com

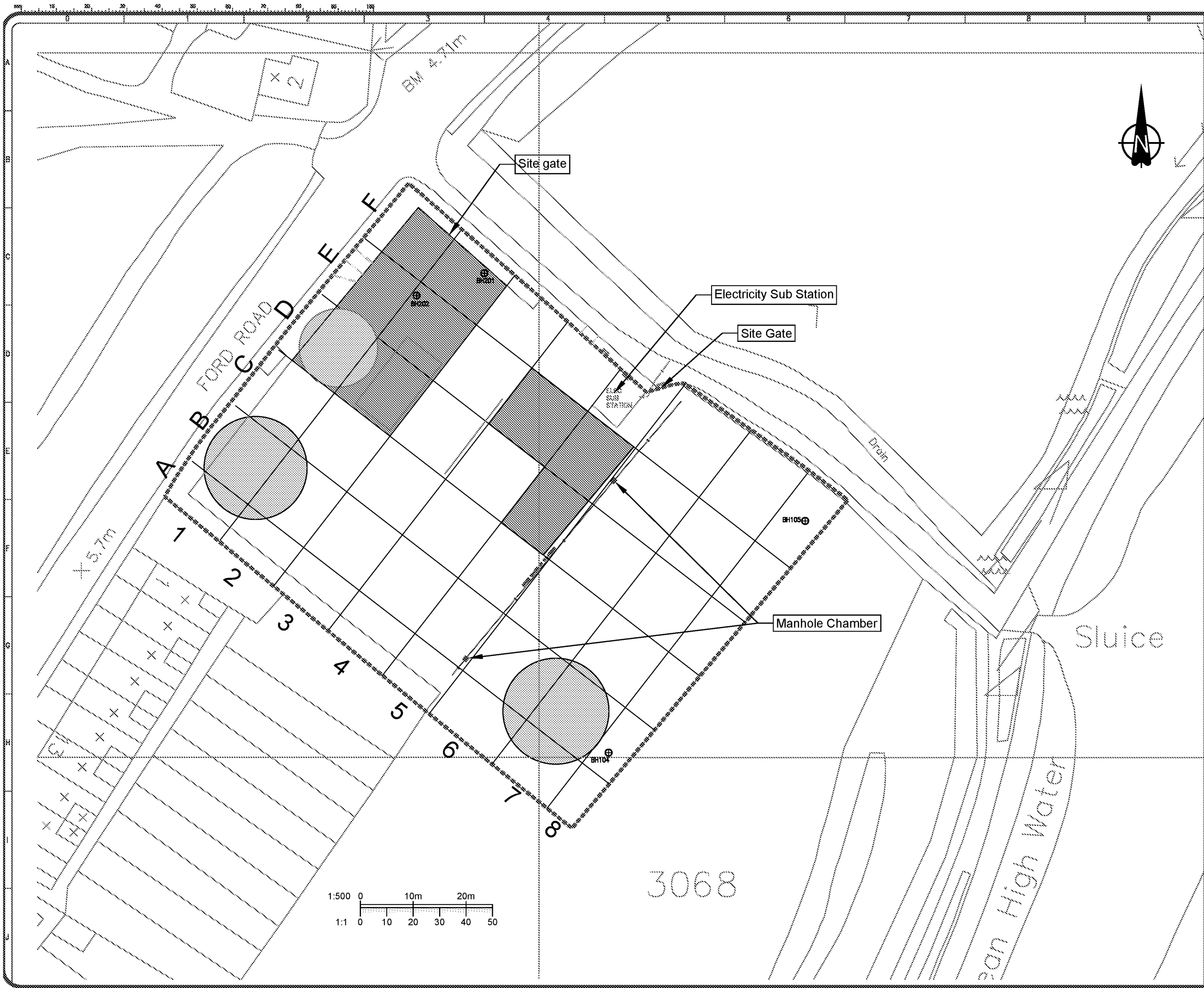
Client
nationalgrid

Project
Arundel Gas Works
Ford Road, Arundel

Title
Validation Testing Locations

Drawn by JS	Checked SG	Date 08.09.21	Authorised Date
Original Scale 1:500	Date 08.09.21	Rev 0	Paper A3

Drawing Number
D1820/5011/A5



SGS_ISO 9001_with_UKAS_TCI_HR.jpg

Legend

- National Grid Property Holdings Site Boundary
- Stabilised Materials
- Concrete Gasholder Base
- Below Ground Brick Wall
- Below Ground Remnant Cast Iron Pipework
- Below Ground Redundant Gas Pipe (25mm PE)
- Surface Water Drain

0	First Issue	08.09.21
REV	COMMENT	DATE
Columbus House Village Way Cardiff CF15 7NE 029 2036 8636		
enquiries@celtic-ltd.com www.celtic-ltd.com		
Client		
National Grid Logo .JPG		
Project		
Arundel Gas Works Ford Road, Arundel		
Title		
Constraints Plan		
Drawn by	Checked	Date
JS	SG	08.09.21
Original Scale	Date	Rev
1:500	08.09.21	0
Drawing Number	Paper	
D1820/5011/A6	A3	



Legend

- National Grid Property Holdings Site Boundary
- Surface Contours
(0.1m increments illustrated)
(0.5m increments labelled)

0	First Issue	08.09.21
REV	COMMENT	DATE

Celtic enGlobe
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Cardiff
CF15 7NE
029 2036 8636
enquiries@celtic-ld.com
www.celtic-ld.com

Client
nationalgrid

Project
Arundel Gas Works
Ford Road, Arundel
Title
Final Site
Topographic Levels

Drawn by JS	Checked SG	Date 08.09.21	Authorised Date
Original Scale 1:500	Date 08.09.21	Rev 0	Paper A3

Drawing Number
D1820/5011/A7

APPENDIX B REGULATORY CORRESPONDENCE

Application for Planning Permission

DECISION NOTICE

Application Ref: AB/45/21/PL

1 To Addressee

Celtic Technologies Ltd
Columbus House
Greenmeadow Springs
Tongwynlais
Cardiff
CF15 7NE

2 Site Address

Former Gasholder Station
(land opposite Arundel Cemetery)
Ford Road
Arundel

3 Description of Development

Remediation works to mitigate potential liabilities associated with ground conditions resulting from the site's historic use as a gasworks. This site is in CIL Zone 1 (Zero Rated) as other development.

4 In pursuance of their powers under this Act and related Orders and Regulations the Council **PERMIT** this development to be carried out in accordance with the application and plans and subject to the following conditions.

- 1 The development hereby permitted shall be begun before the expiration of 3 years from the date of this permission.

Reason: To comply with Section 91 of the Town and Country Planning Act 1990 (as amended).

- 2 The development hereby approved shall be carried out in accordance with the following approved plans and reports:
Location Plan P6100/2410/4986/Fig A1 rev0
Detailed Quantitative Risk Assessment Report
Analytical Report No 11-28269
Site Investigation Report

Reason: For the avoidance of doubt and in the interests of amenity and the environment in accordance with policy D DM1 of the Arun Local Plan.

- 3 As per the National Planning Policy Framework (NPPF) (updated February 2019) air quality should be considered at the design stage and incorporate appropriate and effective mitigation.

The applicant must follow the Air Quality & Emissions Mitigation Guidance for Sussex (2013), available at:

<http://www.sussex-air.net/Consultation/AirQualitydocument.pdf>

This countywide adopted guidance states that where a major sized development is proposed a number of checklists

should be followed in order to determine the likely impact of the development on air quality. The intention of the guidance is to identify any air quality impacts through an impact assessment and ensure the integration of appropriate mitigation into a scheme at the design stage, so the damage costs on health can be properly mitigated. The air quality impact assessment can follow the procedures contained within the Institute of Air Quality Management (IAQM) Guidance entitled: 'Land-Use Planning & Development Control: Planning For Air Quality' (January 2017), available at:

<http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

Reason: To protect the amenity of local residents in accordance with Policy QE SP1 of Arun Local Plan.

- 4 Following completion of development a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the Local Planning Authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met.

Reason: To protect the environment and prevent harm to human health by ensuring that the remediated site has been reclaimed in an appropriate standard in accordance with Arun Local Plan policies QE SP1 and QE DM4.

- 5 If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until a remediation strategy detailing how this contamination will be dealt with has been submitted to, and approved in writing by, the Local Planning Authority. The remediation strategy shall be implemented as approved. If no such contaminated material is identified during the development, a statement to this effect must be submitted in writing to the Local Planning Authority.

Reason: To ensure that the development does not contribute to, is not put at unacceptable risk from, or adversely affected by, unacceptable levels of water pollution from previously unidentified contamination sources at the development site in accordance with policies QE SP1 and QE DM4 of Arun Local Plan and paragraph 170 of the National Planning Policy Framework.

- 6 Development shall proceed in accordance with the submitted Construction Management Plan ref R1820/21/5089 rev 0 dated June 2021 and the plan shall be adhered to throughout the entire restoration period.

Reason: In the interests of the amenities of the area in accordance with policy QE SP1 of the Arun Local Plan.

INFORMATIVE:

Requirement for an Environmental permit

The dewatering and remediation works associated with this development will require an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2016, from the Environment Agency, unless an exemption applies. The applicant is advised to contact the Environment Agency on 03708 506 506 for further advice and to discuss the issues likely to be raised. You should be aware that there is no guarantee that a permit will be granted.

Additional 'Environmental Permitting Guidance' can be found at: <https://www.gov.uk/environmental-permit-check-if-you-need-one>.

Waste on-site

The CL:AIRE Definition of Waste: Development Industry Code of Practice (version 2) provides operators with a framework for determining whether or not excavated material arising from site during remediation and/ or land development works are waste or have ceased to be waste. Under the Code of Practice:

- excavated materials that are recovered via a treatment operation can be re-used onsite providing they are treated to a standard such that they fit for purpose and unlikely to cause pollution
- treated materials can be transferred between sites as part of a hub and cluster project
- some naturally occurring clean material can be transferred directly between sites

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically, and that the permitting status of any proposed on-site operations are clear. If in doubt, the Environment Agency should be contacted for advice at an early stage to avoid any delays.

Developers should refer to:

- the position statement on the Definition of Waste: Development Industry Code of Practice
- The waste management page on GOV.UK

Waste to be taken off-site

Contaminated soil that is (or must be) disposed of is waste. Therefore, its handling, transport, treatment and disposal are subject to waste management legislation, which includes:

- Duty of Care Regulations 1991
- Hazardous Waste (England and Wales) Regulations 2005
- Environmental Permitting (England and Wales) Regulations 2016
- The Waste (England and Wales) Regulations 2011

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically in line with British Standard BS EN 14899:2005

'Characterization of Waste - Sampling of Waste Materials - Framework for the Preparation and Application of a Sampling Plan' and that the permitting status of any proposed treatment or disposal activity is clear. If in doubt, the Environment Agency should be contacted for advice at an early stage to avoid any delays.

If the total quantity of hazardous waste material produced or taken off-site is 500kg or greater in any 12 month period, the developer will need to register with us as a hazardous waste producer. Refer to the hazardous waste pages on GOV.UK for more information.

INFORMATIVE: Statement pursuant to Article 35 of the Town and Country Planning (Development Management Procedure)(England) Order 2015. The Local Planning Authority has acted positively and proactively in determining this application by assessing the proposal against all material considerations, including planning policies and any representations that may have been received and subsequently determining to grant planning permission in accordance with the presumption in favour of sustainable development, as set out within the National Planning Policy Framework.



Neil Crowther
Group Head of Planning

Case Officer:

Mrs A Gardner

Arun District Council

Decision Issued: **4th June 2021**

The Arun Civic Centre
Maltravers Road
Littlehampton
West Sussex BN17 5LF

IT IS IMPORTANT THAT YOU READ THE NOTES ATTACHED TO THIS DOCUMENT

APPEALS TO THE SECRETARY OF STATE

If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.

If this is a decision on a planning application relating to the same or substantially the same land and development as is already the subject of an enforcement notice, and you want to appeal against this planning application decision, then you must do so within 28 days of the date of this notice.

If an enforcement notice is served relating to the same or substantially the same land and development as in your application and you want to appeal against this planning application decision, then you must do so within 28 days of the date of service of the enforcement notice, or within 6 months of the date of this notice, whichever period expires earlier.

Otherwise, if you want to appeal against this decision then you must do so within 6 months of the date of this notice.

Appeals must be using a form which you can get from the Secretary of State at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN (Tel: 0303 444 5000) or online at <http://acp.planninginspectorate.gov.uk>

The Secretary of State can allow a longer period for giving notice of an appeal but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

If you intend to submit an appeal that you would like examined by inquiry then you must send notice to the Local Planning Authority and Planning Inspectorate(inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details can be found at www.GOV.uk

PURCHASE NOTICES

If either the local planning authority or the Secretary of State refused permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council (that is, where the land is situated in a National Park, the National Park authority for the Park, or in any other case the district council in whose area the land is situated). This notice will require the Council to purchase the owner's interest in the land in accordance with the provisions of Chapter 1 of Part VI of the Town & Country Planning Act 1990.

Please note that this decision notice only relates to matters under the Planning Acts and does not give consent under any other legislation that may apply to the development. You will need to carry out your own checks to determine whether any other consents or permissions are required. For example, the Building Regulations are likely to apply to most developments, and a Highways Licence may be required from West Sussex County Council for any development within the public highway (including the placing of skips on

highway land).

Arun District Council
Development Control
1, Arun Civic Centre Maltravers Road
Littlehampton
West Sussex
BN17 5LF

Our ref: HA/2021/123131/01-L01
Your ref: AB/45/21/PL
Date: 11 May 2021

Dear Sir/Madam

THE PLANNING APPLICATION IS FOR REMEDIATION WORKS TO MITIGATE POTENTIAL LIABILITIES ASSOCIATED WITH GROUND CONDITIONS RESULTING FROM THE SITE'S HISTORIC USE AS A GASWORKS.

FORMER GASHOLDER STATION (LAND OPPOSITE ARUNDEL CEMETRY) FORD ROAD ARUNDEL

Thank you for consulting the Environment Agency on the above application.

Environment Agency Position

We have **no objection** to the proposed development as submitted, **subject to the inclusion of the following 2 conditions**, in any permission granted.

We consider that planning permission could be granted to the proposed development, as submitted, if the following planning conditions are included as set out below. Without these conditions, the proposed development on this site poses an unacceptable risk to the environment and we would object to the application.

Conditions

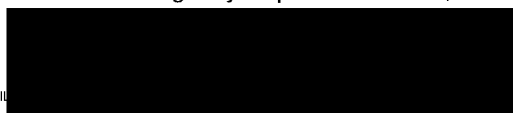
Condition 1 – Verification report

A verification report is required, demonstrating the completion of works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to, and approved in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met.

Reason(s)

This condition is required to ensure that the site does not pose any further risk to human health or the water environment by demonstrating that the requirements of the approved verification plan have been met and that remediation of the site is complete. This is in line with paragraph 170 of the National Planning Policy Framework.

Environment Agency
Environment Agency Depot Canal Walk, Romsey, Hampshire, SO51 7LP.



We have reviewed the Supplementary Site Investigation Factual Report (Dec 2020) and Remediation Implementation and Verification Plan (March 2021). We note the intended end use and remediation measures are based on an intended open storage end use and a programme of site excavation and turnover is proposed to identify, segregate and treat contaminated soils where appropriate. Groundwater treatment is proposed to deal with NAPL contamination and impacted perched water during excavation works.

Condition 2 – Previously unidentified contamination

If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until a remediation strategy detailing how this contamination will be dealt with has been submitted to, and approved in writing by, the local planning authority. The remediation strategy shall be implemented as approved.

Reason(s)

To ensure that the development does not contribute to, is not put at unacceptable risk from, or adversely affected by, unacceptable levels of water pollution from previously unidentified contamination sources at the development site. This is in line with paragraph 170 of the National Planning Policy Framework.

Advice to Local Planning Authority/Applicant

The site comprises made ground, overlying superficial alluvial deposits which sit upon the Spetisbury Chalk principal aquifer. Groundwater is very shallow, only 1-3m below ground level and the River Arun is 40m to the south east. Groundwater flow is generally towards the river to the east, however it is tidally influenced.

There is widespread contamination in the made ground across the site, which is higher in the north and east associated with the gas holder and associated infrastructure. Deeper hydrocarbon and NAPL contamination tends to be focused in the soils and perched water to the north east.

We would highlight that this application only addresses the current contamination aspects, relating to continued use for open storage following remediation. Our response covers this continuation of current use for open storage. Any additional future development could create additional pathways, such as through site drainage or piling, and may result in the need for additional remediation in the future which would be dealt with through the planning system.

Requirement for an Environmental permit

The dewatering and remediation works associated with this development will require an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2016, from the Environment Agency, unless an exemption applies. The applicant is advised to contact the Environment Agency on [REDACTED] for further advice and to discuss the issues likely to be raised. You should be aware that there is no guarantee that a permit will be granted. Additional 'Environmental Permitting Guidance' can be found at: [REDACTED]

Waste on-site

The CL:AIRE Definition of Waste: Development Industry Code of Practice (version 2) provides operators with a framework for determining whether or not excavated material arising from site during remediation and/ or land development works are waste or have ceased to be waste. Under the Code of Practice:

- excavated materials that are recovered via a treatment operation can be re-used on-site providing they are treated to a standard such that they fit for purpose and unlikely to cause pollution

- treated materials can be transferred between sites as part of a hub and cluster project
- some naturally occurring clean material can be transferred directly between sites

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically, and that the permitting status of any proposed on-site operations are clear. If in doubt, the Environment Agency should be contacted for advice at an early stage to avoid any delays.

We recommends that developers should refer to:

- the position statement on the Definition of Waste: Development Industry Code of Practice
- The waste management page on GOV.UK

Waste to be taken off-site

Contaminated soil that is (or must be) disposed of is waste. Therefore, its handling, transport, treatment and disposal are subject to waste management legislation, which includes:

- Duty of Care Regulations 1991
- Hazardous Waste (England and Wales) Regulations 2005
- Environmental Permitting (England and Wales) Regulations 2016
- The Waste (England and Wales) Regulations 2011

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically in line with British Standard BS EN 14899:2005 'Characterization of Waste - Sampling of Waste Materials - Framework for the Preparation and Application of a Sampling Plan' and that the permitting status of any proposed treatment or disposal activity is clear. If in doubt, the Environment Agency should be contacted for advice at an early stage to avoid any delays.

If the total quantity of hazardous waste material produced or taken off-site is 500kg or greater in any 12 month period, the developer will need to register with us as a hazardous waste producer. Refer to the hazardous waste pages on GOV.UK for more information.

Should you have any further queries please do not hesitate to contact me.

Yours faithfully

Miss Hannah Brothwell
Sustainable Places Advisor



cc Celtic Technologies Limited

The Company Director and/or Secretary
Celtic Technologies Limited
1210
Arlington Business Park
Reading
RG7 4TY

Our ref: AP3195FG/W0075

Date: 14 May 2021

Dear Sir/Madam,

Environmental Permitting (England and Wales) Regulations 2016

Deployment ref: AP3195FG/W0075

Permit holder: Celtic Technologies Limited

Location of the deployment: Ford Road, Arundel, West Sussex, BN18 9DX.

Following assessment of your deployment notification reference number AP3195FG/W0075 I can confirm that we have agreed your deployment form and you may now start to operate.

This deployment lasts for one year from the date the activity starts on site. If you wish to continue beyond this one year period you must re-notify.

You must comply with your permit and carry out the activities in accordance with the requirements of the agreed deployment form and:

- further information including an updated site plan, a summary of the proposal, clarification on the noise monitoring & pollution control measures and confirmation of the mitigation in place throughout the stabilisation process received by us on 12 May 2021 at 12:56 and 14 May 2021 at 09:43.

You must seek written permission from us if any of the details provided in the deployment form change.

This approval letter is associated with the mobile plant permitting regime only. As the operator, it is your responsibility to agree other authorisations, for example, planning permission, remedial strategy, abstraction or discharge consents with the relevant regulatory authority.

Please note that operating under your Mobile Plant Permit / Mobile Treatment Licence does not imply that the remediation processes used will be suitable for meeting any remediation objectives specified. These issues must be considered separately by the developer/consultant and our local area Groundwater and Contaminated Land team. These must be defined in the site remedial strategy which sets out the remediation options to reduce or control the risks from pollution linkages associated with the site as a whole. You

may need to carry out further remediation if an unacceptable risk to the environment remains at the site.

Please notify us at least seven days prior to starting the remediation activities, at [REDACTED]

If you have any queries about this matter please contact us by telephone on 0 [REDACTED] or email us at [REDACTED] quoting your deployment application reference AP3195FG/W0075.

Yours faithfully,

Grant Wilson

**Team Leader,
National Permitting Service**



APPLICATION FOR PRIOR CONSENT FOR WORKS ON CONSTRUCTION SITES

Control of Pollution Act 1974 Part III Section 61

To: Head of Environmental Health
Arun District Council
Civic Centre
Maltravers Road
LITTLEHAMPTON
West Sussex BN17 5LF

Complete in full, using block letters, sign and send to address
opposite by post or by hand or by DX (DX 57406 Littlehampton)

1. ~~I/We~~ apply ¹ to you for a consent under Section 61(1) of the Control of Pollution Act 1974 with regard to [noise limits on] the carrying out of construction works.

~~I/We~~ propose to carry out works on the following premises: *(describe the premises)*²

Former Gasholder Station (land opposite Arundel cemetery) comprising 0.44 hectares off Ford Road, Arundel, West Sussex BN18 9DX. The site comprises commercial (open storage) land use, with no above ground buildings or structures on-site. There is no proposed change of land use and the works are being undertaken under planning application AB/45/21/PL.

2. The works will be carried out using the following methods³ *(describe the working methods which can be by reference to an attached Schedule)*.

The works comprise remediation activities to mitigate potential liabilities to controlled waters and human health associated with ground conditions resulting from the site's historic use as a gasworks. The works will involve excavation, using mechanical tracked 360 excavators, of soils and below ground structures and the ex-situ treatment of soils using cementitious stabilisation (regulated by an Environmental Permit deployed in agreement with the Environment Agency). Hydraulic breakers attached to the excavators will be required, on a limited basis, to break out below ground structures to access soils requiring treatment. A water treatment system will be established to deal with any perched groundwaters on-site with disposal of treated (trade effluent) waters to foul sewer under agreement and consent to discharge from Southern Water.

3. ~~I/ We~~ will take the following steps to minimise the levels of noise generated by the works: *(describe the steps to be taken i.e restricted hours of work)*.

- Working hours are restricted to 08:00 to 18:00 Monday to Friday with no weekend or bank holiday works;
- Excavation, haul routes and treatment activities shall be positioned as far away from sensitive receptors as reasonably practicable;
- We shall select plant and machinery in good working order and less than 3 years old where available;
- Equipment will be appropriately maintained in a good and effective working order and operated in a manner to minimise noise emissions;
- Equipment will be switched off when not in use;
- Where available quieter equipment will be selected and noise damping fitted where practicable; and
- Acoustic barriers will be available on-site and erected around activities to minimise noise emissions.

4. Should you require any further information, any communications regarding this matter should be made to *(address / telephone number / name of the person dealing with the matter)*

Steve Gronow, Celtic Technologies Ltd, Columbus House, Greenmeadow Springs, Tongwynlais, Cardiff CF15 7NE.
Tel: 07985 836252; email steve.gronow@celtic-ltd.com

Dated: 14 May 2021

Signed:

(signature of (or on behalf of) the applicant)

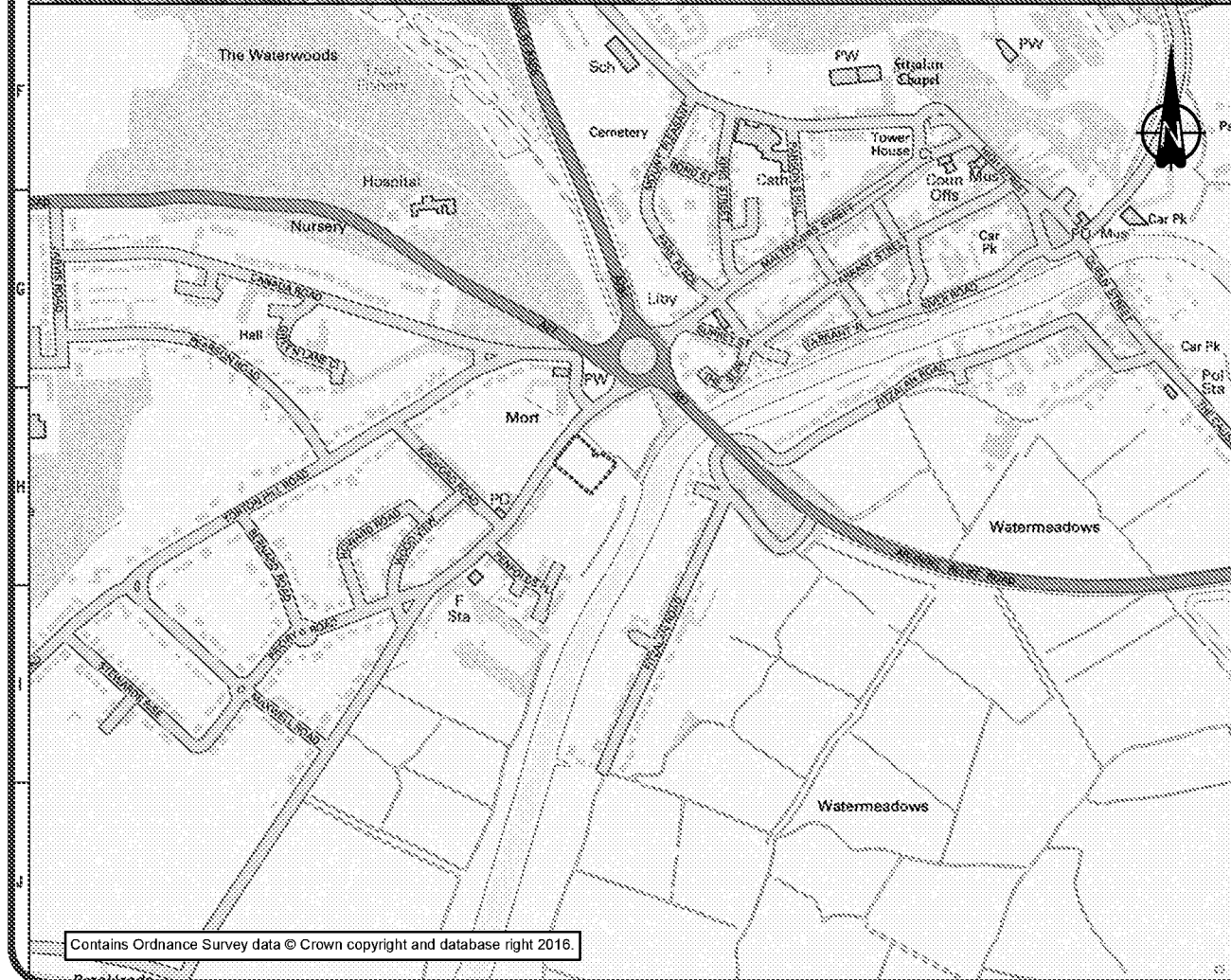
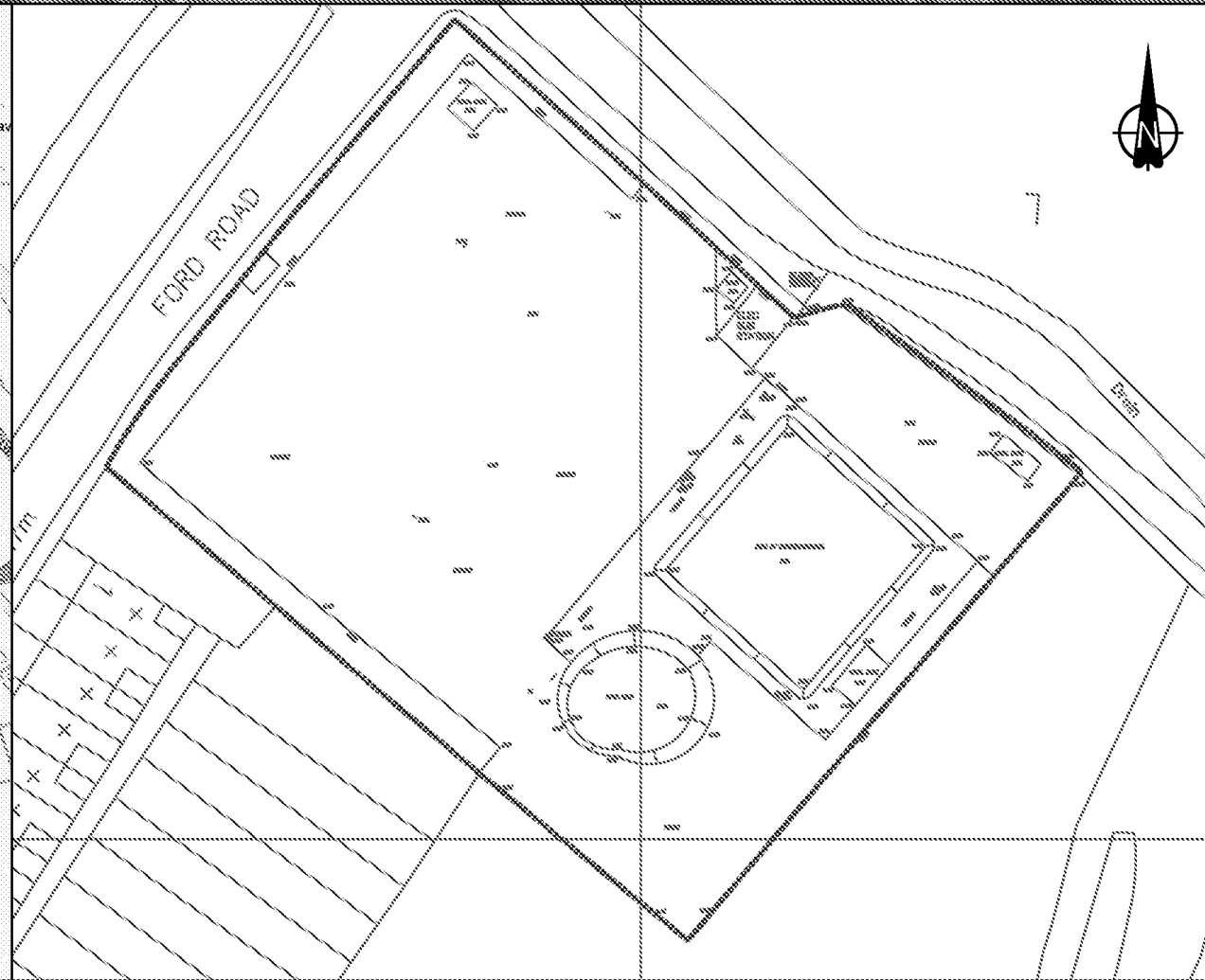
- 1 Any person who intends to carry out works to which the Control of Pollution Act 1974 s.60 applies may apply in advance to the Local Authority for a consent for the works which are going to be carried out, and the mitigation measures to be used. Note that where the building works require approval under the Building Regulations 1985, SI 1985/1065 as amended, the Section 61 application must be made either at the same time as the Building Regulations application or after approval has been obtained: Control of Pollution Act 1974 s.61(2) as amended by the Building Act 1984, s.133(2), Sch 7.
- 2 It may be helpful to describe the premises by reference to a marked-up plan.
- 3 A Section 61 application must contain the particulars of the works, the method by which they are to be carried out, and also the steps which are proposed to be taken to minimise the noise resulting from the works: Control of Pollution Act 1974 s.61(3).

DATA PROTECTION

The information contained in this form will be used by Arun District Council for the purposes indicated and will be further used or transferred to other organisations or individuals, only as the law permits.



Google 2018



Legend
National Grid Property Holdings Ltd
Site Boundary

0 First Issue 22/11/19
REV COMMENT DATE

Celtic
enGlobe
Columbus House
Village Way
Cardiff
CF15 7NE
029 2036 8636
Client

nationalgrid

Project
Arundel Gas Works
Ford Road, Arundel
Title
Site Location Plan

Drawn by	Checked	Date	Authorised	Date
GEP	GR	19/11/19	KD	22/11/19

Original Scale	Date	Rev	Paper
N.T.S	19/11/19	0	A3

Drawing Number

P6100/2410/4986/Fig A1

Contains Ordnance Survey data © Crown copyright and database right 2016.

CAD REF:-

Steve Gronow

From: Malcolm Earl <m[REDACTED]>
Sent: 15 June 2021 10:20
To: Steve Gronow
Subject: FW: CL:AIRE Def. of Waste Code of Practice Declaration - 11/06/2021 08:12:52

ATTENTION: Assurez-vous que le contenu soit de confiance avant d'ouvrir une pièce jointe ou un hyperlien.
CAUTION: Do not click on links or open attachments you do not trust.

Hi Steve

See below the receipt from Claire for Arundel declaration.

Any queries please call me.

Regards

Malcolm

Malcolm Earl

Intégral Géotechnique (Wales) Limited
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX
[REDACTED]

Integral Géotechnique (Wales) Limited DISCLAIMER:

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Please help to save paper - Do you need to print this Email?

From: Yueming Lu <[REDACTED]>
Sent: 15 June 2021 10:15
To: Malcolm Earl <malcolm@integralgeotec.com>; Waste Exemptions <waste-exemptions@environment-agency.gov.uk>
Subject: CL:AIRE Def. of Waste Code of Practice Declaration - 11/06/2021 08:12:52

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Timestamp	11/06/2021 08:12:52
Qualified Person Name	Malcolm Earl
Qualified Person Number	QP175
1. This Declaration relates to -	Site of Origin - Route A: Land affected by contamination or suspected of being affected by contamination.
2. Proposed Volumes	4900
3a. Site of origin - name of site owner, address & contact details	National Grid Property Holdings Ltd, National Grid House, Warwick Technology Park, Gallows Hill, Warwick CV34 6DA. Tel: 01926 653000
3b. Site of origin - site name & address	Former Holder Station, Ford Road, Arundel BN18 9DX
3c. Site of origin - developer name, address & contact details	National Grid Property Holdings Ltd, National Grid House, Warwick Technology Park, Gallows Hill, Warwick CV34 6DA. Tel: 01926 653000
4a. Donor Site - developer name, address & contact details	
4b. Donor Site - site name & address	
4c. Receiver Site - developer name, address & contact details	
4d. Receiver Site - site name & address	
5a. Soil Treatment Facility / Hub site owner / operator - name, address & contact details	Celtic Technologies Ltd, Columbus House, Greenmeadow Springs, Tongwynlais, Cardiff CF15 7NE. Tel: 07985 836252, email steve.gronow@celtic-ltd.com
5b. EA / NRW Permit number for Mobile Treatment Plant or Fixed Soil Treatment site	Celtic Technologies Ltd Permit no. is EPR/AP3195FG
5c. Donor site - developer name, address & contact details	
5d. Donor site - name & address	
5e. Receiver site - developer name, address & contact details	
5f. Receiver site name and address	
6a. Local Authority name, address	Arun District Council, Arun Civic Centre, Maltravers Road, Littlehampton, West Sussex BN17 5LF. Tel: 01903 737755
6b. Local Authority - name and contact details:	Arun District Council, Arun Civic Centre, Maltravers Road, Littlehampton, West Sussex BN17 5LF. Tel: 01903 737755 LA Environmental Protection Officer contact name is Chima Umunnakwe (chima.umunnakwe@arun.gov.uk) Tel: 01903 737336
6c. Environment Agency / Natural Resources Wales local office address & contact details	Environment Agency, Chichester Office, Oving Road, Chichester, West Sussex PO20 2AG. Contact: Hannah Brothwell or Emma Cullis emma.cullis@environment-agency.gov.uk . Tel: 0208 4748891
7. How will payment be made	BACS

8. Who will pay the Declaration fee?	Celtic Technologies Ltd – Ruth Dill
9. Email address of person identified in Q8	Ruth Dill (ruth.dill@celtic-ltd.com).
10. Terms & Conditions	Person identified in Q8 has read and agreed to the Terms & Conditions.
11. Please provide a purchase order number	Quote - Arundel MMP
12a. I confirm that -	I satisfy the Qualified Person requirements set out in Appendix 6 of the Definition of Waste: Development Industry Code of Practice to complete this Declaration. I have reviewed the Materials Management Plan for the above project. I have reviewed the risk assessment. I have reviewed the Remediation Strategy/Design Statement covering the above site. I have requested correspondence / documentation relating to the development and how that relates to the use of materials.
12b. Please provide a reference for the Materials Management Plan	Celtic Technologies - Former Holder Station, Ford Road, Arundel R1820.21.5083 rev 2 Arundel MMP.doc 28/05/21
12c. Please provide a reference for the Risk Assessment	Celtic Technologies - Remediation Implementation & Verification Plan R1820/21/5045, March 2021. Section 3.0 Detailed quantitative Risk Assessment
12d. Please provide a reference for the Remediation Strategy or Design Statement documents.	Ford Road, Arundel National Grid Property Holdings R1820/21/5045 Rev 2 March 2021 Remediation Implementation And Verification Plan D1820/A1: Location Plan of Site, D1820/A4 Remediation Areas D1820/A5 Remediation Layout Plan. Specification - Remediation Implementation & Verification Plan R1820/21/5045, March 2021 Section 3.4 Adopted SACS Table 6 Soil SAC
12e. Please provide a reference for the Verification Plan	Celtic Technologies – Remediation Implementation & Verification Plan R1820/21/5045
12f. Identify the organisation and individual(s) (email address / contact details) with responsibility for producing the Verification Report	Steve Gronow Celtic Technologies 02920 368636 ian.wright@celtic-ltd.com
12g. Please provide an estimated production date for the Verification Report.	30/09/2021
12h. Please reference other supporting documents as required in the MMP. e.g. as a minimum this must include - location plans, schematics, Desk Top Study, mass balance calculations, contingency arrangements, tracking system. Where these are part of another document, this should be explained here. It is recommended each item is listed.	Ford Road, Arundel National Grid Property Holdings R1820/21/5045 Rev 2 March 2021 Remediation Implementation And Verification Plan D1820/A4 Remediation Areas and D1820/A5 Remediation Layout Plan, show the areas of excavation together with the stockpiling and processing areas. The materials will generally be replaced within their areas of excavation, following appropriate assessment and processing requirements. D1820/A1: Location Plan of Site Tracking system is compliant. A description is included within the Remediation Implementation and Verification Plan report (ref R1820/21/8045) and the material movements will be recorded within the attached tracker. The contingency arrangements will on the whole be the responsibility of Celtic Technologies as the contract is an all-risk basis, but as it's an NEC3 format, we will have the ability to raise compensation events for unexpected conditions, which if accepted become the financial responsibility of the client.

<p>13a. I confirm that I have reviewed the following correspondence / documentation relating to the development and how that relates to the use of materials from:</p>	<p>a) The Local Authority, b) Environment Agency / NRW, c) Other relevant environmental regulatory bodies associated with the development, e.g. Defra, Natural England</p>
<p>13b. Please reference the correspondence with the Local Authority.</p>	<p>Planning Permission 04-Jun-2021 Application Number: AB/45/21/PL Particulars and location of development: Remediation works to mitigate potential liabilities associated with ground conditions resulting from the site's historic use as a gasworks. LA Document references: Email from Chima Umunnakwe (Environmental Protection Officer) dated 18 May 2021</p>
<p>13c. Please reference the correspondence with the EA / NRW.</p>	<p>EA Document references: Letter from Hannah Brothwell (Sustainable Places Advisor) dated 11 May 2021</p> <p>There has been engagement with the Environment Agency directly as well as through the appropriate planning channels</p>
<p>13d. Please reference the correspondence with other relevant regulatory bodies</p>	<p>Note from James Kenny (archaeological advisor) dated 7 May 2021</p>
<p>14a. I have reviewed the planning consent including planning conditions</p>	<p>Planning Permission No. 20/0310/PA</p>
<p>14b. I have reviewed correspondence concerning the planning consent regarding the development from:</p>	<p>a) The Local Authority , b) Environment Agency / NRW, c) Other relevant environmental regulatory bodies</p>
<p>14c. Please list correspondence reviewed in 14b.</p>	<p>Planning Permission 04-Jun-2021 Application Number: AB/45/21/PL The planning permission includes the remediation works to mitigate potential liabilities associated with ground conditions resulting from the site's historic use as a gasworks. 4 Following completion of development a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the Local Planning Authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. Letter from Hannah Brothwell (EA) (Sustainable Places Advisor) dated 11 May 2021 LA Document references: Email from Chima Umunnakwe (Environmental Protection Officer) dated 18 May 2021</p>
<p>15. If planning consent is not required please explain why</p>	
<p>16. I confirm that the MMP contains the information required:-</p>	<p>The risk assessment assesses human health and environmental risks in relation to the proposed uses of all the materials in the MMP. The risk assessment concludes that the objectives of preventing harm to human health and pollution of the environment will be met if materials are used in the proposed manner., The Local Authority, the Environment Agency / Natural Resources Wales and other relevant environmental regulatory bodies have not objected to the proposed development / land remediation on the basis that the use of any material is likely to cause harm to human health or pollution of the environment. [This confirmation should be given regardless of whether planning consent is required for the activity. Also see paragraph 3.37 of the CoP.], The EA/NRW have not objected to the reuse of materials on the grounds that it a.) constitutes a waste management operation or b.) has had a previous application for an environmental permit for waste recovery refused (on the grounds that the project represents waste disposal)., The project or phase to which this Declaration applies has not yet commenced; this is not a retrospective application</p>

of the DoW CoP., The project does not involve land-spreading / agricultural re-profiling.

Kind regards

CL:AIRE

Web: 

Leading Sustainable Land Reuse

CL:AIRE is a Charitable Company Limited by Guarantee/Registered in England No. 3740059/Entrust Enrolment No. 118820/Registered Charity No. 1075611



Consent ID: 17742

TEMPORARY CONSENT TO DISCHARGE EFFLUENT

Southern Water Services hereby permit Celtic Technologies Ltd, Unit 7-8, Commerce Park, Brunel Road Theale, RG7 4AB to discharge effluent from Former Arundel Gasworks, FORD ROAD, ARUNDEL, BN18 9DX into the adjacent foul sewerage system, subject to the following conditions:

1. Nature of the effluent

The effluent shall consist only of Abstraction of contaminated water from site-wide excavation dewatering operations. No change may be made without the written permission of Southern Water Services.

2. Location of the site and sewers affected

The effluent shall only be discharged into the foul sewerage system located at Ford Road. No change shall be made in location of the discharge point(s) without written permission of Southern Water Services.

3. Maximum quantity to be discharged in any one day

The maximum quantity of effluent discharged in any one period of twenty-four hours shall not exceed 85 cubic metres without the written consent of Southern Water Services.

4. Maximum rate of discharge

The maximum rate at which The Trade Effluent may be discharged shall not exceed 1 litres/sec.

5. Time of discharge

No effluent shall be discharged except between the hours of 08:00 hours and 18:00 hours in any one day.

6. Matters strictly prohibited from entry to the sewer

The following substances are strictly prohibited from entry to the Company's sewers and shall not be contained in the effluent:

6.1 Any petroleum spirit or other inflammable solvents.

6.2 Calcium Carbide.

6.3 Any organic solvents

6.4 Any other substances, either alone or in combination with any other matter lawfully present in the Company's sewers, likely to injure the said sewers or to interfere with the free flow of their contents or to affect prejudicially the treatment and disposal of their contents or to be dangerous to the health of the men working in the sewers or at the Wastewater Treatment Works or to make specially difficult or expensive any process of purification or to pollute in any way the watercourse, estuary or coastal water into which the effluent will eventually discharge.

7. Limitations on effluent composition

The effluent must not contain any substance currently on the Priority Substances 2008/105/EC (as amended) listing in greater than background concentration.

8. Measurement and monitoring of the discharge

8.1 The method of measuring and recording the volume of effluent discharged under the terms of this Temporary Consent shall be as previously agreed in writing with Southern Water Services. The Consentee shall keep records of the volume of effluent discharged and return those records to Southern Water Services on demand.

8.2 The Consentee is responsible for ensuring the effluent discharged complies with the terms of this Temporary Consent. Southern Water Services may carry out additional monitoring of the discharge that will be recharged to the Consentee.

9. Payment

The Consentee shall pay to their Sewerage Retailer charges for compliance monitoring of this temporary discharge and the disposal of the effluent, as previously notified and agreed in writing by the Consentee. All such charges shall become due and payable on demand.

10. Duration of the Temporary Consent

The effluent may only be discharged during the period commencing from the date of this Temporary Consent and ending 6 calendar months thereafter.

11. Termination

Southern Water Services may terminate this licence on 24 hours written notice if the Consentee breaches any of the terms of this Temporary Consent.

12. Waiver

Failure by Southern Water Services to enforce any of the terms of this Temporary Consent shall not be a waiver of them nor of the right at any time subsequently to enforce all the terms of this Temporary Consent.

Dated this 11/05/2021.

Signed:



Dr Isabelle Standen
Trade Effluent Inspector

From: PSC Land
To: Steve Gronow
Subject: RE: Deployment Application for Arundel Gasworks
Date: 06 August 2021 07:45:53
Attachments: image008.png
image009.jpg
image010.jpg
image011.jpg
image012.jpg
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image014.png
image015.png

ATTENTION: Assurez-vous que le contenu soit de confiance avant d'ouvrir une pièce jointe ou un hyperlien.
CAUTION: Do not click on links or open attachments you do not trust.

Good Morning,

Thank you for informing us of the end of works at this site and we acknowledge receipt of your notification.

Kind regards

Nicola Waller
Permitting Support Advisor – National Permitting Service

Environment Agency | Regulated Industry, Quadrant 2, 99 Parkway Avenue, Sheffield, S9 4WF

[REDACTED]
[REDACTED]



From: Steve Gronow [mailto:St [REDACTED]]
Sent: 05 August 2021 16:02
To: PSC Land <[REDACTED]>
Cc: Christian Davies <[REDACTED]>
Subject: RE: Deployment Application for Arundel Gasworks

Dear sir/madam,

Further to the deployment of our Environmental Permit (mobile treatment plant) reference EPR/AP3195FG, deployed at the Arundel Gasworks, I can confirm that the works have now been successfully completed and we no longer require the deployment at this site. If you could please confirm receipt of this notification, it would be much appreciated. If you have any queries or require any further information, please do not hesitate to contact me.

Kind regards

Steve

From: Steve Gronow
Sent: 15 April 2021 16:23

[REDACTED]

Subject: Deployment Application for Arundel Gasworks

Please see attached deployment application for Celtic's Environmental Permit (mobile treatment plant) reference EPR/AP3195FG, which we are wanting to deploy at Arundel Gasworks. The reference for the payment that has been made is PSCDEPCELTIC820.

If you have any queries or require any further information, please let me know.

Kind regards

Steve

Steve Gronow, *BSc (Hons), MCIWM*

Project Manager

Celtic Technologies & Biogenie, subsidiaries of EnGlobe Corp.

Columbus House

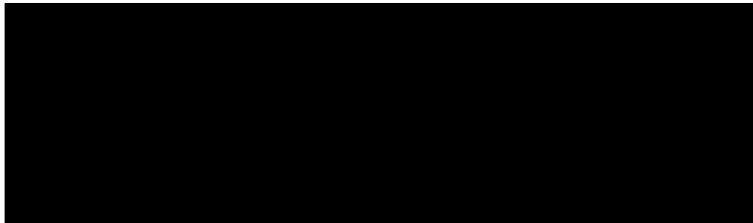
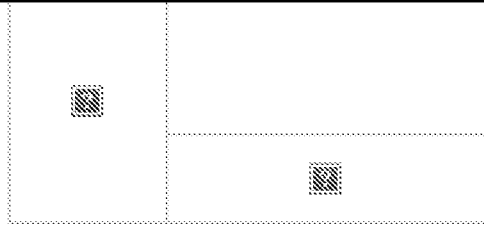
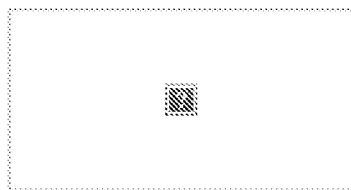
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Tongwynlais

Cardiff

CF15 7NE

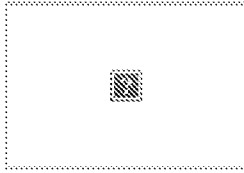
United Kingdom



Following government requirements on us all to limit non-essential travel, we are currently only working on a minimal number of deemed “operationally essential” remediation sites, identified to us to be essential work by clients where they have to maintain progress. All works are proceeding following strict social distancing guidelines and comprehensive Englobe company procedures. These include our Soil Treatment facilities (STF's) across the UK. All Englobe UK staff that are home office working are contactable through our standard phone systems, emails and mobiles and as always available to support your enquiry.

We intend to continue with as near “normal” working to deliver environmental remediation contracting and hazardous Soil Treatment, as these exceptional circumstances permit.

Contaminated Soil to treat offsite? Have you visited Biogenie's website? 



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[@CelticTechLtd](#)



Please consider the environment, only print this email if necessary

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APPENDIX C PHOTOGRAPHS

Plate 1 – View of access track from Ford Road prior to works



Plate 2 – View of Original Site Gate



Plate 3 – View of new gate



Plate 4 – View from western corner looking east from Ford Road



Plate 5 – View of SSE sub-station



Plate 6 – Excavation of F4 in readiness for water treatment system area



Plate 7 – View of water treatment system



Plate 8 – View of vegetation clearance stockpile



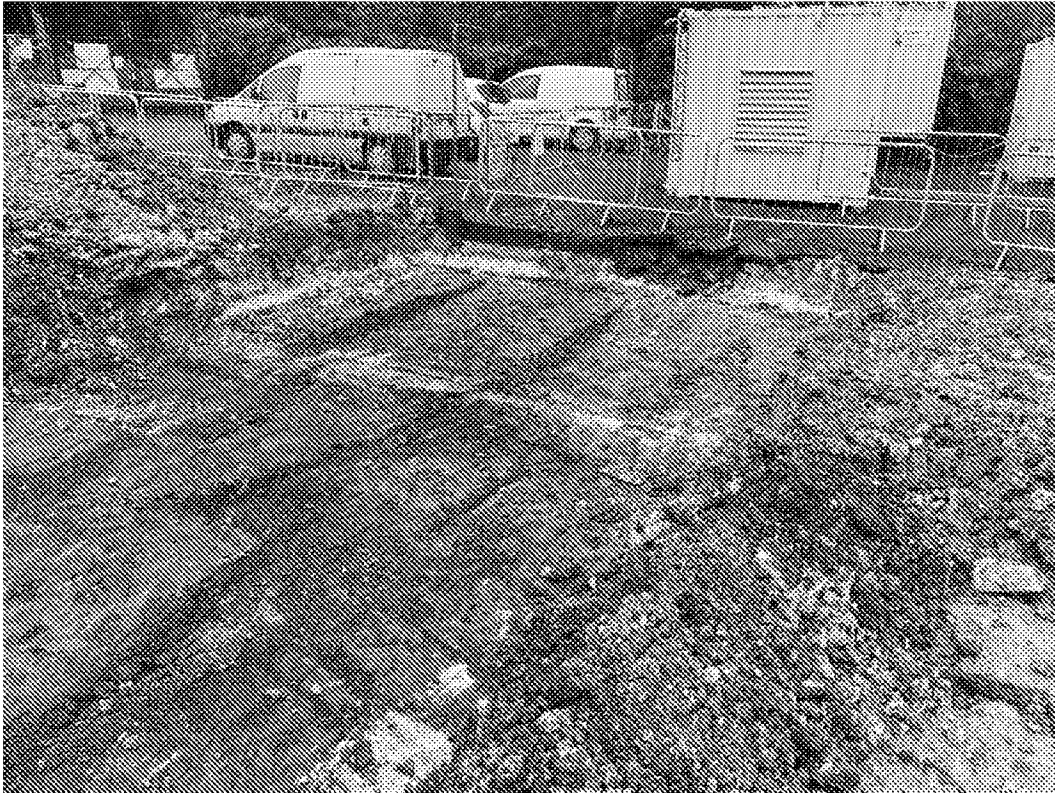
Plate 9 – View of Area 1 stockpiling overburden from gas governor area



Plate 10 – View of Area 1 exposed below ground concrete chambers looking north (Grid D7)



Plate 11 – View of Area 1 Grid E7 made ground being excavated



Pate 12 – View of Area 1 car tyres encountered within concrete chamber



Plate 13 – View of Area 1 concrete chamber after removal



Plate 14 – View of Area 1 following removal of concrete obstruction (Grid E6)



Plate 15 – View of further concrete chambers being removed



Plate 16 – View of natural soils encountered following made ground removal (Grid E7)



Plate 17 – View of concrete chambers following removal in Area 1



Plate 18 – View of natural soils encountered following made ground removal (Grid D7)



Plate 19 – View of natural soils encountered following made ground removal (Grid D6)



Plate 20 – View of made ground and natural soils encountered around gas holder base in grid A7



Plate 21 – Exposing the gas holder base across grid A7



Plate 22 – Exposing the gas holder base across grid B7



Plate 23 – Exposing the gas holder base across grid B7/C7



Plate 24 – Re-compacting the made ground across Area 1



Plate 25 – Capping layer placed across Area 1



Plate 26 – Excavating to natural ground in Area 2



Plate 27 – Re-compacting the made ground in Area 2



Plate 28 – Capping layer placed across Area 2



Plate 29 – Gasholder base in Area 3



Plate 30 – Excavation to natural ground in Area 3 Grids B1 – B4



Plate 31 – Segregation of small amounts of contamination encountered from Areas 1-3



Plate 32 – Excavation to natural ground in grid C5



Plate 33 – Excavation to natural ground in grid C1 / C2



Plate 34 – Re-compacting made ground across Area 3



Plate 35 – Tarry wood exposed in historic feature no. 4 within Area 4



Plate 36 – Covering contaminated materials with odour suppressing foam



Plate 37 – Contaminated materials within former gasholder (feature no. 4)



Plate 38 – Excavating contaminated materials within former gasholder (feature no. 4)



Plate 39 – Stabilisation treatment of contaminated materials within former gasholder
(feature no. 4)



Plate 40 – Looking east whilst excavating contaminated materials and exposing below ground brick wall structures in grid B2



Plate 41 – Looking northwest of same area as above in grid B2



Plate 42 – Contaminated materials being excavated in grid E2



Plate 43 – Addition of PFA and cement grout to contaminated materials in grid E2



Plate 44 – Stabilisation treatment in grid E2



Plate 45 – Stabilisation treatment in grid F1



Plate 46 – Exposed low pressure gas pipe in grid ref E1, Area 4



Plate 47 – Stabilisation treatment in grid F2



Plate 48 – Made ground backfilled in Grid refs E3 and F3 within Area 4



Plate 49 – Grout mixing area with water mist sprayer to dampen potential dust emissions



Plate 50 – Environmental monitoring point 4 in northern corner



Plate 51 – Scrap metal stockpile



Plate 52 – Further concrete obstructions removed from Area 4



Plate 53 – Use of dust suppression bowser along haul route



Plate 54 – View of site following placement of capping layer



APPENDIX D STABILISATION TANK TEST DATA (TO FOLLOW)

APPENDIX E EXPORT DATA

Registration CBDU44059 – SOUTH COAST SKIPS LTD

Registration number	CBDU44059
Business name	SOUTH COAST SKIPS LTD
Company number	04796275
Registered as	Carrier, Broker, Dealer - Upper Tier ▶ Help with tier types
Applicant type	Company
Registration date:	11/02/2019
Expiry date:	10/02/2022

Business address

Address	SOUTH COAST SKIP HIRE, FORD ROAD, ARUNDEL, BN18 0BD
Postcode	BN18 0BD

Registration CBDU89511 – PETER NORRIS (HAULAGE) LTD

Registration number	CBDU89511
Business name	PETER NORRIS (HAULAGE) LTD
Company number	01047883
Registered as	Carrier, Broker, Dealer - Upper Tier ▶ Help with tier types
Applicant type	Company
Registration date:	12/04/2019
Expiry date:	15/05/2022

Business address

Address	PETER NORRIS (HAULAGE) LTD, STATION APPROACH, CRPINGTON, BR5 2NB
Postcode	BR5 2NB

Registration CBDU147665 – MATTHEWS (SUSSEX) LTD

Registration number	CBDU147665
Business name	MATTHEWS (SUSSEX) LTD
Company number	02682383
Registered as	Carrier Dealer - Upper Tier ▶ Help with tier types
Applicant type	Company
Registration date:	06/12/2019
Expiry date:	24/12/2022

Business address

Address	MATTHEWS M CONTRACTORS, STEPHENSON PLACE, CRAWLEY, RH10 1TL
Postcode	RH10 1TL

Registration CBDU80960 – ROBERT HOPKINS ENVIRONMENTAL SERVICES LTD

Registration number	CBDU80960
Business name	ROBERT HOPKINS ENVIRONMENTAL SERVICES LTD
Company number	03604896
Registered as	Carrier, Broker, Dealer - Upper Tier ▶ Help with tier types
Applicant type	Company
Registration date:	06/02/2019
Expiry date:	18/02/2022

Business address

Address	ENVIRONMENTAL SERVICES LTD, BULLOCK STREET, WEST BRIDGMICH, B75 7HE
Postcode	B75 7HE

Registration CBDU85928 – R M PETTETT LTD

Registration number	CBDU85928
Business name	R M PETTETT LTD
Company number	04665752
Registered as	Carrier Dealer - Upper Tier ► Help with tier types
Applicant type	Company
Registration date:	28/01/2019
Expiry date:	23/02/2022

Business address

Address	STANE FARM, STANE STREET, PULBOROUGH, RH20 1BL
Postcode	RH20 1BL

Registration CBDU96863 – Shield Environmental Services Ltd.

Registration number	CBDU96863
Business name	Shield Environmental Services Ltd.
Company number	01889667
Registered as	Carrier, Broker, Dealer - Upper Tier ► Help with tier types
Applicant type	Company
Registration date:	27/02/2019
Expiry date:	02/04/2022

Business address

Address	SHIELD ENVIRONMENTAL SERVICES LTD, CROWN WAY, BRISTOL, BS30 8XJ
Postcode	BS30 8XJ



Unit 9, Manger 2, Rodford Industrial Estate
Ford, Arundel, West Sussex, BN18 0BS

Tipper Hire • Plant Hire • Cartaway
Construction Waste Re-cycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Dig & Screened Topsoil

CONVEYANCE WASTE TRANSFER NOTE

39653

COLLECTED FROM

Customer Name GRS Road Stone Date 6.7.21
Site Address Ford Rd, Arundel Time on Site _____ Time off site _____

Quantity 1x Load

DESCRIPTION OF MATERIALS

Hard Core

Waste/Material received from:

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No. ORDU44039 Reg. Authority E. A. Sheffield
Signature _____ Vehicle Reg. No. W119 VFH

CUBIC METRES

TONNE

DAY WORK

Gross Weight

Tare Weight

Net Weight

Total Hours

Less Breaks

Trav. Time

HOURS

1x Load

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. _____ Issued by _____
Registered Waste Carrier _____ Issued by _____
Signature for Receipt of Waste/Material _____ Date 6.7.21

Certified that the above particulars
which Waste/Material is being carried
metre or tonnes.

is the vehicle described,
issued made by the cubic

MINIMUM HIRE 8 HOURS/21
Customers ordering vehicles off the

Machine Loading



Unit 9, Hangar 1, Rufford Industrial Estate
Ford, Arundel, West Sussex, BN18 0BS

Tipper Hire • Plant Hire • Cartway
Construction Waste Recycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Dug & Screened Topsoil

CONVEYANCE
WASTE TRANSFER NOTE
40919

COLLECTED FROM

Customer Name: GRS Rockhenge Date: 6/11/2021
Site Address: C10 Gos Works, Time on Site: --- Time off site: ---
Ford Rd. BN18 9DX Quantity: 1 x Load

DESCRIPTION OF MATERIALS	Waste/Material received from:
<u>Hardcore</u>	

Company/Person Collecting Waste

Name: SCS
Address: Ford
Registered Certificate No. CBD044059 Reg. Authority E. A. Sheffield
Signature: --- Vehicle Reg. No. NN19VET

CUBIC METRES	TONNE		DAY WORK	
			Total Hours	---
<u>1 x Load</u>	Gross Weight	---	Less Breaks	---
	Tare Weight	---	Trav. Time	---
	Net Weight	---	HOURS	---

Person/Company/Authority receiving Waste/Material

Name: SCS
Address: Ford
Waste Disposal Licence No. --- Issued by: ---
Registered Waste Carrier --- Issued by: ---
Signature for Receipt of Waste/Material: --- Date: 6/11/2021

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic transferor herein.

MINIMUM HIRE & HOURS All Hours are charged Deposit Deposit. Maximum 15 minutes for Machine Loading.
Customers ordering vehicles off the Public Road do so entirely at their own responsibility.



Unit 9, Hangar 1, Redford Industrial Estate
East Avenue, Dover, Kent, TN20 6ES

Tipper Hire • Plant Hire • Cartaway
Construction Waste Recycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Drag & Screened Topsoil

CONVEYANCE
WASTE TRANSFER NOTE
40917

COLLECTED FROM

Customer Name GRS Roadstone Date 6/11/2011
Site Address C10 Spa Works Time on Site --- Time off site ---
Ford Rd. BN13 9DA
Quantity 1 x Load

DESCRIPTION OF MATERIALS

Waste

Waste/Material received from:

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No. CBD144059 Reg. Authority E. A. Sheffield
Signature --- Vehicle Reg. No. WN19VFS

CUBIC METRES

1 x Load

TONNE

Gross Weight

Tare Weight

Net Weight

DAY WORK

Total Hours

Less Breaks

Work Time

HOURS

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. --- Issued by ---
Registered Waste Carrier --- Issued by ---
Signature for Receipt of Waste/Material --- Date 6/11/2011

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic metre or tonne.

MINIMUM HIRE & HOURS: All Hires are charged Depots to Depot. Maximum 15 minutes for Machine Loading.
Customers ordering vehicles off the Public Road do so entirely at their own responsibility.



Unit 9, Hangar 1, Rufford Industrial Estate
Ford, Arundel, West Sussex. BN18 9BE

Tipper Hire • Plant Hire • Cartway
Construction Waste Re-cycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Dug & Screened Topsoil

CONVEYANCE
WASTE TRANSFER NOTE
40903

COLLECTED FROM

Customer Name GRS Roadworks Date 11/11/2021
Site Address C10 Gen Works Time on Site --- Time off site ---
Ford Rd, BN18 9BA
Quantity 1 x Load

DESCRIPTION OF MATERIALS	Waste/Material received from
<u>Hardcore 170/07</u>	

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No. CRDU44059 Reg. Authority E. A. Sheffield
Signature --- Vehicle Reg. No. WN15VFS

CUBIC METRES	TONNE		DAY WORK	
			Total Hours	---
	Gross Weight	---	Less Breaks	---
	Tare Weight	---	Trav. Time	---
	Net Weight	---	HOURS	---

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. --- Issued by ---
Registered Waste Carrier --- Issued by ---
Signature for Receipt of Waste/Material --- Date 11/11/2021

Confirmed that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic metre or tonne.

MINIMUM HIRE & HOURS: All hirers are charged Depot to Depot. Maximum 1.5 minutes for Mobilising/travelling. Customers ordering vehicles off the Public Road do so entirely at their own responsibility.



Unit 9, Hangar 3, Radford Industrial Estate
Ford, Arundel, West Sussex. BN18 9BG

Tipper Hire • Plant Hire • Cartaway
Construction Waste Re-cycling
Hoggin • Crushed Concrete
Chaff • Bulk Fill Materials
As Dug & Screened Topsoil

CONVEYANCE
WASTE TRANSFER NOTE
40904

COLLECTED FROM

Customer Name GRS Recyclers Date 11/7/2021
Site Address C10 Gou Works Time on Site --- Time off Site ---
Ford Rd, BN18 9DA Quantity 1 x Load

DESCRIPTION OF MATERIALS

Hardcore 170007

Waste/Material received from:

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No. CSD414059 Reg. Authority E. A. Sheffield
Signature _____ Vehicle Reg. No. NN19 VET

CUBIC METRES

1 x Load

TONNE

Gross Weight ---

Tare Weight ---

Net Weight ---

DAY WORK

Total Hours ---

Less Breaks ---

Extra Time ---

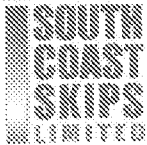
HOURS ---

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. --- Issued by ---
Registered Waste Carrier --- Issued by ---
Signature for Receipt of Waste/Material _____ Date 11/7/2021

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic metre or more.

MINIMUM HIRE 8 HOURS: All Hires are charged Depot to Depot. Maximum 15 minutes for Machine Loading.
Customers ordering vehicles off the Public Road do so entirely of their own responsibility.



Unit 9, Hanger 3, Radford Industrial Estate
Fort, Arundel, West Sussex BN18 8GS

Tipper Hire • Plant Hire • Cartway
Construction Waste Re-cycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Dug & Screened Topsoil

CONVEYANCE
WASTE TRANSFER NOTE
40905

COLLECTED FROM

Customer Name GRS Roadworks Date 11/4/2021
Site Address C/O GUY WORKS Time on Site --- Time off site ---
Ford Rd, BN18 9DX
Quantity 1 x Road

DESCRIPTION OF MATERIALS	Waste/Material received from:
<u>Hardcore 140707</u>	

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No. CR0444059 Reg. Authority E. A. Sheffield
Signature --- Vehicle Reg. No. NN19VFS

CUBIC METRES	TONNE		DAY WORK	
			Total Hours	---
<u>1 x Road</u>	Gross Weight	<u>---</u>	Less Breaks	<u>---</u>
	Tare Weight	<u>---</u>	Trav. Time	<u>---</u>
	Net Weight	<u>---</u>	HOURS	<u>---</u>

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. --- Issued by ---
Registered Waste Carrier --- Issued by ---
Signature for Receipt of Waste/Material --- Date 11/4/2021

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic metre or tonnes.

MINIMUM HIRE 8 HOURS: All Hires are charged Depot to Depot. Maximum 15 minutes for Machine Loading.
Customers ordering vehicles off the Public Road do so entirely at their own responsibility.



Unit 9, Hangar 3, Rufford Industrial Estate
Ford, Arundel, West Sussex. BN18 0RS

Tipper Hire • Plant Hire • Cartaway
Construction Waste Re-cycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Dug & Screened Topsoil

CONVEYANCE WASTE TRANSFER NOTE

40906

COLLECTED FROM

Customer Name GPS Roadworks Date 11/7/2021
Site Address C10 Gas Works Time on Site --- Time off site ---
Ford Rd, BN18 5PX
Quantity 1 x Load

DESCRIPTION OF MATERIALS

Hardcore 170104

Waste/Material received from:

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No: CBDU44059 Reg. Authority E. A. Sheffield
Signature _____ Vehicle Reg No NN19VFJ

CUBIC METRES

1 x Load

TONNE

Gross Weight ---

Tare Weight ---

Net Weight ---

DAY WORK

Total Hours ---

Less Breaks ---

Hour Time ---

HOURS ---

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. --- issued by ---
Registered Waste Carrier --- Issued by ---
Signature for Receipt of Waste/Material _____ Date 11/7/2021

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic metre or tonne.

MINIMUM HIRE 8 HOURS. All Hires are charged Depot to Depot. Maximum 15 minutes for Machine Loading.
Customers ordering vehicles off the Public Road do so entirely at their own responsibility.



Unit 9, Hangar 1, Radford Industrial Estate
Ford, Arundel, West Sussex, BN16 0BS

Tipper Hire • Plant Hire • Cartaway
Construction Waste Re-cycling
Hoggin • Crushed Concrete
Chalk • Bulk Fill Materials
As Dug & Screened Topsoil

CONVEYANCE
WASTE TRANSFER NOTE
40902

COLLECTED FROM

Customer Name GRS Roadstone Date 1/7/2021
Address C10 Gas Works, Time on Site --- Time off site ---
Ford Rd BN18 9DX
PO 709207 Quantity 1x Load

DESCRIPTION OF MATERIALS

Hardcore 17610.4

Waste/Material received from:

Company/Person Collecting Waste

Name SCS
Address Ford
Registered Certificate No. CBDU44039 Reg. Authority E. A. Sheffield
Signature --- Vehicle Reg. No. NN19VFJ

CUBIC METRES

1x Load

TONNE

Gross Weight ---

Tare Weight ---

Net Weight ---

DAY WORK

Total Hours ---

Less Breaks ---

Trav. Time ---

HOURS ---

Person/Company/Authority receiving Waste/Material

Name SCS
Address Ford
Waste Disposal Licence No. --- Issued by ---
Registered Waste Carrier --- Issued by ---
Signature for Receipt of Waste/Material --- Date 1/7/2021

Certified that the above particulars are true and relate to the Waste/Materials being removed in the vehicle described,
which Waste/Material is being conveyed in pursuance of a sale or an agreement for the sale thereof made by the cubic
metre or tonne.

MINIMUM HIRE & HOURS: All Hires are charged Depot to Depot. Maximum 15 minutes for Machine Loading.
Customers ordering vehicles off the Public Road do so entirely at their own responsibility.

Conveyance & Waste Transfer Note

Unit 9, Hanger 3
Ridford Industrial Estate
Ford, Arundel, West Sussex. BN16 0BS

Tel: Waste Carrier Registration CBDU69437



Ticket No

DATE

Customer
Contact
Order No

Location
Address

Producer's Certificate

Container
Quantity
Service
Extra
SIC Code
Info
Sec 62 No

Brief
Description
of waste

Signature
PRINT NAME
Date
Time

Disposal Certificate

Vehicle Reg No
Driver's
Signature
PRINT NAME

Disposer's
Signature
PRINT NAME

Ticket No

Disposal Site

EAWML/10146

Date

Time

NO ASBESTOS, RUBBER TRACKS,
GAS CYLINDERS, TYRES, TREE
ROOTS, BATTERIES, MATTRESSES,
FRIDGES, FREEZERS, PAINTS,
LIQUIDS OR CHEMICALS WITHOUT
PRIOR ARRANGEMENT.

Overloaded bins will
be refused collection.

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

Net price
Total
VAT

VAT No. 819 1570 23

Conveyance & Waste Transfer Note



Unit 9, Hanger 3
Radford Industrial Estate
Ford, Ayrshire, West Sussex, BN16 9BS

Tel: []
Waste Carrier Registration CBU59437

Ticket No []



Customer	Location	DATE
Contact	Address	
Order No		

Producer's Certificate

Container	Brief
Quantity	Description
Service	of waste
Extra	Signature
SIC Code	PRINT NAME
Info	Date
Sec 62 No	Time

Disposal Certificate

Vehicle Reg No	Ticket No
Driver's	Disposer's
Signature	Signature
PRINT NAME	PRINT NAME
Disposal Site	Date
EAWML/10146	Time

NO ASBESTOS, RUBBER TRACKS,
GAS CYLINDERS, TYRES, TREE
ROOTS, BATTERIES, MATTRESSES,
FRIDGES, FREEZERS, PAINTS,
LIQUIDS OR CHEMICALS WITHOUT
PRIOR ARRANGEMENT.

**Overloaded bins will
be refused collection.**

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

Net price	£
Total	£
VAT	£

VAT No. 819 157023

Unit 9, Hangar 3
Rusford Industrial Estate
Ford, Arundel, West Sussex. BN18 0AS



Ticket No

Tel: Waste Carrier Registration CBU59437

Customer
Contact
Order No

Location
Address

DATE

Producer's Certificate

Container
Quantity
Service
Extra
SIC Code
Info
Sec 62 No

Brief
Description
of waste

Signature

PRINT NAME

Date

Time

Disposal Certificate

Vehicle Reg No
Driver's
Signature
PRINT NAME

Disposal Site

Disposer's
Signature
PRINT NAME

Ticket No

Date

Time

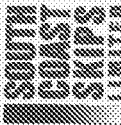
NO ASBESTOS, RUBBER TRACKS,
GAS CYLINDERS, TYRES, TREE
ROOTS, BATTERIES, MATTRESSES,
FRIDGES, FREEZERS, PAINTS,
LIQUIDS OR CHEMICALS WITHOUT
PRIOR ARRANGEMENT.

**Overloaded bins will
be refused collection.**

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

Net price
Total
VAT

VAT No. 819 1570 23



Conveyance & Waste Transfer Note

Unit 9, Hanger 3
Rusford Industrial Estate
Ford, Arundel, West Sussex BN18 0BS

Tel: []
Waste Carrier Registration CADU59437

Ticket No []

Customer []
Contact []
Order No []

Location Address []

DATE []

Producer's Certificate

Container []
Quantity []
Service []
Extra []
SIC Code []
Info []
Sec 62 No []

Brief Description of waste []

Signature []

PRINT NAME []

Date [] Time []

Disposal Certificate

Vehicle Reg No []

Driver's Signature []

PRINT NAME []

Disposal Site []

EAWML/10146

Date []

Time []

Ticket No []

Disposer's Signature []

PRINT NAME []

NO ASBESTOS, RUBBER TRACKS,
GAS CYLINDERS, TYRES, TREE
ROOTS, BATTERIES, MATTRESSES,
FRIDGES, FREEZE, PAINTS,
LIQUIDS OR CHEMICALS WITHOUT
PRIOR ARRANGEMENT.

Overloaded bins will
be refused collection.

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

Net price £ []
Total £ []
VAT £ []

VAT No. 819 1570 23

Conveyance Waste Transfer Note

Unit 9, Hanger 3
Rudford Industrial Estate
Ford, Arundel, West Sussex BN18 9BS

Ticket No

To Waste Carrier Registration CRDU59437

Customer

Contact

Order No

Location
Address

DATE

Producer's Certificate

Container

Quantity

Service

Extra

SIG Code

Info

SIG 62 No

Brief

Description

of waste

Signature

PRINT NAME

Date

Time

Disposal Certificate

Vehicle Reg No

Driver's

Signature

PRINT NAME

Disposer's

Signature

PRINT NAME

Ticket No

Disposal Site

EAWML10146

Date

Time

NO ASBESTOS, RUBBER TRACKS,
GAS CYLINDERS, TYRES, TREE
ROOTS, BATTERIES, MATTRESSES,
FRIDGES, FREEZERS, PAINTS,
LIQUIDS OR CHEMICALS WITHOUT
PRIOR ARRANGEMENT.

Overloaded bins will
be refused collection.

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

Net price £
Total £
VAT £

VAT No. 819 1570 23

South Coast Skips Limited

Unit 9, Hangar 3
Ridford Industrial Estate
Ford, Arundel West Sussex, BN18 0BS

Tel: 01243 831120
Waste Carrier Registration C8DU159437

Ticket No



DATE

Customer
Contact
Order No

Location
Address

Producer's Certificate

Container
Quantity
Service
Extra
SIC Code
Info
Sec 62 No

Brief
Description
of waste
Signature
PRINT NAME
Date
Time

Disposal Certificate

Vehicle Reg No
Driver's
Signature
PRINT NAME
Disposal Site

Ticket No
Disposer's
Signature
PRINT NAME
Date
Time

NO ASBESTOS, RUBBER TRACKS,
GAS CYLINDERS, TYRES, TREE
ROOTS, BATTERIES, MATTRESSES,
FRIDGES, FREEZERS, PAINTS,
LIQUIDS OR CHEMICALS WITHOUT
PRIOR ARRANGEMENT.

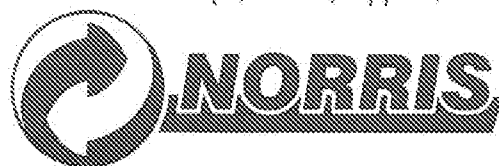
Overloaded bins will
be refused collection.

I confirm that I have notified my skip supplier of the
waste hierarchy as required by Regulation 12 of the
Waste (England and Wales) Regulations 2011

Net price
Total
VAT

VAT No. 819 1570 23

White - Norris, Yellow - Customer, Pink & Blue - Haulier, Green - Tip
 Skips, Grabs, Tippers, Roll on offs, Tipping and Aggregates



WASTE TRANSFER NOTE

Goods Yard, Station Approach,
 St Mary Cray, Kent BR5 2NB

WCL: CBDU 89511

SIC: 38110/49410

Ticket	146214
Additional No:	
Date:	28/7/2021
Vehicle Reg:	EU19 VCZ
Driver:	ALAN RUSSELL
Time On Site:	9.30
Time Off Site:	9.40

SECTION A Description of Waste / Material		Weight	Load
☐ Inert Soil & Stone EWC 17 05 04	☐ Concrete EWC 17 01 01	Gross:	☐ Cubic yards
☐ Formwork EWC 17 01 02	☐ Wood EWC 17 02 01		☐ Cubic metres
☒ Hardcore EWC 17 01 02		Tare:	☐ Load
☐ Mixed Construction & Demolition Waste EWC 17 02 04	☐ Other: Please specify material	Nett:	☐ Other (below)
☐ Non-Haz soil & stones EWC 17 05 04	Enter: EWC code		

SECTION B Current Holder of Waste / Material / Collection Point	
Name:	Norris c/o Celtic Technology
Address:	Former Gas Works Ford Rd Arundel
	SIC: 29.00

SECTION C Haulier Collecting Waste	
Name:	Matthews Sussex Ltd
Address:	Stephensons Way Crawley

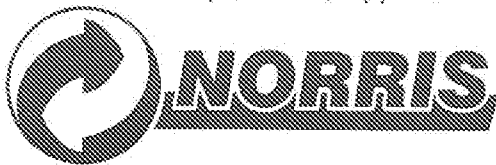
I confirm I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England & Wales) Regulations 2011.
 I, the Customer, Authorised Agents, Representatives or Responsible Person, Please sign this ticket after inspecting, and agreeing quantity and quality of materials delivered
 collected from the above site. We cannot accept any claims concerning either of the above once the vehicle has left the site and the driver has obtained a signed ticket.
 Customers ordering materials off the public road do so entirely at their own risk. No liability can be accepted.

SECTION D Authorised Tip / Delivery Point / Daywork	
Name:	Knepp Castle Estate
Address:	West Grinstead

Customer Signature:	[Redacted]
Customer Print:	COANES
Driver Print:	ALAN RUSSELL
Date:	28/7/20

If you have any problems completing this form, please call Norris for guidance on 0208 291 1500
 Norris is a trading name of Peter Norris (Haulage) Ltd VAT 216 7675 45. Company Reg. No 04567688

White – Norris, Yellow – Customer, Pink & Blue – Haulier, Green – Tip
 Skips, Grabs, Tipper, Roll on offs, Tipping and Aggregates



WASTE TRANSFER NOTE

Ticket	146213
Additional No:	
Date:	28/7/2021
Vehicle Reg:	EV17 VCZ
Driver:	ALAN RUSSELL
Time On Site:	08:00
Time Off Site:	

Goods Yard, Station Approach,
 St Mary Cray, Kent BR5 2NB

WCL: CBDU 89511
 SIC: 38110/49410

SECTION A Description of Waste / Material		Weight	Load
☐ Inert Soil & Stone EWC 17 05 04	☐ Concrete EWC 17 01 03	Gross:	☐ Cubic yards
☐ Tarmac EWC 17 03 02	☐ Wood EWC 17 02 01		☐ Cubic metres
☐ Hardcore EWC 17 03 02	☐ Mixed Municipal EWC 20 03 01	Tare:	☐ Load
☐ Mixed Construction & Demolition Waste EWC 17 05 04	☐ Other: Please specify material	Nett:	☐ Other (below)
☐ Non-Haz soil & stones EWC 17 05 04	EWC		

SECTION B Current Holder of Waste / Material / Collection Point

Name: Norris

Address: 40 Celtic Technology, Former Gas Works, Ford rd
Arundel BN18 9DX SIC: 39-00

SECTION C Haulier Collecting Waste

Name: Matthews

Address: STEPHENSONS WAY CRANLEY

I/We have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England & Wales) Regulations 2011, or Customer, authorised Agent, Representative, or Responsible Persons. Please sign this ticket after inspecting, and agreeing quantity and quality of materials delivered & collected from the above site. We cannot accept any claims concerning either of the above once the vehicle has left the site and the driver has obtained a signed ticket. Operators ordering vehicles off the public road do so entirely at their own risk. No liability can be accepted.

SECTION D Authorised Tip / Delivery Point / Daywork

Name: Knepp Castle Estate

Address: West Brinsford

Customer Signature:

Customer Print:

If you have any problems completing this form, please call Norris for guidance on 0208 233 1500
 Norris is a trading name of Peter Norris (Haulage) Ltd VAT 258 3875 45 Company Reg No 01047623

PETER NORRIS (HAULAGE) LIMITED

t/a Norris Waste Management

Waste Management - Recycling - Skip Hire - Roll On/Off Containers - Grab & Tipper Hire - Aggregates & Materials

Station Approach, St Mary Cray, Orpington BR5 2NB

INVOICE

CELTIC TECHNOLOGIES LTD
UNIT 8 COMMERCE PARK
BRUNEL ROAD
THEALE
READING
RG7 4AB

Account No.	C147
Invoice Date	11/08/2021
Invoice No.	188672

Date	Ticket	Product	Qty	Unit	Price	Value
05/07/2021	800441	Open Industrial Skip (12yds approx.) - End-Of-Life Tyre	1.000	Delivery		
CELTIC TECHNOLOGIES LTD, FORMER GAS WORKS, FORD ROAD, ARUNDEL, WEST SUSSEX BN18 9DX Order Number - 81881						
05/07/2021	800441	Car Tyre Disposal -	86.000	Each		
CELTIC TECHNOLOGIES LTD, FORMER GAS WORKS, FORD ROAD, ARUNDEL, WEST SUSSEX BN18 9DX Order Number - 81881						

Payment Terms: 30 Days

Bank Details: Sort Code: 40-61-35
Account Number: 03006110

ALL QUERIES MUST BE REPORTED WITHIN 14 DAYS OF INVOICE DATE

Registered in England and Wales No. 01047683, Registered Office as above, VAT Reg. No. 218 3875 45

Sub-Total	£625.00
VAT at 20.00%	£125.00
Total	£750.00



Peter Norris (Haulage) Limited
Station Approach
St Mary Cray Orpington BR5 2NB



Carrier Licence: CBDU89511

Site Licence:

VAT Reg: 218 3875 45

Ticket Number: 800441

Ticket Date: 05/07/2021

Customer Name & Address
CELTIC TECHNOLOGIES LTD
CELTIC TECHNOLOGIES LTD
FORMER GAS WORKS, FORD
ROAD
ARUNDEL
WEST SUSSEX
BN18 9DX
Contact: PAUL WILLIAMS

Vehicle Reg.: X199

Transaction Type: DELIVERY

Product: Open Industrial Skip
(12yds approx.)

EWC Code: 16 01 03

SIC Code: 39.00

Waste Description: End-Of-Life Tyre

Tel Number: 07985 836 237

Order No: 81881

Disposal Site :

Skip Delivered:

Net Weight (kgs): 0

Skip Collected:

Special Instructions PLEASE DELIVER A 12 YARD SKIP ON MONDAY 5TH JULY FOR CAR TYRES ONLY.
SITE ESTIMATE 80 CAR TYRES PER SKIP.

Time On Site:

Time Off Site:

Customer Signature:

PRINT NAME:

Driver's Signature:

PRINT NAME:

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

NO ASBESTOS OR ANY TYPE OF FIBRE BOARD, FRIGERS, FREEZERS, TYRES, DUSTBIN REFUSE, PAINTS OR SOLVENTS, ANY TYPE OF TV SCREEN OR COMPUTER MONITOR, ASTRO TURF OR ANY ARTIFICIAL SURFACES, MATTRESSES, GAS CYLINDERS, FIRE EXTINGUISHERS OR ANY TYPE OF PRESSURISED CONTAINER, FLUORESCENT TUBES, LAMPS OR BULBS. ALL PLASTERBOARD/GYPSUM WASTE MUST BE DISPOSED OF SEPARATELY. ANY CONTAMINATION OF PLASTERBOARD WILL INCUR A SURCHARGE FOR THE ENTIRE CONTENTS OF THE BIN.

Customer is responsible for siting the container.

Customer is responsible for all necessary permits and the adequate lighting of the container during the hours of darkness.

Whilst every care will be taken, no liability will be accepted for any damage to property including driveways, drains, pavements and walls. Customer ordering vehicles off the public road do so entirely at their own risk

WE RESERVE THE RIGHT TO COLLECT THE CONTAINER AFTER 14 DAYS OF HIRE. CONTAINER MUST NOT BE OVER FILLED. LEVEL LOADS ONLY. RUBBISH MUST NOT BE BURIED INSIDE THE CONTAINER. DAMAGED OR STOLEN CONTAINERS WILL BE FULLY CHARGEABLE.

During the continuance of the hire period the Customer shall fully and completely indemnify the Owner in respect of all the claims by any person whatsoever for injury to person or property including the property of the customer caused by or in connection with or arising out of the Container and in respects of all costs and charges in connection therewith whether arising under statute of common law.

Our prices allow for our vehicles to be on site for 20 minutes after which we will charge waiting time per minute. We reserve the right to automatically take payment for excess weight and non conforming wastes.

For full terms and conditions please visit our website, www.norriskips.co.uk

WEIGHBRIDGE TICKET

R M PETTETT LTD

non-ferrous metal merchant
and cable granulators

Stone Farm, Stone Street,
Coomore Hill, Pulborough
West Sussex, RH20 1BN

Mobile

Email: r.m.pettett@btinternet.com

Disposal Licence No. W38/U/0056

Waste Licence No. WSK/874227

GOODS

IN

OUT

TICKET NO.

IRON

5830

- 300kg Dirt

Total

5530 kg

CUSTOMER / SUPPLIER

DESCRIPTION OF GOODS

Cast
IRON

USER

REMARKS

DRIVER'S SIGNATURE

PRINT NAME

FOR OFFICE USE ONLY

ALFATICKET © Amethyst Print Associates

The Hazardous Waste Regulations 2005: Consignment Note - Non Fibrous

Project No:

171966

Customer:

Enquin



PART A Notification details

1 Shield Consignment Note code: **SHIELD/SIGOI**

2 The waste described below is to be removed from
(name, address, postcode, telephone, email, facsimile):

**Nambourgrove St, Fordwood
Mundel, BN18 9DX**

3 The waste will be taken to (name, address and postcode)

**Unit 6, Robisher Industrial
Centre, 151 DEZ**

4 The waste producer was (if different from 2)

**Shield Environmental Services Ltd, Shield House, Caxton Business Park,
Crown Way, Warmley, Bristol BS30 8XJ Tel: 0117 960 6366
Fax: 0117 960 6583 enquiries@shieldenvironmental.co.uk**

PART B Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: **ASBESTOS REMOVAL**

2 SIC 2007 for the process giving rise to the waste:

39.000

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code) (6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge, or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Cement	170605	1	Amphib		SOLID	HP5&HP7	1 bag

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing groups(s)	Special handling requirements
----------	--------------------------------	-------------------------	--------------	-------------------	----------------------------------

NOT APPLICABLE

EXEMPT CDG ROAD REGULATIONS - ADR SPECIAL PROVISION SP 165 APPLIES

PART C Carrier's certificate

PART D Consignor's certificate

If more than one carrier is used, please attach schedule for subsequent carriers.

If schedule of carriers is attached tick here ☐

I certify that I collected the consignment, and that the details in A2, A3 and B3
are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and
collection number are:

1

1 Carrier name:

On behalf of

As AA

2 Carrier registration

3 Vehicle registration

Signature

Date

Time

I certify that the information in A, B and C has been completed and is correct,
that the carrier is registered or exempt and was advised of the appropriate
precautionary measures. All of the waste is packaged and labelled correctly
and the carrier has been advised of any special handling requirements.

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

1 Consignor name:

On behalf of

As AA

Signature

Date

Time

PART E Consignee's certificate

Where more than one waste type is collected all of the information given below must be completed for each EWC

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted / rejected	Waste management operation (R or D code)
170605	10kg	A	D15

1 I received this waste at the address given in A3 on:

Date

Time

2 Vehicle registration no. (or mode of transport if not road):

H564OHF

3 Where waste is rejected please provide details:

I certify that waste permit/exempt waste operation number:

EPR/HB3308XU

authorises the management of the waste described in B at the address given in A3

Where the consignment forms part of a multiple collection,

as identified in Part C, I certify that the total number of

consignments forming the collection are:

1

Name

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

**Shield Environmental Services Ltd,
Buck Lane, Ramsey
SO51 9EZ
Tel: 02360 663 784**

Signature

Date

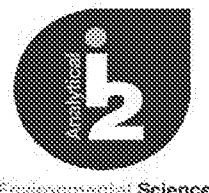
Time

APPENDIX F IMPORT DATA

IMPORTED MATERIALS SCHEDULE

Supplier	Invoice	Quarry Ticket / Ref	Date Material Supplied	Material Type	Quantity	Unit
GRS	1104163	83342716	16/06/2021	Type 1 Sub-Base	20.38	tonne
GRS	1104163	83344009	17/06/2021	Type 1 Sub-Base	19.9	tonne
GRS	1104163	83343189	16/06/2021	Type 1 Sub-Base	19.64	tonne
GRS	1104163	83351129	17/06/2021	Type 1 Sub-Base	19.32	tonne
GRS	1104163	83343015	16/06/2021	Type 1 Sub-Base	19.14	tonne
GRS	1104164	83423561	29/06/2021	Type 1 Sub-Base	19.8	tonne
GRS	1104164	83426435	29/06/2021	Type 1 Sub-Base	19.6	tonne
GRS	1104164	83428730	29/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104164	83422537	29/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104164	83434748	30/06/2021	Type 1 Sub-Base	19.35	tonne
GRS	1104164	83429974	29/06/2021	Type 1 Sub-Base	19.25	tonne
GRS	1104164	8346417	29/06/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104166	83617765	28/07/2021	Type 1 Sub-Base	19.18	tonne
GRS	1104167	83395055	24/06/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104720	83404268	25/06/2021	Type 1 Sub-Base	20.28	tonne
GRS	1104720	83404510	25/06/2021	Type 1 Sub-Base	19.8	tonne
GRS	1104720	83402616	25/06/2021	Type 1 Sub-Base	19.6	tonne
GRS	1104720	83404278	25/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104720	83402475	25/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104720	83397411	24/06/2021	Type 1 Sub-Base	19.2	tonne
GRS	1105989	83393375	24/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1105989	83398817	24/06/2021	Type 1 Sub-Base	19.3	tonne
GRS	1104715	83444209	01/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104715	83438735	30/06/2021	Type 1 Sub-Base	19.96	tonne
GRS	1104715	8343644	30/06/2021	Type 1 Sub-Base	19.96	tonne
GRS	1104715	83482995	07/07/2021	Type 1 Sub-Base	19.96	tonne
GRS	1104715	83442444	01/07/2021	Type 1 Sub-Base	19.96	tonne
GRS	1104715	83438486	30/06/2021	Type 1 Sub-Base	19.92	tonne
GRS	1104715	83474633	06/07/2021	Type 1 Sub-Base	19.7	tonne
GRS	1104715	83485621	07/07/2021	Type 1 Sub-Base	19.66	tonne
GRS	1104715	83483235	07/07/2021	Type 1 Sub-Base	19.5	tonne
GRS	1104715	83474464	06/07/2021	Type 1 Sub-Base	19.5	tonne
GRS	1104714	83473432	06/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104714	83472236	06/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104714	83471900	06/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104714	83464996	05/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104714	83462930	05/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104714	83443994	01/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104714	83481562	07/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104714	83468281	05/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104714	83464736	05/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104714	83446134	01/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104716	83473385	06/07/2021	Type 1 Sub-Base	19.5	tonne
GRS	1104716	83467416	05/07/2021	Type 1 Sub-Base	19.5	tonne
GRS	1104716	83467016	05/07/2021	Type 1 Sub-Base	19.5	tonne
GRS	1104716	83446327	01/07/2021	Type 1 Sub-Base	19.45	tonne
GRS	1104716	83438427	30/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104716	83436381	30/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104716	83432853	30/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104716	83424713	29/06/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104716	83444629	01/07/2021	Type 1 Sub-Base	19.4	tonne
GRS	1104716	83440056	06/07/2021	Type 1 Sub-Base	19.35	tonne
GRS	1104717	83446160	01/07/2021	Type 1 Sub-Base	19.35	tonne
GRS	1105987	83476223	06/07/2021	Type 1 Sub-Base	19.96	tonne
GRS	1104713	83516515	13/07/2021	Type 1 Sub-Base	20.28	tonne
GRS	1104713	83511429	12/07/2021	Type 1 Sub-Base	20.28	tonne
GRS	1104713	83470211	06/07/2021	Type 1 Sub-Base	20.17	tonne
GRS	1104713	83509992	12/07/2021	Type 1 Sub-Base	20.08	tonne
GRS	1104713	83467797	05/07/2021	Type 1 Sub-Base	20.05	tonne
GRS	1104713	83463405	05/07/2021	Type 1 Sub-Base	20.04	tonne
GRS	1104713	83486740	07/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104713	83486088	07/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104713	83476350	06/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104713	83474109	06/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104165	83629744	29/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104165	83616819	28/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104165	83633358	26/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104165	83634847	28/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104165	83620927	28/07/2021	Type 1 Sub-Base	19.98	tonne
GRS	1104165	82630732	29/07/2021	Type 1 Sub-Base	19.9	tonne
GRS	1104165	83635124	29/07/2021	Type 1 Sub-Base	19.24	tonne
GRS	1104165	83630491	29/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104165	83611815	27/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104165	83633628	26/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104718	83626148	29/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104718	83618899	28/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104718	83612141	27/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104718	83610181	27/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104718	83608649	27/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104718	83603393	26/07/2021	Type 1 Sub-Base	20	tonne
GRS	1104718	83624329	29/07/2021	Type 1 Sub-Base	19.9	tonne
GRS	1104718	83627037	29/07/2021	Type 1 Sub-Base	19.8	tonne
GRS	1104718	83614354	28/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1104718	83605562	27/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1104719	1755434	27/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1104719	83602529	26/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1104719	83616008	28/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104719	83610547	27/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104719	83607258	27/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104719	83603528	26/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104719	83600502	26/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1104719	83598324	26/07/2021	Type 1 Sub-Base	19.2	tonne
GRS	1105988	83629398	29/07/2021	Type 1 Sub-Base	20	tonne
GRS	1105988	83602283	24/07/2021	Type 1 Sub-Base	19.93	tonne
GRS	1105988	83625243	29/07/2021	Type 1 Sub-Base	19.7	tonne
GRS	1105988	83629170	29/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1105988	83621068	28/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1105988	83597518	26/07/2021	Type 1 Sub-Base	19.22	tonne
GRS	1105988	83619460	28/07/2021	Type 1 Sub-Base	19.2	tonne
Origin	SIN40979	SDN0045851	09/07/2021	Cement	27	tonne
Origin	SIN40980	SDN0045853	09/07/2021	Cement	27.14	tonne
Origin	SIN40981	SDN0045854	09/07/2021	Cement	27.16	tonne
Power Minerals	21301277	N/A	12/07/2021	PFA	156.42	tonne

APPENDIX G LABORATORY ANALYSIS



Steve Gronow
Celtic EnGlobe
Columbus House
Greenmeadow Springs
Tongwynlais
Cardiff
CF15 7NE

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

e: steve.gronow@celtic-ld.com

Analytical Report Number : 21-81374

Replaces Analytical Report Number: 21-81374, issue no. 1
Client references/information amended.

Project / Site name:	NGPH Arundel	Samples received on:	16/06/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	16/06/2021
Your order number:	81841	Analysis completed by:	08/07/2021
Report Issue Number:	2	Report issued on:	08/07/2021
Samples Analysed:	10 water samples		

Signature

Izabela Wójcik
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

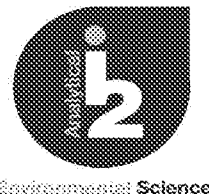
Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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

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

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

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



Analytical Report Number: 21-81374
Project / Site name: NGPH Arundel

Your Order No: 81841

Lab Sample Number	1904580	1904581	1904582	1904583	1904584
Sample Reference	BH201	BH202	BH203	BH204	BH101d
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	2.632
Depth (m)	2.454	2.495	2.305	2.497	None Supplied
Date Sampled	15/06/2021	15/06/2021	15/06/2021	15/06/2021	15/06/2021
Time Taken	1610	1620	1600	1540	1700
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.5	6.9	7.0	6.9	8.4
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	2500	1600	850	830	2600
Total Cyanide	µg/l	10	ISO 17025	530	940	15	48	590
Complex Cyanide	µg/l	10	ISO 17025	520	940	15	48	590
Free Cyanide	µg/l	10	ISO 17025	11	< 10	< 10	< 10	< 10
Sulphate as SO ₄	mg/l	0.045	ISO 17025	565	597	48.3	34.6	512
Sulphide	µg/l	5	NONE	10	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	130	66	65	63	170
Ammoniacal Nitrogen as NH ₄	µg/l	15	ISO 17025	270000*	12000	3100	1600	330000*
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	98.5	32.0	8.09	8.21	291
Total Suspended Solids	mg/l	2	ISO 17025	< 2.0	3.0	< 2.0	10	8.0

Phenols by HPLC

Catechol	µg/l	0.5	NONE	8400	< 0.5	< 0.5	< 0.5	21000
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	18000	< 0.5	< 0.5	< 0.5	63000
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	20000	< 0.5	< 0.5	< 0.5	120000
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

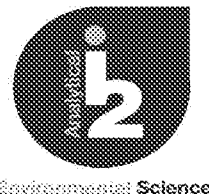
Total Phenols (HPLC)	µg/l	3.5	NONE	47000	< 3.5	< 3.5	< 3.5	200000
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	1930**	20.2	27.7	1.86	2850**
Acenaphthylene	µg/l	0.01	ISO 17025	42.9	8.01	1.72	1.46	237
Acenaphthene	µg/l	0.01	ISO 17025	12.0	1.88	9.35	19.0	9.67
Fluorene	µg/l	0.01	ISO 17025	23.5	2.37	3.90	3.15	30.6
Phenanthrene	µg/l	0.01	ISO 17025	18.0	1.45	2.39	2.10	18.0
Anthracene	µg/l	0.01	ISO 17025	3.62	0.37	0.28	0.27	2.13
Fluoranthene	µg/l	0.01	ISO 17025	1.76	0.35	0.30	0.94	1.34
Pyrene	µg/l	0.01	ISO 17025	0.96	0.22	0.17	1.09	0.79
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	2030	34.8	45.8	29.8	3140
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Analytical Report Number: 21-81374
Project / Site name: NGPH Arundel

Your Order No: 81841

Lab Sample Number	1904580	1904581	1904582	1904583	1904584
Sample Reference	BH201	BH202	BH203	BH204	BH101d
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	2.632
Depth (m)	2.454	2.495	2.305	2.497	None Supplied
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Time Taken	1610	1620	1600	1540	1700
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.35	0.41	0.018	0.073	0.34
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Arsenic (dissolved)	µg/l	0.15	ISO 17025	33.6	1.39	0.64	3.01	43.5
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.02	< 0.02	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	5.5	3.8	2.2	2.6	9.8
Copper (dissolved)	µg/l	0.5	ISO 17025	2.7	7.0	4.5	7.8	3.2
Lead (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2	0.6	0.5	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	8.1	23	3.7	3.4	9.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	3.6	4.3	1.2	1.4	6.7
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.2	14	11	4.6	5.2

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	4750	159	< 1.0	69.2	28400
Toluene	µg/l	1	ISO 17025	2340	7.1	< 1.0	3.6	10900
Ethylbenzene	µg/l	1	ISO 17025	15.9	< 1.0	< 1.0	< 1.0	277
p & m-xylene	µg/l	1	ISO 17025	1480	27.7	4.4	12.1	2410
o-xylene	µg/l	1	ISO 17025	525	30.1	23.7	17.7	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

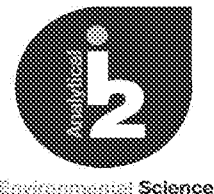
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	4800	160	< 1.0	69	28000
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	2300	7.1	< 1.0	3.6	11000
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	2400	69	38	68	4100
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1900	21	30	< 10	2800
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1300	160	150	290	3000
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	25	< 10	< 10	< 10	23
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	13000	420	220	430	49000

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

* Result was reported from high dilution and should be interpreted with care

**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.



Analytical Report Number: 21-81374
Project / Site name: NGPH Arundel

Your Order No: 81841

Lab Sample Number	1904585	1904586	1904587	1904588	1904589
Sample Reference	BH102	BH104	BH105	BH101s	BH105a
Sample Number	None Supplied	None Supplied	None Supplied	2.792	None Supplied
Depth (m)	2.210	1.495	1.375	None Supplied	1.375
Date Sampled	15/06/2021	15/06/2021	15/06/2021	15/06/2021	15/06/2021
Time Taken	1520	1440	1500	1720	1500
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.1	7.1	7.1	6.8	7.1
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	760	760	1200	3100	1200
Total Cyanide	µg/l	10	ISO 17025	< 10	30	330	360	350
Complex Cyanide	µg/l	10	ISO 17025	< 10	30	330	360	350
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO ₄	mg/l	0.045	ISO 17025	34.7	43.7	300	994	301
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	65	57	57	43	59
Ammoniacal Nitrogen as NH ₄	µg/l	15	ISO 17025	18	53	57000	250000*	55000
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	2.18	6.40	8.32	45.2	8.08
Total Suspended Solids	mg/l	2	ISO 17025	< 2.0	3.0	420	13	500

Phenols by HPLC

Catechol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

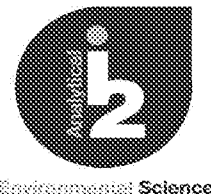
Total Phenols (HPLC)	µg/l	3.5	NONE	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	0.93	3.24	2.65
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	17.2	0.22
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	2.62	10.3	3.55
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	23.0	0.25
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	6.66	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	7.09	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	8.40	0.52
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	5.98	0.38
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	3.55	81.9	7.57
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Analytical Report Number: 21-81374
Project / Site name: NGPH Arundel

Your Order No: 81841

Lab Sample Number	1904585	1904586	1904587	1904588	1904589
Sample Reference	BH102	BH104	BH105	BH101s	BH105a
Sample Number	None Supplied	None Supplied	None Supplied	2.792	None Supplied
Depth (m)	2.210	1.495	1.375	None Supplied	1.375
Date Sampled	15/06/2021	15/06/2021	15/06/2021	15/06/2021	15/06/2021
Time Taken	1520	1440	1500	1720	1500
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.005	0.021	0.18	0.37	0.18
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Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.29	0.29	2.21	4.97	2.15
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.3	2.8	1.9	5.7	2.5
Copper (dissolved)	µg/l	0.5	ISO 17025	5.7	4.6	2.0	3.3	2.0
Lead (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.1	2.1	6.2	3.5	6.9
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.5	1.9	< 0.6	7.0	0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	19	6.5	5.3	8.0	3.8

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	1380	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	38.9	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	150	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	139	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	1400	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	39	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	340	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	1100	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	30	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	2900	< 10

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

* Result was reported from high dilution and should be interpreted with care

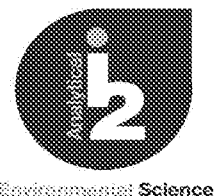
**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.



Analytical Report Number : 21-81374
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Phenols, speciated, in water, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	NONE
Complex cyanide in water	Determination of complex cyanide by calculation. Accredited matrices SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L029-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total organic carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR analyser. Accredited matrices: SW PW GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025



Analytical Report Number : 21-81374
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Steve Gronow
Celtic EnGlobe
Columbus House
Greenmeadow Springs
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i2 Analytical Ltd.
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Watford,
Herts,
WD18 8YS

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Analytical Report Number : 21-82127

Project / Site name:	NGPH Arundel	Samples received on:	21/06/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	21/06/2021
Your order number:	81849	Analysis completed by:	28/06/2021
Report Issue Number:	1	Report issued on:	28/06/2021
Samples Analysed:	4 soil samples		

Zina Abdul Razzak
Senior Quality Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 21-82127
Project / Site name: NGPH Arundel
Your Order No: 81849

Lab Sample Number				1909905	1909906	1909907	1909908
Sample Reference				F4 NE	F4 re-use	Tarmac 1	GRS6F5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.70	None Supplied	None Supplied	None Supplied
Date Sampled				16/06/2021	16/06/2021	17/06/2021	17/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.9	11	3.0	2.8
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.1	1.5

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

pH - Automated	pH Units	N/A	MCERTS	8.1	8.3	-	8.7
Electrical Conductivity	µS/cm	10	ISO 17025	220	160	-	210
Total Cyanide	mg/kg	1	MCERTS	5.6	8.2	-	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	5.6	8.2	-	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	430	100	-	160
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivale	g/l	0.00125	MCERTS	0.21	0.051	-	0.082
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivale	mg/l	1.25	MCERTS	214	51.1	-	81.7
Sulphide	mg/kg	1	MCERTS	< 1.0	13	-	190
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	3.1	12	-	47
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	-	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.0	3.1	-	0.1

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	-	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	-	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	-	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	-	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	-	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	-	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	-	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	-	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	-	< 1.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.88	1.1	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	5.5	3.6	5.7	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.58	0.72	39	< 0.05
Fluorene	mg/kg	0.05	MCERTS	2.7	2.2	50	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	20	23	710	0.31
Anthracene	mg/kg	0.05	MCERTS	8.4	9.6	180	0.20
Fluoranthene	mg/kg	0.05	MCERTS	60	59	1200	0.53
Pyrene	mg/kg	0.05	MCERTS	49	49	760	0.42
Benzo(a)anthracene	mg/kg	0.05	MCERTS	50	45	640	0.48
Chrysene	mg/kg	0.05	MCERTS	27	32	470	0.32
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	36	39	500	0.32
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	11	13	220	0.13
Benzo(a)pyrene	mg/kg	0.05	MCERTS	26	29	380	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	12	14	200	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	5.3	4.2	64	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	11	13	200	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	324	337	5570	3.00
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Analytical Report Number: 21-82127
Project / Site name: NGPH Arundel
Your Order No: 81849

Lab Sample Number				1909905	1909906	1909907	1909908
Sample Reference				F4 NE	F4 re-use	Tarmac 1	GRS6F5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-0.70	None Supplied	None Supplied	None Supplied
Date Sampled				16/06/2021	16/06/2021	17/06/2021	17/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	20	-	38
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	3.9
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	22	-	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	40	-	2.3
Iron (aqua regia extractable)	mg/kg	40	MCERTS	30000	29000	-	6300
Lead (aqua regia extractable)	mg/kg	1	MCERTS	98	270	-	300
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	22	-	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	100	-	470

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	9.5	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	13	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	13	-	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	37	-	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	3.8	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	21	19	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	220	160	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	410	340	-	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	650	530	-	< 10

Miscellaneous Organics

Coal Tar		N/A	NONE	-	-	Not Identified	-
Total Residue	mg/kg	10	NONE	-	-	57000	-

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

Analytical Report Number : 21-82127

Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1909905	F4 NE	None Supplied	0.70-0.70	Brown loam and clay with gravel and vegetation.
1909906	F4 re-use	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1909907	Tarmac 1	None Supplied	None Supplied	Brown loam and gravel with vegetation.
1909908	GRS6F5	None Supplied	None Supplied	Brown clay and loam with gravel.

Analytical Report Number : 21-82127
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-82127

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Coal Tar in Soil	DCM Extraction with qualitative interpretation via GC/MS	In-house method	L064-PL	D	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 21-83514

Project / Site name:	NGPH Arondel	Samples received on:	25/06/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	25/06/2021
Your order number:	81861	Analysis completed by:	02/07/2021
Report Issue Number:	1	Report issued on:	02/07/2021
Samples Analysed:	8 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 21-83514
Project / Site name: NGPH Arondel
Your Order No: 81861

Lab Sample Number				1918032	1918033	1918034	1918035	1918036
Sample Reference				D6 Reuse	D7 Reuse	E6 Reuse	E7 Reuse	D6 NW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	0.50
Date Sampled				24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	13	14	10	16
Total mass of sample received	kg	0.001	NONE	1.4	1.0	1.3	1.3	1.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	8.2	7.9	8.2	8.0
Electrical Conductivity	µS/cm	10	ISO 17025	590	310	660	150	240
Total Cyanide	mg/kg	1	MCERTS	21	21	14	23	4.6
Complex Cyanide	mg/kg	1	MCERTS	21	21	14	23	4.6
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1400	620	1400	110	180
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.71	0.31	0.72	0.053	0.092
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	711	312	722	53.1	92.1
Sulphide	mg/kg	1	MCERTS	5.2	1.7	7.4	1.6	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	6.6	4.8	5.1	4.1	6.7
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.1	1.4	1.2	0.9	1.5

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-83514
Project / Site name: NGPH Arondel
Your Order No: 81861

Lab Sample Number				1918032	1918033	1918034	1918035	1918036
Sample Reference				D6 Reuse	D7 Reuse	E6 Reuse	E7 Reuse	D6 NW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	0.50
Date Sampled				24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.31	0.43	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.93	1.2	0.92	0.54	1.2
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.51	0.68	0.60	0.31	0.44
Phenanthrene	mg/kg	0.05	MCERTS	2.8	5.7	5.5	3.0	3.0
Anthracene	mg/kg	0.05	MCERTS	1.4	2.1	2.0	0.96	1.0
Fluoranthene	mg/kg	0.05	MCERTS	7.7	15	13	6.5	8.8
Pyrene	mg/kg	0.05	MCERTS	7.0	12	11	5.6	8.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.0	11	8.2	4.7	6.5
Chrysene	mg/kg	0.05	MCERTS	3.1	6.4	4.7	2.7	4.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	6.6	14	11	5.6	7.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	3.1	2.0	2.4	3.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.6	9.9	7.4	4.8	6.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.9	5.6	4.1	3.0	4.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.79	1.8	1.2	0.88	1.3
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.1	6.1	4.4	3.5	4.9

Total PAHs

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	47.8	93.9	75.5	44.3	61.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	22	17	17	20
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	24	23	29	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	44	69	43	30	58
Iron (aqua regia extractable)	mg/kg	40	MCERTS	31000	30000	23000	27000	30000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	610	140	81	550
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	22	19	21	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.7	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	95	150	110	100	120

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-83514

Project / Site name: NGPH Arondel

Your Order No: 81861

Lab Sample Number				1918032	1918033	1918034	1918035	1918036
Sample Reference				D6 Reuse	D7 Reuse	E6 Reuse	E7 Reuse	D6 NW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	0.50
Date Sampled				24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	12	18	5.1	4.6	38
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	43	65	42	23	130
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	63	110	81	45	250
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	120	190	130	72	410

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

Analytical Report Number: 21-83514
Project / Site name: NGPH Arondel
Your Order No: 81861

Lab Sample Number				1918037	1918038	1918039
Sample Reference				E6 NW	E6 NE	E7 NE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50
Date Sampled				24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	14	11
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	7.7	7.6
Electrical Conductivity	µS/cm	10	ISO 17025	1000	760	770
Total Cyanide	mg/kg	1	MCERTS	19	20	33
Complex Cyanide	mg/kg	1	MCERTS	19	20	33
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1700	1000	2500
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.84	0.51	1.3
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	844	513	1260
Sulphide	mg/kg	1	MCERTS	21	1.1	8.9
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	13	9.5	5.0
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	0.6	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.4	1.2	1.4

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-83514
Project / Site name: NGPH Arondel
Your Order No: 81861

Lab Sample Number				1918037	1918038	1918039
Sample Reference				E6 NW	E6 NE	E7 NE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50
Date Sampled				24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.33
Acenaphthylene	mg/kg	0.05	MCERTS	1.0	0.35	0.86
Acenaphthene	mg/kg	0.05	MCERTS	0.22	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	1.0	< 0.05	0.37
Phenanthrene	mg/kg	0.05	MCERTS	8.3	1.4	4.2
Anthracene	mg/kg	0.05	MCERTS	2.5	0.66	1.6
Fluoranthene	mg/kg	0.05	MCERTS	13	3.7	11
Pyrene	mg/kg	0.05	MCERTS	11	3.3	9.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	8.5	2.5	7.4
Chrysene	mg/kg	0.05	MCERTS	4.8	1.9	4.6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	6.8	2.5	10
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.3	1.3	2.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.3	2.2	7.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.6	1.3	4.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.1	0.41	1.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.0	1.5	4.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	71.9	23.0	69.5
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	16	17
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	27	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	52	46	52
Iron (aqua regia extractable)	mg/kg	40	MCERTS	24000	23000	22000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	190	110	160
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	19	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	97	110

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-83514
Project / Site name: NGPH Arondel
Your Order No: 81861

Lab Sample Number				1918037	1918038	1918039
Sample Reference				E6 NW	E6 NE	E7 NE
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50
Date Sampled				24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status			
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	4.1	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	54	14	5.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	280	83	35
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	390	150	64
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	740	250	100

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



Analytical Report Number: 21-83514
Project / Site name: NGPH Arondel
Your Order No: 81861

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1918033	D7 Reuse		169	Loose Fibres	Chrysotile & Amosite	< 0.001	< 0.001

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

Analytical Report Number : 21-83514

Project / Site name: NGPH Arondel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1918032	D6 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1918033	D7 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1918034	E6 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and chalk.
1918035	E7 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1918036	D6 NW	None Supplied	0.5	Brown clay and loam with gravel.
1918037	E6 NW	None Supplied	0.5	Brown clay and loam with gravel.
1918038	E6 NE	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1918039	E7 NE	None Supplied	0.5	Brown clay and loam with gravel.

Analytical Report Number : 21-83514

Project / Site name: NGPH Arondel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-83514

Project / Site name: NGPH Arondel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Steve Gronow

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Analytical Report Number : 21-85007

Project / Site name:	NGPH Arundel	Samples received on:	02/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	05/07/2021
Your order number:	81892	Analysis completed by:	12/07/2021
Report Issue Number:	1	Report issued on:	12/07/2021
Samples Analysed:	15 soil samples		

Signed

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

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

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

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

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

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

Analytical Report Number: 21-85007
 Project / Site name: NGPH Arundel
 Your Order No: 81892

Lab Sample Number				1926979	1926980	1926981	1926982	1926983
Sample Reference				A6 NW	B6 NW	C6 NW	A8 SE	B8 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	14	15	14	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.3	1.2

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

pH - Automated	pH Units	N/A	MCERTS	8.2	8.1	8.2	8.3	8.3
Electrical Conductivity	µS/cm	10	ISO 17025	68	80	210	68	79
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	16	22	26	19	20
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0078	0.011	0.013	0.0097	0.010
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	7.8	10.8	13.1	9.7	10.0
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	2.4	< 1.0	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	4.1	3.3	3.7	2.6	4.0
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.0	1.4	1.4	1.4	1.4

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85007

Project / Site name: NGPH Arundel

Your Order No: 81892

Lab Sample Number				1926979	1926980	1926981	1926982	1926983
Sample Reference				A6 NW	B6 NW	C6 NW	A8 SE	B8 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.57	0.38	0.68	0.49	0.33
Anthracene	mg/kg	0.05	MCERTS	0.23	0.15	0.22	0.20	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.98	0.95	1.1	1.5	0.68
Pyrene	mg/kg	0.05	MCERTS	0.89	0.94	1.0	1.4	0.66
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.84	0.87	0.64	1.6	0.53
Chrysene	mg/kg	0.05	MCERTS	0.85	0.91	0.99	1.6	0.69
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1	0.91	0.85	2.0	0.91
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.42	0.55	0.49	0.74	0.31
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.0	0.86	0.77	1.6	0.78
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.46	0.40	0.40	0.71	0.44
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.30	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.55	0.50	0.50	0.77	0.56

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	7.91	7.42	7.66	12.8	5.89
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	16	17	16	14
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	21	22	21	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	42	42	46	44
Iron (aqua regia extractable)	mg/kg	40	MCERTS	29000	30000	25000	27000	24000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	630	200	220	210	200
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	< 0.3	0.6	< 0.3	0.8
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	22	17	18	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	83	78	77	76

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85007
 Project / Site name: NGPH Arundel
 Your Order No: 81892

Lab Sample Number				1926979	1926980	1926981	1926982	1926983
Sample Reference				A6 NW	B6 NW	C6 NW	A8 SE	B8 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	6.0	< 2.0	< 2.0	< 2.0	2.8
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	< 10	16	< 10	< 10	< 10
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	20	34	19	24	15
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	33	50	28	33	24

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

Analytical Report Number: 21-85007
 Project / Site name: NGPH Arundel
 Your Order No: 81892

Lab Sample Number				1926984	1926985	1926986	1926987	1926988
Sample Reference				C8 SE	A6 SW	A7 SW	A8 SW	A6 Reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	None Supplied
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	12	10	11	14
Total mass of sample received	kg	0.001	NONE	1.2	1.1	1.1	1.0	1.1

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

pH - Automated	pH Units	N/A	MCERTS	8.2	8.1	9.1	8.1	8.3
Electrical Conductivity	µS/cm	10	ISO 17025	52	200	420	180	140
Total Cyanide	mg/kg	1	MCERTS	1.0	< 1.0	9.7	8.1	9.8
Complex Cyanide	mg/kg	1	MCERTS	1.0	< 1.0	9.7	8.1	9.8
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	16	18	430	340	300
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0079	0.0088	0.21	0.17	0.15
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	7.9	8.8	213	168	150
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	3.2	1.9	6.7
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	2.6	2.2	12	10	8.2
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	0.6
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.3	1.3	1.9	1.7	1.9

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85007

Project / Site name: NGPH Arundel

Your Order No: 81892

Lab Sample Number				1926984	1926985	1926986	1926987	1926988
Sample Reference				C8 SE	A6 SW	A7 SW	A8 SW	A6 Reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	None Supplied
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Speciated PAHs								
Naphthalene				mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene				mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene				mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene				mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene				mg/kg	0.05	MCERTS	0.83	0.40
Anthracene				mg/kg	0.05	MCERTS	0.26	< 0.05
Fluoranthene				mg/kg	0.05	MCERTS	2.1	1.0
Pyrene				mg/kg	0.05	MCERTS	1.8	0.94
Benzo(a)anthracene				mg/kg	0.05	MCERTS	1.1	0.61
Chrysene				mg/kg	0.05	MCERTS	1.4	0.69
Benzo(b)fluoranthene				mg/kg	0.05	MCERTS	1.5	0.78
Benzo(k)fluoranthene				mg/kg	0.05	MCERTS	0.81	0.43
Benzo(a)pyrene				mg/kg	0.05	MCERTS	1.3	0.77
Indeno(1,2,3-cd)pyrene				mg/kg	0.05	MCERTS	0.81	0.39
Dibenz(a,h)anthracene				mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene				mg/kg	0.05	MCERTS	0.93	0.46

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	12.9	6.50	103	81.0	90.6
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	15	15	12	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	20	21	17	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	46	37	27	24	30
Iron (aqua regia extractable)	mg/kg	40	MCERTS	26000	25000	26000	19000	32000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210	170	98	110	110
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.1	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	16	15	12	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	79	72	84	79	99

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85007
 Project / Site name: NGPH Arundel
 Your Order No: 81892

Lab Sample Number				1926984	1926985	1926986	1926987	1926988
Sample Reference				C8 SE	A6 SW	A7 SW	A8 SW	A6 Reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	None Supplied
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	4.7
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	10	8.4	12
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	10	< 10	70	63	51
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	23	19	150	140	110
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	33	27	230	210	180

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

Analytical Report Number: 21-85007

Project / Site name: NGPH Arundel

Your Order No: 81892

Lab Sample Number				1926989	1926990	1926991	1926992	1926993
Sample Reference				A7 Reuse	A8 Reuse	B6 Reuse	B7 Reuse	B8 Reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	12	15	13	14
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.2

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

pH - Automated	pH Units	N/A	MCERTS	8.3	8.2	8.3	8.3	8.7
Electrical Conductivity	µS/cm	10	ISO 17025	150	200	370	200	140
Total Cyanide	mg/kg	1	MCERTS	18	15	12	9.1	9.9
Complex Cyanide	mg/kg	1	MCERTS	18	15	12	9.1	9.9
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	330	340	340	350	380
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.16	0.17	0.17	0.18	0.19
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	163	170	168	177	188
Sulphide	mg/kg	1	MCERTS	18	4.8	7.7	14	5.5
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	15	13	8.1	6.6	13
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.7	1.8	1.9	1.9	2.2

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85007

Project / Site name: NGPH Arundel

Your Order No: 81892

Lab Sample Number				1926989	1926990	1926991	1926992	1926993
Sample Reference				A7 Reuse	A8 Reuse	B6 Reuse	B7 Reuse	B8 Reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.88	0.73	0.64	0.82	0.93
Acenaphthene	mg/kg	0.05	MCERTS	0.34	< 0.05	< 0.05	0.27	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.58	0.42	0.28	0.44	0.42
Phenanthrene	mg/kg	0.05	MCERTS	6.2	4.1	2.9	4.8	5.1
Anthracene	mg/kg	0.05	MCERTS	2.0	2.1	1.2	1.7	1.9
Fluoranthene	mg/kg	0.05	MCERTS	15	13	8.9	13	18
Pyrene	mg/kg	0.05	MCERTS	14	11	8.2	12	16
Benzo(a)anthracene	mg/kg	0.05	MCERTS	11	7.5	5.8	8.8	12
Chrysene	mg/kg	0.05	MCERTS	7.5	5.8	4.0	6.7	7.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	13	11	8.2	11	14
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	4.5	2.6	2.6	3.3	5.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	12	8.6	6.6	9.6	12
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5.8	4.8	4.0	5.3	6.7
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.7	1.3	1.2	1.6	2.0
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	6.7	5.4	4.5	6.0	7.5

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	101	78.4	59.0	85.5	108
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	16	14	15	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	22	23	22	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	23	26	24	38
Iron (aqua regia extractable)	mg/kg	40	MCERTS	26000	26000	27000	29000	27000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	77	89	98	91	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	16	17	16	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86	92	94	89	97

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85007
 Project / Site name: NGPH Arundel
 Your Order No: 81892

Lab Sample Number				1926989	1926990	1926991	1926992	1926993
Sample Reference				A7 Reuse	A8 Reuse	B6 Reuse	B7 Reuse	B8 Reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	5.4	8.2	5.4	4.5	< 2.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	15	10	8.9	< 8.0
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	24	36	32	26	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	37	59	47	39	< 10
TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	13	8.9	9.7	11	7.3
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	83	51	54	62	58
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	180	110	130	160	130
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	270	170	190	230	200

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

Analytical Report Number : 21-85007

Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1926979	A6 NW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926980	B6 NW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926981	C6 NW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926982	A8 SE	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926983	B8 SE	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926984	C8 SE	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926985	A6 SW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926986	A7 SW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926987	A8 SW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1926988	A6 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1926989	A7 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1926990	A8 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1926991	B6 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1926992	B7 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1926993	B8 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-85007

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

Analytical Report Number : 21-85007

Project / Site name: NGPH Arundel

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

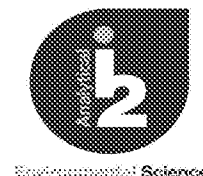
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

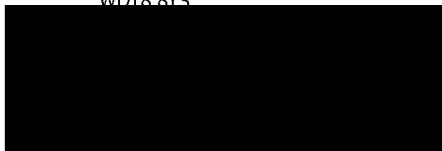
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



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Analytical Report Number : 21-85251

Project / Site name:	NGPH Arundel	Samples received on:	06/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	06/07/2021
Your order number:	81914	Analysis completed by:	13/07/2021
Report Issue Number:	1	Report issued on:	13/07/2021
Samples Analysed:	15 soil samples		

Signed:

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

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

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

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

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

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

Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928531	1928532	1928533	1928534	1928535
Sample Reference				C6 Reuse	C7 Reuse	C8 Reuse	A1 SW	A2 SW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	0.60	0.60
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	14	14	13	10
Total mass of sample received	kg	0.001	NONE	1.3	0.90	1.1	1.1	1.3

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

pH - Automated	pH Units	N/A	MCERTS	9.0	8.3	8.4	8.0	7.8
Electrical Conductivity	µS/cm	10	ISO 17025	290	330	280	54	130
Total Cyanide	mg/kg	1	MCERTS	21	12	6.7	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	21	12	6.7	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	330	360	200	8.5	11
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.16	0.18	0.098	0.0042	0.0056
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	163	180	97.5	4.2	5.6
Sulphide	mg/kg	1	MCERTS	3.5	4.0	3.3	< 1.0	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	9.9	10	8.4	7.2	1.9
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.8	2.2	1.7	0.2	0.3

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number	1928531	1928532	1928533	1928534	1928535
Sample Reference	C6 Reuse	C7 Reuse	C8 Reuse	A1 SW	A2 SW
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	0.60	0.60
Date Sampled	05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	1.1	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	1.1	2.5	1.1	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.36	0.79	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.57	3.1	0.41	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.0	33	3.8	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	2.3	11	1.5	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	19	55	14	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	17	45	12	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	11	25	7.9	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	7.5	19	5.8	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	15	31	11	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	5.2	8.6	3.9	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	13	25	9.1	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.5	13	5.1	< 0.05	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	1.8	3.4	1.5	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.4	15	5.8	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	113	293	82.4	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	13	13	15	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	19	17	36	34
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	31	28	24	24
Iron (aqua regia extractable)	mg/kg	40	MCERTS	22000	22000	23000	39000	43000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	99	97	85	16	19
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	14	13	25	26
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	87	89	85	60	59

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928531	1928532	1928533	1928534	1928535
Sample Reference				C6 Reuse	C7 Reuse	C8 Reuse	A1 SW	A2 SW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	0.60	0.60
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	5.7	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	14	15	12	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	65	150	75	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	110	170	140	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	190	340	230	< 10	< 10

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

Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928536	1928537	1928538	1928539	1928540
Sample Reference				A3 SW	A4 SW	A5 SW	Type 1 Cap 1	Type 1 Cap 2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.60	0.60	None Supplied	None Supplied
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	15	13	1.9	3.5
Total mass of sample received	kg	0.001	NONE	1.2	2.0	1.4	2.0	1.4

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

pH - Automated	pH Units	N/A	MCERTS	8.0	8.1	8.0	9.1	9.1
Electrical Conductivity	µS/cm	10	ISO 17025	140	170	150	130	150
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	25	17	17	56	67
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.013	0.0083	0.0086	0.028	0.034
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	12.7	8.3	8.6	28.2	33.5
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	2.8	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	3.6	2.9	2.3	6.9	5.9
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.4	0.9	0.9	0.1	< 0.1

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928536	1928537	1928538	1928539	1928540
Sample Reference				A3 SW	A4 SW	A5 SW	Type 1 Cap 1	Type 1 Cap 2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.60	0.60	None Supplied	None Supplied
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.69	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.4	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.9	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.2	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.4	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.2	< 0.05	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.49	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.3	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	16.2	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	11	10	2.4	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	20	22	12	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	30	32	10	4.3
Iron (aqua regia extractable)	mg/kg	40	MCERTS	43000	22000	23000	11000	14000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	55	82	5.9	6.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	12	14	7.5	8.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	60	50	54	45	44
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928536	1928537	1928538	1928539	1928540
Sample Reference				A3 SW	A4 SW	A5 SW	Type 1 Cap 1	Type 1 Cap 2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.60	0.60	None Supplied	None Supplied
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	14	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	19	< 10	< 10

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

Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928541	1928542	1928543	1928544	1928545
Sample Reference				Type 1 Cap 3	Type 1 Cap 4	Type 1 Cap 5	Type 1 Cap 6	Type 1 Cap 7
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4.1	4.0	2.5	1.6	3.4
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0

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

pH - Automated	pH Units	N/A	MCERTS	9.1	9.2	9.1	9.2	9.0
Electrical Conductivity	µS/cm	10	ISO 17025	170	160	160	150	160
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	79	79	61	55	75
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.040	0.040	0.031	0.028	0.038
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	39.6	39.7	30.6	27.7	37.7
Sulphide	mg/kg	1	MCERTS	1.6	2.0	6.5	8.0	3.6
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	9.3	7.9	5.7	5.9	7.6
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	< 0.1	0.1	0.1	0.1	0.2

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928541	1928542	1928543	1928544	1928545
Sample Reference				Type 1 Cap 3	Type 1 Cap 4	Type 1 Cap 5	Type 1 Cap 6	Type 1 Cap 7
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

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

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.3	1.6	2.4	2.8	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	11	9.5	12	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	10	11	8.0	6.5	7.9
Iron (aqua regia extractable)	mg/kg	40	MCERTS	11000	15000	11000	13000	13000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	6.4	5.6	7.0	7.7
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.1	8.4	7.0	8.7	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	43	44	40	43	42

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85251
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1928541	1928542	1928543	1928544	1928545
Sample Reference				Type 1 Cap 3	Type 1 Cap 4	Type 1 Cap 5	Type 1 Cap 6	Type 1 Cap 7
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				05/07/2021	05/07/2021	05/07/2021	05/07/2021	05/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

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

Analytical Report Number : 21-85251

Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1928531	C6 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1928532	C7 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1928533	C8 Reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1928534	A1 SW	None Supplied	0.6	Brown clay and sand with gravel.
1928535	A2 SW	None Supplied	0.6	Brown clay and sand with gravel.
1928536	A3 SW	None Supplied	0.6	Brown clay and sand with gravel.
1928537	A4 SW	None Supplied	0.6	Brown clay and loam with gravel.
1928538	A5 SW	None Supplied	0.6	Brown clay and loam with gravel.
1928539	Type 1 Cap 1	None Supplied	None Supplied	Brown loam with gravel.
1928540	Type 1 Cap 2	None Supplied	None Supplied	Brown loam with gravel.
1928541	Type 1 Cap 3	None Supplied	None Supplied	Brown loam with gravel.
1928542	Type 1 Cap 4	None Supplied	None Supplied	Brown loam with gravel.
1928543	Type 1 Cap 5	None Supplied	None Supplied	Brown loam with gravel.
1928544	Type 1 Cap 6	None Supplied	None Supplied	Brown loam with gravel.
1928545	Type 1 Cap 7	None Supplied	None Supplied	Brown loam with gravel.

Analytical Report Number : 21-85251
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-85251
Project / Site name: NGPH Arundel

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

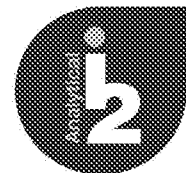
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



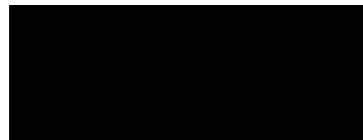
Environmental Science

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Analytical Report Number : 21-85610

Project / Site name:	NGPH Arundel	Samples received on:	07/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	07/07/2021
Your order number:	81914	Analysis completed by:	15/07/2021
Report Issue Number:	1	Report issued on:	15/07/2021
Samples Analysed:	9 water samples		

Signed



Izabela Wójcik
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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



Analytical Report Number: 21-85610
Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1930710	1930711	1930712	1930713	1930714
Sample Reference				BH201	BH202	BH203	BH204	BH101s
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.39	2.46	2.49	2.48	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				1440	1530	1610	1700	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

	pH Units	N/A	ISO 17025	7.4	7.1	7.2	7.2	6.9
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	2000	1300	790	600	2700
Total Cyanide	µg/l	10	ISO 17025	370	800	24	150	7300
Complex Cyanide	µg/l	10	ISO 17025	370	770	24	150	7200
Free Cyanide	µg/l	10	ISO 17025	< 10	31	< 10	< 10	32
Sulphate as SO ₄	mg/l	0.045	ISO 17025	496	402	55.1	55.2	794
Sulphide	µg/l	5	NONE	200	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	90	33	59	36	28
Ammoniacal Nitrogen as NH ₄	µg/l	15	ISO 17025	200000**	580	4300	410	100000**
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	42.2	25.2	10.7	10.2	38.6
Total Suspended Solids	mg/l	2	ISO 17025	6.0	< 2.0	5.0	34	17

Phenols by HPLC

	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Catechol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	5400	< 0.5	< 0.5	< 0.5	< 0.5
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	4100	< 0.5	< 0.5	< 0.5	< 0.5
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

Total Phenols (HPLC)	µg/l	3.5	NONE	9600	< 3.5	< 3.5	< 3.5	< 3.5
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	2.93	1.00	40.1	0.93	39.0
Acenaphthylene	µg/l	0.01	ISO 17025	17.9	0.50	2.35	< 0.01	13.0
Acenaphthene	µg/l	0.01	ISO 17025	21.6	< 0.01	12.5	1.13	5.35
Fluorene	µg/l	0.01	ISO 17025	26.6	< 0.01	5.22	< 0.01	11.3
Phenanthrene	µg/l	0.01	ISO 17025	2.66	< 0.01	4.04	< 0.01	6.29
Anthracene	µg/l	0.01	ISO 17025	4.00	0.25	0.50	< 0.01	5.36
Fluoranthene	µg/l	0.01	ISO 17025	2.60	0.22	0.47	0.26	11.1
Pyrene	µg/l	0.01	ISO 17025	1.26	< 0.01	0.26	0.18	8.53
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	0.22	< 0.01	< 0.01	2.83
Chrysene	µg/l	0.01	ISO 17025	< 0.01	0.21	< 0.01	< 0.01	1.79
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.29	< 0.01	< 0.01	1.80
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	0.31	< 0.01	< 0.01	0.89
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	0.27	< 0.01	< 0.01	1.57
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	0.29	< 0.01	< 0.01	0.56
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	0.28	< 0.01	< 0.01	0.22
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	0.29	< 0.01	< 0.01	0.53

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	79.5	4.13	65.4	2.50	110
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Analytical Report Number: 21-85610

Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1930710	1930711	1930712	1930713	1930714
Sample Reference				BH201	BH202	BH203	BH204	BH101s
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.39	2.46	2.49	2.48	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				1440	1530	1610	1700	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.26	0.43	0.078	0.099	3.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	18.3	1.04	0.79	1.37	3.12
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.04	< 0.02	0.06	0.03
Chromium (dissolved)	µg/l	0.2	ISO 17025	6.8	5.8	4.7	4.5	7.2
Copper (dissolved)	µg/l	0.5	ISO 17025	2.0	13	2.8	8.2	6.8
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.2	< 0.2	0.4	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.3	21	3.8	5.6	7.1
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.7	2.8	1.1	1.5	6.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.5	18	10	10	8.4

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	2710	< 1.0	211	< 1.0	454
Toluene	µg/l	1	ISO 17025	1130	< 1.0	10.8	< 1.0	51.3
Ethylbenzene	µg/l	1	ISO 17025	25.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	871	< 1.0	6.8	< 1.0	30.6
o-xylene	µg/l	1	ISO 17025	270	< 1.0	17.6	< 1.0	32.1
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sum of BTEX	µg/l	7	ISO 17025	-	-	-	-	-
Sum of m, p & o-Xylene	µg/l	2	ISO 17025	-	-	-	-	-
Sum of m, p & o-Xylene	mg/l	0.002	NONE	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	2700	< 1.0	210	< 1.0	450
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	1100	< 1.0	11	< 1.0	51
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	1400	< 1.0	37	< 1.0	71
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	41	< 10	40
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	310	< 10	100	< 10	95
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	11	< 10	< 10	< 10	32
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	11
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	5500	< 10	400	< 10	750

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

*Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

** Result was reported from high dilution and should be interpreted with care



Analytical Report Number: 21-85610
Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1930715	1930716	1930717	1930718
Sample Reference				BH101d	BH104	BH105	FB1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	1.47	1.30	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	1310	1245	1730
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status	

General Inorganics

pH	pH Units	N/A	ISO 17025	8.5	7.6	7.4	7.3
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	26000	630	1100	< 10
Total Cyanide	µg/l	10	ISO 17025	660	110	230	< 10
Complex Cyanide	µg/l	10	ISO 17025	660	110	230	< 10
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Sulphate as SO ₄	mg/l	0.045	ISO 17025	580	108	266	1.51
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	180	44	50	0.55
Ammoniacal Nitrogen as NH ₄	µg/l	15	ISO 17025	450000**	34	52000	16
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	256	5.55	7.13	0.94
Total Suspended Solids	mg/l	2	ISO 17025	< 2.0	21	23	< 2.0

Phenols by HPLC

Catechol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	83000	< 0.5	< 0.5	< 0.5
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	100000	< 0.5	< 0.5	< 0.5
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

Total Phenols (HPLC)	µg/l	3.5	NONE	180000	< 3.5	< 3.5	< 3.5
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	6340*	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	356	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	21.4	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	61.8	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	47.7	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	6.30	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	3.20	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	2.83	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	6840	< 0.16	< 0.16	< 0.16
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Analytical Report Number: 21-85610
Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1930715	1930716	1930717	1930718
Sample Reference				BH101d	BH104	BH105	FB1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	1.47	1.30	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	1310	1245	1730
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				

Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.35	0.068	0.19	0.008
Arsenic (dissolved)	µg/l	0.15	ISO 17025	50.3	0.51	2.03	< 0.15
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	13	2.6	3.1	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	2.1	4.7	1.1	1.3
Lead (dissolved)	µg/l	0.2	ISO 17025	0.3	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	11	3.4	5.0	< 0.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	10	1.0	0.7	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.2	5.0	1.4	2.1

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	30400*	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	11800*	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	210	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	2100	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	984	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sum of BTEX	µg/l	7	ISO 17025	46000	-	-	-
Sum of m, p & o-Xylene	µg/l	2	ISO 17025	3100	-	-	-
Sum of m, p & o-Xylene	mg/l	0.002	NONE	3	-	-	-

Petroleum Hydrocarbons

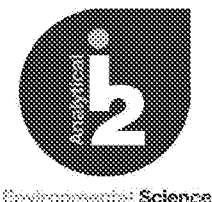
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	30000*	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	12000*	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	4700	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	6300	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	990	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	65	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	54000	< 10	< 10	< 10

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

*Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

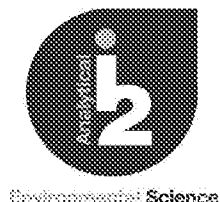
** Result was reported from high dilution and should be interpreted with care



Analytical Report Number : 21-85610
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Phenols, speciated, in water, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	NONE
Complex cyanide in water	Determination of complex cyanide by calculation. Accredited matrices SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
pH at 20oC in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L005-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L029-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total organic carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR analyser. Accredited matrices: SW PW GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025



Analytical Report Number : 21-85610
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025

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

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 21-85742

Project / Site name:	NGPH Arundel	Samples received on:	07/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	07/07/2021
Your order number:	81914	Analysis completed by:	14/07/2021
Report Issue Number:	1	Report issued on:	14/07/2021
Samples Analysed:	26 soil samples		

Signed:

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

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

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

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

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

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931538	1931539	1931540	1931541	1931542
Sample Reference				B1 reuse	B2 reuse	B3 reuse	B4 reuse	B5 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	9.8	12	13	11
Total mass of sample received	kg	0.001	NONE	1.2	1.4	1.2	1.4	1.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	< 0.001	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.2	8.2	7.7	7.9
Electrical Conductivity	µS/cm	10	ISO 17025	150	89	130	150	150
Total Cyanide	mg/kg	1	MCERTS	14	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	14	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	79	21	27	24	26
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.040	0.011	0.013	0.012	0.013
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	39.7	10.7	13.3	12.0	13.2
Sulphide	mg/kg	1	MCERTS	3.8	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	7.3	9.7	8.2	13	9.9
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	0.6	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.6	1.4	1.5	1.7	1.5

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931538	1931539	1931540	1931541	1931542
Sample Reference				B1 reuse	B2 reuse	B3 reuse	B4 reuse	B5 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.98	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	8.3	0.26	0.24	0.28	0.29
Acenaphthene	mg/kg	0.05	MCERTS	0.99	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	4.3	< 0.05	< 0.05	< 0.05	0.22
Phenanthrene	mg/kg	0.05	MCERTS	42	1.2	2.1	1.5	2.3
Anthracene	mg/kg	0.05	MCERTS	14	0.34	0.46	0.40	0.67
Fluoranthene	mg/kg	0.05	MCERTS	110	4.0	4.6	4.4	5.8
Pyrene	mg/kg	0.05	MCERTS	91	3.6	3.9	3.8	5.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	54	2.7	3.2	3.0	3.6
Chrysene	mg/kg	0.05	MCERTS	45	2.2	2.5	2.3	2.9
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	51	4.0	3.5	3.6	3.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	17	0.96	2.1	1.9	1.8
Benzo(a)pyrene	mg/kg	0.05	MCERTS	45	2.9	3.2	3.1	3.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	23	1.6	1.9	1.7	1.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	5.8	0.55	0.61	0.57	0.67
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	24	1.8	2.2	1.8	2.1

Total PAHs

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	535	26.1	30.3	28.2	34.7
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	36	13	16	15	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	23	30	23	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	66	27	29	25	24
Iron (aqua regia extractable)	mg/kg	40	MCERTS	47000	31000	48000	29000	32000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	310	85	110	120	70
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.6	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	16	20	17	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	480	67	74	63	58

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931538	1931539	1931540	1931541	1931542
Sample Reference				B1 reuse	B2 reuse	B3 reuse	B4 reuse	B5 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	4.6	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	15	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	30	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	81	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	130	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	17	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	49	7.7	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	350	19	16	14	15
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	610	40	23	33	22
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	1000	67	39	47	37

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931543	1931544	1931545	1931546	1931547
Sample Reference				A1 NW	B1 NW	C1 NW	A5 SE	B5 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.30	0.30	0.30
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	12	9.2	9.8	16
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.0	1.4	1.1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	7.8	8.1	8.6	8.1
Electrical Conductivity	µS/cm	10	ISO 17025	130	160	150	270	260
Total Cyanide	mg/kg	1	MCERTS	17	2.5	< 1.0	14	12
Complex Cyanide	mg/kg	1	MCERTS	17	2.5	< 1.0	14	12
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	39	21	120	270	160
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.020	0.010	0.062	0.13	0.078
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	19.5	10.3	61.9	134	78.3
Sulphide	mg/kg	1	MCERTS	4.3	< 1.0	< 1.0	4.0	4.7
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	13	7.2	3.3	18	12
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	0.6
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.2	1.1	0.1	1.5	2.2

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931543	1931544	1931545	1931546	1931547
Sample Reference				A1 NW	B1 NW	C1 NW	A5 SE	B5 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.30	0.30	0.30
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.75	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	2.3	< 0.05	< 0.05	0.65	0.69
Acenaphthene	mg/kg	0.05	MCERTS	0.48	< 0.05	< 0.05	1.0	2.7
Fluorene	mg/kg	0.05	MCERTS	1.6	< 0.05	< 0.05	1.4	2.9
Phenanthrene	mg/kg	0.05	MCERTS	22	0.62	0.41	15	34
Anthracene	mg/kg	0.05	MCERTS	6.6	< 0.05	< 0.05	4.2	9.2
Fluoranthene	mg/kg	0.05	MCERTS	53	2.0	0.50	27	42
Pyrene	mg/kg	0.05	MCERTS	41	2.0	0.39	21	28
Benzo(a)anthracene	mg/kg	0.05	MCERTS	35	1.4	0.22	15	21
Chrysene	mg/kg	0.05	MCERTS	26	1.1	0.22	11	17
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	30	1.9	< 0.05	18	18
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	12	0.48	< 0.05	4.7	6.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	27	1.4	< 0.05	13	15
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	13	0.85	< 0.05	7.1	7.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	3.4	0.29	< 0.05	2.4	2.1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	13	0.89	< 0.05	7.7	7.5

Total PAHs

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	287	12.8	1.74	149	213
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	33	14	22	13	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	23	38	18	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	49	25	30	23	28
Iron (aqua regia extractable)	mg/kg	40	MCERTS	50000	27000	72000	25000	30000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	310	82	17	93	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	26	15	37	13	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.5	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	350	63	66	86	110

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85742

Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1931543	1931544	1931545	1931546	1931547
Sample Reference				A1 NW	B1 NW	C1 NW	A5 SE	B5 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.30	0.30	0.30
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	4.1	2.3
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	11	9.7
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	17	20
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	31	32
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	11	< 1.0	< 1.0	< 1.0	10
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	31	< 2.0	< 2.0	13	51
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	130	< 10	< 10	64	190
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	190	21	< 10	84	220
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	350	31	< 10	160	470

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931548	1931549	1931550	1931551	1931552
Sample Reference				C5 SE	D8 reuse	E8 reuse	D8 SE	E8 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	None Supplied	None Supplied	0.30	0.30
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	15	18	16	14
Total mass of sample received	kg	0.001	NONE	1.2	1.1	1.1	1.1	1.1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	8.1	8.1	8.2	7.6
Electrical Conductivity	µS/cm	10	ISO 17025	210	280	240	440	150
Total Cyanide	mg/kg	1	MCERTS	2.1	7.2	6.8	12	11
Complex Cyanide	mg/kg	1	MCERTS	2.1	7.2	6.8	12	11
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	120	270	330	120	150
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.058	0.13	0.16	0.062	0.074
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	58.1	134	165	62.0	73.7
Sulphide	mg/kg	1	MCERTS	6.3	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	32	6.3	4.6	3.7	7.1
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	8.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.0	1.1	0.8	0.8	1.2

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931548	1931549	1931550	1931551	1931552
Sample Reference				C5 SE	D8 reuse	E8 reuse	D8 SE	E8 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	None Supplied	None Supplied	0.30	0.30
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.59	0.41	< 0.05	0.55	0.21
Acenaphthene	mg/kg	0.05	MCERTS	0.31	0.49	0.50	0.62	0.46
Fluorene	mg/kg	0.05	MCERTS	0.48	0.62	0.55	1.2	0.59
Phenanthrene	mg/kg	0.05	MCERTS	5.4	8.1	6.4	12	7.5
Anthracene	mg/kg	0.05	MCERTS	1.7	2.4	1.7	3.3	1.8
Fluoranthene	mg/kg	0.05	MCERTS	15	21	11	18	12
Pyrene	mg/kg	0.05	MCERTS	13	17	8.3	14	8.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	10	12	6.2	9.2	6.3
Chrysene	mg/kg	0.05	MCERTS	7.8	9.5	4.9	9.0	6.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	12	15	7.1	9.4	7.3
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	4.8	5.3	2.5	3.7	2.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	10	11	5.0	6.9	5.0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5.0	6.4	2.9	3.7	2.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.6	2.1	1.0	0.95	0.80
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	5.4	6.8	3.1	3.8	2.9

Total PAHs

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	94.4	118	61.6	96.4	65.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	19	21	22	22
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	34	39	38	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	21	15	14	26
Iron (aqua regia extractable)	mg/kg	40	MCERTS	40000	38000	47000	45000	43000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	61	39	35	53
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	21	24	22	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	82	78	67	90

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931548	1931549	1931550	1931551	1931552
Sample Reference				C5 SE	D8 reuse	E8 reuse	D8 SE	E8 SE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	None Supplied	None Supplied	0.30	0.30
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	7.1
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	18
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	36
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	61
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	19	17	7.3	9.1	5.4
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	110	230	51	63	51
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	200	420	76	90	82
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	330	670	130	160	140

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931553	1931554	1931555	1931556	1931557
Sample Reference				E8 NE	A1 reuse	A2 reuse	A3 reuse	A4 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	10	9.1	9.2	9.3
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.2	1.2	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.6	8.4	8.1	8.1	8.2
Electrical Conductivity	µS/cm	10	ISO 17025	100	81	230	220	170
Total Cyanide	mg/kg	1	MCERTS	43	< 1.0	1.4	1.9	3.5
Complex Cyanide	mg/kg	1	MCERTS	43	< 1.0	1.4	1.9	3.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	26	79	85	110	170
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.013	0.040	0.042	0.055	0.086
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.0	39.5	42.3	54.7	86.1
Sulphide	mg/kg	1	MCERTS	1.2	1.7	< 1.0	< 1.0	2.6
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	4.0	6.6	6.2	7.4	13
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.3	1.1	0.8	1.0	1.5

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931553	1931554	1931555	1931556	1931557
Sample Reference				E8 NE	A1 reuse	A2 reuse	A3 reuse	A4 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.50	0.55	0.47	4.9
Acenaphthylene	mg/kg	0.05	MCERTS	0.27	1.4	1.8	1.6	14
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.20	0.20	0.20	3.7
Fluorene	mg/kg	0.05	MCERTS	0.19	0.71	0.89	0.82	27
Phenanthrene	mg/kg	0.05	MCERTS	2.0	8.0	9.6	6.8	140
Anthracene	mg/kg	0.05	MCERTS	0.53	2.9	3.6	2.5	42
Fluoranthene	mg/kg	0.05	MCERTS	4.1	22	28	20	130
Pyrene	mg/kg	0.05	MCERTS	3.7	20	25	18	120
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.5	17	20	15	98
Chrysene	mg/kg	0.05	MCERTS	2.4	16	14	14	75
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.2	19	23	20	90
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	9.0	5.2	8.7	36
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.2	17	17	17	72
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.5	8.2	8.3	9.3	30
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.34	2.3	2.3	2.6	9.0
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	8.8	7.9	9.1	28

Total PAHs

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	25.8	154	167	145	919
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	23	29	25	36
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	34	40	38	41
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	36	37	40	46
Iron (aqua regia extractable)	mg/kg	40	MCERTS	32000	55000	66000	68000	110000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	130	150	120	120	93
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	28	31	36	53
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.5	< 1.0	< 1.0	1.7
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	63	140	120	130	150

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85742
 Project / Site name: NGPH Arundel
 Your Order No: 81914

Lab Sample Number				1931553	1931554	1931555	1931556	1931557
Sample Reference				E8 NE	A1 reuse	A2 reuse	A3 reuse	A4 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	4.2	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	12	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	24	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	5.7
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	6.4	6.8	9.0	63
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	19	63	68	81	470
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	39	130	110	150	440
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	58	200	190	240	980

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

Analytical Report Number: 21-85742

Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1931558	1931559	1931560	1931561	1931562
Sample Reference				A5 reuse	C1 reuse	C2 reuse	C3 reuse	C4 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	9.1	11	12	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.2

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.3	8.2	8.2	8.3
Electrical Conductivity	µS/cm	10	ISO 17025	160	110	220	260	290
Total Cyanide	mg/kg	1	MCERTS	1.6	1.4	1.8	3.3	2.6
Complex Cyanide	mg/kg	1	MCERTS	1.6	1.4	1.8	3.3	2.6
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	100	60	81	95	80
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.051	0.030	0.041	0.048	0.040
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	50.6	30.2	40.6	47.7	39.8
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	3.1	< 1.0	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	11	6.2	6.2	9.1	10
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.0	0.9	1.1	1.3	1.1

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931558	1931559	1931560	1931561	1931562
Sample Reference				A5 reuse	C1 reuse	C2 reuse	C3 reuse	C4 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.47	0.59	0.72	0.96	0.35
Acenaphthylene	mg/kg	0.05	MCERTS	1.1	1.7	2.0	2.9	0.81
Acenaphthene	mg/kg	0.05	MCERTS	0.18	0.16	0.33	0.39	0.12
Fluorene	mg/kg	0.05	MCERTS	0.60	0.67	1.1	1.9	0.45
Phenanthrene	mg/kg	0.05	MCERTS	5.2	6.4	11	22	3.9
Anthracene	mg/kg	0.05	MCERTS	1.8	2.5	3.9	6.9	1.4
Fluoranthene	mg/kg	0.05	MCERTS	14	19	28	36	11
Pyrene	mg/kg	0.05	MCERTS	13	18	25	30	10
Benzo(a)anthracene	mg/kg	0.05	MCERTS	11	15	22	22	8.1
Chrysene	mg/kg	0.05	MCERTS	9.8	13	19	19	7.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	13	18	26	23	9.8
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	5.3	7.2	10	10	3.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	11	15	22	20	8.0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.0	7.8	11	9.6	4.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.6	2.2	3.1	2.8	1.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	6.1	7.9	11	9.9	4.4

Total PAHs

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	101	134	197	218	75.0
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24	21	26	22	23
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	36	31	38	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	38	42	37	38
Iron (aqua regia extractable)	mg/kg	40	MCERTS	82000	79000	61000	79000	60000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	130	110	180	120	140
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	42	30	30	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.4	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170	150	190	120	150

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85742

Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1931558	1931559	1931560	1931561	1931562
Sample Reference				A5 reuse	C1 reuse	C2 reuse	C3 reuse	C4 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.3	9.6	17	25	19
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	57	63	130	120	100
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	98	120	240	160	210
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	160	200	390	310	330

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

Analytical Report Number: 21-85742

Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1931563
Sample Reference				C5 reuse
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				06/07/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	11
Total mass of sample received	kg	0.001	NONE	1.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-
Asbestos Quantification Total	%	0.001	ISO 17025	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3
Electrical Conductivity	µS/cm	10	ISO 17025	210
Total Cyanide	mg/kg	1	MCERTS	4.9
Complex Cyanide	mg/kg	1	MCERTS	4.9
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	140
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.070
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	70.4
Sulphide	mg/kg	1	MCERTS	1.3
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	13
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.3

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3
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Analytical Report Number: 21-85742

Project / Site name: NGPH Arundel

Your Order No: 81914

Lab Sample Number				1931563
Sample Reference				C5 reuse
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				06/07/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status	
Speciated PAHs				
Naphthalene	mg/kg	0.05	MCERTS	0.65
Acenaphthylene	mg/kg	0.05	MCERTS	1.6
Acenaphthene	mg/kg	0.05	MCERTS	0.25
Fluorene	mg/kg	0.05	MCERTS	0.98
Phenanthrene	mg/kg	0.05	MCERTS	10
Anthracene	mg/kg	0.05	MCERTS	3.7
Fluoranthene	mg/kg	0.05	MCERTS	25
Pyrene	mg/kg	0.05	MCERTS	23
Benzo(a)anthracene	mg/kg	0.05	MCERTS	18
Chrysene	mg/kg	0.05	MCERTS	16
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	21
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	8.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	9.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.6
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	9.6

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	168
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	45
Iron (aqua regia extractable)	mg/kg	40	MCERTS	71000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-85742
Project / Site name: NGPH Arundel
Your Order No: 81914

Lab Sample Number				1931563
Sample Reference				C5 reuse
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				06/07/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	units	limit of detection	Accreditation Status	
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	2.2
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	9.6
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	81
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	150
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	240

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



Analytical Report Number: **21-85742**
Project / Site name: **NGPH Arundel**
Your Order No: **81914**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1931538	B1 reuse		169	Loose Fibres	Chrysotile	< 0.001	< 0.001
1931541	B4 reuse		182	Loose Fibres	Chrysotile	< 0.001	< 0.001
1931543	A1 NW	0.30	172	Loose Fibres	Amosite	< 0.001	< 0.001

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

Analytical Report Number : 21-85742

Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1931538	B1 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931539	B2 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931540	B3 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931541	B4 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931542	B5 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931543	A1 NW	None Supplied	0.3	Brown clay and loam with gravel.
1931544	B1 NW	None Supplied	0.5	Brown clay and loam with gravel and vegetation.
1931545	C1 NW	None Supplied	0.3	Brown clay and loam with gravel.
1931546	A5 SE	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
1931547	B5 SE	None Supplied	0.3	Brown clay and loam with gravel.
1931548	C5 SE	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
1931549	D8 reuse	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.
1931550	E8 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931551	D8 SE	None Supplied	0.3	Brown clay and loam with gravel.
1931552	E8 SE	None Supplied	0.3	Brown clay and loam with gravel.
1931553	E8 NE	None Supplied	None Supplied	Brown clay and loam with gravel.
1931554	A1 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931555	A2 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931556	A3 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931557	A4 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931558	A5 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931559	C1 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931560	C2 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931561	C3 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931562	C4 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.
1931563	C5 reuse	None Supplied	None Supplied	Brown clay and loam with gravel.

Analytical Report Number : 21-85742

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-85742

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 21-87241

Replaces Analytical Report Number: 21-87241, issue no. 2
Result correction by laboratory.

Project / Site name:	NGPH Arundel	Samples received on:	15/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	15/07/2021
Your order number:	81957	Analysis completed by:	12/08/2021
Report Issue Number:	3	Report issued on:	13/08/2021
Samples Analysed:	12 soil samples		

Signed:

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 21-87241
Project / Site name: NGPH Arundel
Your Order No: 81957

Lab Sample Number				1939838	1939839	1939840	1939841	1939842
Sample Reference				D5 reuse	E5 reuse	D4 reuse	E4 reuse	D3 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	44	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.9	9.0	10	9.7	12
Total mass of sample received	kg	0.001	NONE	1.8	2.0	1.8	2.0	1.6

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile	Chrysotile	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	< 0.001	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.3	8.4	8.3	8.2
Electrical Conductivity	µS/cm	10	ISO 17025	200	200	190	220	220
Total Cyanide	mg/kg	1	MCERTS	< 1.0	4.3	6.8	5.9	7.7
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	4.3	6.8	5.9	7.7
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	150	170	170	170	220
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.074	0.087	0.087	0.086	0.11
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	73.6	86.7	86.8	86.1	108
Sulphide	mg/kg	1	MCERTS	6.9	6.1	6.7	12	14
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	14	11	13	13	18
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.5	1.0	1.2	1.6	1.7

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.4	2.4	2.1	9.8	3.3
Acenaphthylene	mg/kg	0.05	MCERTS	4.8	5.9	6.8	14	8.1
Acenaphthene	mg/kg	0.05	MCERTS	0.48	0.54	0.58	3.2	1.0
Fluorene	mg/kg	0.05	MCERTS	1.3	2.8	2.2	8.6	4.5
Phenanthrene	mg/kg	0.05	MCERTS	11	20	12	64	31
Anthracene	mg/kg	0.05	MCERTS	5.8	13	6.5	27	11
Fluoranthene	mg/kg	0.05	MCERTS	33	41	35	100	53
Pyrene	mg/kg	0.05	MCERTS	29	34	31	88	45
Benzo(a)anthracene	mg/kg	0.05	MCERTS	25	29	28	67	39
Chrysene	mg/kg	0.05	MCERTS	19	24	21	57	29
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	23	24	22	53	31
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	8.2	12	15	29	16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	20	21	23	52	28
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	11	11	11	25	14
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	3.5	3.7	3.7	8.0	4.8

Analytical Report Number: 21-87241
 Project / Site name: NGPH Arundel
 Your Order No: 81957

Lab Sample Number				1939838	1939839	1939840	1939841	1939842
Sample Reference				D5 reuse	E5 reuse	D4 reuse	E4 reuse	D3 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	11	11	12	25	14
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	207	256	231	631	332

Analytical Report Number: 21-87241
Project / Site name: NGPH Arundel
Your Order No: 81957

Lab Sample Number				1939838	1939839	1939840	1939841	1939842
Sample Reference				D5 reuse	E5 reuse	D4 reuse	E4 reuse	D3 reuse
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	28	34	29	36	37
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	24	25	27	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	28	34	36	37
Iron (aqua regia extractable)	mg/kg	40	MCERTS	33000	39000	38000	43000	61000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	140	150	170	680
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	23	20	25	35
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	160	160	180	240	260

Monocaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	10	24	20
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	12	32	25
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	46	30
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	26	100	75

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	5.4	4.3	5.0	9.8	6.7
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	20	34	25	65	42
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	150	200	88	440	210
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	270	290	140	540	340
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	450	530	260	1100	600

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

Analytical Report Number: 21-87241
Project / Site name: NGPH Arundel
Your Order No: 81957

Lab Sample Number				1939843	1939844	1939845	1939846	1939847
Sample Reference				E3 reuse	F3 reuse	D5 SE	E5 SE	E5 NE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	0.30	0.30	0.30
Date Sampled				15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.0	11	8.1	7.6	21
Total mass of sample received	kg	0.001	NONE	1.9	1.6	1.4	1.3	1.3

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.001	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	0.001	-	-	< 0.001	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	8.0	8.2	8.0	7.6
Electrical Conductivity	µS/cm	10	ISO 17025	220	220	150	400	660
Total Cyanide	mg/kg	1	MCERTS	8.6	19	< 1.0	19	80
Complex Cyanide	mg/kg	1	MCERTS	8.6	19	< 1.0	19	78
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.9
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	190	210	24	850	1800
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.095	0.11	0.012	0.42	0.89
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	95.0	105	12.0	423	892
Sulphide	mg/kg	1	MCERTS	5.6	72	7.2	68	62
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	12	15	12	35	300
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	0.6	< 0.5	< 0.5	< 0.5	100
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.4	1.6	1.4	2.2	6.7

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	58
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	51
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	110
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.1	1.9	< 0.05	2.8	18
Acenaphthylene	mg/kg	0.05	MCERTS	11	5.9	1.2	15	15
Acenaphthene	mg/kg	0.05	MCERTS	0.89	0.57	< 0.05	2.2	4.3
Fluorene	mg/kg	0.05	MCERTS	4.7	2.1	0.42	9.2	5.4
Phenanthrene	mg/kg	0.05	MCERTS	53	12	3.0	32	22
Anthracene	mg/kg	0.05	MCERTS	28	5.8	1.2	12	11
Fluoranthene	mg/kg	0.05	MCERTS	77	31	11	55	54
Pyrene	mg/kg	0.05	MCERTS	64	28	9.9	52	55
Benzo(a)anthracene	mg/kg	0.05	MCERTS	55	27	9.5	44	44
Chrysene	mg/kg	0.05	MCERTS	43	18	9.3	32	40
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	42	22	8.4	37	44
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	22	10	5.6	14	17
Benzo(a)pyrene	mg/kg	0.05	MCERTS	36	20	8.0	31	35
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	20	10	4.0	16	17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	6.4	3.3	1.7	5.7	5.6

Analytical Report Number: 21-87241
 Project / Site name: NGPH Arundel
 Your Order No: 81957

Lab Sample Number				1939843	1939844	1939845	1939846	1939847
Sample Reference				E3 reuse	F3 reuse	D5 SE	E5 SE	E5 NE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	0.30	0.30	0.30
Date Sampled				15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status					
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	19	10	4.1	16	17
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	486	208	76.8	374	403

Analytical Report Number: 21-87241
Project / Site name: NGPH Arundel
Your Order No: 81957

Lab Sample Number				1939843	1939844	1939845	1939846	1939847
Sample Reference				E3 reuse	F3 reuse	D5 SE	E5 SE	E5 NE
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	0.30	0.30	0.30
Date Sampled				15/07/2021	15/07/2021	15/07/2021	15/07/2021	15/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	42	25	15	37	150
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	2.1	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	23	22	37	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	41	33	98	59
Iron (aqua regia extractable)	mg/kg	40	MCERTS	46000	35000	30000	110000	69000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	240	180	490	320
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.0	0.7	< 0.3	2.3	1.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	28	18	67	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	200	170	140	1400	190

Monocaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	3.9
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	15	< 2.0	< 2.0	58	48
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	25	< 8.0	< 8.0	130	100
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	60	< 8.0	< 8.0	150	140
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	100	< 10	< 10	340	290

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	6.1	4.3	< 1.0	14	20
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	50	28	6.8	150	44
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	320	140	57	580	200
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	420	270	160	820	360
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	790	440	220	1600	620

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

Analytical Report Number: 21-87241
Project / Site name: NGPH Arundel
Your Order No: 81957

Lab Sample Number				1939848	1939849
Sample Reference				Batch 8	E4 Base
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	3.00
Date Sampled				15/07/2021	14/07/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	22
Total mass of sample received	kg	0.001	NONE	2.0	1.5

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	8.4
Electrical Conductivity	µS/cm	10	ISO 17025	410	270
Total Cyanide	mg/kg	1	MCERTS	68	77
Complex Cyanide	mg/kg	1	MCERTS	68	77
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	770	410
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.38	0.21
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	383	205
Sulphide	mg/kg	1	MCERTS	110	34
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	39	63
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	0.6	310
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.4	0.2

Phenols by HPLC

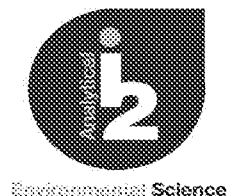
Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2.3	19
Acenaphthylene	mg/kg	0.05	MCERTS	14	11
Acenaphthene	mg/kg	0.05	MCERTS	1.4	4.9
Fluorene	mg/kg	0.05	MCERTS	6.0	28
Phenanthrene	mg/kg	0.05	MCERTS	28	55
Anthracene	mg/kg	0.05	MCERTS	13	21
Fluoranthene	mg/kg	0.05	MCERTS	56	27
Pyrene	mg/kg	0.05	MCERTS	53	21
Benzo(a)anthracene	mg/kg	0.05	MCERTS	45	18
Chrysene	mg/kg	0.05	MCERTS	34	9.9
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	32	7.8
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	22	4.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	32	7.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	16	2.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	5.9	1.3



Analytical Report Number: 21-87241
 Project / Site name: NGPH Arundel
 Your Order No: 81957

Lab Sample Number				1939848	1939849
Sample Reference				Batch 8	E4 Base
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	3.00
Date Sampled				15/07/2021	14/07/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	16	2.7
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	377	239

Analytical Report Number: 21-87241

Project / Site name: NGPH Arundel

Your Order No: 81957

Lab Sample Number				1939848	1939849
Sample Reference				Batch 8	E4 Base
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	3.00
Date Sampled				15/07/2021	14/07/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	units	Limit of detection	Accreditation Status		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	38	4.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.0	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	3.7
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	3.4
Iron (aqua regia extractable)	mg/kg	40	MCERTS	86000	4000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	1900	3.5
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.8	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	66	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	1800	32

Monocaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	2100	520
Toluene	µg/kg	1	MCERTS	5000	1700
Ethylbenzene	µg/kg	1	MCERTS	640	280
p & m-xylene	µg/kg	1	MCERTS	6900	5300
o-xylene	µg/kg	1	MCERTS	3000	1700
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	0.65	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	43	< 2.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	120	< 8.0
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	160	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	330	< 10

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	2.1	0.52
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	5.0	1.7
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	18	12
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	11	32
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	100	230
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	490	400
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	770	410
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	1400	1100

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



Analytical Report Number: **21-87241**
Project / Site name: **NGPH Arundel**
Your Order No: **81957**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1939838	D5 reuse		139	Loose Fibres	Chrysotile	< 0.001	< 0.001
1939839	E5 reuse		137	Loose Fibrous Debris	Chrysotile	< 0.001	< 0.001
1939840	D4 reuse		136	Loose Fibres	Chrysotile	< 0.001	< 0.001
1939841	E4 reuse		140	Loose Fibres	Chrysotile	< 0.001	< 0.001
1939843	E3 reuse		128	Loose Fibres & Hard/Cement Type Material	Chrysotile	0.001	0.001
1939846	E5 SE	0.30	187	Loose Fibres	Chrysotile	< 0.001	< 0.001
1939848	Batch 8		205	Loose Fibres	Chrysotile	< 0.001	< 0.001

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

Analytical Report Number : 21-87241

Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1939838	D5 reuse	None Supplied	None Supplied	Brown loam and clay with gravel and brick.
1939839	E5 reuse	None Supplied	None Supplied	Brown clay and sand with stones and gravel
1939840	D4 reuse	None Supplied	None Supplied	Brown clay and sand with rubble and brick.
1939841	E4 reuse	None Supplied	None Supplied	Brown clay and sand with rubble and brick.
1939842	D3 reuse	None Supplied	None Supplied	Brown clay and sand with rubble and brick.
1939843	E3 reuse	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation.
1939844	F3 reuse	None Supplied	None Supplied	Brown clay and sand with rubble and chalk.
1939845	D5 SE	None Supplied	0.3	Light brown clay and sand with gravel and vegetation.
1939846	E5 SE	None Supplied	0.3	Brown clay and sand with rubble and brick.
1939847	E5 NE	None Supplied	0.3	Black clay and sand with gravel and oil / petroleum.
1939848	Batch 8	None Supplied	None Supplied	Brown clay and sand with brick and gravel
1939849	E4 Base	None Supplied	3	Beige clay with chalk and gravel.

Analytical Report Number : 21-87241

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-87241

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 21-88318

Project / Site name:	NGPH Arundel	Samples received on:	21/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	21/07/2021
Your order number:	81975	Analysis completed by:	29/07/2021
Report Issue Number:	1	Report issued on:	29/07/2021
Samples Analysed:	12 soil samples		

Signed:

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

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

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

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

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

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

Analytical Report Number: 21-88318
Project / Site name: NGPH Arundel
Your Order No: 81975

Lab Sample Number				1946300	1946301	1946302	1946303	1946304
Sample Reference				F3 NE	F2 NE	F1 NE	F1 NW	E1 NW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.8	9.9	5.4	5.6	7.0
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile	Chrysotile	Chrysotile	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	0.002	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	0.002	< 0.001	< 0.001	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	7.8	7.8	8.2	8.8
Electrical Conductivity	µS/cm	10	ISO 17025	430	740	480	470	900
Total Cyanide	mg/kg	1	MCERTS	2.1	120	46	25	3.0
Complex Cyanide	mg/kg	1	MCERTS	2.1	120	46	25	3.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	1.3	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	470	1100	660	660	2100
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.24	0.57	0.33	0.33	1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	235	570	330	331	1030
Sulphide	mg/kg	1	MCERTS	10	5.3	5.8	4.9	9.4
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	5.7	4.7	3.9	11	29
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	1.4	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.5	2.0	1.4	1.6	1.2

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-88318
Project / Site name: NGPH Arundel
Your Order No: 81975

Lab Sample Number				1946300	1946301	1946302	1946303	1946304
Sample Reference				F3 NE	F2 NE	F1 NE	F1 NW	E1 NW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2.3	1.9	1.8	2.8	2.9
Acenaphthylene	mg/kg	0.05	MCERTS	5.6	4.5	2.8	4.9	6.4
Acenaphthene	mg/kg	0.05	MCERTS	0.68	0.57	0.54	0.72	1.5
Fluorene	mg/kg	0.05	MCERTS	2.8	1.9	1.4	2.9	6.2
Phenanthrene	mg/kg	0.05	MCERTS	28	20	18	21	38
Anthracene	mg/kg	0.05	MCERTS	10	8.4	5.9	10	18
Fluoranthene	mg/kg	0.05	MCERTS	37	36	31	34	39
Pyrene	mg/kg	0.05	MCERTS	39	35	28	33	41
Benzo(a)anthracene	mg/kg	0.05	MCERTS	39	31	25	30	36
Chrysene	mg/kg	0.05	MCERTS	34	30	23	27	28
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	43	34	30	31	42
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	24	24	14	19	18
Benzo(a)pyrene	mg/kg	0.05	MCERTS	41	35	27	30	35
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	21	18	14	15	19
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	6.5	4.8	4.1	4.1	6.0
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	24	20	15	15	20

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	358	305	240	282	356
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	25	24	26	31	30
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	24	28	28	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	62	64	53	33	30
Iron (aqua regia extractable)	mg/kg	40	MCERTS	32000	35000	39000	35000	36000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	410	780	340	160	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	14	8.2	9.9	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	23	23	23	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	380	270	220	170	250

Monosromatics & Oxygenates

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

Analytical Report Number: 21-88318
 Project / Site name: NGPH Arundel
 Your Order No: 81975

Lab Sample Number				1946300	1946301	1946302	1946303	1946304
Sample Reference				F3 NE	F2 NE	F1 NE	F1 NW	E1 NW
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	4.9	< 2.0	6.1	3.8	8.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	11	< 8.0	12	11	15
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	34	< 8.0	41	25	32
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	50	< 10	60	39	55

TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	2.5	2.9	2.7	2.2	5.1
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	12	19	11	15	20
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	100	180	95	97	140
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	240	440	200	180	240
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	360	640	310	290	400

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

Analytical Report Number: 21-88318
Project / Site name: NGPH Arundel
Your Order No: 81975

Lab Sample Number				1946305	1946306	1946307	1946308	1946309
Sample Reference				D1 NW	D1 Re-use	E1 Re-use	F1 Re-use	D2 Re-use
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	5.9	7.7	8.1	4.5	6.2
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	< 0.001	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	< 0.001	-	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	8.1	10.3	8.5	8.3
Electrical Conductivity	µS/cm	10	ISO 17025	550	330	560	240	240
Total Cyanide	mg/kg	1	MCERTS	6.1	5.5	1.2	9.1	28
Complex Cyanide	mg/kg	1	MCERTS	6.1	5.5	1.2	9.1	28
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	710	280	930	250	180
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.35	0.14	0.46	0.13	0.092
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	354	141	463	127	92.3
Sulphide	mg/kg	1	MCERTS	4.2	2.7	17	1.6	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	10	20	94	8.4	7.3
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	52	35	150	28
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.1	0.6	1.0	0.5	0.5

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Analytical Report Number: 21-88318
Project / Site name: NGPH Arundel
Your Order No: 81975

Lab Sample Number				1946305	1946306	1946307	1946308	1946309
Sample Reference				D1 NW	D1 Re-use	E1 Re-use	F1 Re-use	D2 Re-use
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	1.6	2.7	19	5.4	8.3
Acenaphthylene	mg/kg	0.05	MCERTS	3.8	2.6	6.4	3.1	3.9
Acenaphthene	mg/kg	0.05	MCERTS	0.53	1.1	3.1	2.3	2.4
Fluorene	mg/kg	0.05	MCERTS	1.7	4.4	14	7.0	9.6
Phenanthrene	mg/kg	0.05	MCERTS	14	20	37	30	30
Anthracene	mg/kg	0.05	MCERTS	6.1	6.6	19	10	13
Fluoranthene	mg/kg	0.05	MCERTS	35	25	35	28	26
Pyrene	mg/kg	0.05	MCERTS	30	21	34	24	22
Benzo(a)anthracene	mg/kg	0.05	MCERTS	21	14	31	19	17
Chrysene	mg/kg	0.05	MCERTS	19	12	27	15	13
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	24	14	31	17	16
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	13	8.7	18	10	7.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	23	13	28	16	13
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	11	6.6	13	7.1	5.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	3.4	2.1	4.5	2.2	2.0
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	12	6.9	14	7.1	6.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	220	160	336	203	194
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	25	24	25	21	21
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	35	36	34	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	26	32	23	22
Iron (aqua regia extractable)	mg/kg	40	MCERTS	34000	52000	53000	47000	50000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	73	87	40	46
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	37	36	34	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	100	110	67	73

Monosromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	1.2	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	6.7	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	3.5	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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 Project / Site name: NGPH Arundel
 Your Order No: 81975

Lab Sample Number				1946305	1946306	1946307	1946308	1946309
Sample Reference				D1 NW	D1 Re-use	E1 Re-use	F1 Re-use	D2 Re-use
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				20/07/2021	20/07/2021	20/07/2021	20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	< 1.0	2.2	1.6	< 1.0	2.2
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	6.6	11	7.7	3.9	6.5
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	13	34	22	16	17
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	37	110	100	92	89
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	57	160	140	110	110
TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	0.029	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	2.2	3.2	14	5.0	4.1
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	14	24	60	47	31
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	84	90	190	130	100
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	160	160	270	210	140
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	260	270	530	400	280

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

Analytical Report Number: 21-88318
Project / Site name: NGPH Arundel
Your Order No: 81975

Lab Sample Number				1946310	1946311
Sample Reference				E2 Re-use	F2 Re-use
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	6.0	4.1
Total mass of sample received	kg	0.001	NONE	1.0	1.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.2
Electrical Conductivity	µS/cm	10	ISO 17025	300	360
Total Cyanide	mg/kg	1	MCERTS	11	2.9
Complex Cyanide	mg/kg	1	MCERTS	11	2.9
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	340	480
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.17	0.24
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	170	239
Sulphide	mg/kg	1	MCERTS	1.9	2.9
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	13	9.3
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	38	150
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.8	0.8

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3
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Analytical Report Number: 21-88318
 Project / Site name: NGPH Arundel
 Your Order No: 81975

Lab Sample Number				1946310	1946311
Sample Reference				E2 Re-use	F2 Re-use
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	5.5	5.2
Acenaphthylene	mg/kg	0.05	MCERTS	5.1	5.6
Acenaphthene	mg/kg	0.05	MCERTS	2.2	1.7
Fluorene	mg/kg	0.05	MCERTS	7.5	5.8
Phenanthrene	mg/kg	0.05	MCERTS	37	33
Anthracene	mg/kg	0.05	MCERTS	12	14
Fluoranthene	mg/kg	0.05	MCERTS	39	37
Pyrene	mg/kg	0.05	MCERTS	34	32
Benzo(a)anthracene	mg/kg	0.05	MCERTS	30	28
Chrysene	mg/kg	0.05	MCERTS	24	26
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	28	32
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	18	18
Benzo(a)pyrene	mg/kg	0.05	MCERTS	26	29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	14	14
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	4.4	4.5
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	15	15

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	302	300
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24	22
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	25
Iron (aqua regia extractable)	mg/kg	40	MCERTS	52000	48000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	89	83
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	37
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	91	100

Monosromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	3.8	< 1.0
o-xylene	µg/kg	1	MCERTS	2.3	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0

Analytical Report Number: 21-88318
 Project / Site name: NGPH Arundel
 Your Order No: 81975

Lab Sample Number				1946310	1946311
Sample Reference				E2 Re-use	F2 Re-use
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				20/07/2021	20/07/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	1	MCERTS	1.8	2.7
TPH-CWG - Aliphatic > EC12 - EC16	mg/kg	2	MCERTS	8.0	7.7
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	8	MCERTS	23	23
TPH-CWG - Aliphatic > EC21 - EC35	mg/kg	8	MCERTS	91	100
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	120	130
TPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aromatic > EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001
TPH-CWG - Aromatic > EC8 - EC10	mg/kg	0.001	MCERTS	0.018	< 0.001
TPH-CWG - Aromatic > EC10 - EC12	mg/kg	1	MCERTS	5.2	4.3
TPH-CWG - Aromatic > EC12 - EC16	mg/kg	2	MCERTS	38	27
TPH-CWG - Aromatic > EC16 - EC21	mg/kg	10	MCERTS	160	130
TPH-CWG - Aromatic > EC21 - EC35	mg/kg	10	MCERTS	220	260
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	420	420

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



Analytical Report Number: **21-88318**
Project / Site name: **NGPH Arundel**
Your Order No: **81975**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1946300	F3 NE	0.50	147	Loose Fibrous Debris	Chrysotile	< 0.001	< 0.001
1946301	F2 NE	0.50	161	Loose Fibres & Loose Fibrous Debris	Chrysotile	0.002	0.002
1946302	F1 NE	0.50	148	Loose Fibres	Chrysotile	< 0.001	< 0.001
1946303	F1 NW	0.50	149	Loose Fibres	Chrysotile	< 0.001	< 0.001
1946304	E1 NW	0.50	160	Loose Fibres	Chrysotile	< 0.001	< 0.001
1946305	D1 NW	0.50	156	Loose Fibres	Amosite	< 0.001	< 0.001
1946307	E1 Re-use		190	Loose Fibres	Chrysotile	< 0.001	< 0.001
1946309	D2 Re-use		181	Loose Fibres	Chrysotile	< 0.001	< 0.001
1946311	F2 Re-use		197	Loose Fibres	Chrysotile	< 0.001	< 0.001

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

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Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1946300	F3 NE	None Supplied	0.5	Brown loam with gravel and vegetation.
1946301	F2 NE	None Supplied	0.5	Brown loam with gravel and vegetation.
1946302	F1 NE	None Supplied	0.5	Brown loam with gravel and vegetation.
1946303	F1 NW	None Supplied	0.5	Brown gravel.**
1946304	E1 NW	None Supplied	0.5	Brown gravel.**
1946305	D1 NW	None Supplied	0.5	Brown gravel.**
1946306	D1 Re-use	None Supplied	None Supplied	Brown clay with gravel.
1946307	E1 Re-use	None Supplied	None Supplied	Brown clay with gravel.
1946308	F1 Re-use	None Supplied	None Supplied	Brown clay with gravel.
1946309	D2 Re-use	None Supplied	None Supplied	Brown clay with gravel.
1946310	E2 Re-use	None Supplied	None Supplied	Brown clay with gravel.
1946311	F2 Re-use	None Supplied	None Supplied	Brown clay with gravel.

** Non MCERTS matrix

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Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-88318
Project / Site name: NGPH Arundel

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

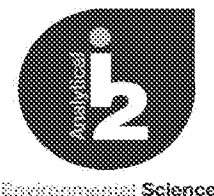
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

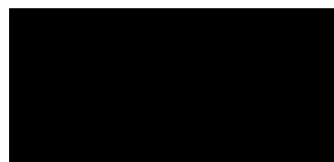
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



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Analytical Report Number : 21-89823

Project / Site name:	NGPH Arundel	Samples received on:	29/07/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	29/07/2021
Your order number:	81997	Analysis completed by:	06/08/2021
Report Issue Number:	1	Report issued on:	06/08/2021
Samples Analysed:	10 soil samples		

Signed:

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

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

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

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

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

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

Analytical Report Number: 21-89823
Project / Site name: NGPH Arundel
Your Order No: 81997

Lab Sample Number				1955574	1955575	1955576	1955577	1955578
Sample Reference				Type 1 Cap 8	Type 1 Cap 9	Type 1 Cap 10	Type 1 Cap 11	Type 1 Cap 12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				28/07/2021	28/07/2021	28/07/2021	28/07/2021	28/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	1.7	3.2	2.2	3.1	1.2
Total mass of sample received	kg	0.001	NONE	1.5	1.5	1.5	1.4	1.5

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	9.3	9.2	9.3	9.5
Electrical Conductivity	µS/cm	10	ISO 17025	120	140	140	160	140
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	56	88	92	100	110
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.028	0.044	0.046	0.051	0.057
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	27.8	44.2	45.9	51.3	56.9
Sulphide	mg/kg	1	MCERTS	5.8	1.7	1.3	2.4	2.2
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	6.6	4.5	6.7	5.0	6.2
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.2	0.2	0.3	0.2	0.3

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.30
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.48
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.40
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.22
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.25
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

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Lab Sample Number				1955574	1955575	1955576	1955577	1955578
Sample Reference				Type 1 Cap 8	Type 1 Cap 9	Type 1 Cap 10	Type 1 Cap 11	Type 1 Cap 12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				28/07/2021	28/07/2021	28/07/2021	28/07/2021	28/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	1.65
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.0	3.0	3.1	3.2	3.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	16	15	35	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	5.0	6.3	5.9	8.4	13
Iron (aqua regia extractable)	mg/kg	40	MCERTS	18000	20000	18000	24000	17000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	6.9	7.9	6.5	7.6	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	11	10	32	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	45	45	42	53	47

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	17
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	25

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

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Project / Site name: NGPH Arundel
Your Order No: 81997

Lab Sample Number				1955579	1955580	1955581	1955582	1955583
Sample Reference				Type 1 Cap 13	Type 1 Cap 14	Batch 28	ES NE 2	Batch 29
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	0.30	None Supplied
Date Sampled				28/07/2021	28/07/2021	22/07/2021	28/07/2021	22/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4.2	4.1	21	13	23
Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.3	1.3	1.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001	-	< 0.001

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.4	9.5	11.7	8.5	11.5
Electrical Conductivity	µS/cm	10	ISO 17025	130	140	2000	220	1900
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	91	88	1400	120	1700
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.046	0.044	0.72	0.061	0.87
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	45.5	43.9	715	61.0	875
Sulphide	mg/kg	1	MCERTS	2.4	< 1.0	58	7.1	54
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	5.3	6.7	440	38	450
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	< 0.5	74	< 0.5	57
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	0.2	3.4	1.8	3.5

Phenols by HPLC

Catechol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Resorcinol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cresols (o-, m-, p-)	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Total Naphthols (sum of 1- and 2- Naphthol)	mg/kg	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
2-Isopropylphenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenol	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trimethylphenol (2,3,5-)	mg/kg	0.1	ISO 17025	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Xylenols and Ethylphenols	mg/kg	0.3	ISO 17025	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Total Phenols

Total Phenols (HPLC)	mg/kg	1.3	ISO 17025	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	44	1.3	45
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	25	4.1	26
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	17	0.57	18
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	33	3.1	37
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.27	71	28	71
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	27	9.5	28
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.39	55	38	57
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.35	61	37	61
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.23	30	33	32
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.20	34	30	34
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	27	43	37
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	19	15	12
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	31	34	29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	16	20	17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.5	5.7	4.7

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Project / Site name: NGPH Arundel
Your Order No: 81997

Lab Sample Number				1955579	1955580	1955581	1955582	1955583
Sample Reference				Type 1 Cap 13	Type 1 Cap 14	Batch 28	ES NE 2	Batch 29
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	0.30	None Supplied
Date Sampled				28/07/2021	28/07/2021	22/07/2021	28/07/2021	22/07/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	16	18	17

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	1.44	511	321	524
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.2	3.0	30	20	32
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	1.3	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	13	38	23	43
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	8.9	62	36	72
Iron (aqua regia extractable)	mg/kg	40	MCERTS	18000	16000	52000	35000	48000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	9.6	12	200	220	200
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	8.8	33	20	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	43	850	170	680

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	31	< 1.0	80
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	190	< 1.0	220
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	220	< 1.0	270
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	390	< 1.0	470
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	240	< 1.0	270
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	27	< 1.0	19
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	250	< 2.0	260
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	300	< 8.0	340
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	200	< 8.0	220
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	780	< 10	830

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	0.031	< 0.001	0.079
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	0.19	< 0.001	0.22
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	1.2	< 0.001	1.5
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	90	< 1.0	87
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	920	23	940
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	1300	220	1400
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	1100	390	1100
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	12	3400	630	3500

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

Analytical Report Number : 21-89823

Project / Site name: NGPH Arundel

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1955574	Type 1 Cap 8	None Supplied	None Supplied	Light grey sand with gravel and rubble.
1955575	Type 1 Cap 9	None Supplied	None Supplied	Light brown sand with gravel and rubble.
1955576	Type 1 Cap 10	None Supplied	None Supplied	Light brown sand with gravel and rubble.
1955577	Type 1 Cap 11	None Supplied	None Supplied	Light brown sand with gravel and rubble.
1955578	Type 1 Cap 12	None Supplied	None Supplied	Light grey sand with gravel and rubble.
1955579	Type 1 Cap 13	None Supplied	None Supplied	Light brown sand with gravel and rubble.
1955580	Type 1 Cap 14	None Supplied	None Supplied	Light brown sand with gravel and rubble.
1955581	Batch 28	None Supplied	None Supplied	Brown sandy clay with gravel and brick.
1955582	ES NE 2	None Supplied	0.3	Brown clay and sand with gravel.
1955583	Batch 29	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 21-89823

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Phenols, speciated, in soil, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	ISO 17025
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Electrical conductivity of soil	Determination of electrical conductivity in soil by electrometric measurement.	In-house method	L031-PL	D	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 21-89823

Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

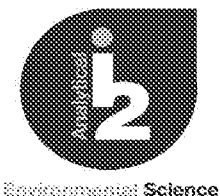
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report



Analytical Report Number : 21-89823

Project / Site name: NGPH Arundel

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
Batch 28	None Supplied	S	1955581	c	Free cyanide in soil	L080-PL	c
Batch 28	None Supplied	S	1955581	c	Complex Cyanide in soil	L080-PL	c
Batch 28	None Supplied	S	1955581	c	Sulphide in soil	L010-PL	c
Batch 28	None Supplied	S	1955581	c	Total cyanide in soil	L080-PL	c
Batch 29	None Supplied	S	1955583	c	Free cyanide in soil	L080-PL	c
Batch 29	None Supplied	S	1955583	c	Complex Cyanide in soil	L080-PL	c
Batch 29	None Supplied	S	1955583	c	Sulphide in soil	L010-PL	c
Batch 29	None Supplied	S	1955583	c	Total cyanide in soil	L080-PL	c
Type 1 Cap 10	None Supplied	S	1955576	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
Type 1 Cap 10	None Supplied	S	1955576	b	TPHCWG (Soil)	L088/76-PL	b

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature

Iss No 21-89823-1 NGPH Arundel C1820
Page 9 of 9



Celtic EnGlobe
Columbus House
Greenmeadow Springs
Tongwynlais
Cardiff
CF15 7NE

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

e:

Analytical Report Number : 21-90908

Project / Site name:	NGPH Arundel	Samples received on:	04/08/2021
Your job number:	C1820	Samples instructed on/ Analysis started on:	04/08/2021
Your order number:	82008	Analysis completed by:	11/08/2021
Report Issue Number:	1	Report issued on:	11/08/2021
Samples Analysed:	5 water samples		

Sign 

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

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

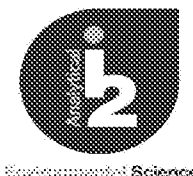
Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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

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

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

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



Analytical Report Number: 21-90908
Project / Site name: NGPH Arundel

Your Order No: 82008

Lab Sample Number	1962066	1962067	1962068	1962069	1962070
Sample Reference	BH201	BH104	BH105	FB2	BH202
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.5	7.2	7.1	6.2	7.0
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	2300	670	1000	< 10	1500
Total Cyanide	µg/l	10	ISO 17025	200	40	130	< 10	120
Complex Cyanide	µg/l	10	ISO 17025	200	40	130	< 10	120
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO4	mg/l	0.045	ISO 17025	504	48.7	289	2.00	1010
Sulphide	µg/l	5	NONE	46	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	120	58	59	0.33	94
Ammoniacal Nitrogen as NH4	µg/l	15	ISO 17025	320000	45	55000	29	76000
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	93.9	3.10	7.77	0.64	62.6
Total Suspended Solids	mg/l	2	ISO 17025	4.0	14	48	4.0	46

Phenols by HPLC

Catechol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	20000	< 0.5	< 0.5	< 0.5	7100
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	23000	< 0.5	< 0.5	< 0.5	8600
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

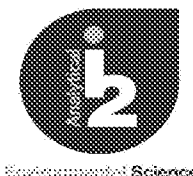
Total Phenols (HPLC)	µg/l	3.5	NONE	43000	< 3.5	< 3.5	< 3.5	16000
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	986	0.99	0.74	0.62	311
Acenaphthylene	µg/l	0.01	ISO 17025	40.1	< 0.01	< 0.01	< 0.01	35.7
Acenaphthene	µg/l	0.01	ISO 17025	11.8	< 0.01	3.10	< 0.01	4.54
Fluorene	µg/l	0.01	ISO 17025	23.6	< 0.01	< 0.01	< 0.01	8.62
Phenanthrene	µg/l	0.01	ISO 17025	17.7	< 0.01	< 0.01	< 0.01	8.44
Anthracene	µg/l	0.01	ISO 17025	3.23	< 0.01	< 0.01	< 0.01	2.13
Fluoranthene	µg/l	0.01	ISO 17025	1.79	< 0.01	< 0.01	< 0.01	1.25
Pyrene	µg/l	0.01	ISO 17025	0.97	< 0.01	< 0.01	< 0.01	0.78
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	1080	0.99	3.84	0.62	373
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Analytical Report Number: 21-90908
Project / Site name: NGPH Arundel

Your Order No: 82008

Lab Sample Number				1962066	1962067	1962068	1962069	1962070
Sample Reference				BH201	BH104	BH105	FB2	BH202
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.35	0.064	0.91	< 0.004	0.71
Arsenic (dissolved)	µg/l	0.15	ISO 17025	37.8	0.51	3.47	< 0.15	4.88
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.02	< 0.02	< 0.02	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	7.7	3.0	2.8	0.3	3.7
Copper (dissolved)	µg/l	0.5	ISO 17025	2.4	3.9	1.4	3.9	1.0
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.09	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	11	2.8	7.3	< 0.5	20
Selenium (dissolved)	µg/l	0.6	ISO 17025	4.2	1.9	0.6	< 0.6	8.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.0	3.5	1.8	2.3	4.5

Monocaromatics & Oxygenates

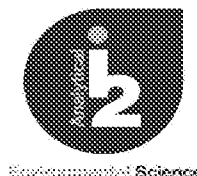
Benzene	µg/l	1	ISO 17025	7000	< 1.0	< 1.0	< 1.0	3280
Toluene	µg/l	1	ISO 17025	2490	< 1.0	< 1.0	< 1.0	1060
Ethylbenzene	µg/l	1	ISO 17025	101	< 1.0	< 1.0	< 1.0	37.5
p & m-xylene	µg/l	1	ISO 17025	1110	< 1.0	< 1.0	< 1.0	213
o-xylene	µg/l	1	ISO 17025	374	< 1.0	< 1.0	< 1.0	123
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	150
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	150

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	7000	< 1.0	< 1.0	< 1.0	3300
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	2500	< 1.0	< 1.0	< 1.0	1100
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	1800	< 1.0	< 1.0	< 1.0	410
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	990	< 10	< 10	< 10	310
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	440	< 10	< 10	< 10	330
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	24	< 10	< 10	< 10	14
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	13000	< 10	< 10	< 10	5400

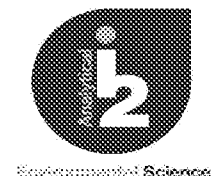
U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 21-90908
Project / Site name: NGPH Arundel

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 *for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Phenols, speciated, in water, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-PL	W	NONE
Complex cyanide in water	Determination of complex cyanide by calculation. Accredited matrices SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L029-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total organic carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR analyser. Accredited matrices: SW PW GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025



Analytical Report Number : 21-90908
Project / Site name: NGPH Arundel

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

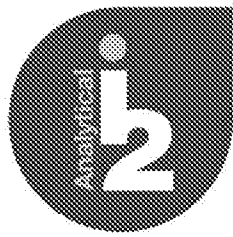
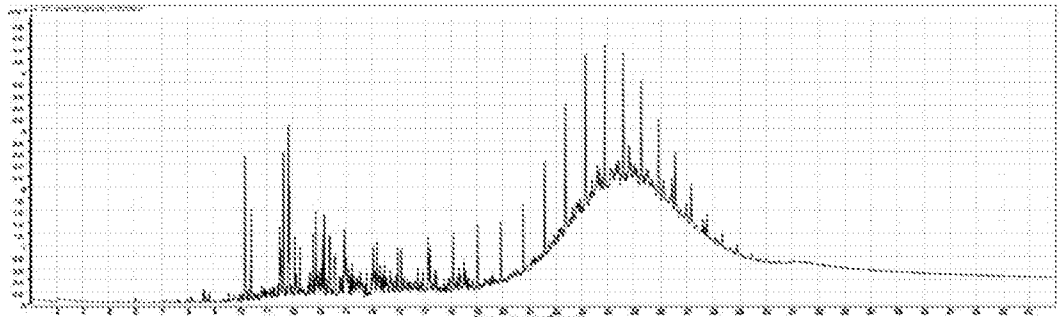
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



Analysis For Suspected Coal Tar

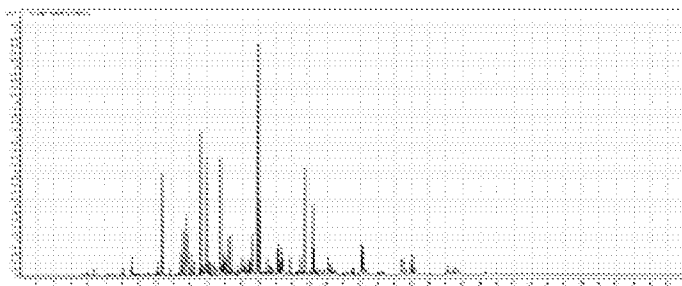
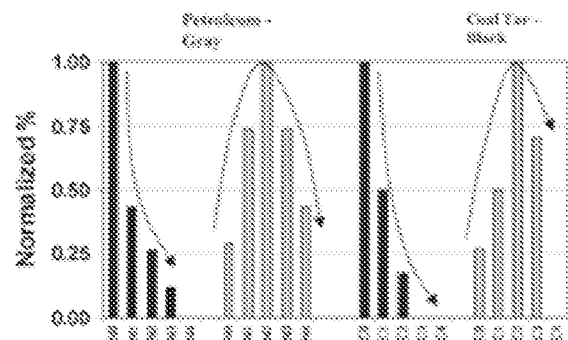
Coal Tar was used in pavement layers up until the mid 1980's and is categorised as Hazardous under WM3. As part of any assessment it is important to identify if it is present as this will affect the classification.

Tar is classed as a category 1 carcinogen, and if present at concentrations greater than 0.1% (from a sum of all fractions) any waste would be considered hazardous by HP 7. If however, the concentration of Benzo(a)pyrene is < 0.005% of the Coal Tar (rather than the waste as a whole) it may be exempt.

If Coal Tar is identified and B(a)P exceeds 50mg/kg in the black top layer alone then the amount of Coal Tar present should be considered hazardous.

Coal Tar is a chemically complex and variable, and as such the analysis requires looking at sets of specific markers and assessing the sample from a combination of data manipulations.

- Presence or absence of phenolic compounds (Phenol, Cresols, Xylenols, Trimethylphenols, etc.)
- Ratio of parent to alkyl PAH's
- Presence of specific sulphur, oxygen & nitrogen heterocyclic compounds
- PAH ratios of a number of specific target compounds
- Petrogenic and pyrogenic source differentiation
- Benzo(a)pyrene at the critical 50mg/kg level



The identification of 'Coal Tar' is determined by assessing the overall composition of the material from the results obtained from the above targets to provide a presence/absence classification, along with a breakdown of the individual USEPA16 PAHs and a total Residue/extractable material quantification.

This method will distinguish between heavy fuel oils, bitumen based products and Coal Tar in particular to a limit of around 10mg/kg

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522471/403/M1

Report Date: 30 July 2021

Client: CELTIC TECHNOLOGIES LTD

Our Contract Ref: 51064057/M1

Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Socotec Test Reference: 26374403

Test Number: 1

Date Tested: 28 Jul 2021

Tested By: SOCOTEC Uxbridge

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: Site

Location: T1

Material Source: Site

Depth of Test (mm): ground

Kentledge Type: 360 exc

Material Description: Crushed Stone

Plate Diameter (mm): 300

Layer Thickness (mm): n/a

Weather Conditions: mild

Results :

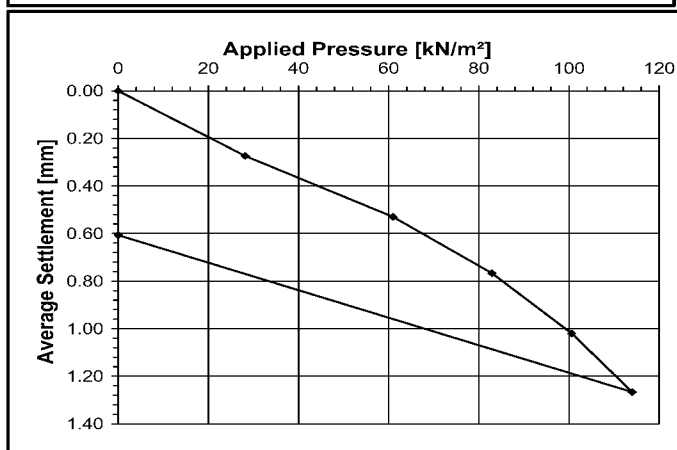
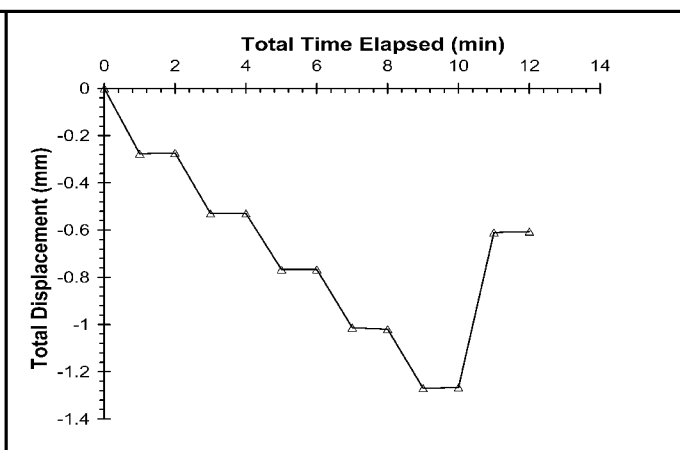
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
1.99	28	0.27
4.31	61	0.53
5.86	83	0.77
7.11	101	1.02
8.06	114	1.27
0.00	0	0.61
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 113

Modulus of Subgrade Reaction (MN/m²/m): 40

Moisture Content (%): N/A

Equivalent CBR by Plate Loading (%): 5.8



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:

Andrew Sears - HSE Support and Facilities Manager

for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522471/404/M2

Report Date: 30 July 2021

Client: CELTIC TECHNOLOGIES LTD

Our Contract Ref: 51064057/M1

Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Socotec Test Reference: 26374404

Test Number: 2

Date Tested: 28 Jul 2021

Tested By: SOCOTEC Uxbridge

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: Site

Location: T2

Material Source: Site

Depth of Test (mm): ground

Kentledge Type: 360 exc

Material Description: Crushed Stone

Plate Diameter (mm): 300

Layer Thickness (mm): n/a

Weather Conditions: mild

Results :

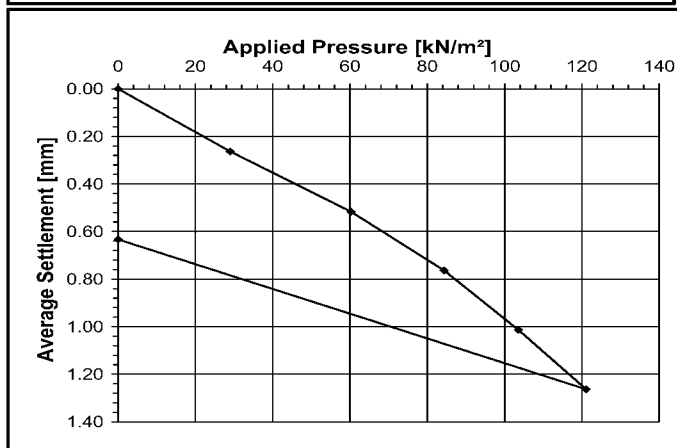
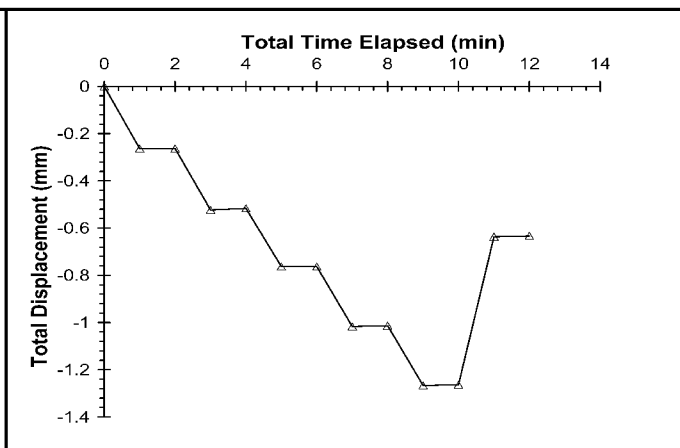
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
2.05	29	0.26
4.26	60	0.52
5.96	84	0.76
7.32	104	1.01
8.56	121	1.26
0.00	0	0.63
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 120

Modulus of Subgrade Reaction (MN/m²/m): 42

Moisture Content (%): N/A

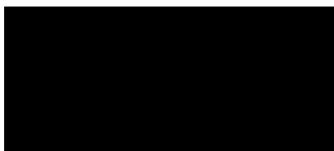
Equivalent CBR by Plate Loading (%): 6.4



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:



Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522471/405/M3

Report Date: 30 July 2021

Client: CELTIC TECHNOLOGIES LTD

Our Contract Ref: 51064057/M1

Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Socotec Test Reference: 26374405

Test Number: 3

Date Tested: 28 Jul 2021

Tested By: SOCOTEC Uxbridge

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: Site

Location: T3

Material Source: Site

Depth of Test (mm): ground

Kentledge Type: 360 exc

Material Description: Crushed Stone

Plate Diameter (mm): 300

Layer Thickness (mm): n/a

Weather Conditions: mild

Results :

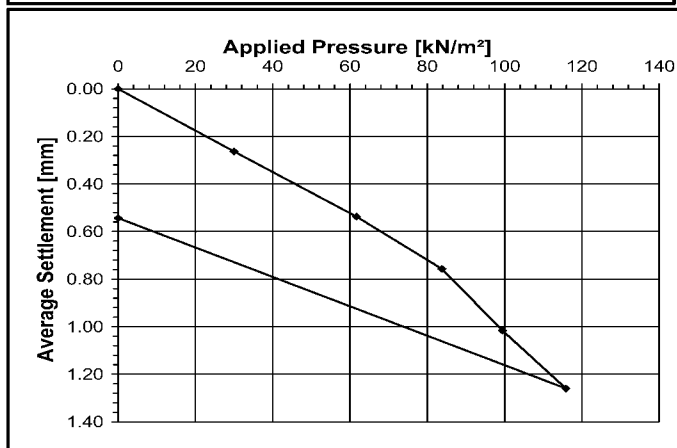
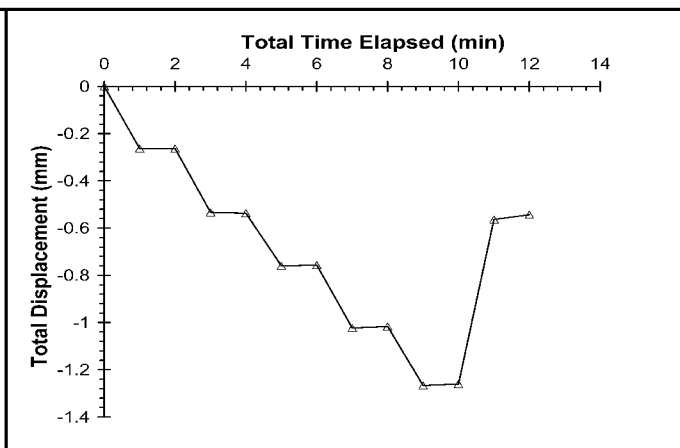
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
2.12	30	0.26
4.36	62	0.54
5.92	84	0.76
7.03	99	1.02
8.19	116	1.26
0.00	0	0.54
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 115

Modulus of Subgrade Reaction (MN/m²/m): 41

Moisture Content (%): N/A

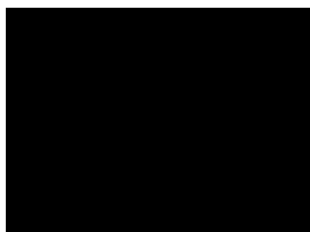
Equivalent CBR by Plate Loading (%): 5.9



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:



Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522471/406/M4

Report Date: 30 July 2021

Client: CELTIC TECHNOLOGIES LTD

Our Contract Ref: 51064057/M1

Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Socotec Test Reference: 26374406

Test Number: 4

Date Tested: 28 Jul 2021

Tested By: SOCOTEC Uxbridge

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: Site

Location: T4

Material Source: Site

Depth of Test (mm): ground

Kentledge Type: 360 exc

Material Description: Crushed Stone

Plate Diameter (mm): 300

Layer Thickness (mm): n/a

Weather Conditions: mild

Results :

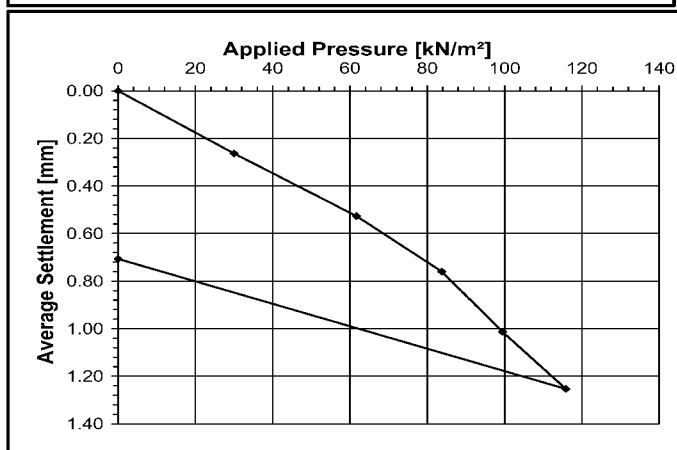
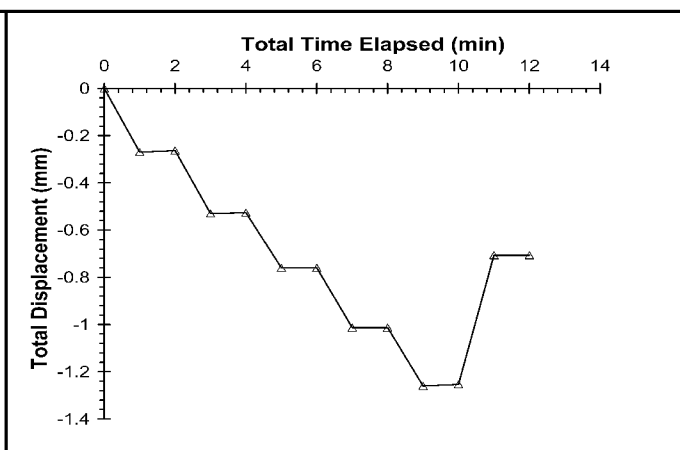
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
2.12	30	0.26
4.36	62	0.53
5.92	84	0.76
7.03	99	1.01
8.19	116	1.25
0.00	0	0.71
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 116

Modulus of Subgrade Reaction (MN/m²/m): 41

Moisture Content (%): N/A

Equivalent CBR by Plate Loading (%): 6.0



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:



Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522882/037/M1

Report Date: 4 August 2021

Client: CELTIC TECHNOLOGIES LTD
Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Our Contract Ref: 51064057/M2

Socotec Test Reference: 26379037

Test Number: 1

Date Tested: 2 Aug 2021

Tested By: SOCOTEC Sittingbourne

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: SITE

Location: CBR02

Material Source: SITE

Depth of Test (mm): Surface

Kentledge Type: 20t

Material Description: Type 1

Plate Diameter (mm): 300

Layer Thickness (mm): N/G

Weather Conditions: Overcast

Results :

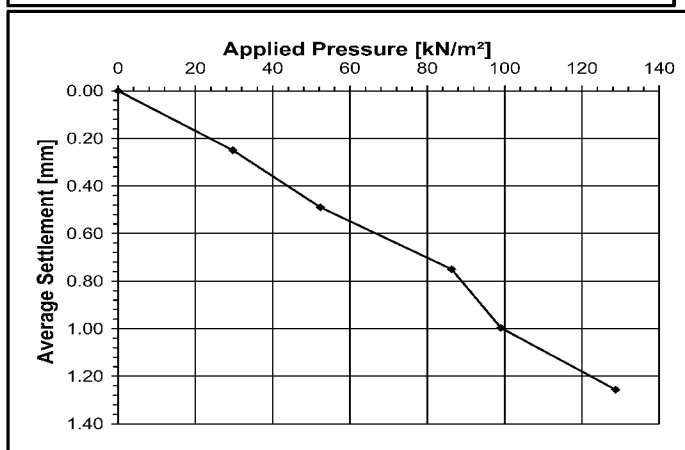
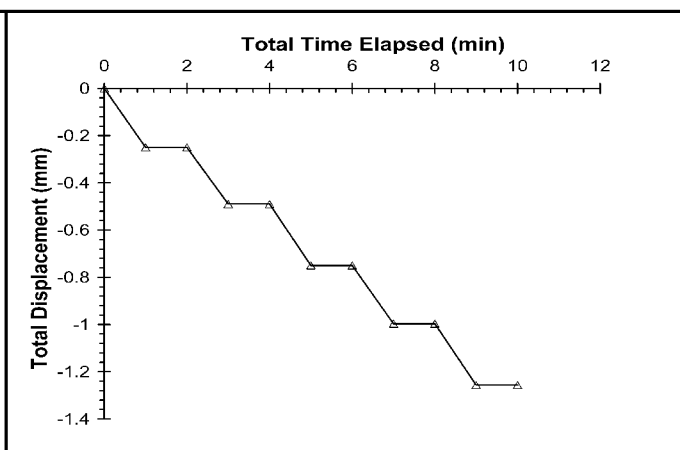
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
2.10	30	0.25
3.70	52	0.49
6.10	86	0.75
7.00	99	1.00
9.10	129	1.26
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 128

Modulus of Subgrade Reaction (MN/m²/m): 45

Moisture Content (%): N/A

Equivalent CBR by Plate Loading (%): 7.1



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:

Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

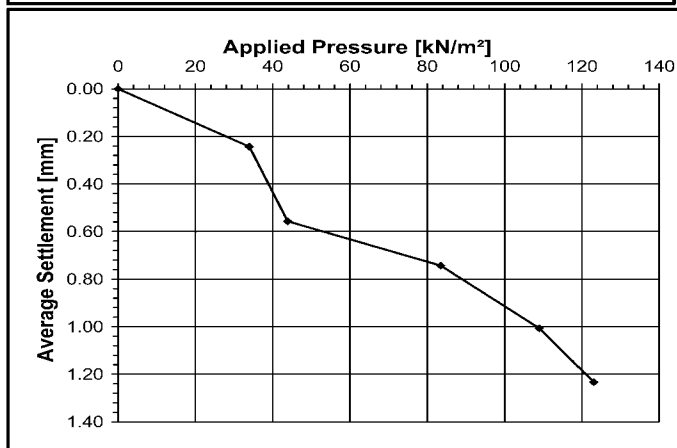
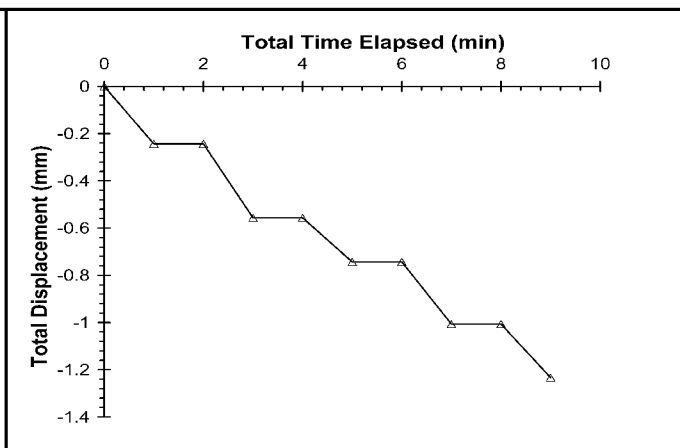
Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No:	UXB0522882/038/M2	Report Date:	4 August 2021
Client:	CELTIC TECHNOLOGIES LTD	Our Contract Ref:	51064057/M2
Address:	GREENMEADOW SPRINGS CARDIFF CF15 7NE GB	Socotec Test Reference:	26379038
Client Contact:	Not Advised	Test Number:	2
Site:	Former gas holder, Ford Road, Arundel, BN18 9DX	Date Tested:	2 Aug 2021
Location:	CBR03	Tested By:	SOCOTEC Sittingbourne
Depth of Test (mm):	Surface	Material Supplier:	SITE
Material Description:	Type 1	Material Source:	SITE
Layer Thickness (mm):	N/G	Kentledge Type:	20t
		Plate Diameter (mm):	300
		Weather Conditions:	Overcast

Results :

Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
2.40	34	0.24
3.10	44	0.56
5.90	83	0.74
7.70	109	1.01
8.70	123	1.23
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 123
Modulus of Subgrade Reaction (MN/m²/m): 43
Moisture Content (%): N/A
Equivalent CBR by Plate Loading (%): 6.7



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)
Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:



Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522882/039/M3

Report Date: 4 August 2021

Client: CELTIC TECHNOLOGIES LTD

Our Contract Ref: 51064057/M2

Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Socotec Test Reference: 26379039

Test Number: 3

Date Tested: 2 Aug 2021

Tested By: SOCOTEC Sittingbourne

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: SITE

Location: CBR04

Material Source: SITE

Depth of Test (mm): Surface

Kentledge Type: 20t

Material Description: Type 1

Plate Diameter (mm): 300

Layer Thickness (mm): N/G

Weather Conditions: Overcast

Results :

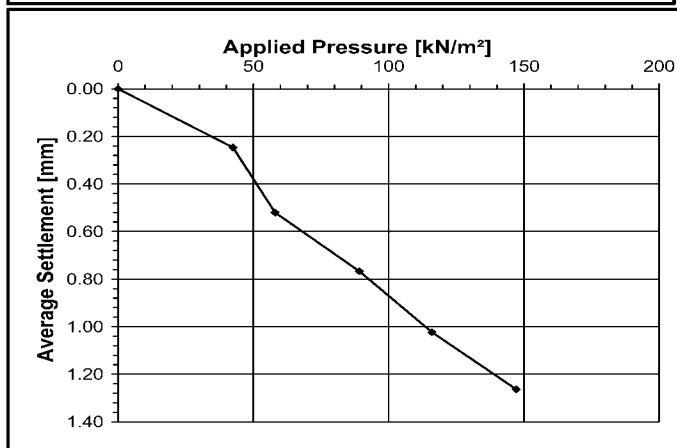
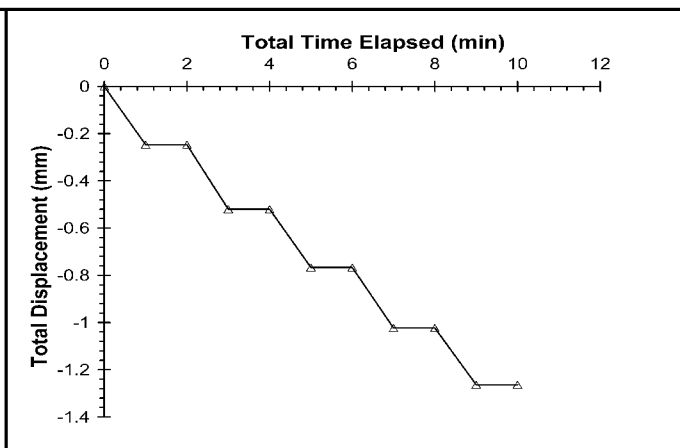
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
3.00	42	0.25
4.10	58	0.52
6.30	89	0.77
8.20	116	1.02
10.40	147	1.26
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 145

Modulus of Subgrade Reaction (MN/m²/m): 51

Moisture Content (%): N/A

Equivalent CBR by Plate Loading (%): 8.9



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:

Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522882/040/M4

Report Date: 4 August 2021

Client: CELTIC TECHNOLOGIES LTD

Our Contract Ref: 51064057/M2

Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Socotec Test Reference: 26379040

Test Number: 4

Date Tested: 2 Aug 2021

Tested By: SOCOTEC Sittingbourne

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: SITE

Location: CBR05

Material Source: SITE

Depth of Test (mm): Surface

Kentledge Type: 20t

Material Description: Type 1

Plate Diameter (mm): 300

Layer Thickness (mm): N/G

Weather Conditions: Overcast

Results :

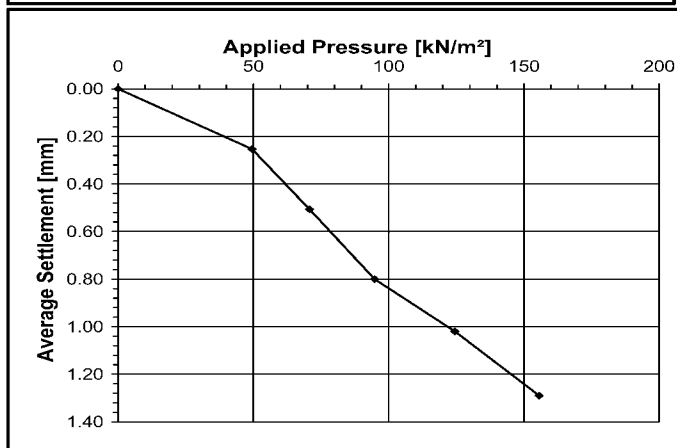
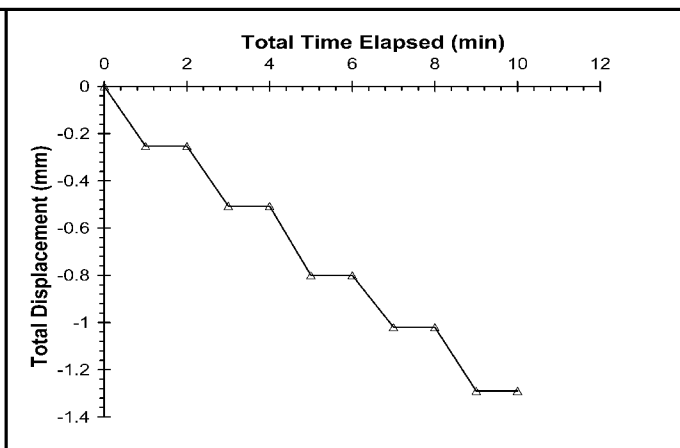
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
3.50	50	0.25
5.00	71	0.51
6.70	95	0.80
8.80	124	1.02
11.00	156	1.29
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 151

Modulus of Subgrade Reaction (MN/m²/m): 53

Moisture Content (%): N/A

Equivalent CBR by Plate Loading (%): 9.5



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was determined in accordance with BS 1378:1990 Method 3.2

Signed:

Lawrence Sears - HSE Support and Facilities Manager

on behalf of SOCOTEC UK Limited

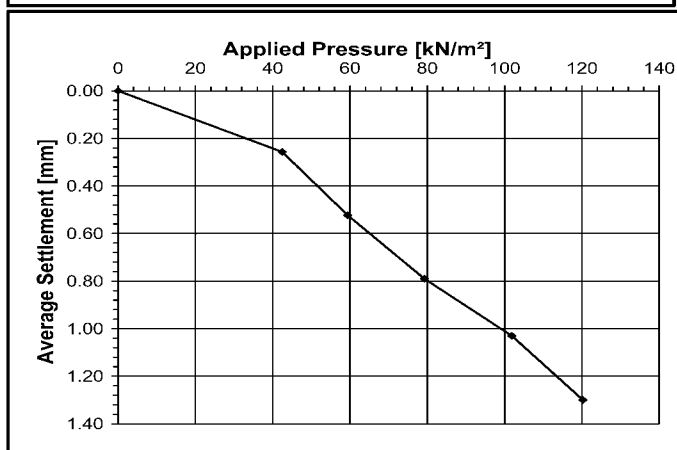
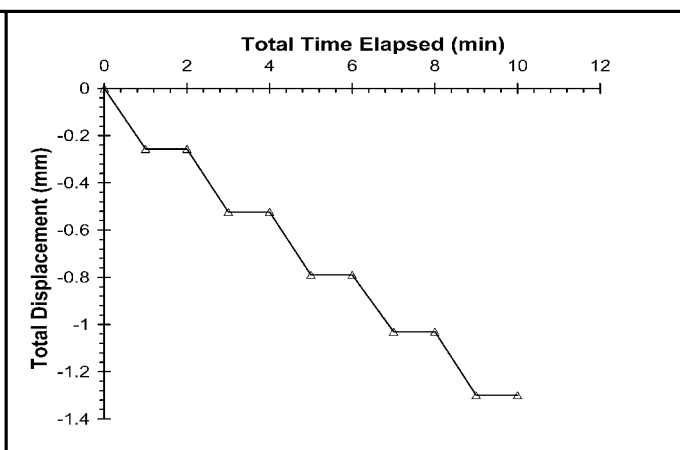
Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No:	UXB0522882/041/M5	Report Date:	4 August 2021
Client:	CELTIC TECHNOLOGIES LTD	Our Contract Ref:	51064057/M2
Address:	GREENMEADOW SPRINGS CARDIFF CF15 7NE GB	Socotec Test Reference:	26379041
Client Contact:	Not Advised	Test Number:	5
Site:	Former gas holder, Ford Road, Arundel, BN18 9DX	Date Tested:	2 Aug 2021
Location:	CBR06	Tested By:	SOCOTEC Sittingbourne
Depth of Test (mm):	Surface	Material Supplier:	SITE
Material Description:	Type 1	Material Source:	SITE
Layer Thickness (mm):	N/G	Kentledge Type:	20t
		Plate Diameter (mm):	300
		Weather Conditions:	Overcast

Results :

Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
3.00	42	0.26
4.20	59	0.52
5.60	79	0.79
7.20	102	1.03
8.50	120	1.30
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 117
Modulus of Subgrade Reaction (MN/m²/m): 41
Moisture Content (%): N/A
Equivalent CBR by Plate Loading (%): 6.1



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)
Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:



Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

Determination of Equivalent CBR Value derived from Plate Bearing Test

Report No: UXB0522882/042/M6

Report Date: 4 August 2021

Client: CELTIC TECHNOLOGIES LTD
Address: GREENMEADOW SPRINGS
CARDIFF
CF15 7NE
GB

Our Contract Ref: 51064057/M2

Socotec Test Reference: 26379042

Test Number: 6

Date Tested: 2 Aug 2021

Tested By: SOCOTEC Sittingbourne

Client Contact: Not Advised

Site: Former gas holder, Ford Road, Arundel, BN18 9DX

Material Supplier: SITE

Location: CBR07

Material Source: SITE

Depth of Test (mm): Surface

Kentledge Type: 20t

Material Description: Type 1

Plate Diameter (mm): 300

Layer Thickness (mm): N/G

Weather Conditions: Overcast

Results :

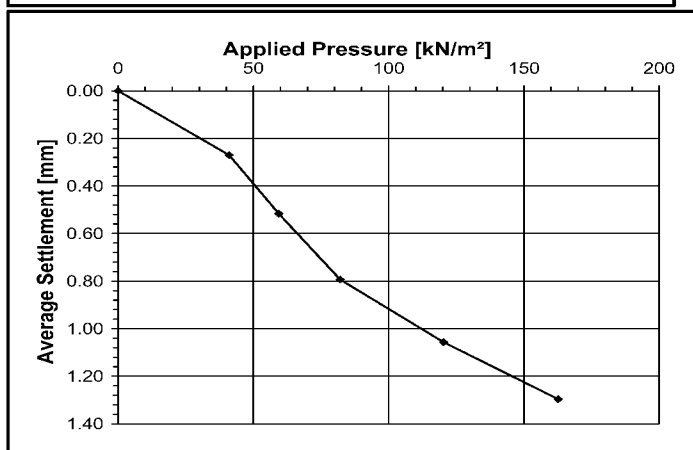
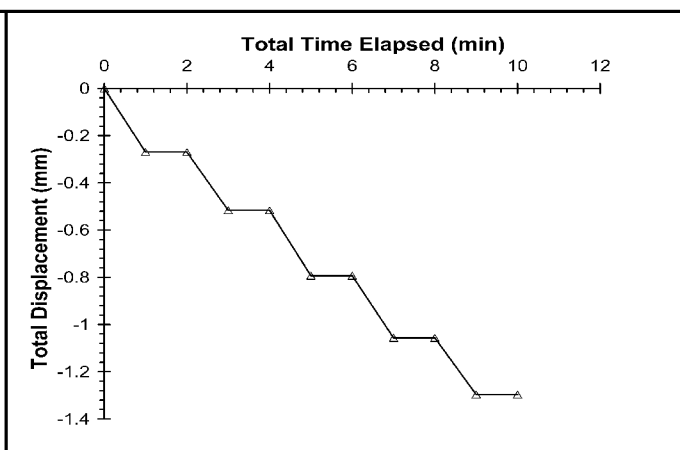
Applied Load (kN)	Applied Pressure (kN/m ²)	Applied Plate Settlement (mm)
2.90	41	0.27
4.20	59	0.52
5.80	82	0.79
8.50	120	1.06
11.50	163	1.30
End of Test		

Pressure at 1.25mm Settlement (kN/m²): 154

Modulus of Subgrade Reaction (MN/m²/m): 55

Moisture Content (%): N/A

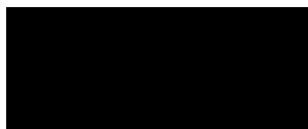
Equivalent CBR by Plate Loading (%): 9.9



Certified that testing was carried out in accordance with DIHM 301 v6 02/18, Design Manual for Road and Bridges Volume 7, Pavement design and Maintenance, IAN 73/06 Rev 1 (2009)

Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

Signed:



Andrew Sears - HSE Support and Facilities Manager
for and on behalf of SOCOTEC UK Limited

APPENDIX H ENVIRONMENTAL MONITORING DATA

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: NG ARUNDEL		Vapour Trigger Values OR site receptors Stop Work at ____ 1.0 ____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____ 0.5 ____ ppm (15 min TWA) at treatment area Stop Work at ____ 10 ____ ppm (15 min TWA) at treatment area when RPE worn Odour limit and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action limit value General Dust Exposure Action Limit Values: ____ 250 ____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB OR site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB					
Date: 07/06/2021																	
Round Number: 1		Weather: Sunny Wind Direct SSW 9mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A					
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)	
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5		
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below			
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																	
1	10:00:00	0.0	0.0	57.8	77.7	195.6	173.3	139.1	123.1	9.58	9.72	2.31	3.49	0	0		
2	10:20:00	0.0	0.0	53.2	84.0	35.6	38.7	13.6	13.1	4.8	4.9	1.86	1.95	0	0		
3	10:40:00	0.0	0.0	54.9	80.9	35.1	34.8	19	19.5	6.9	8.51	3.39	3.36	0	0		
4	11:15:00	0.0	0.0	58.8	80.4	80.2	80.2	29.5	37.4	11.25	12.1	4.09	4.15	0	0		
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Data logging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																	
1																	
2																	
3																	

Odour Monitoring Criteria Intensity

0 No detectable odour

1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)

2 Moderate odour (distinct odour detected while standing still)

3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)

4 Strong odour (bearable, but offensive odour)

5 Very strong odour (very offensive, possibly causing nausea)

Extent

0 No detectable odour

1 Local & transient (only during brief periods when wind drops or blows)

2 Transient as above, but detected away from installation boundary

3 Persistent, but fairly localised

4 Persistent and pervasive up to 50m from plant or installation boundary

5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: NG ARUNDEL		Vapour Trigger Values On site receptors Stop Work at ____ 1.0 ____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____ 0.5 ____ ppm (15 min TWA) at treatment area Stop Work at ____ 10 ____ ppm (15 min TWA) at treatment area when RPE worn Odour limit and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action limit value General Dust Exposure Action Limit Values: ____ 250 ____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB On site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB					
Date: 07/06/2021																	
Round Number: 2		Weather: Sunny Wind Direct SSW 9mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A					
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)	
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m3)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5		
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins				
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																	
1	15:15:00	0.0	0.0	55.3	69.4	56.6	55.3	43.4	44.4	8.98	8.43	3.85	3.58	0	0		
2	15:35:00	0.0	0.0	53.3	78.3	43.4	44.1	21.3	20.6	6.4	6.9	2.48	2.84	0	0		
3	15:55:00	0.0	0.0	51.7	79.3	48.4	50.3	18.6	19.5	11.2	13.4	3.86	4.10	0	0		
4	16:15:00	0.0	0.0	53.9	81.2	75.2	77.4	31.2	35.3	13.25	13.9	3.91	4.28	0	0		
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Data logging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																	
1																	
2																	
3																	

Odour Monitoring Criteria Intensity

0 No detectable odour

1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)

2 Moderate odour (distinct odour detected while standing still)

3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)

4 Strong odour (bearable, but offensive odour)

Extent

0 No detectable odour

1 Local & transient (only during brief periods when wind drops or blows)

2 Transient as above, but detected away from installation boundary

3 Persistent, but fairly localised

4 Persistent and pervasive up to 50m from plant or installation boundary

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: NG ARUNDEL		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> Vapour Trigger Values OW site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria _0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour limit and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 </td> <td style="width: 50%;"> Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB </td> </tr> </table>										Vapour Trigger Values OW site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria _0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour limit and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3	Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB			
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Date: 08/06/2021																
Round Number: 1		Weather: Sunny Wind Direction: S 4 mph mB:														
PID Calibration Passed: Y/N		Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A														
Location	Time	VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)
		Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5	
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below		
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																
1	12:30:00	0.0	0.0	57.3	78.4	72.8	8.4	44.5	53.6	19.15	19.43	5.79	5.76	0	0	
2	12:50:00	0.0	0.0	53.9	81.4	72.1	73.7	47	49.3	19.71	21.51	5.39	6.24	0	0	
3	13:10:00	0.0	0.0	61.4	84.5	58.2	52.8	39.2	27.5	20.97	21.9	6.59	6.55	0	0	
4	13:30:00	0.0	0.0	54.8	77.4	64.56	62.6	51.46	52.23	18.54	21.98	5.83	5.42	0	0	
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour limit and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 </td> <td style="width: 50%;"> Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB </td> </tr> </table>										Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour limit and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3	Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB			
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Date: 08/06/2021																
Round Number: 2		Weather: Sunny Wind Direction: S 11 mph mB:														
PID Calibration Passed: Y/N		Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A														
Location	Time	VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)
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						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below		
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																
1	16:00:00	0.0	0.0	52.5	76.5	69.5	72.1	65.4	64.2	19.54	19.53	5.43	5.45	0	0	
2	16:20:00	0.0	0.0	54.9	78.7	73.3	74.8	54.7	58.7	19.76	21.43	6.73	6.25	0	0	
3	16:40:00	0.0	0.0	59.3	81.6	67.5	65.7	57.6	60.1	20.45	20.87	6.24	6.73	0	0	
4	17:00:00	0.0	0.0	58.3	80.5	59.8	64.3	55.4	57.5	17.53	22.14	6.38	6.34	0	0	
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Round Number: 1		Weather: Sunny Wind Direction: W 4mph mB:														
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1	10:20:00	0.0	0.0	57.9	73.2	64.4	67.7	85.5	83.4	19.43	19.76	6.54	7.45	0	0	
2	10:40:00	0.0	0.0	56.4	74.5	78.5	74.8	67.4	64.6	23.64	21.54	5.63	6.74	0	0	
3	11:00:00	0.0	0.0	52.8	81.5	79.6	65.7	64.5	65.8	24.45	24.67	6.65	6.45	0	0	
4	11:20:00	0.0	0.0	58.6	76.7	59.6	67.4	64.2	59.6	19.43	21.43	6.32	7.12	0	0	
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Date: 09/06/2021																
Round Number: 2		Weather: Sunny Wind Direction: S 12mph mB:														
PID Calibration Passed: Y/N		Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A														
Location	Time	VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)
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1	14:20:00	0.0	0.0	54.5	74.6	77.4	77.2	91.3	89.3	24.5	21.34	7.35	7.39	0	0	
2	14:40:00	0.0	0.0	57.4	78.5	69.8	72.3	76.3	77.5	23.8	19.75	6.75	6.56	0	0	
3	15:00:00	0.0	0.0	56.3	83.2	83.5	81.5	84.4	81.3	24.54	23.68	5.73	6.13	0	0	
4	15:20:00	0.0	0.0	57.7	80.1	65.3	66.2	69.8	70.4	20.45	21.56	7.43	7.45	0	0	
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PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	57.7	80.3					95.3				0	0						
2	09:20:00	0.0	0.0	58.2	77.6					76.8				0	0						
3	09:40:00	0.0	0.0	55.4	81.5					84.4				0	0						
4	10:00:00	0.0	0.0	53.8	79.4					76.3				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Date: 10/06/2021																					
Round Number: 2		Weather: Sunny Wind Direction: SSW 11mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
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IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:10:00	0.0	0.0	54.5	80.5				92.4					0	0						
2	15:30:00	0.0	0.0	55.1	79.3				80.3					0	0						
3	15:50:00	0.0	0.0	54.7	79.4				81.6					0	0						
4	16:10:00	0.0	0.0	56.2	80.1				78.9					0	0						
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3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 14/06/2021																					
Round Number: 1		Weather: Sunny Wind Direction: N 4mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:10:00	0.0	0.0	55.3	76.4					77.5				0	0						
2	09:30:00	0.0	0.0	56.3	69.5					74.3				0	0						
3	09:50:00	0.0	0.0	53.7	78.6					69.6				0	0						
4	10:10:00	0.0	0.0	56.7	82.4					70.2				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour Risk and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 14/06/2021																					
Round Number: 2		Weather: Sunny Wind Direction: SSW 9mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins								
														see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:30:00	0.0	0.0	51.3	64.8				85.3					0	0						
2	15:50:00	0.0	0.0	54.6	67.4				88.6					0	0						
3	16:10:00	0.0	0.0	55.7	78.6				79.5					0	0						
4	16:30:00	0.0	0.0	55.3	80.3				77.3					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria

Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 15/06/2021																					
Round Number: 1		Weather: Sunny Wind Direction: NE 7mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	11:00:00	0.0	0.0	54.7	66.7				91.5					0	0						
2	11:20:00	0.0	0.0	53.2	68.1				87.5					0	0						
3	11:40:00	0.0	0.0	56.4	80.3				87.8					0	0						
4	12:00:00	0.0	0.0	55.8	79.5				83.8					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 15/06/2021																					
Round Number: 2		Weather: Sunny Wind Direction: S 9 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m ³)		PM10 (µg/m ³)		PM2.5 (µg/m ³)		PM1 (µg/m ³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	16:00:00	0.0	0.0	51.5	66.5				83.5					0	0						
2	16:20:00	0.0	0.0	56.3	68.3				81.8					0	0						
3	16:40:00	0.0	0.0	57.8	78.5				86.3					0	0						
4	17:00:00	0.0	0.0	56.5	80.1				83.6					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 16/06/2021		Weather: Sunny Wind Direction: S 8mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
Round Number: 1																					
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:30:00	0.0	0.0	55.4	63.6					101.4					0	0					
2	08:50:00	0.0	0.0	54.3	70.3					92.4					0	0					
3	09:10:00	0.0	0.0	56.8	76.5					84.5					0	0					
4	09:30:00	0.0	0.0	55.8	79.4					91.3					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 16/06/2021																					
Round Number: 2		Weather: Sunny Wind Direction: S 4 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	16:00:00	0.0	0.0	52.4	71.5				87.6					0	0						
2	16:20:00	0.0	0.0	55.4	72.5				90.4					0	0						
3	16:40:00	0.0	0.0	56.1	80.9				88.5					0	0						
4	17:00:00	0.0	0.0	55.6	82.5				94.6					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria

Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	Extent
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 17/06/2021																					
Round Number: 2		Weather: Sunny Wind Direction: NNE 7 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:15:00	0.0	0.0	56.7	69.6				92.4					0	0						
2	14:35:00	0.0	0.0	54.6	73.6				88.5					0	0						
3	14:55:00	0.0	0.0	56.8	79.5				101.5					0	0						
4	15:15:00	0.0	0.0	56.3	80.6				97.4					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
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- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria _0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 18/06/2021																					
Round Number: 1		Weather: Very Heavy Rain Wind Direction: NNE 15mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1		VERY HEAVY RAIN UNABLE TO MONITOR, NO WORKS UNDERTAKEN												0	0						
2														0	0						
3														0	0						
4														0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

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Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values On site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria _0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour Return and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 21/06/2021																					
Round Number: 1		Weather: Very Heavy Rain Wind Direction: NNE 16mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins					see below			
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1		VERY HEAVY RAIN UNABLE TO MONITOR, NO WORKS UNDERTAKEN										0	0								
2												0	0								
3												0	0								
4												0	0								
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria

Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 21/06/2021																					
Round Number: 2		Weather: Showers Wind Direction: NE 17 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:30:00	0.0	0.0	53.5	67.4					65.5					0	0					
2	15:50:00	0.0	0.0	52.7	64.4					57.6					0	0					
3	16:10:00	0.0	0.0	54.6	78.8					59.5					0	0					
4	16:30:00	0.0	0.0	56.7	78.5					64.6					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 22/06/2021																					
Round Number: 1		Weather: Showers Wind Direction: NNE 16 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	10:00:00	0.0	0.0	53.5	63.6				63.6					0	0						
2	10:20:00	0.0	0.0	55.7	69.6				60.5					0	0						
3	10:40:00	0.0	0.0	57.5	81.4				67.5					0	0						
4	11:00:00	0.0	0.0	56.3	80.5				72.5					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 22/06/2021																					
Round Number: 2		Weather: Overcast Wind Direction: NNE 15 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	16:00:00	0.0	0.0	54.4	65.4					77.4					0	0					
2	16:20:00	0.0	0.0	54.9	67.4					83.3					0	0					
3	16:40:00	0.0	0.0	56.4	80.3					89.3					0	0					
4	17:00:00	0.0	0.0	55.4	78.4					84.5					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 23/06/2021																					
Round Number: 1		Weather: Sunny Wind Direction: NNE 15 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	10:00:00	0.0	0.0	52.3	59.3				46.8					0	0						
2	10:20:00	0.0	0.0	51.8	57.8				53.8					0	0						
3	10:40:00	0.0	0.0	56.4	72.2				52.9					0	0						
4	11:00:00	0.0	0.0	53.2	73.3				49.7					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values <small>Off site receptors</small> Stop Work at ____1.0____ ppm (15 min TWA) at site boundary <small>On site receptors</small> RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour Risk and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB <small>Off site monitors (15 min LAeq)</small> Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 24/06/2021																					
Round Number: 1		Weather: Sunny Wind Direction: NW 9mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	12:10:00	0.0	0.0	53	67				43					0	0						
2	11:10:00	0.0	0.0	65	69				23.4					0	0						
3	11:30:00	0.0	0.0	59	72				40.3					0	0						
4	11:50:00	0.0	0.0	60	76				33.2					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					
Dig Area F4	0.52	0	0	72	79									0	0						

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 25/06/2021		Weather: Showers Wind Direction: WSW 9 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
Round Number: 1		PID Calibration Passed: Y/N										VOC NOISE DUST ODOUR									
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5	Comments (Action required?/ Action taken)					
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins								
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:30:00	0.0	0.0	53	62				35.5					0	0						
2	09:50:00	0.0	0.0	57	64				45.2					0	0						
3	10:10:00	0.0	0.0	64	75				36.3					0	0						
4	10:30:00	0.0	0.0	61	77				32.1					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 28/06/2021																					
Round Number: 1		Weather: Sunny Spells Wind Direction: S 8 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	11:00:00	0.0	0.0	49	54					44.6					0	0					
2	11:20:00	0.0	0.0	53	58					47.6					0	0					
3	11:40:00	0.0	0.0	58	76					53.6					0	0					
4	12:00:00	0.0	0.0	65	73					49.5					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					
Breaking concrete with bucket				60.4	83.3					68.5					0	0					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values QM site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 28/06/2021																					
Round Number: 2		Weather: Sunny Spells Wind Direction: SW 3 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	16:20:00	0.0	0.0	43	56					35.7					0	0					
2	16:40:00	0.0	0.0	47	54					48.5					0	0					
3	17:00:00	0.0	0.0	49	69					59.3					0	0					
4	17:20:00	0.0	0.0	51	76					52.5					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria

Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 29/06/2021																					
Round Number: 1		Weather: Showers Wind Direction: N 5mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:30:00	0.0	0.0	56	67					45.7					0	0					
2	08:50:00	0.0	0.0	49	63					65.3					0	0					
3	09:10:00	0.0	0.0	61	75					58.2					0	0					
4	09:30:00	0.0	0.0	59	78					57.3					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 29/06/2021																					
Round Number: 2		Weather: Showers Wind Direction: N 6 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:30:00	0.0	0.0	49	65					36.6				0	0						
2	15:50:00	0.0	0.0	53	59					57.2				0	0						
3	16:10:00	0.0	0.0	58	78					63.5				0	0						
4	16:30:00	0.0	0.0	64	81					62.5				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 30/06/2021																					
Round Number: 2		Weather: Overcast Wind Direction: N 7 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:00:00	0.0	0.0	48	60					46.7				0	0						
2	14:20:00	0.0	0.0	55	67					55.3				0	0						
3	14:40:00	0.0	0.0	58	74					86.4				0	0						
4	15:00:00	0.0	0.0	62	72					67.4				1	1	Slight Organic odour due to removing green waste					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values QM site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 01/07/2021																					
Round Number: 1		Weather: Overcast Wind Direction: ENE 4 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	11:00:00	0.0	0.0	43	53				45.6					0	0						
2	11:20:00	0.0	0.0	47	56				41.7					0	0						
3	11:40:00	0.0	0.0	53	74				67.4					0	0						
4	12:00:00	0.0	0.0	56	76				58.3					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour Risk and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 01/07/2021																					
Round Number: 2		Weather: Overcast Wind Direction: S 11 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:30:00	0.0	0.0	53	59					38.5					0	0					
2	15:50	0.0	0.0	47	58					47.5					0	0					
3	16:10:00	0.0	0.0	51	69					53.2					0	0					
4	16:30	0.0	0.0	53	78					56.4					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
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- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	
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1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
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5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 05/07/2021																					
Round Number: 1		Weather: Rain Wind Direction: SW 9mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:30:00	0.0	0.0	42	52					24.4				0	0						
2	08:50:00	0.0	0.0	46	63					26.1				0	0						
3	09:10:00	0.0	0.0	52	73					36.3				0	0						
4	09:30:00	0.0	0.0	56	76					36.7				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 05/07/2021																					
Round Number: 2		Weather: Rain Wind Direction: S 13mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:20:00	0.0	0.0	43	55					19.4				0	0						
2	14:40:00	0.0	0.0	51	61					21.6				0	0						
3	15:00:00	0.0	0.0	57	76					31.4				0	0						
4	15:20:00	0.0	0.0	55	73					27.4				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 06/07/2021																					
Round Number: 1		Weather: Rain Wind Direction: W 22mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	10:10:00	0.0	0.0	39	53				21.5					0	0						
2	10:30:00	0.0	0.0	41	55				20.4					0	0						
3	10:50:00	0.0	0.0	54	73				25.6					0	0						
4	11:10:00	0.0	0.0	58	78				22.4					0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 06/07/2021																					
Round Number: 2		Weather: Overcast Wind Direction: W 24mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	38	51					25.3				0	0						
2	15:20:00	0.0	0.0	43	57					28.4				0	0						
3	15:40:00	0.0	0.0	57	67					31.2				1	1	Slight hydrocarbon odour from excavation works					
4	16:00:00	0.0	0.0	55	73					24.5				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 07/07/2021																					
Round Number: 1		Weather: Rain Wind Direction: W16 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	34	49					21.3					0	0					
2	09:20:00	0.0	0.0	41	54					24.7					0	0					
3	09:40:00	0.0	0.0	55	77					22.5					0	0					
4	10:00:00	0.0	0.0	58	81					23.6					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
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- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 07/07/2021																					
Round Number: 2		Weather: Showers Wind Direction: SSW 17mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	31	52					24.4				0	0						
2	15:20:00	0.0	0.0	42	56					23.1				0	0						
3	15:40:00	0.0	0.0	58	79					34.2				0	0						
4	16:00:00	0.0	0.0	56	76					36.6				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	Extent
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 08/07/2021																					
Round Number: 2		Weather: Showers Wind Direction: SSW 6mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:40:00	0.0	0.0	53	64					36.4				0	0						
2	15:00:00	0.0	0.0	51	66					47.5				0	0						
3	15:20:00	0.0	0.0	58	78					54.3				0	0						
4	15:40:00	0.0	0.0	62	81					55.7				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 09/07/2021																					
Round Number: 1		Weather: Overcast Wind Direction: SW 10mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	49	62					44.1				0	0						
2	09:20:00	0.0	0.0	51	67					45.9				0	0						
3	09:40:00	0.0	0.0	59	79					52.2				0	0						
4	10:00:00	0.0	0.0	58	76					56.3				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 12/07/2021																					
Round Number: 1		Weather: Overcast Wind Direction: NE 10 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m ³)		PM10 (µg/m ³)		PM2.5 (µg/m ³)		PM1 (µg/m ³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:10:00	0.0	0.0	53	66					56.2				0	0						
2	08:30:00	0.0	0.0	49	72					37.4				0	0						
3	08:50:00	0.0	0.0	61	80					51.4				0	0						
4	09:10:00	0.0	0.0	64	78					55.6				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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- 0 No detectable odour
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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 12/07/2021																					
Round Number: 2		Weather: Showers Wind Direction: SSW 7 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	51	63					54.3				0	0						
2	15:20:00	0.0	0.0	54	68					49.6				0	0						
3	15:40:00	0.0	0.0	65	79					78.4				1	1	Slight Hydrocarbon odour due to excavation					
4	16:00:00	0.0	0.0	62	75					67.3				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
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- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 13/07/2021																					
Round Number: 2		Weather: Sunny Wind Direction: SE 13 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m ³)		PM10 (µg/m ³)		PM2.5 (µg/m ³)		PM1 (µg/m ³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	55	68					42.1				0	0						
2	15:20:00	0.0	0.0	58	78					16.7				0	0						
3	15:40:00	0.0	0.0	57	84					21.5				1	1	Slight Hydrocarbon odour due to excavation					
4	16:00:00	0.0	0.1	59	86					18.4				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria

Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 14/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: NE 11 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	10:00:00	0.0	0.0	57	62				41.2					0	0						
2	10:20:00	0.0	0.0	63	70				111.6					0	0	Grout being mixed					
3	10:40:00	0.0	0.0	62	84				22.1					1	1	Slight Hydrocarbon odour due to excavation					
4	11:00:00	0.0	0.0	60	81				18.3					1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					
Mixing Area				74	91																

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 14/07/2021																					
Round Number: 2		Weather: Sunny Wind Direction: NE 11 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:40:00	0.0	0.0	54	68					38.2				0	0						
2	15:00:00	0.0	0.0	61	77					52.1				0	0						
3	15:20:00	0.0	0.0	65	81					42.4				0	0						
4	15:40:00	0.0	0.1	63	88					29.4				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 15/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: NE 15 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m ³)		PM10 (µg/m ³)		PM2.5 (µg/m ³)		PM1 (µg/m ³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:20:00	0.0	0.0	52	67					43.2				0	0						
2	08:40:00	0.0	0.0	57	79					68.2				0	0						
3	09:00:00	0.0	0.0	62	83					18.4				0	0						
4	09:20:00	0.0	0.1	65	85					33.1				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

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- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 15/07/2021																					
Round Number: 2		Weather: Sunny Wind Direction: NE 11 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m ³)		PM10 (µg/m ³)		PM2.5 (µg/m ³)		PM1 (µg/m ³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	56	62					30.5				0	0						
2	15:20:00	0.0	0.0	63	81					47.1				0	0						
3	15:40:00	0.0	0.0	59	80					32.7				0	0						
4	16:00:00	0.0	0.0	69	88					21.7				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria

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- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 16/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: N 8 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	61	65					30.5				0	0						
2	09:20:00	0.0	0.0	70	73					47.1				0	0						
3	09:40:00	0.0	0.0	64	82					32.7				0	0						
4	10:00:00	0.0	0.0	67	85					21.7				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values <small>Off site receptors</small> Stop Work at ____1.0____ ppm (15 min TWA) at site boundary <small>On site receptors</small> RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour Risk and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB <small>Off site monitors (15 min LAeq)</small> Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 19/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: S 3 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	58	67					19.4				0	0						
2	09:20:00	0.0	0.0	67	73					32.9				0	0						
3	09:40:00	0.0	0.0	64	80					25.5				0	0						
4	10:00:00	0.0	0.0	65	78					18.5				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 19/07/2021																					
Round Number: 2		Weather: Sunny Wind Direction: S 9 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	61	65					17.3				0	0						
2	15:30:00	0.0	0.0	63	76					18.2				0	0						
3	15:50:00	0.0	0.0	66	76					17.3				0	0						
4	16:10:00	0.0	0.0	63	74					21.4				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
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- 1 Local & transient (only during brief periods when wind drops or blows)
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- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 20/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: ENE 5 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below	see below						
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:30:00	0.0	0.0	62	65					19.1					0	0					
2	08:50:00	0.0	0.0	66	77					18.6					0	0					
3	09:10:00	0.0	0.0	66	79					18.4					0	0					
4	09:40:00	0.0	0.0	68	81					24.7					1	1	Slight Hydrocarbon odour due to excavation				
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 20/07/2021																					
Round Number: 2		Weather: Sunny Wind Direction: S 9 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m ³)		PM10 (µg/m ³)		PM2.5 (µg/m ³)		PM1 (µg/m ³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:40:00	0.0	0.0	59	62					20.3				0	0						
2	15:00:00	0.0	0.0	62	70					17.4				0	0						
3	15:20:00	0.0	0.0	67	83					18.5				0	0						
4	15:40:00	0.0	0.0	64	82					21.4				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m ³ (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 21/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: NE 3 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	61	72					19.4				0	0						
2	09:20:00	0.0	0.0	68	82					20.5				0	0						
3	09:40:00	0.0	0.0	66	79					17.6				0	0						
4	10:00:00	0.0	0.0	67	80					19.8				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

Odour Monitoring Criteria	Extent
Intensity	
0 No detectable odour	0 No detectable odour
1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)	1 Local & transient (only during brief periods when wind drops or blows)
2 Moderate odour (distinct odour detected while standing still)	2 Transient as above, but detected away from installation boundary
3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)	3 Persistent, but fairly localised
4 Strong odour (bearable, but offensive odour)	4 Persistent and pervasive up to 50m from plant or installation boundary
5 Very strong odour (very offensive, possibly causing nausea)	5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 22/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: E 4 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	11:00:00	0.0	0.0	55	69					18.3				0	0						
2	11:20:00	0.0	0.0	64	77					16.6				0	0						
3	11:40:00	0.0	0.0	62	79					15.3				0	0						
4	12:00:00	0.0	0.0	67	81					19.4				1	1	Slight Hydrocarbon odour due to excavation					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
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- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 22/07/2021																					
Round Number: 2		Weather: Sunny Wind Direction: SE 9 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	61	67					17.1				0	0						
2	15:20:00	0.0	0.0	66	78					18.7				0	0						
3	15:40:00	0.0	0.0	68	84					17.9				0	0						
4	16:00:00	0.0	0.0	65	80					23.7				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Extent

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- 5 Persistent and widespread (odour detected >50 m from installation boundary)

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 26/07/2021																					
Round Number: 1		Weather: Showers Wind Direction: S 3 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	61	68					11.4				0	0						
2	09:20:00	0.0	0.0	66	74					13.2				0	0						
3	09:50:00	0.0	0.0	59	83					13.2				0	0						
4	10:10:00	0.0	0.0	65	83					11.6				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 26/07/2021																					
Round Number: 2		Weather: Showers Wind Direction: S 14mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	55	67					13.5				0	0						
2	15:20:00	0.0	0.0	62	70					13.1				0	0						
3	15:40:00	0.0	0.0	62	79					16.7				0	0						
4	16:00:00	0.0	0.0	66	82					18.4				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 27/07/2021																					
Round Number: 1		Weather: Showers Wind Direction: SSW 11mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	10:20:00	0.0	0.0	59	66					17.1				0	0						
2	10:40:00	0.0	0.0	64	73					19.7				0	0						
3	11:00:00	0.0	0.0	66	81					22.4				0	0						
4	11:20:00	0.0	0.0	64	83					25.4				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 27/07/2021																					
Round Number: 2		Weather: Showers Wind Direction: SSW 16mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	14:30:00	0.0	0.0	61	69					16.3				0	0						
2	14:50:00	0.0	0.0	67	77					21.2				0	0						
3	15:10:00	0.0	0.0	70	85					24.7				0	0						
4	15:30:00	0.0	0.0	66	81					23.4				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn Odour Risk and action values: Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 28/07/2021																					
Round Number: 1		Weather: Showers Wind Direction: W 17 mph mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	09:00:00	0.0	0.0	65	75					34.1					0	0					
2	09:20:00	0.0	0.0	68	77					28.5					0	0					
3	09:40:00	0.0	0.0	70	82					37.2					0	0					
4	10:00:00	0.0	0.0	71	80					37.4					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria**Intensity**

- 0 No detectable odour
- 1 Faint odour (barely detectable, need to stand still and inhale facing into the wind)
- 2 Moderate odour (distinct odour detected while standing still)
- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 28/07/2021		Weather: Sunny Wind Direction: SW 27 MPH Gusting 40MPH+ mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
Round Number: 2																					
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	60	70					55.9					0	0					
2	15:20:00	0.0	0.0	65	74					48.3					0	0					
3	15:40:00	0.0	0.0	71	80					52.9					0	0					
4	16:00:00	0.0	0.0	70	84					55.4					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

Odour Monitoring Criteria
Intensity

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- 3 Moderately strong odour (detectable while walking & breathing, normally possibly offensive)
- 4 Strong odour (bearable, but offensive odour)
- 5 Very strong odour (very offensive, possibly causing nausea)

Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
- 2 Transient as above, but detected away from installation boundary
- 3 Persistent, but fairly localised
- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Off site receptors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 29/07/2021																					
Round Number: 1		Weather: Sunny Wind Direction: SW 22 MPH Gusting 35MPH+ mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:30:00	0.0	0.0	56	68					32.5				0	0						
2	08:50:00	0.0	0.0	63	78					36.1				0	0						
3	09:10:00	0.0	0.0	68	76					44.6				0	0						
4	09:30:00	0.0	0.0	70	82					57.3				0	0						
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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Extent

- 0 No detectable odour
- 1 Local & transient (only during brief periods when wind drops or blows)
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- 4 Persistent and pervasive up to 50m from plant or installation boundary
- 5 Persistent and widespread (odour detected >50 m from installation boundary)

SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site monitors (15 min LAeq) Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 29/07/2021		Weather: Sunny Wind Direction: SW 27 MPH Gusting 35MPH+ mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
Round Number: 2																					
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	15:00:00	0.0	0.0	55	67					31.3					0	0					
2	15:20:00	0.0	0.0	58	76					40.5					0	0					
3	15:40:00	0.0	0.0	66	80					37.4					0	0					
4	16:00:00	0.0	0.0	68	80					55.9					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

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SAR-PC-32

Environmental Monitoring/ Occupational Monitoring Proforma

Site: Arundel		Vapour Trigger Values Off site receptors Stop Work at ____1.0____ ppm (15 min TWA) at site boundary On site receptors RPE Criteria ____0.5____ ppm (15 min TWA) at treatment area Stop Work at ____10____ ppm (15 min TWA) at treatment area when RPE worn										Dust action/limit value General Dust Exposure Action Limit Values: ____250____ µg/m3 (PM10 15 min TWA) Noise exposure limit values and action values (15 min LAeq) Action Level: 85dB where ear protection must be worn Stop work Criteria 90 dB Odour limit and action values: Off site receptors (15 min LAeq) Action level: Intensity 2 Extent 2 Stop work Criteria: Intensity 3 Extent 3 Predicted noise level of 70 dB at site boundary shall be adhered to. Where levels become >73 dB, works shall cease and further mitigation measures installed. Background value for site: 65 dB									
Date: 30/07/2021		Weather: Showera Wind Direction: SW 32MPH Gusting 50MPH+ mB:										Monitoring Equipment Pre-Checks Completed DustMate [Celt109] Y—N—N/A Noise Meter [Celt220] Y—N—N/A PID [Celt254] Y—N—N/A									
Round Number: 1																					
PID Calibration Passed: Y/N		VOC		NOISE		DUST								ODOUR		Comments (Action required?/ Action taken)					
Location	Time	Average over 15 mins (ppm)	Peak over 15 mins (ppm)	LAeq 15 mins (dB)	Peak over 15 mins (dB)	TSP (µg/m³)		PM10 (µg/m³)		PM2.5 (µg/m³)		PM1 (µg/m³)		Intensity 0-5	Extent 0-5						
						5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	5 mins	15 mins	see below							
IMPORTANT: if TRIGGER VALUES are exceeded SITE supervisor and site team should be notified immediately and controls reviewed.																					
1	08:30:00	0.0	0.0	58	68					22.5					0	0					
2	12:00:00	0.0	0.0	60	71					21.8					0	0					
3	09:10:00	0.0	0.0	65	78					25.4					0	0					
4	09:30:00	0.0	0.0	67	78					27.6					0	0					
Use below to record occupational health monitoring readings in active work areas, i.e. Remediation technologies processes at excavation/ drilling location (VOC's and noise), within/around WTS/BP systems & adjacent to pumps BH and dewatering locations (noise, VOC's). Consideration should be given to use of Datalogging PID for work shift exposure monitoring and use of Personal PID etc for workers undertaking tasks where exposure is occurring.																					

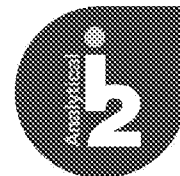
Odour Monitoring Criteria
Intensity

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CERTIFICATE OF ANALYSIS



Environmental Science

MULTI-SAMPLE	REGISTERED	RECEIVED	ANALYSIS	ANALYSIS
REPORT REFERENCE	DATE	DATE	STARTED	COMPLETE
2021-30-52-10:52:55	24/06/2021	24/06/2021	24/06/2021	29/06/2021

LABORATORY	CUSTOMER
i2 Analytical	Celtic enGlobe
Croxley Green Business Park	Columbus House
7 Woodshots Meadow	Greenmeadow Springs
Watford	Tongwynlais
WD18 8YS	Cardiff
	CF15 7NE

PO NUMBER	81859	CLIENT SITE	NGPH Arundel
END DATE SAMPLED	22/06/2021	CLIENT CODE	C1820
DATE SAMPLED (DD/MM/YY)	08/06/2021		

Matrix: Water

	i2 Sample Number	234501	234502	234503	234504
	Sample Reference	EMP1	EMP2	EMP3	EMP4
Determinand	Technique	LOD	Accreditation		
Rate of Dust Deposition	T487	0.0 mg/m2/day	None	57.9	53.8
Total Solids (mass)	T487	10.0 mg	None	32.8	30.5
Total Solids (volume)	T487	0.001 l	None	2.790	1.790

Technical Reviewer	Role
Mrs Kathryn Gleaves	Customer Services
Mrs Jeanette Abbott	Customer Service Manager

Extra Testing Information

Technique Code	Technique Name	Samples
T487	L004B-Grav	234501, 234502, 234503, 234504
Testing Location		Samples
All analysis was carried out at i2 Analytical (Poland). i2 Analytical Limited Sp. z o.o., Ordziat w Polsce, ul.Pionierow 39, 41-711 Ruda Slaska, Poland		234501, 234502, 234503, 234504

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Tests covered by this certificate were conducted in accordance with i2 Analytical's SOPs.

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

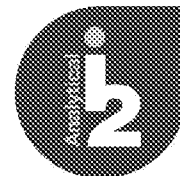
This is a simplified test report.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Results in black are positive/detected results. Results in gray are below the LOD or have not been found.

LOD = Limit of Determination. This is the lowest reportable limit of the test.

CERTIFICATE OF ANALYSIS



Environmental Science

MULTI-SAMPLE	REGISTERED	RECEIVED	ANALYSIS	ANALYSIS
REPORT REFERENCE	DATE	DATE	STARTED	COMPLETE
2021-12-12-14:12:45	07/07/2021	07/07/2021	07/07/2021	12/07/2021

LABORATORY	CUSTOMER
i2 Analytical	Celtic enGlobe
Croxley Green Business Park	Columbus House
7 Woodshots Meadow	Greenmeadow Springs
Watford	Tongwynlais
WD18 8YS	Cardiff
	CF15 7NE

PO NUMBER	81914	CLIENT SITE	NGPH Arundel
END DATE SAMPLED	06/07/2021	CLIENT CODE	C1820
DATE SAMPLED (DD/MM/YY)	22/06/2021		

Matrix: Water

Determinand	Technique	LOD	Accreditation	i2 Sample Number	240159	240160	240161	240162
				Sample Reference	EMP1	EMP2	EMP3	EMP4
Rate of Dust Deposition	T487	0.0 mg/m2/day	None		67.9	41.3	59.1	25.9
Total Solids (mass)	T487	10.0 mg	None		38.5	23.4	33.5	14.7
Total Solids (volume)	T487	0.001 l	None		1.900	1.640	1.860	1.200

Matrix: Sticky Pad

Determinand	Technique	LOD	Accreditation	i2 Sample Number	240232	240233	240234	240235
				Sample Reference	EMP1	EMP2	EMP3	EMP4
Directional Dust	T488	0.0	None		Saved in Online Documentation	Saved in Online Documentation	Saved in Online Documentation	Saved in Online Documentation

Technical Reviewer	Role
Mrs Jeanette Abbott	Customer Service Manager
Mrs Kathryn Gleaves	Customer Services

Extra Testing Information

Technique Code	Technique Name	Samples
T487	LOD4E-Grav	240159, 240160, 240161, 240162
T488	L016 Sticky Pad Reader	240232, 240233, 240234, 240235

Testing Location	Samples
All analysis was carried out at i2 Analytical (Poland), i2 Analytical Limited Sp z o.o, Oddział w Polsce, ul.Pionierow 39, 41-711 Ruda Śląska, Poland	240159, 240160, 240161, 240162, 240232, 240233, 240234, 240235

The results reported relate to samples received in the laboratory and may not be representative of a whole batch. Tests covered by this certificate were conducted in accordance with i2 Analytical's SOPs. Note: All assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement of uncertainty can be provided on request. This is a simplified test report.

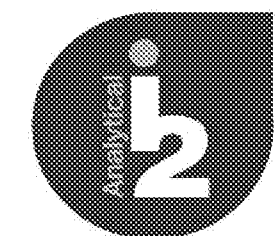
i2 Analytical Limited
Registered in England No.
4750390 VAT Reg. No. 821
0972 49

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Results in black are positive/detected results. Results in gray are below the LOD or have not been found.
LOD = Limit of Determination. This is the lowest reportable limit of the test.



Directional Dust Analysis Report

Job No: 2091 / 21-85386 Sample No: 240159 / 1929481
 Client: Celtic enGlobe Site Reference: CI820 NGPH Arundel



Environmental Science

Gauge Ref: EMPI

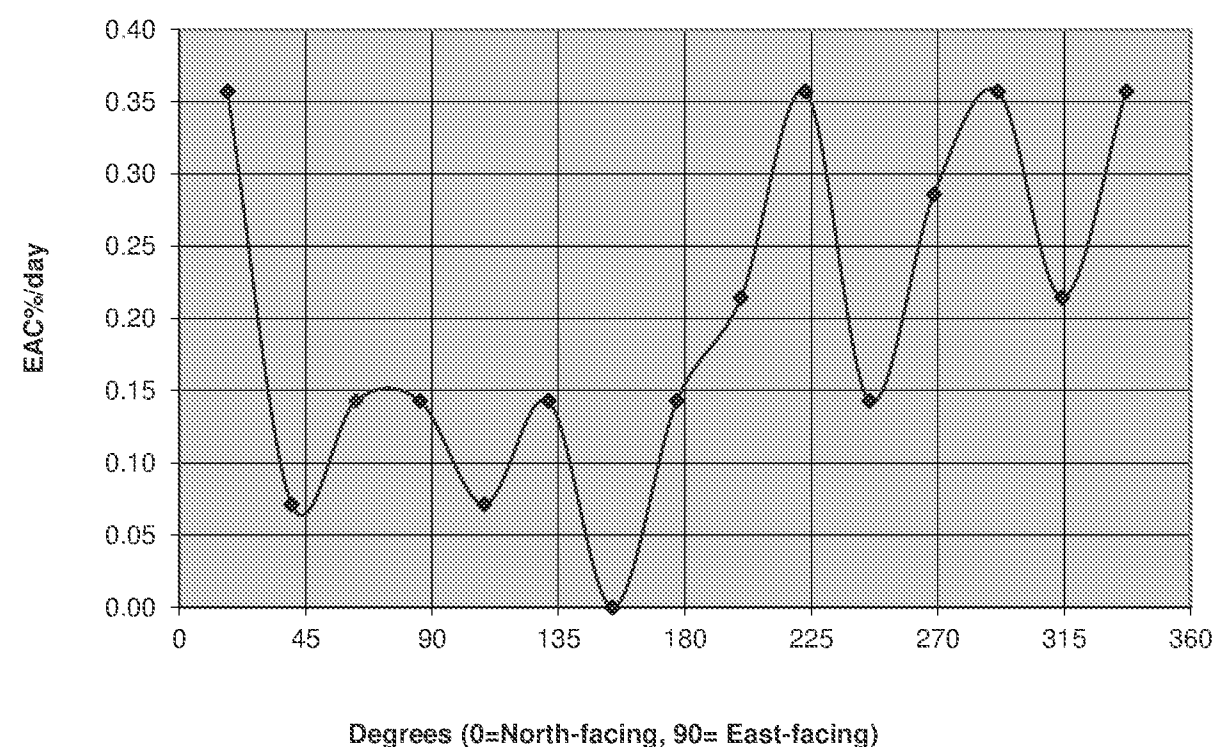
Sticky Pad Data

Date On: 22/06/2021 Date Off: 06/07/2021 Days = 14

Clean = 101

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	96	337	0.36	
40	98	314	0.21	
60	96	291	0.36	
80	97	269	0.29	
100	99	246	0.14	
120	96	223	0.36	
140	98	200	0.21	
160	99	177	0.14	
180	101	154	0.00	
200	99	131	0.14	
220	100	109	0.07	
240	99	86	0.14	
260	99	63	0.14	
280	100	40	0.07	
300	96	17	0.36	

EAC%/day vs Orientation



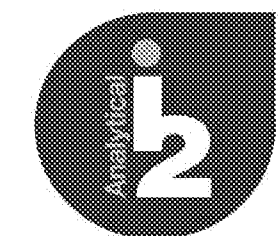
Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

LR016.1 i2 Analytical 08/2017

i2 Analytical Ltd.
 7 Woodshots Meadow,
 Watford, WD18 8YS
 (T) 01923 225404 (F) 01923 237404
 reception@i2analytical.com

Directional Dust Analysis Report

Job No: 2091 / 21-85386 Sample No: 240160 / 1929482
 Client: Celtic enGlobe Site Reference: CI820 NGPH Arundel



Environmental Science

Gauge Ref: EMP2

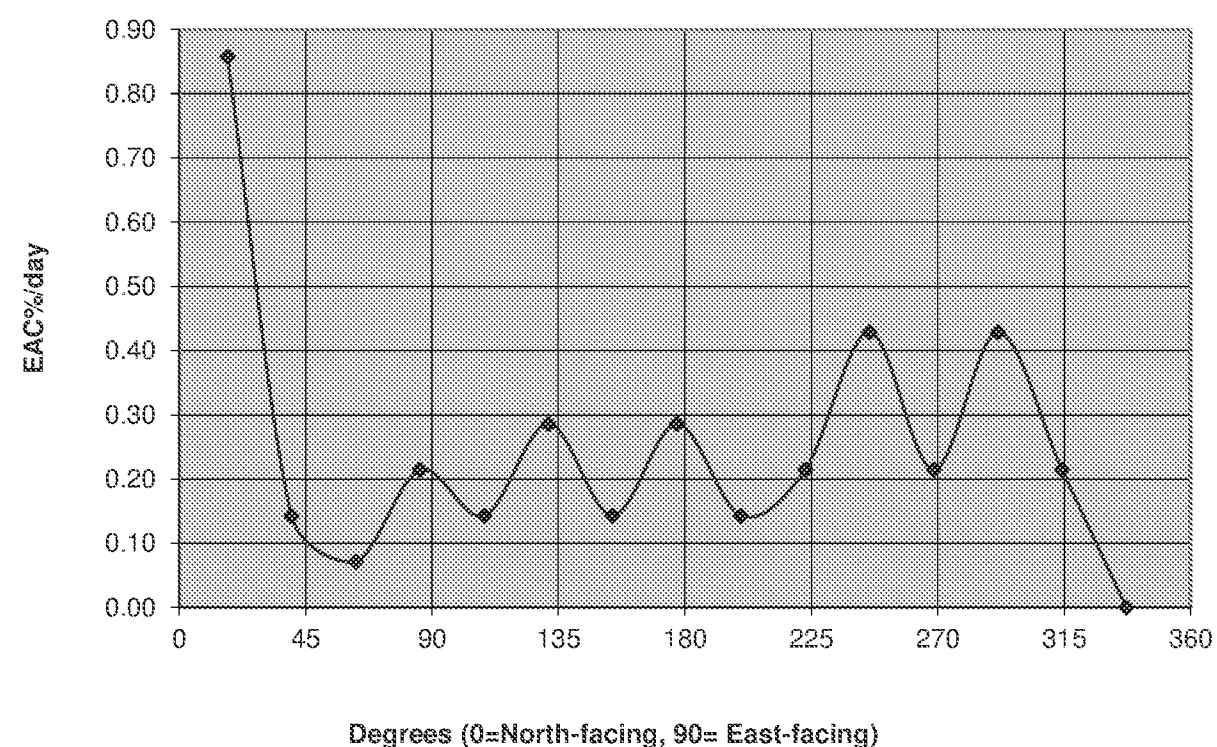
Sticky Pad Data

Date On: 22/06/2021 Date Off: 06/07/2021 Days = 14

Clean = 101

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	101	337	0.00	
40	98	314	0.21	
60	95	291	0.43	
80	98	269	0.21	
100	95	246	0.43	
120	98	223	0.21	
140	99	200	0.14	
160	97	177	0.29	
180	99	154	0.14	
200	97	131	0.29	
220	99	109	0.14	
240	98	86	0.21	
260	100	63	0.07	
280	99	40	0.14	
300	89	17	0.86	

EAC%/day vs Orientation



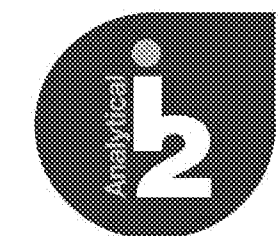
Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

LR016.1 i2 Analytical 08/2017

i2 Analytical Ltd.
 7 Woodshots Meadow,
 Watford, WD18 8YS
 (T) 01923 225404 (F) 01923 237404
 reception@i2analytical.com

Directional Dust Analysis Report

Job No: 2091 / 21-85386 Sample No: 240161 / 1929483
 Client: Celtic enGlobe Site Reference: CI820 NGPH Arundel



Environmental Science

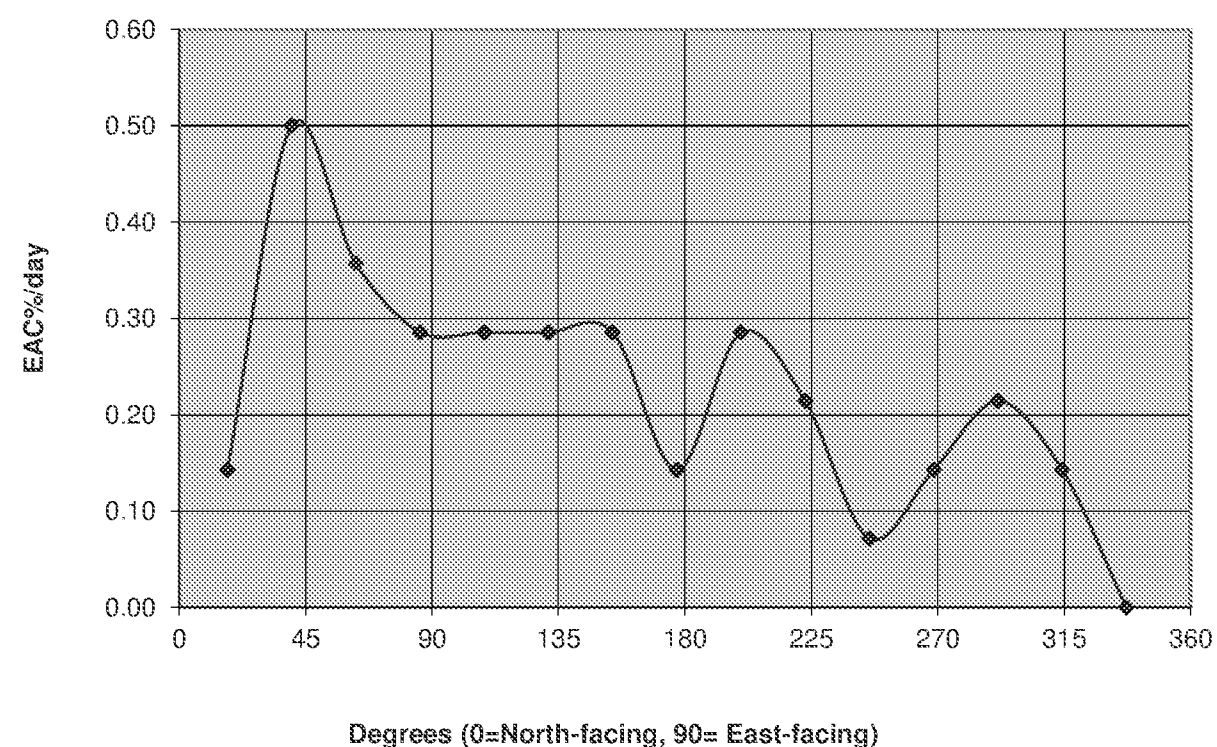
Gauge Ref: EMP3

Sticky Pad Data

Date On: 22/06/2021 Date Off: 06/07/2021 Days = 14
 Clean = 100

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	100	337	0.00	
40	98	314	0.14	
60	97	291	0.21	
80	98	269	0.14	
100	99	246	0.07	
120	97	223	0.21	
140	96	200	0.29	
160	98	177	0.14	
180	96	154	0.29	
200	96	131	0.29	
220	96	109	0.29	
240	96	86	0.29	
260	95	63	0.36	
280	93	40	0.50	
300	98	17	0.14	

EAC%/day vs Orientation



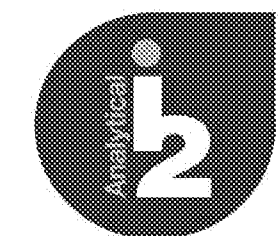
Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

LR016.1 i2 Analytical 08/2017

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Directional Dust Analysis Report

Job No: 2091 / 21-85386 Sample No: 240162 / 1929484
 Client: Celtic enGlobe Site Reference: CI820 NGPH Arundel



Environmental Science

Gauge Ref: EMP4

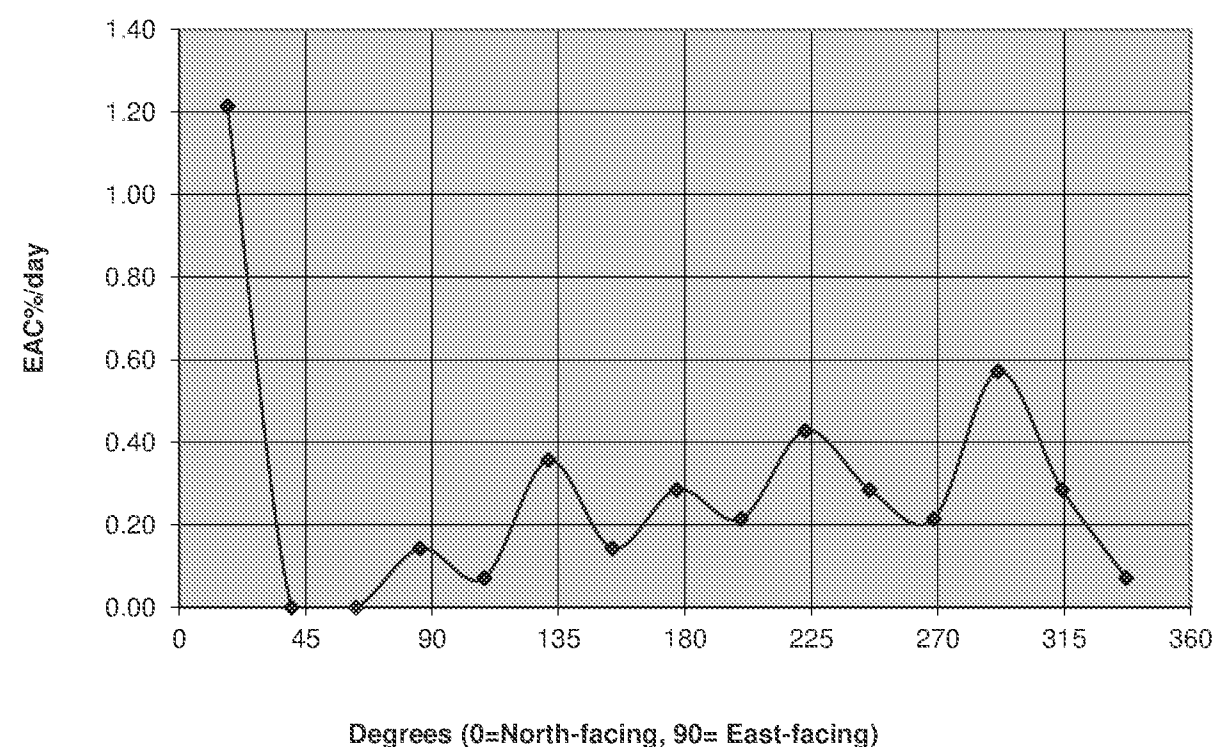
Sticky Pad Data

Date On: 22/06/2021 Date Off: 06/07/2021 Days = 14

Clean = 101

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	100	337	0.07	
40	97	314	0.29	
60	93	291	0.57	
80	98	269	0.21	
100	97	246	0.29	
120	95	223	0.43	
140	98	200	0.21	
160	97	177	0.29	
180	99	154	0.14	
200	96	131	0.36	
220	100	109	0.07	
240	99	86	0.14	
260	101	63	0.00	
280	101	40	0.00	
300	84	17	1.21	

EAC%/day vs Orientation

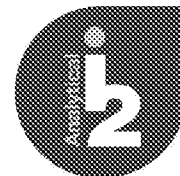


Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

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CERTIFICATE OF ANALYSIS



Environmental Science

MULTI-SAMPLE	REGISTERED	RECEIVED	ANALYSIS	ANALYSIS
REPORT REFERENCE	DATE	DATE	STARTED	COMPLETE
2021-26-51-14:51:17	28/06/2021	16/07/2021	16/07/2021	26/07/2021

LABORATORY	CUSTOMER
i2 Analytical	Celtic enGlobe
Croxley Green Business Park	Columbus House
7 Woodshots Meadow	Greenmeadow Springs
Watford	Tongwynlais
WD18 8YS	Cardiff
	CF15 7NE

CLIENT CODE	C1820	PO NUMBER	81957
CLIENT SITE	NGPH Arundel		

Matrix: Tenax TD Tube

				i2 Sample Number	235711	235712	235717	235718
				Sample Reference	EMP2	EMP1	EMP4	EMP3
				Sampling Time (min)	20153	20144	20163	20158
				Pre Printed Barcode	437844	437847	749629	749630
Determinand	Technique	LOD	Accreditation					
Benzene	T352	1.0 ng	None	9.0	6.3	10.0	12.3	
Benzene mg/m3	T352	0.0 mg/m3	None	0.0011	0.0008	0.0012	0.0015	
Benzene ppb	T352	0.0 ppb	None	0.339	0.240	0.380	0.466	
Ethyl Benzene	T352	1.0 ng	None	1.7	1.2	3.6	3.9	
Ethyl Benzene mg/m3	T352	0.0 mg/m3	None	0.0002	0.0001	0.0004	0.0004	
Ethyl Benzene ppb	T352	0.0 ppb	None	0.0421	0.0304	0.0894	0.0958	
Toluene	T352	1.0 ng	None	6.9	5.4	13.5	19.1	
Toluene mg/m3	T352	0.0 mg/m3	None	0.0009	0.0006	0.0015	0.0021	
Toluene ppb	T352	0.0 ppb	None	0.306	0.160	0.402	0.570	
Total VOC (excluding Targets)	T352	10.0 ng	None	360	210	310	380	
Total VOC (excluding Targets) mg/m3	T352	0.0 mg/m3	None	0.0410 ⁴⁸²	0.0235 ⁴⁸⁵	0.0345 ⁴⁸²	0.0433 ⁴⁸⁵	
m/p-Xylene	T352	1.0 ng	None	5.5	4.4	11.5	17.6	
m/p-Xylene mg/m3	T352	0.0 mg/m3	None	0.0007	0.0005	0.0014	0.0021	
m/p-Xylene ppb	T352	0.0 ppb	None	0.0758	0.0593	0.160	0.242	
o-Xylene	T352	1.0 ng	None	2.2	1.7	4.7	5.3	
o-Xylene mg/m3	T352	0.0 mg/m3	None	0.0003	0.0002	0.0005	0.0006	
o-Xylene ppb	T352	0.0 ppb	None	0.0589	0.0459	0.127	0.145	

				i2 Sample Number	235722
				Sampling Time (min)	20160
				Sample Reference	Control 1
				Pre Printed Barcode	1017171
Determinand	Technique	LOD	Accreditation		
Benzene	T352	1.0 ng	None	5.9	
Benzene mg/m3	T352	0.0 mg/m3	None	0.0007	
Benzene ppb	T352	0.0 ppb	None	0.222	
Ethyl Benzene	T352	1.0 ng	None	< 1.0	
Ethyl Benzene mg/m3	T352	0.0 mg/m3	None	< 0.000121	
Ethyl Benzene ppb	T352	0.0 ppb	None	< 0.0025	
Toluene	T352	1.0 ng	None	< 1.0	
Toluene mg/m3	T352	0.0 mg/m3	None	< 0.000121	
Toluene ppb	T352	0.0 ppb	None	< 0.0025	
Total VOC (excluding Targets)	T352	10.0 ng	None	72	
Total VOC (excluding Targets) mg/m3	T352	0.0 mg/m3	None	0.0081 ⁴⁸²	
m/p-Xylene	T352	1.0 ng	None	< 1.0	
m/p-Xylene mg/m3	T352	0.0 mg/m3	None	< 0.000121	
m/p-Xylene ppb	T352	0.0 ppb	None	< 0.0025	
o-Xylene	T352	1.0 ng	None	< 1.0	
o-Xylene mg/m3	T352	0.0 mg/m3	None	< 0.000121	

		i2 Sample Number	235722
		Sampling Time (min)	20160
		Sample Reference	Control 1
		Pre Printed Barcode	1017171
Determinand	Technique	LOD	Accreditation
o-Xylene ppb	T352	0.0 ppb	None

Technical Reviewer	Role
Mrs Jeanette Abbott	Customer Service Manager

Extra Testing Information

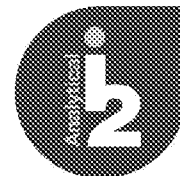
Technique Code	Technique Name	Samples
T352	AIR02-1-GCMS-TO	235711, 235712, 235717, 235718, 235722

Testing Location	Samples
All analysis was carried out at i2 Analytical (Poland), i2 Analytical Limited Sp z o.o. Oddział w Polsce, ul.Pionierów 39, 41-711 Ruda Śląska, Poland	235711, 235712, 235717, 235718, 235722

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.
Tests covered by this certificate were conducted in accordance with i2 Analytical's SOP's.
Note: All assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement of uncertainty can be provided on request.
This is a simplified test report.
This certificate should not be reproduced, except in full, without the express permission of the laboratory.
Results in black are positive/detected results. Results in gray are below the LOD or have not been found.
LOD = Limit of Determination. This is the lowest reportable limit of the test.
480 - Uptake rate used to calculate mg/m3 is based on Toluene



CERTIFICATE OF ANALYSIS



Environmental Science

MULTI-SAMPLE	REGISTERED	RECEIVED	ANALYSIS	ANALYSIS
REPORT REFERENCE	DATE	DATE	STARTED	COMPLETE
2021-27-37-14/37:41	22/07/2021	22/07/2021	22/07/2021	27/07/2021

LABORATORY	CUSTOMER
i2 Analytical	Celtic enGlobe
Croxley Green Business Park	Columbus House
7 Woodshots Meadow	Greenmeadow Springs
Watford	Tongwynlais
WD18 8YS	Cardiff
	CF15 7NE

PO NUMBER	81975	CLIENT SITE	NGPH Arundel
END DATE SAMPLED	20/07/2021	CLIENT CODE	C1820
DATE SAMPLED (DD/MM/YY)	06/07/2021		

Matrix: Water

Determinand	Technique	LOD	Accreditation	i2 Sample Number	247053	247054	247055	247056
				Sample Reference	EMP1	EMP2	EMP3	EMP4
Rate of Dust Deposition	T487	0.0 mg/m2/day	None		39.7	73.9	65.8	60.1
Total Solids (mass)	T487	10.0 mg	None		22.5	41.9	37.9	28.4
Total Solids (volume)	T487	0.001 l	None		1.360	1.390	1.340	1.190

Matrix: Sticky Pad

Determinand	Technique	LOD	Accreditation	i2 Sample Number	247057	247058	247059	247060
				Sample Reference	EMP1	EMP2	EMP3	EMP4
Directional Dust	T488	0.0	None		Saved in Online Documentation	Saved in Online Documentation	Saved in Online Documentation	Saved in Online Documentation

Technical Reviewer	Role
Mrs Kathryn Gleaves	Customer Services
Mrs Jeanette Abbott	Customer Service Manager

Extra Testing Information

Technique Code	Technique Name	Samples
T487	LOD4E-Grav	247053, 247054, 247055, 247056
T488	LOD6-Sticky Pad Reader	247057, 247058, 247059, 247060

Testing Location	Samples
All analysis was carried out at i2 Analytical (Poland), i2 Analytical Limited Sp z o.o, Oddział w Polsce, ul.Pionierow 39, 41-711 Ruda Śląska, Poland	247053, 247054, 247055, 247056, 247057, 247058, 247059, 247060

The results reported relate to samples received in the laboratory and may not be representative of a whole batch. Tests covered by this certificate were conducted in accordance with i2 Analytical's SOPs. Note: All assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement of uncertainty can be provided on request. This is a simplified test report.

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Results in black are positive/detected results. Results in gray are below the LOD or have not been found.
LOD = Limit of Determination. This is the lowest reportable limit of the test.



Directional Dust Analysis Report



Environmental Science

Job No: 2188 / 21-88314 Sample No: 247057 / 1946191
 Client: Celtic enGlobe Site Reference: NGPH Arundel

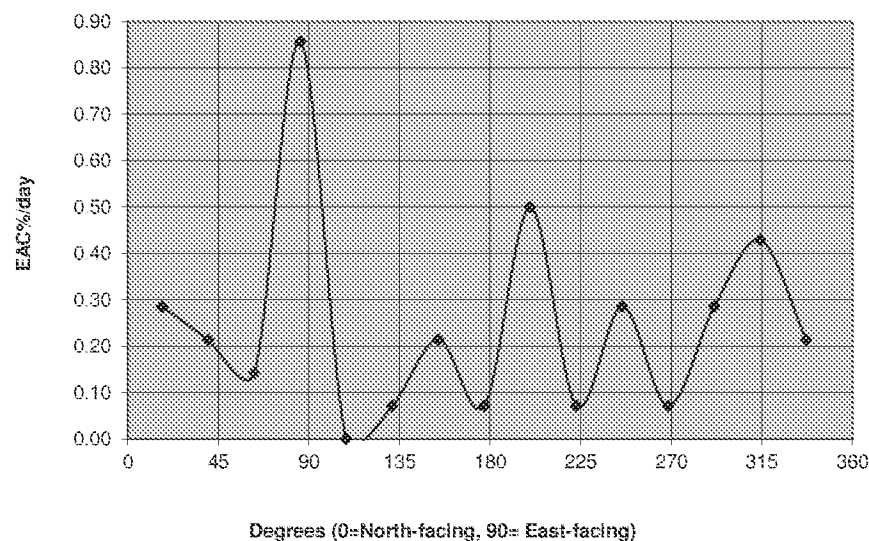
Gauge Ref: EMPI

Sticky Pad Data

Date On: 06/07/2021 Date Off: 20/07/2021 Days = 14
 Clean = 103

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	100	337	0.21	
40	97	314	0.43	
60	99	291	0.29	
80	102	269	0.07	
100	99	246	0.29	
120	102	223	0.07	
140	96	200	0.50	
160	102	177	0.07	
180	100	154	0.21	
200	102	131	0.07	
220	103	109	0.00	
240	91	86	0.86	
260	101	63	0.14	
280	100	40	0.21	
300	99	17	0.29	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

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Directional Dust Analysis Report



Environmental Science

Job No: 2188 / 21-88314 Sample No: 247058 / 1946192

Client: Celtic enGlobe Site Reference: NGPH Arundel

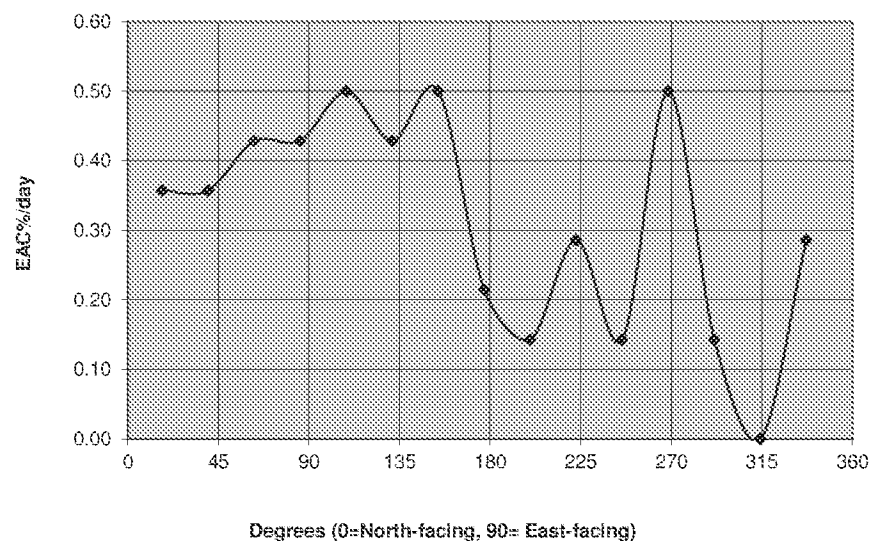
Gauge Ref: EMP2

Sticky Pad Data

Date On: 06/07/2021 Date Off: 20/07/2021 Days = 14
Clean = 100

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	96	337	0.29	
40	100	314	0.00	
60	98	291	0.14	
80	93	269	0.50	
100	98	246	0.14	
120	96	223	0.29	
140	98	200	0.14	
160	97	177	0.21	
180	93	154	0.50	
200	94	131	0.43	
220	93	109	0.50	
240	94	86	0.43	
260	94	63	0.43	
280	95	40	0.36	
300	95	17	0.36	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
The calculation is based on taking readings at 20mm intervals along the sticky pad.

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Directional Dust Analysis Report



Environmental Science

Job No: 2188 / 21-88314 Sample No: 247059 / 1946193
 Client: Celtic enGlobe Site Reference: NGPH Arundel

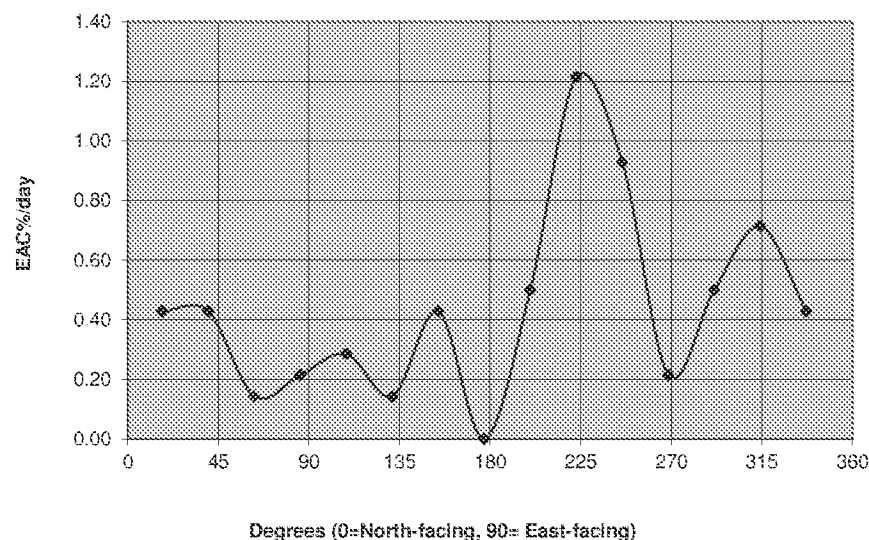
Gauge Ref: EMP3

Sticky Pad Data

Date On: 06/07/2021 Date Off: 20/07/2021 Days = 14
 Clean = 102

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	96	337	0.43	
40	92	314	0.71	
60	95	291	0.50	
80	99	269	0.21	
100	89	246	0.93	
120	85	223	1.21	
140	95	200	0.50	
160	102	177	0.00	
180	96	154	0.43	
200	100	131	0.14	
220	98	109	0.29	
240	99	86	0.21	
260	100	63	0.14	
280	96	40	0.43	
300	96	17	0.43	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

LR016.1 i2 Analytical 08/2017

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Directional Dust Analysis Report



Environmental Science

Job No: 2188 / 21-88314 Sample No: 247060 / 1946194

Client: Celtic enGlobe Site Reference: NGPH Arundel

Gauge Ref: EMP4

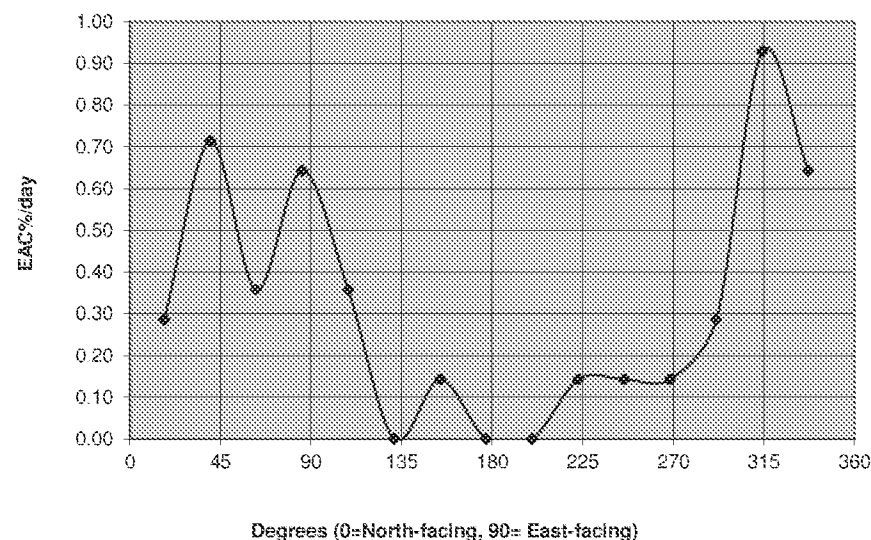
Sticky Pad Data

Date On: 06/07/2021 Date Off: 20/07/2021 Days = 14

Clean = 102

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	93	337	0.64	
40	89	314	0.93	
60	98	291	0.29	
80	100	269	0.14	
100	100	246	0.14	
120	100	223	0.14	
140	102	200	0.00	
160	102	177	0.00	
180	100	154	0.14	
200	102	131	0.00	
220	97	109	0.36	
240	93	86	0.64	
260	97	63	0.36	
280	92	40	0.71	
300	98	17	0.29	

EAC%/day vs Orientation

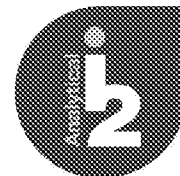


Note: Cells coloured green are inputs. The rest are either constants or calculated values.
The calculation is based on taking readings at 20mm intervals along the sticky pad.

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CERTIFICATE OF ANALYSIS



Environmental Science

MULTI-SAMPLE	REGISTERED	RECEIVED	ANALYSIS	ANALYSIS
REPORT REFERENCE	DATE	DATE	STARTED	COMPLETE
2021-06-45-10:45:54	28/06/2021	30/07/2021	30/07/2021	06/08/2021

LABORATORY	CUSTOMER
i2 Analytical	Celtic enGlobe
Croxley Green Business Park	Columbus House
7 Woodshots Meadow	Greenmeadow Springs
Watford	Tongwynlais
WD18 8YS	Cardiff
	CF15 7NE

SAMPLING TIME (MIN)	20160	CLIENT SITE	NGPH Arundel
PO NUMBER	81997	CLIENT CODE	C1820

Matrix: Tenax TD Tube

Determinand	Technique	LOD	Accreditation	i2 Sample Number			
				235713	235714	235715	235716
				Sample Reference	EMP1	EMP2	EMP4
				Pre Printed Barcode	736809	736814	736821
Benzene	T352	1.0 ng	None	1.9	6.3	18.1	24.8
Benzene mg/m3	T352	0.0 mg/m3	None	0.0002	0.0008	0.0022	0.0030
Benzene ppb	T352	0.0 ppb	None	0.0702	0.239	0.685	0.938
Ethyl Benzene	T352	1.0 ng	None	1.2	2.2	6.8	4.5
Ethyl Benzene mg/m3	T352	0.0 mg/m3	None	0.0001	0.0002	0.0007	0.0005
Ethyl Benzene ppb	T352	0.0 ppb	None	0.0304	0.0540	0.168	0.113
Toluene	T352	1.0 ng	None	5.6	12.4	38.3	38.8
Toluene mg/m3	T352	0.0 mg/m3	None	0.0006	0.0014	0.0043	0.0044
Toluene ppb	T352	0.0 ppb	None	0.186	0.371	1.15	1.16
Total VOC (excluding Targets)	T352	10.0 ng	None	180	200	490	360
Total VOC (excluding Targets) mg/m3	T352	0.0 mg/m3	None	0.0202	0.0229	0.0558	0.0405
m/p-Xylene	T352	1.0 ng	None	5.5	16.8	86.3	51.2
m/p-Xylene mg/m3	T352	0.0 mg/m3	None	0.0005	0.0020	0.0102	0.0060
m/p-Xylene ppb	T352	0.0 ppb	None	0.0745	0.229	1.17	0.696
o-Xylene	T352	1.0 ng	None	2.2	5.8	27.5	16.1
o-Xylene mg/m3	T352	0.0 mg/m3	None	0.0003	0.0007	0.0032	0.0019
o-Xylene ppb	T352	0.0 ppb	None	0.0800	0.159	0.747	0.439

Determinand	Technique	LOD	Accreditation	i2 Sample Number	
				235720	Control 2
				Sample Reference	1056307
				Pre Printed Barcode	
Benzene	T352	1.0 ng	None	< 1.0	
Benzene mg/m3	T352	0.0 mg/m3	None	< 0.00012	
Benzene ppb	T352	0.0 ppb	None	< 0.0375	
Ethyl Benzene	T352	1.0 ng	None	< 1.0	
Ethyl Benzene mg/m3	T352	0.0 mg/m3	None	< 0.00013	
Ethyl Benzene ppb	T352	0.0 ppb	None	< 0.0258	
Toluene	T352	1.0 ng	None	< 1.0	
Toluene mg/m3	T352	0.0 mg/m3	None	< 0.00013	
Toluene ppb	T352	0.0 ppb	None	< 0.0282	
Total VOC (excluding Targets)	T352	10.0 ng	None	< 10.0	
Total VOC (excluding Targets) mg/m3	T352	0.0 mg/m3	None	< 0.00013	
m/p-Xylene	T352	1.0 ng	None	< 1.0	
m/p-Xylene mg/m3	T352	0.0 mg/m3	None	< 0.00012	
m/p-Xylene ppb	T352	0.0 ppb	None	< 0.0138	
o-Xylene	T352	1.0 ng	None	< 1.0	
o-Xylene mg/m3	T352	0.0 mg/m3	None	< 0.00012	
o-Xylene ppb	T352	0.0 ppb	None	< 0.0275	

Technical Reviewer	Role
Mrs Kathryn Gleaves	Customer Services

Extra Testing Information

Technique Code	Technique Name	Samples
T352	AP02-1-GCMS-TD	235713, 235714, 235715, 235716, 235720

Testing Location	Samples
All analysis was carried out at I2 Analytical (Poland), I2 Analytical Limited Sp z o.o, Oddział w Polsce, ul.Pionierow 39, 41-711 Ruda Śląska, Poland	235713, 235714, 235715, 235716, 235720

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Tests covered by this certificate were conducted in accordance with I2 Analytical's SOPs.

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

This is a simplified test report.

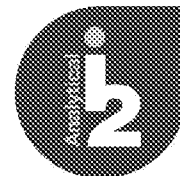
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Results in black are positive/detected results. Results in gray are below the LOD or have not been found.

LOD = Limit of Determination. This is the lowest reportable limit of the test.



CERTIFICATE OF ANALYSIS



Environmental Science

MULTI-SAMPLE	REGISTERED	RECEIVED	ANALYSIS	ANALYSIS
REPORT REFERENCE	DATE	DATE	STARTED	COMPLETE
2021-11-44-09:44:00	05/08/2021	05/08/2021	05/08/2021	11/08/2021

LABORATORY	CUSTOMER
i2 Analytical	Celtic enGlobe
Croxley Green Business Park	Columbus House
7 Woodshots Meadow	Greenmeadow Springs
Watford	Tongwynlais
WD18 8YS	Cardiff
	CF15 7NE

PO NUMBER	82008	CLIENT SITE	NGPH Arundel
END DATE SAMPLED	03/08/2021	CLIENT CODE	C1820
DATE SAMPLED (DD/MM/YY)	27/07/2021		

Matrix: Water

Determinand	Technique	LOD	Accreditation	i2 Sample Number	252974	252975	252976	252977
				Sample Reference	EMP1	EMP2	EMP3	EMP4
Rate of Dust Deposition	T487	0.0 mg/m2/day	None		210	44.5	56.8	132
Total Solids (mass)	T487	10.0 mg	None		59.5	12.6	16.1	37.3
Total Solids (volume)	T487	0.001 l	None		1.540	0.990	1.230	1.260

Matrix: Sticky Pad

Determinand	Technique	LOD	Accreditation	i2 Sample Number	252978	252979	252980	252981
				Sample Reference	EMP1	EMP2	EMP3	EMP4
Directional Dust	T488	0.0	None		Saved in Online Documentation	Saved in Online Documentation	Saved in Online Documentation	Saved in Online Documentation

Technical Reviewer	Role
Mrs Jeanette Abbott	Customer Service Manager

Extra Testing Information

Technique Code	Technique Name	Samples
T487	LOD4E-Grav	252974, 252975, 252976, 252977
T485	L016 Sticky Pad Reader	252978, 252979, 252980, 252981

Testing Location	Samples
All analysis was carried out at i2 Analytical (Poland), i2 Analytical Limited Sp z o.o., Oddział w Polsce, ul. Pionierow 39, 41-711 Ruda Śląska, Poland	252974, 252975, 252976, 252977, 252978, 252979, 252980, 252981

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.
 Tests covered by this certificate were conducted in accordance with i2 Analytical's SOPs.
 Note: All assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement of uncertainty can be provided on request.
 This is a simplified test report.
 This certificate should not be reproduced, except in full, without the express permission of the laboratory.
 Results in black are positive/detected results. Results in gray are below the LOD or have not been found.

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 Registered in England No.
 4750390 VAT Reg. No. 821
 0972 49



Directional Dust Analysis Report



Environmental Science

Job No: 2268 / 21-90956 Sample No: 252978 / 1962184
 Client: Celtic enGlobe Site Reference: NGPH Arundel

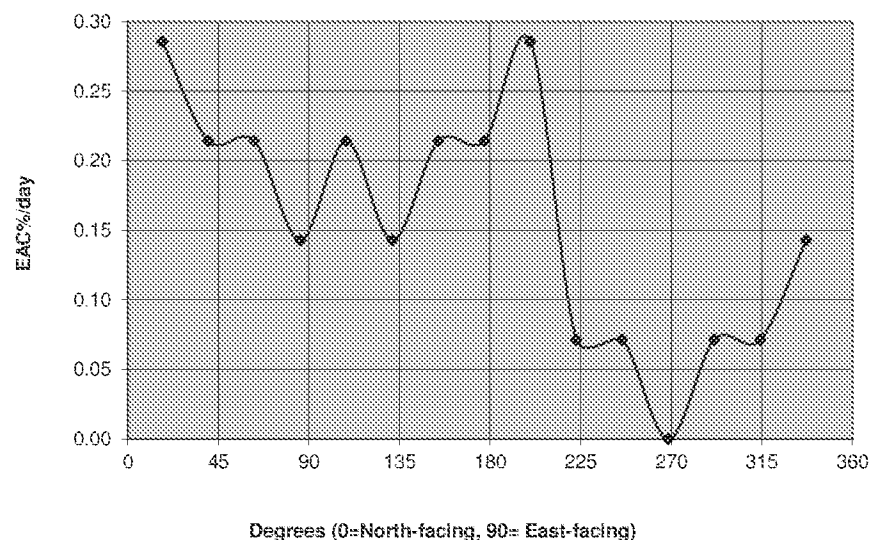
Gauge Ref: EMPI

Sticky Pad Data

Date On: 20/07/2021 Date Off: 03/08/2021 Days = 14
 Clean = 97

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	95	337	0.14	
40	96	314	0.07	
60	96	291	0.07	
80	97	269	0.00	
100	96	246	0.07	
120	96	223	0.07	
140	93	200	0.29	
160	94	177	0.21	
180	94	154	0.21	
200	95	131	0.14	
220	94	109	0.21	
240	95	86	0.14	
260	94	63	0.21	
280	94	40	0.21	
300	93	17	0.29	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
 The calculation is based on taking readings at 20mm intervals along the sticky pad.

LR016.1 i2 Analytical 08/2017

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Directional Dust Analysis Report



Environmental Science

Job No: 2268 / 21-90956 Sample No: 252979 / 1962185

Client: Celtic enGlobe Site Reference: NGPH Arundel

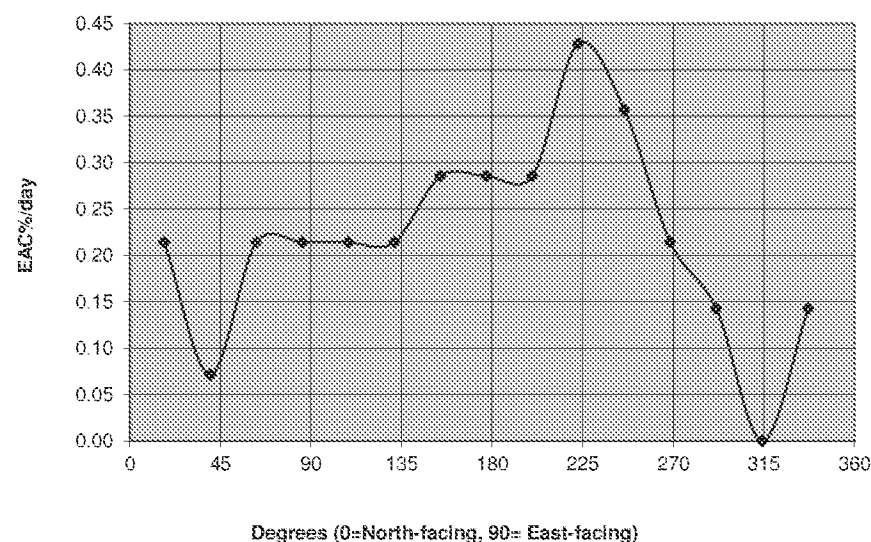
Gauge Ref: EMP2

Sticky Pad Data

Date On: 20/07/2021 Date Off: 03/08/2021 Days = 14
Clean = 99

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	97	337	0.14	
40	99	314	0.00	
60	97	291	0.14	
80	96	269	0.21	
100	94	246	0.36	
120	93	223	0.43	
140	95	200	0.29	
160	95	177	0.29	
180	95	154	0.29	
200	96	131	0.21	
220	96	109	0.21	
240	96	86	0.21	
260	96	63	0.21	
280	98	40	0.07	
300	96	17	0.21	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
The calculation is based on taking readings at 20mm intervals along the sticky pad.

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Directional Dust Analysis Report



Environmental Science

Job No: 2268 / 21-90956 Sample No: 252980 / 1962186

Client: Celtic enGlobe Site Reference: NGPH Arundel

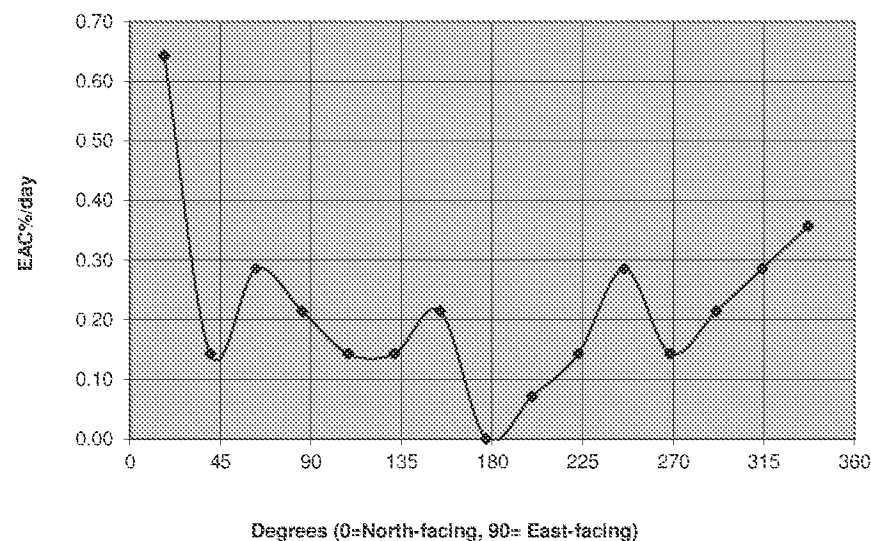
Gauge Ref: EMP3

Sticky Pad Data

Date On: 20/07/2021 Date Off: 03/08/2021 Days = 14
Clean = 97

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	92	337	0.36	
40	93	314	0.29	
60	94	291	0.21	
80	95	269	0.14	
100	93	246	0.29	
120	95	223	0.14	
140	96	200	0.07	
160	97	177	0.00	
180	94	154	0.21	
200	95	131	0.14	
220	95	109	0.14	
240	94	86	0.21	
260	93	63	0.29	
280	95	40	0.14	
300	88	17	0.64	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
The calculation is based on taking readings at 20mm intervals along the sticky pad.

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Directional Dust Analysis Report



Environmental Science

Job No: 2268 / 21-90956 Sample No: 252981 / 1962187

Client: Celtic enGlobe Site Reference: NGPH Arundel

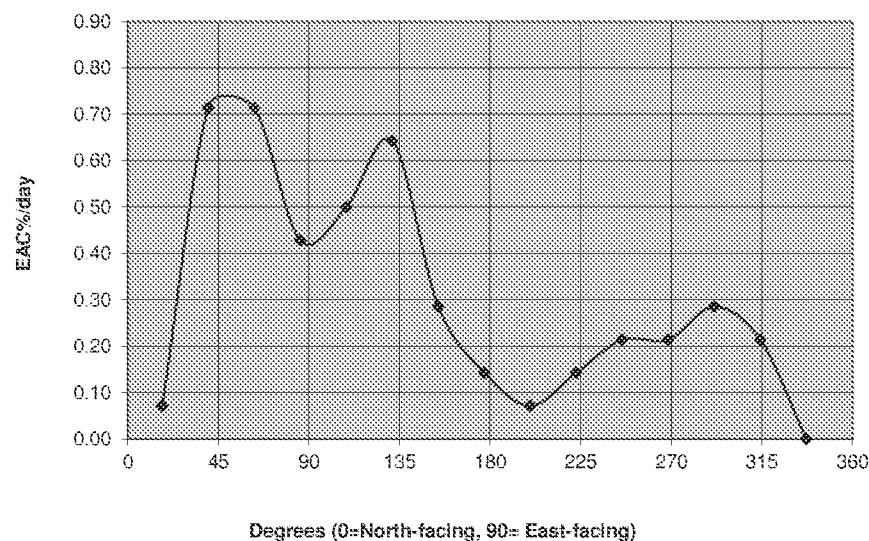
Gauge Ref: EMP4

Sticky Pad Data

Date On: 20/07/2021 Date Off: 03/08/2021 Days = 14
Clean = 96

X Axis mm	Meter	Angle deg	EAC%/day	Comment
20	96	337	0.00	
40	93	314	0.21	
60	92	291	0.29	
80	93	269	0.21	
100	93	246	0.21	
120	94	223	0.14	
140	95	200	0.07	
160	94	177	0.14	
180	92	154	0.29	
200	87	131	0.64	
220	89	109	0.50	
240	90	86	0.43	
260	86	63	0.71	
280	86	40	0.71	
300	95	17	0.07	

EAC%/day vs Orientation



Note: Cells coloured green are inputs. The rest are either constants or calculated values.
The calculation is based on taking readings at 20mm intervals along the sticky pad.

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AIRBORNE FIBRE CONCENTRATION RECORDS

Page 1 of 3		File / Project number: J030960 AMENDED Issue 1		Date of sampling: 30 Jun 2021		Date of analysis: 30 Jun 2021								
				Date issued: 1 Jul 2021		Certificate number: CM01								
Client Name & Address: Celtic Technologies & Biogenie Columbus House Greenmeadow Springs Tongwynlais Cardiff CF15 7NE				Site Address/Location: Arundel Gas Works Ford Road Arundel BN18 9DX										
				Location Slides Counted: Site										
Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm ³
Monitoring point A	CM001998	Reassurance	858	H28	10:05	10:58	53	16.0	16.0	16.0	848	1	120	<0.01
Monitoring point B	CM001999	Reassurance	855	H27	10:07	10:59	52	16.0	16.0	16.0	832	1.5	120	<0.01
Monitoring point C	CM002000	Reassurance	854	H12	10:08	11:00	52	16.0	16.0	16.0	832	1.5	120	<0.01
Monitoring point D	CM002001	Reassurance	859	H15	10:11	11:02	51	16.0	16.0	16.0	816	1	120	<0.01
Canteen	CM002002	Reassurance	856	H6	10:14	11:20	66	8.0	8.0	8.0	528	2	200	<0.01
Monitoring point A	CM002003	Reassurance	858	H28	12:44	13:41	57	16.0	16.0	16.0	912	1	110	<0.01
Monitoring point B	CM002004	Reassurance	855	H27	12:46	13:40	54	16.0	16.0	16.0	864	1.5	120	<0.01
Monitoring point C	CM002005	Reassurance	854	H12	12:47	13:37	50	16.0	16.0	16.0	800	1.5	120	<0.01

Page 2 of 3		File / Project number: J030960/CM01 AMENDED Issue 1					Date of sampling: 30 Jun 2021			Date of analysis: 30 Jun 2021				
							Date issued: 1 Jul 2021			Certificate number: CM01				
Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm³
Monitoring point D	CM002006	Reassurance	859	H15	12:48	13:36	48	16.0	16.0	16.0	768	1	130	<0.01
Operator Kevin Fagan	CM002007	Reassurance	856	H6	12:50	13:38	48	10.0	10.0	10.0	480	2	200	<0.01
Drying room	CM002008	Reassurance	852	H28	13:59	14:45	46	16.0	16.0	16.0	736	1.5	140	<0.01
Field Blank	CM002009	FB	860	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

All testing is in accordance with HSE Guidance notes HSG 248 & Enquin Asbestos Procedures Manual Section 2
The number of fields to be counted to obtain a level of accuracy of <0.01 fibres/ml - cm³ of air is 96000/(sample volume in litres)

Number of measurements undertaken: 12

Report Type: Final AMENDED

Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation

Location of work area: Reassurance air testing at four perimeter monitoring locations and welfare facilities. Static air test in excavator cab

Comments:

All results satisfactory
Working practices good

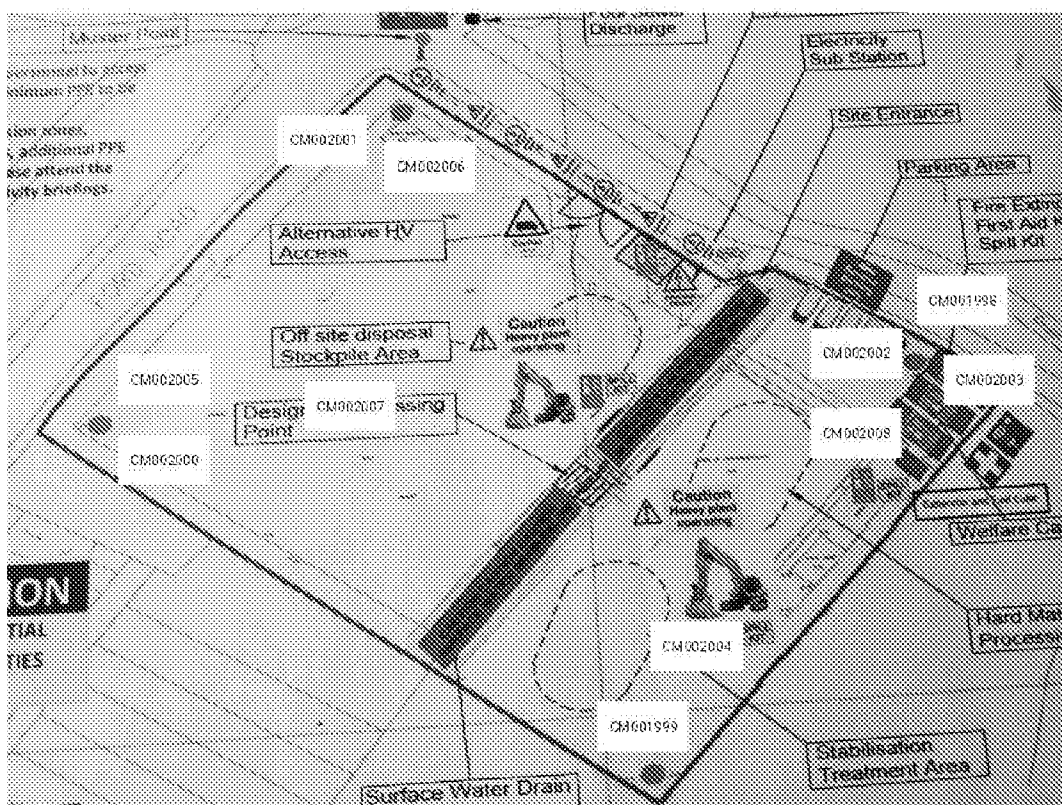
Signed Analyst
Print Name: Ian Price

AIRBORNE FIBRE CONCENTRATION RECORDS

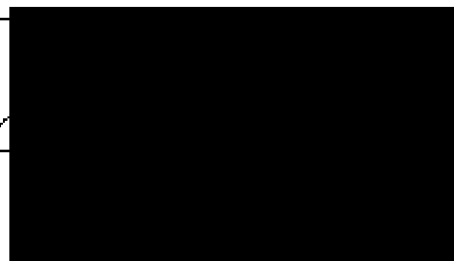
Page 3 of 3	File / Project number: J030960 AMENDED Issue 1	Date of sampling: 30 Jun 2021 Date issued: 1 Jul 2021	Date of analysis: 30 Jun 2021 Certificate number: CM01
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NPL Test Slide Number	839	5 sets of lines visible	Yes
Flowmeter Number	1021.	Flowmeter Calibration Factor	1.0
Stage Micrometer Number	962	Stage Micrometer Calibration Factor	1.00
Thermometer Barometer Number	00969./00969	Barometric Pressure mB **	1017mb
** Correction Factor If Outside Limit	1.0	Temperature Reading °C **	16
Microscope Number	674	Measured Graticule Diameter /µm	100
Timepiece Number	D - Timepiece	Corrected Graticule Diameter /µm	100

Diagram (Clearance / Reference only)



Signed Analyst
Print Name: Ian Price



AIRBORNE FIBRE CONCENTRATION RECORDS

Page 1 of 3	File / Project number: J030960	Date of sampling: 07 Jul 2021 Date issued: 07 Jul 2021	Date of analysis: 07 Jul 2021 Certificate number: CM02
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Client Name & Address: Celtic Technologies & Biogenie Columbus House Greenmeadow Springs Tongwynlais Cardiff CF15 7NE							Site Address/Location: Arundel Gas Works Ford Road Arundel BN18 9DX				Location Slides Counted: Site				
Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow (L/min)	Rate	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm ³
Canteen	CM002013	Reassurance	854	H6	11:26	12:50	84	10.0	10.0	10.0		840	1	200	<0.01
Monitoring point A	CM002014	Reassurance	858	H15	11:29	12:48	79	16.0	16.0	16.0		1264	1	100	<0.01
Monitoring point B	CM002015	Reassurance	852	H12	11:30	12:46	76	16.0	16.0	16.0		1216	1	100	<0.01
Monitoring point C	CM002016	Reassurance	856	H27	11:33	12:47	74	16.0	16.0	16.0		1184	1	100	<0.01
Monitoring point D	CM002017	Reassurance	855	H28	11:34	12:48	74	16.0	16.0	16.0		1184	1	100	<0.01
Drying room	CM002018	Reassurance	852	H15	13:27	14:13	46	16.0	16.0	16.0		736	1	150	<0.01
Monitoring point A	CM002019	Reassurance	854	H28	13:29	14:13	44	16.0	16.0	16.0		704	1	150	<0.01
Monitoring point B	CM002020	Reassurance	855	H27	14:18	14:52	34	16.0	16.0	16.0		544	1	200	<0.01

AIRBORNE FIBRE CONCENTRATION RECORDS

Page 2 of 3	File / Project number: J030960/CM02	Date of sampling: 07 Jul 2021 Date issued: 07 Jul 2021	Date of analysis: 07 Jul 2021 Certificate number: CM02
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Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm ²
Monitoring point C	CM002021	Reassurance	858	H15	14:20	14:53	33	16.0	16.0	16.0	528	6.5	200	<0.01
Monitoring point D	CM002022	Reassurance	859	H6	14:21	14:54	33	16.0	16.0	16.0	528	1	200	<0.01
Cab of machine operator Aaron Dickens	CM002023	Reassurance	854	H12	14:22	14:55	33	16.0	16.0	16.0	528	1	200	<0.01
Field Blank	CM002024	FB	860	N/A	N/A	N/A	0	N/A	N/A	0.0	0	N/A	N/A	N/A

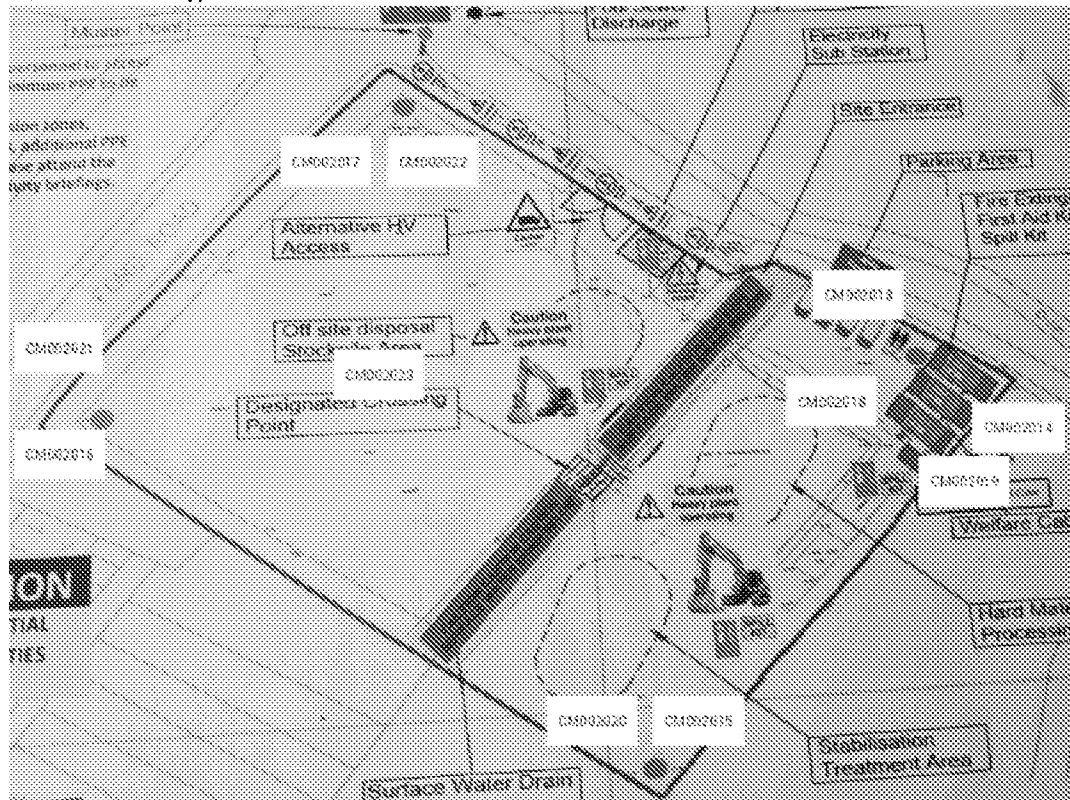
<p>All testing is in accordance with HSE Guidance notes HSG 248 & Enquin Asbestos Procedures Manual Section 2</p> <p>The number of fields to be counted to obtain a level of accuracy of <0.01 fibres/ml - cm² of air is 96000/(sample volume in litres)</p>	
Number of measurements undertaken: 12	Report Type: Final
<p>Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation</p>	
<p>Location of work area: Reassurance air testing at four perimeter monitoring locations, drying room, canteen and within cab of working excavator</p>	
<p>Comments:</p> <p>All air test results satisfactory</p> <p>Good working practices to minimise dust release</p>	
<p>Signed Analyst</p> <p>Print Name: Ian Price</p>	

AIRBORNE FIBRE CONCENTRATION RECORDS

Page 3 of 3	File / Project number: J030960	Date of sampling: 07 Jul 2021 Date issued: 07 Jul 2021	Date of analysis: 07 Jul 2021 Certificate number: CM02
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NPL Test Slide Number	839	5 sets of lines visible	Yes
Flowmeter Number	1021	Flowmeter Calibration Factor	1.0
Stage Micrometer Number	962	Stage Micrometer Calibration Factor	1.00
Thermometer/Barometer Number	00969./00969	Barometric Pressure mB **	1024mb
** Correction Factor If Outside Limit	1.0	Temperature Reading °C **	21
Microscope Number	674	Measured Graticule Diameter / μ m	100
Timepiece Number	D - Timepiece	Corrected Graticule Diameter / μ m	100

Diagram (Clearance / Reference only)



Signed Analyst
Print Name: Ian Price

AIRBORNE FIBRE CONCENTRATION RECORDS

Page 1 of 3		File / Project number: J030960 AMENDED Issue 1		Date of sampling: 16 Jul 2021		Date of analysis: 16 Jul 2021								
				Date issued: 22 Jul 2021		Certificate number: CM03								
Client Name & Address: Celtic Technologies & Biogenie Columbus House Greenmeadow Springs Tongwynlais Cardiff CF15 7NE				Site Address/Location: Arundel Gas Works Ford Road Arundel BN18 9DX				Location Slides Counted: Site						
Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm ³
Canteen	CM002025	Reassurance	854	H27	09:24	09:57	33	16.0	16.0	16.0	528	1	200	<0.01
Monitoring point A	CM002026	Reassurance	858	H15	09:24	09:57	33	16.0	16.0	16.0	528	1	200	<0.01
Monitoring point B	CM002027	Reassurance	859	H12	09:25	09:58	33	16.0	16.0	16.0	528	3	200	<0.01
Monitoring point C	CM002028	Reassurance	852	H28	09:26	09:59	33	16.0	16.0	16.0	528	1	200	<0.01
Monitoring point D	CM002029	Reassurance	855	H6	09:27	10:00	33	16.0	16.0	16.0	528	2	200	<0.01
Drying room	CM002030	Reassurance	854	H27	11:04	11:47	43	16.0	16.0	16.0	688	2.5	200	<0.01
Monitoring point A	CM002031	Reassurance	858	H15	11:04	11:47	43	16.0	16.0	16.0	688	1	200	<0.01
Monitoring point B	CM002032	Reassurance	859	H12	11:05	11:48	43	16.0	16.0	16.0	688	3	200	<0.01

AIRBORNE FIBRE CONCENTRATION RECORDS

Page 2 of 3		File / Project number: J030960/CM03 AMENDED Issue 1					Date of sampling: 16 Jul 2021			Date of analysis: 16 Jul 2021				
							Date issued: 22 Jul 2021			Certificate number: CM03				
Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm³
Monitoring point C	CM002033	Reassurance	852	H28	11:06	11:49	43	16.0	16.0	16.0	688	2	200	<0.01
Monitoring point D	CM002034	Reassurance	855	H6	11:07	11:51	44	16.0	16.0	16.0	704	3	200	<0.01
Field Blank	CM002035	FB	860	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

All testing is in accordance with HSE Guidance notes HSG 248 & Enquin Asbestos Procedures Manual Section 2
The number of fields to be counted to obtain a level of accuracy of <0.01 fibres/ml - cm³ of air is 96000/(sample volume in litres)

Number of measurements undertaken: 11

Report Type: Final AMENDED

Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation

Location of work area: Reassurance air testing at perimeter monitoring locations, canteen, drying room and in cab of excavator

Comments:

All air test results were satisfactory

Work methods suitable and satisfactory with regard to dust suppression

Signed Analyst

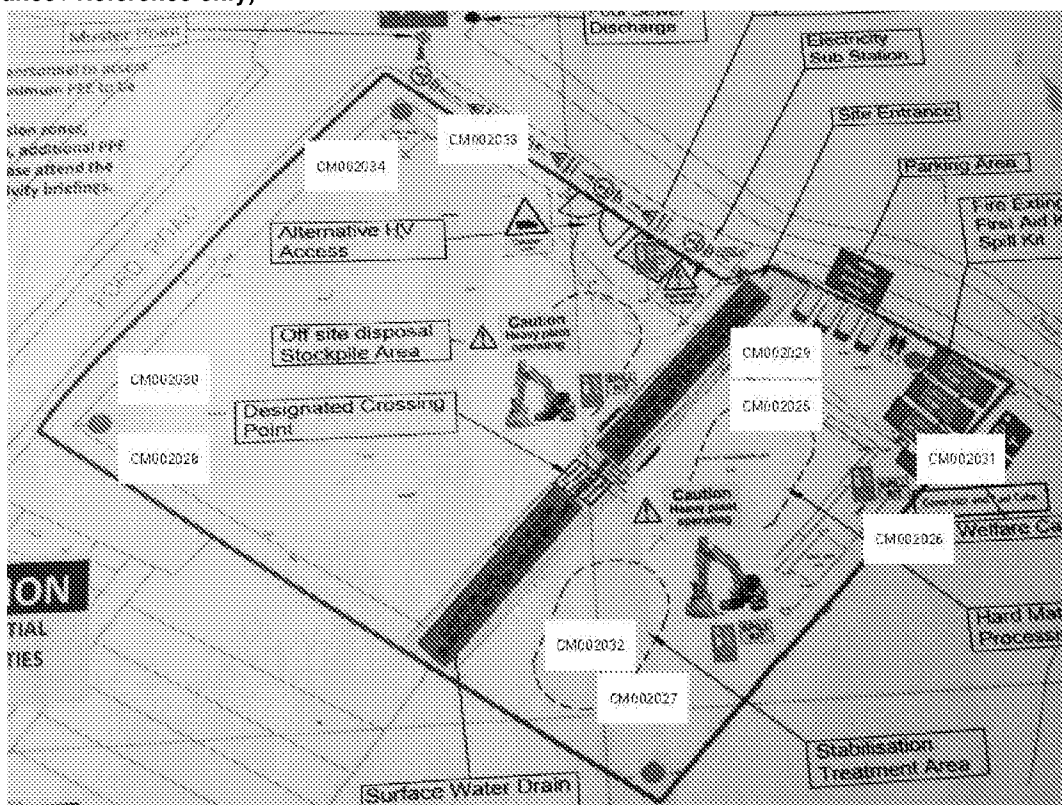
Print Name: Ian Price

AIRBORNE FIBRE CONCENTRATION RECORDS

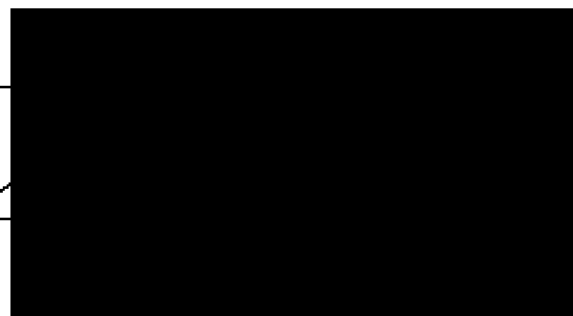
Page 3 of 3	File / Project number: J030960 AMENDED Issue 1	Date of sampling: 16 Jul 2021 Date issued: 22 Jul 2021	Date of analysis: 16 Jul 2021 Certificate number: CM03
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NPL Test Slide Number	839	5 sets of lines visible	Yes
Flowmeter Number	1021.	Flowmeter Calibration Factor	1.0
Stage Micrometer Number	962	Stage Micrometer Calibration Factor	1.00
Thermometer Barometer Number	00969./00969	Barometric Pressure mB **	1022mb
** Correction Factor If Outside Limit	1.0	Temperature Reading °C **	26
Microscope Number	674	Measured Graticule Diameter /µm	100
Timepiece Number	D - Timepiece	Corrected Graticule Diameter /µm	100

Diagram (Clearance / Reference only)



Signed Analyst
Print Name: Ian Price



AIRBORNE FIBRE CONCENTRATION RECORDS

Page 1 of 3	File / Project number: J030960	Date of sampling: 20 Jul 2021 Date issued: 20 Jul 2021	Date of analysis: 20 Jul 2021 Certificate number: CM04
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Client Name & Address: Celtic Technologies & Biogenie Columbus House Greenmeadow Springs Tongwynlais Cardiff CF15 7NE							Site Address/Location: Arundel Gas Works Ford Road Arundel BN18 9DX				Location Slides Counted: Site			
Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm ³
Canteen	CM002036	Reassurance	854	H27	09:24	09:57	33	16.0	16.0	16.0	528	1	200	<0.01
Drying room	CM002037	Reassurance	858	H15	09:24	09:57	33	16.0	16.0	16.0	528	3	200	<0.01
Monitoring point A	CM002038	Reassurance	854	H27	11:02	12:16	74	16.0	16.0	16.0	1184	1	200	<0.01
Monitoring point B	CM002039	Reassurance	858	H15	11:03	12:17	74	16.0	16.0	16.0	1184	1	200	<0.01
Monitoring point C	CM002040	Reassurance	855	H6	11:03	12:18	75	16.0	16.0	16.0	1200	1	200	<0.01
Monitoring point D	CM002041	Reassurance	852	H26	11:07	14:50	223	16.0	16.0	16.0	3558	2	200	<0.01
Monitoring point A	CM002042	Reassurance	854	H27	14:26	15:09	43	16.0	16.0	16.0	688	4.5	200	<0.01
Monitoring point B	CM002043	Reassurance	858	H15	14:27	15:10	43	16.0	16.0	16.0	688	3	200	<0.01

AIRBORNE FIBRE CONCENTRATION RECORDS

Page 2 of 3	File / Project number: J030960/CM04	Date of sampling: 20 Jul 2021 Date issued: 20 Jul 2021	Date of analysis: 20 Jul 2021 Certificate number: CM04
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Location	Sample No	Sample Type	Head No	Pump No	Time Started	Time Stopped	Sample Duration (min)	Initial Flow rate (L/min)	Final Flow Rate (L/min)	Corrected Flow Rate (L/min)	Volume Sampled (litres)	No. Fibres	No. Fields	Conc. Fibres/ml cm ³
Monitoring point C	CM002044	Reassurance	859	H12	14:28	15:11	43	16.0	16.0	16.0	688	2	200	<0.01
Monitoring point D	CM002045	Reassurance	852	H28	14:29	15:12	43	16.0	16.0	16.0	688	1	200	<0.01
Cab of operator Aaron Dickens	CM002046	Reassurance	855	H6	14:31	15:12	41	16.0	16.0	16.0	656	5	200	<0.01
Field Blank	CM002047	FB	860	N/A	N/A	N/A	0	N/A	N/A	0.0	0	N/A	N/A	N/A

All testing is in accordance with HSE Guidance notes HSG 248 & Enquin Asbestos Procedures Manual Section 2

The number of fields to be counted to obtain a level of accuracy of <0.01 fibres/ml - cm³ of air is 96000/(sample volume in litres)

Number of measurements undertaken: 12

Report Type: Final

Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation

Location of work area: Reassurance air testing at perimeter monitoring locations, canteen, drying room and in cab of excavator

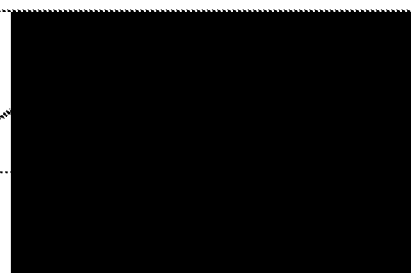
Comments:

All air tests gave satisfactory results

Dust suppression methods suitable and adequate

Signed Analyst

Print Name: Ian Price

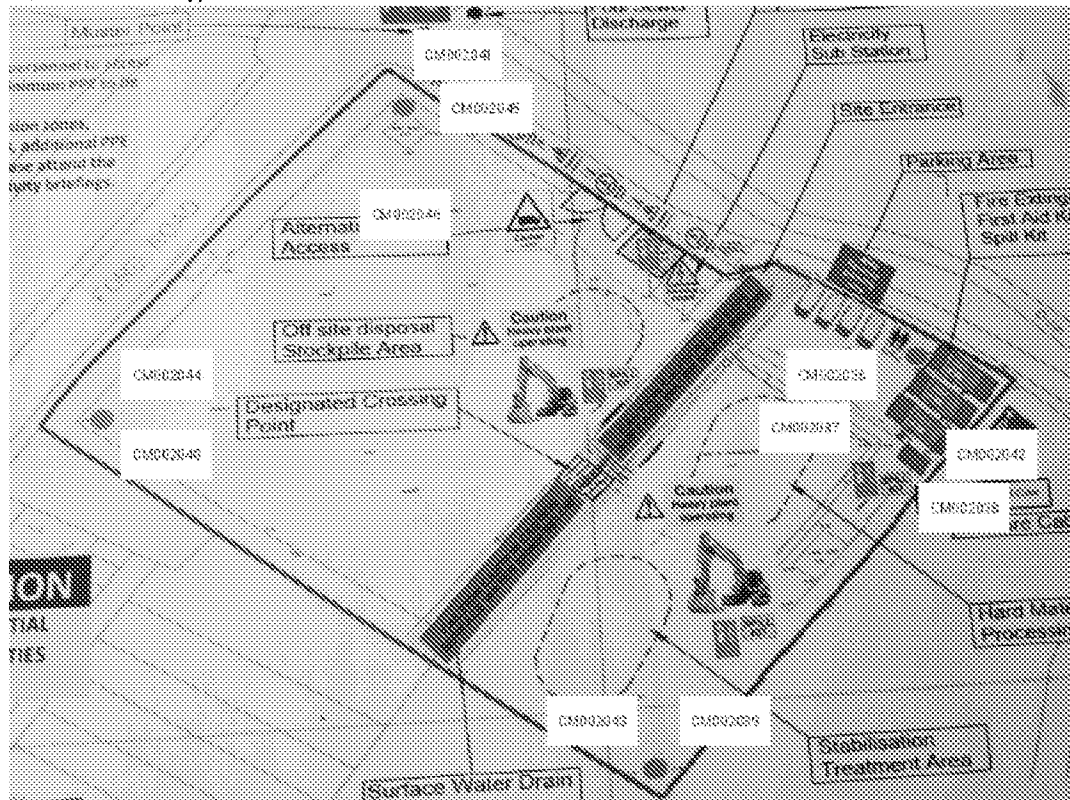


AIRBORNE FIBRE CONCENTRATION RECORDS

Page 3 of 3	File / Project number: J030960	Date of sampling: 20 Jul 2021 Date issued: 20 Jul 2021	Date of analysis: 20 Jul 2021 Certificate number: CM04
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NPL Test Slide Number	839	5 sets of lines visible	Yes
Flowmeter Number	1021	Flowmeter Calibration Factor	1.0
Stage Micrometer Number	962	Stage Micrometer Calibration Factor	1.00
Thermometer/Barometer Number	00969 / 00969	Barometric Pressure mB **	1028mb
** Correction Factor If Outside Limit	1.0	Temperature Reading °C **	28
Microscope Number	674	Measured Graticule Diameter / μ m	100
Timepiece Number	D - Timepiece	Corrected Graticule Diameter / μ m	100

Diagram (Clearance / Reference only)



Signed Analyst
Print Name: Ian Price