



Remediation Verification and Long-term Monitoring Plan (Southern Area) Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

On behalf of:
Wheat Quarter Limited and Metropolitan Thames Valley Housing

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Abbreviations

AOD	Above Ordnance Datum
AST	Above Ground Storage Tank
bgl	below ground level
BGS	British Geological Survey
CL:AIRE	Contaminated Land: Applications in Real Environments
DCM	Dichloromethane
DQRA	Detailed Quantitative Risk Assessment
EA	Environment Agency
EAME	Earth & Marine Environmental Consultants Ltd
LNAPL	Light Non-aqueous phase liquid
LOD	Limit of Detection
MNA	Monitored Natural Attenuation
NAPL	Non-aqueous phase liquid
NGR	National Grid Reference
ORC	Oxygen Releasing Compound
PID	Photo-ionisation Detector
RTW	Remedial Targets Worksheet
SGV	Soil Guideline Value
SVOC	Semi-Volatile Organic Compound
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WFD	Water Framework Directive
WQS	Water Quality Standards

Executive Summary

Earth & Marine Environmental Consultants Ltd (“EAME”) was commissioned by Wheat Quarter Limited and Metropolitan Thames Valley Housing (“the Client”) to undertake an environmental assessment in relation to a parcel of land located at Broadwater Road, Welwyn Garden City, AL8 6UN). The Client is planning to redevelop the site as a mixed-use development with residential properties (without gardens), office, retail, and leisure elements.

It was already known that the site (former polycell factory) had been contaminated with hydrocarbons leaking from a tank farm associated with the former factory operations. This contamination had been subjected to a remedial programme between 2008 and 2011 related to the former development proposals. When EAME began site investigations in 2017 (associated with the new Wheat Quarter development proposals), residual contamination was discovered in both the historic monitoring wells from the former remedial works and new wells installed by EAME. The contamination was mainly present at around 23 metres depth, co-incident with the groundwater and in the form of petroleum hydrocarbons.

The investigations and field measurements undertaken by EAME did not identify Non-Aqueous Phase Liquid (NAPL), but the concentrations of hydrocarbon in the samples, suggest it was likely to be present. Furthermore, some of the results were higher than had been observed in the last round of Monitored Natural Attenuation (MNA) monitoring undertaken by the previous developers. However, rather than this being an indication of a worsening of the situation, EAME believes this reflects a change in sampling techniques. During the earlier phase of remedial works, groundwater samples were recovered by standard purge and pump techniques, which can agitate and disturb the water samples and release volatiles (thus showing less hydrocarbon in the analysis than might exist in reality). EAME used the EA recommended so called low-flow sampling technique, which causes minimal sample disturbance and gives a more accurate sample of the real-life conditions at that sampling point (*i.e.* higher values).

The ongoing presence of hydrocarbon contamination at depth and co-incident with the water table, along with the strong likelihood of NAPL being present, warranted the consideration of further remedial works being undertaken. Following consultation with the EA to agree the overall approach, the developer used a window of opportunity prior to substantive construction works to implement a pro-active remedial programme targeting this impacted groundwater horizon in the source area.

The remedial strategy for this site was based on the principle of achieving environmental betterment, in other words reducing the long-term pollution potential of the residual

material, removing as much pollutant (NAPL) as practicable in the window of opportunity that was available.

It should thus be noted that the remedial works presented in this report are supplemental works related to a new mixed-use development scenario and following on from a much more substantial remediation project associated with a former development plan. In the initial remediation works carried out in 2008 - 2011, the underground storage tanks, which are the source of the groundwater contamination, were removed along with contaminated soils. This was followed by a groundwater pump and treat programme and subsequently MNA, which ended in September 2015.

This report relates to the most recent round of remediation works in the same area, which has comprised installation of delineation/pumping wells, injection of mobilisation agents and groundwater abstraction and treatment (prior to discharge). The developer took the opportunity of an extension in the site hand-over and construction programme to extend the remediation works by a further two weeks. The active remediation works are now completed (and reported here). The programme will now move into a long-term post remedial monitoring and MNA programme.

One of the key observations from the recently completed remedial works is that, although a NAPL was clearly present (or could be created by pumping the groundwater down and creating a local cone of depression), at times up to 300mm thick, this reduced to trace levels at the end of the remedial programme in all monitoring wells. The total volume of recovered NAPL, however, was very low. This means that the total mass of NAPL in the area is also very low.

Moreover, when considering the NAPL thickness and presence against groundwater level, it appears that the NAPL only becomes evident at certain groundwater depths. These limited response zones for NAPL suggest that rather than there being an extensive pool of NAPL resting on the groundwater contiguously over a wide area, the NAPL is instead sat in discrete lenses in the chalk that only manifest themselves in groundwater when the water table passes through those zones.

The remedial works took place during the summer of 2018, which was unusually warm and dry, leading to a generally lower groundwater level across the area and thus reduced ability to over-pump the groundwater.

This limitation on pumping rates and the inconsistent ad-hoc manifestation of NAPL in different boreholes, on the one hand has made this a challenging and complex remedial project. However, it also indicates that the NAPL as a source is not a large magnitude cohesive pool of NAPL and the residual contamination is not a significant ongoing pollution source.

The remedial programme has removed several kg of dissolved phase hydrocarbons and up to 50 litres of free phase NAPL. Furthermore, at the onset of the remedial programme the maximum observed NAPL thickness was 50mm, by the end of the remediation programme the NAPL was effectively absent.

The programme has been robust and substantive and the optimum approach that could have been applied in consideration of the specific site constraints and proposed development programme. Whilst residual contamination remains deep below the site surface and thus periodically in contact with the groundwater, we believe that there is little opportunity to achieve further sustainable removal of this material *i.e.* the site conditions are very challenging in terms of the depth of contamination, groundwater flow characteristics and fragmented/sporadic nature of the residual NAPL.

EAME believes substantial betterment using sustainable remedial techniques has been achieved through the most recent round of remedial works and that a much better understanding of the residual contamination status has been obtained. This will help to inform the piling strategy (which may encounter some of the residual material) and associated mitigation measures that will be applied (being developed by Metropolitan Thames Valley Housing (MHVT) and its contractors). This data set will be further added to by the ongoing long-term monitoring programme which EAME is confident will show a gradual improvement in groundwater quality over time.

EAME does not regard the residual contamination to be prejudicial to the development objectives as the conditions do not pose a threat to site users and infrastructure and will not be exacerbated by the implementation of the development proposals. With the conditions that prevail on the site now, EAME does not believe that the site would be designated as a Part 2a [contaminated] site under the UK environmental regulatory regime and any associated planning conditions can be successfully discharged.

1 Introduction

1.1 Background

Earth & Marine Environmental Consultants Ltd (“EAME”) was commissioned by Wheat Quarter Limited and Metropolitan Thames Valley Housing (“the Client”) to prepare a Remediation Verification and Long-term Monitoring Plan in relation to a parcel of land located at Broadwater Road, Welwyn Garden City, AL8 6UN, UK (“the Site”) (*Figure 1.1*). It is understood that the Client is planning to redevelop the site as a mixed development with residential properties (without gardens), office, retail, and leisure elements (“Proposed Development”). This report relates solely to the southern area of the development and the remediation that occurred during Q3-2018 (*Figure 1-1*).

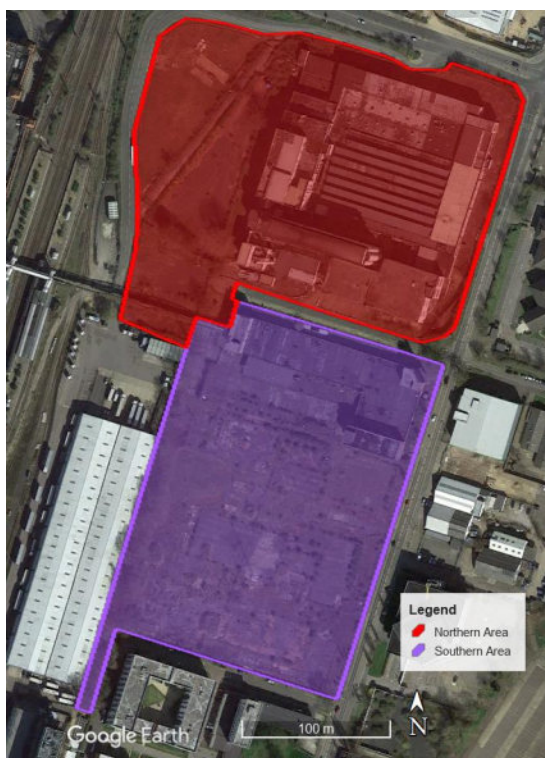


Figure 1-1: Proposed Development Area

Google Earth Imaging with the permission of Google – Licensed to Earth and Marine Environmental Consultants Ltd.

This report has been produced in-line with current Environment Agency (EA) guidance on the verification of remediation of land contamination¹.

¹ Environment Agency (2010). Verification of remediation of land Contamination, Report: SC030114/R1, ISBN: 978-1-84911-175-1

1.2 Site Location and Setting

The southern site is approximately 3.6 ha in area and is also accessed via Hydeway off Broadwater Road (A1000) (*Figure 1-2*). The site is located centrally within the town of Welwyn Garden City at National Grid Reference (NGR) TL 24134 12739 (51.799529, -0.20121127) (*Annex A – Figure A1*). The site is relatively flat and lies at an elevation of between 84 and 85 metres above ordnance datum (AOD). The following current uses were identified surrounding the southern site (*Annex A – Figure A2*):

- **NORTH** – Hydeway beyond which is the northern Site.
- **EAST** – Broadwater Road (A1000) beyond which are commercial premises and offices.
- **SOUTH** – Disused Roche Products facility (Grade II listed) and multiple residential blocks.
- **WEST** – P.W Gates Distribution Ltd warehouse (southern hub) beyond which are railway lines (East Coast Mainline) associated with Welwyn Garden City station and car parking.

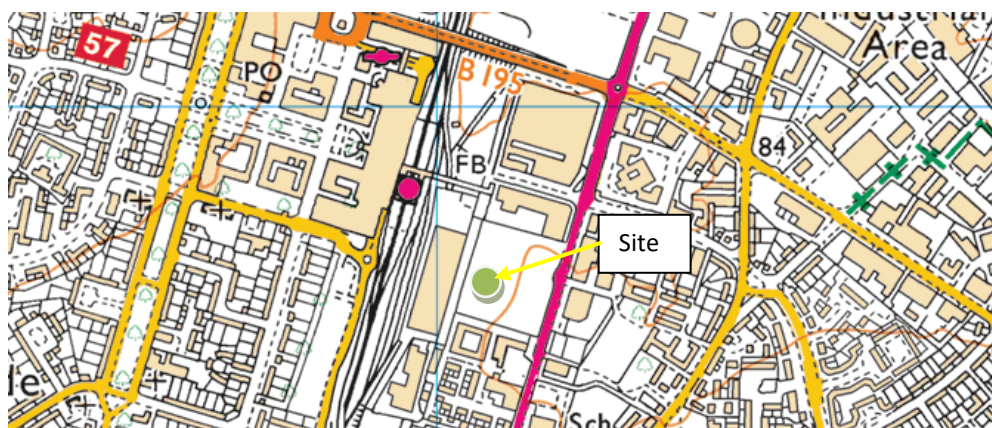


Figure 1-2: Site Location

Ordnance Survey 1: 25,000 scale map - with the permission of The Controller of Her Majesty's Stationery Office, Crown Copyright
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A full assessment of the sites environmental setting is outlined within the standalone Phase II environmental assessment report² and remediation strategy³.

² EAME (2018). Environmental Assessment (Southern Area) Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK, Wheat Quarter Limited, Ref. 016-1512, REV01, September 2018,

³ EAME (2018). Remediation Strategy (Southern Area) Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK, Wheat Quarter Limited, Ref. 016-1512, REV01, September 2018

1.3 Site History

The southern site has been divided into three zones based on historic uses (*Figure 1-3*).

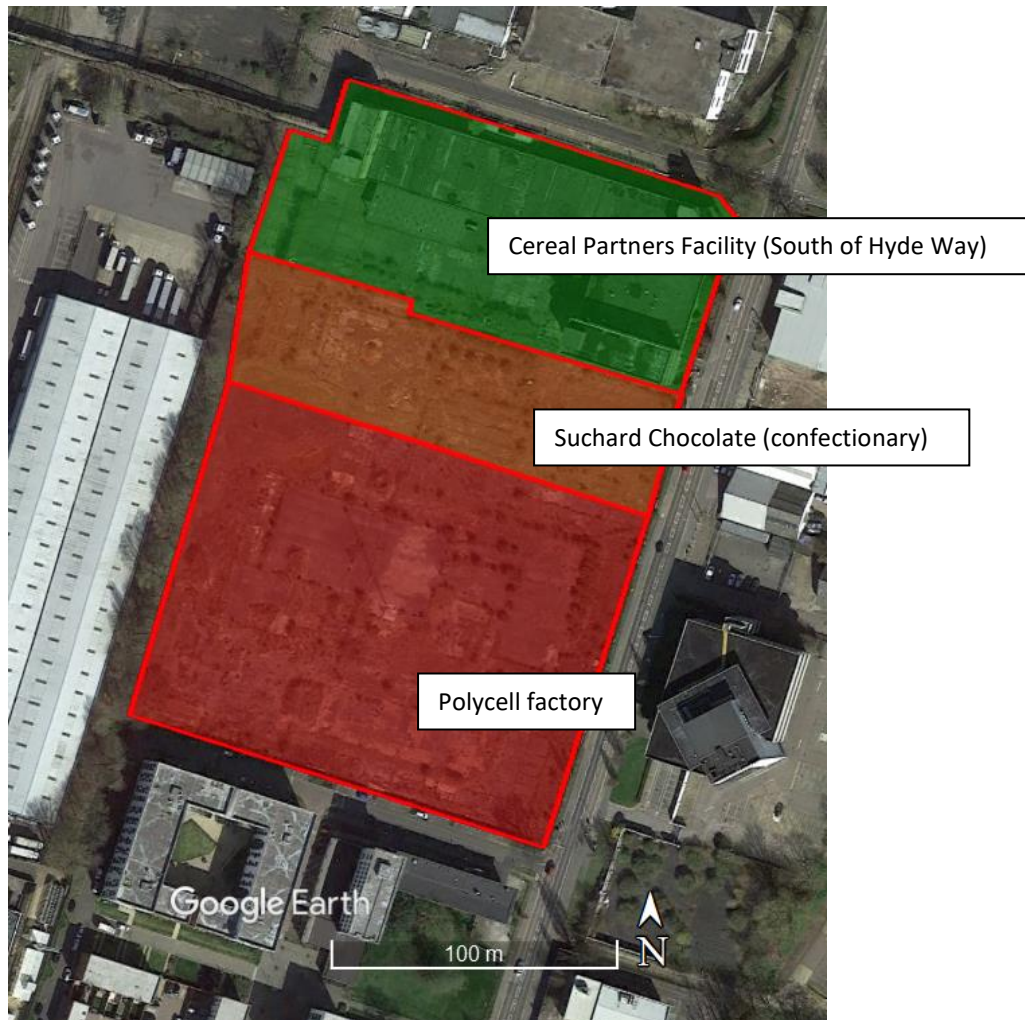


Figure 1-3: Southern Site Zoning

Google Earth Imaging with the permission of Google – Licensed to Earth and Marine Environmental Consultants Ltd.

1.3.1 Polycell factory

The Site was initially developed between 1925 and 1939, with the land immediately adjoining the site to the north and south developed between 1966 and 1976. The original use of the Site was as a film studio that opened in 1928. After this the site was taken over by Ardath Tobacco Company Ltd (1940s - 1960) and then by Polycell (1964). The Polycell Site ceased operation in late 1998.

A Dames and Moore Report (2000)⁴ states that the Polycell facility produced a range of DIY products including Polyfilla and associated products, wallpaper adhesives and paint cleaning fluids. The primary operations carried out on site involved mixing of raw materials and packaging of products. There were two principal areas of production:

- **Polyfilla and paste area** - this was used primarily to produce dry products and some liquid pastes and was located at the western corner of the site. Associated with this area was a wastewater tank for receiving the washing water from the paste lines. The warehouse was adjacent to the powders and paste building and was used for storage of all products produced on the Site.
- **Liquids area** – located at the northern end of the Site, was used to produce paint strippers and brush cleansers.

Associated with the liquids area was a solvent tank farm (*Figure 1-4*) comprising 13 (six in use when the site was operational, seven redundant) underground storage tanks (USTs) and one above ground storage tank (AST).

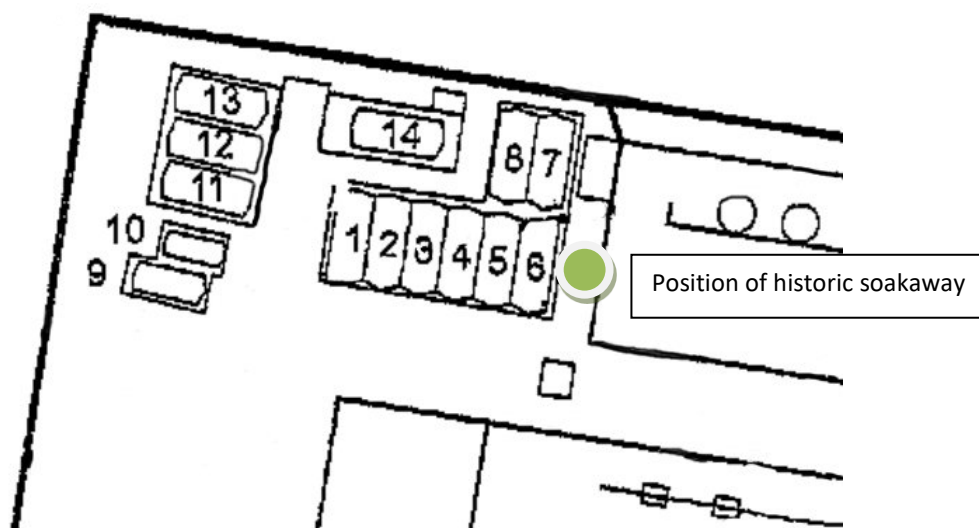


Figure 1-4: Layout of Polycell tank farm and historic soakaway⁵

Naphtha, white spirit and methanol were stored in the six 4,000-gallon USTs (tanks 7 & 8, 5 & 6, and 3 & 4 respectively) and methylene chloride was stored in a 6,250-gallon AST (tank 14).

⁴ Dames and Moore (2000). FINAL FACTUAL REPORT - POLYCELL PRODUCTS LIMITED, WELWYN GARDEN CITY FOR WILLIAMS PLC, Ref: R2779/38842-019-401/WH, 14 July 2000

⁵ Modified from URS Presentation (October 2000), Polycell products Ltd, Welwyn Garden City, Findings of Site Investigations and Risk Assessment, Welwyn Hatfield Council Offices, 12th October 2000.

The seven redundant tanks have volumes ranging from 1,500 to 6,000 gallons and were used to store white spirit, derv, IPA, oxtail, naphtha, turps and methanol.

At the time of the Site acquisition by Tesco Stores Ltd they were informed that the Site was contaminated, and the nature and extent of the contamination was confirmed by subsequent Site investigations undertaken by Delta-Simons. Delta-Simons undertook several phases of intrusive site investigation and long-term groundwater monitoring at the Site between 2003-2016. A long-term strategy was agreed (in conjunction with the Welwyn Hatfield Council and the Environment Agency) to undertake a voluntary groundwater remediation scheme to reduce the associated environmental risks.

Delta-Simons investigations at the Site identified localised soil contamination and significant widespread groundwater contamination at depth within the Principal Chalk Aquifer. The source of the contamination was determined to be leakage from the USTs located in the north-west corner of the former Polycell factory.

The key contaminants identified in the groundwater at the Site comprise 'White Spirit' characterised by a mix of light end aliphatic hydrocarbons, dichloromethane, trimethylbenzene, naphthalene, ethylbenzene and xylenes. Non-aqueous phase liquid (NAPL) free product was identified on the surface of the groundwater at a depth of approximately 22 m within the Chalk within selected boreholes.

Elevated concentrations of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOC) were identified within shallow Made Ground around the periphery of the tank farm. The contamination is considered to have been caused by leakages from the pipework associated with the tank farm, or from the USTs themselves, or a combination of both.

Elevated concentrations of TPH, semi-volatile organic compounds (SVOC) and VOC at depth within the Chalk, in the direction of the identified groundwater flow (primarily towards the southeast), were associated with the free product on the surface of the groundwater.

Groundwater monitoring undertaken prior to the remediation works identified that the dissolved contamination was reaching the boundaries of the Site and investigations on the adjacent CPUK land (to the north of the Site) identified deep groundwater contamination in several boreholes, which has been identified as originating from the tank farm.

1.4 Previous Remedial Activities (2008 – 2011)

Given the scale and extent of the groundwater contamination at the Site a remediation strategy and monitoring programme was devised following a Detailed quantitative risk

assessment (DQRA) completed by Delta-Simons in December 2005. The main objective of the remediation strategy was to remove the principal source of contamination, therefore, preventing the continued contamination of groundwater from the source area. The source was considered to comprise the tank farm and surrounding impacted shallow soils, and free product on the groundwater at depth beneath the tank farm. The secondary objective of the remediation programme was to remediate the dissolved phase groundwater contamination to the derived remedial targets, to minimise impact to the wider groundwater environment.

The remediation scheme comprised a combination of techniques to remove the source of the contamination and address the dissolved phase contamination plume across the wider Site. These included:

- **Stage 1** – Tank pull and soil excavation – completed September/October 2008;
- **Stage 2** – Soil excavation validation – completed October 2008;
- **Stage 3** – On-site ex-situ biopile remediation – completed July 2009;
- **Stage 4** – Pump and Treat groundwater remediation/Free product recovery – completed January 2011;
- **Stage 5** – Soil vapour extraction – completed January 2011;
- **Stage 6** – Oxygen Releasing Compound (ORC) injection – completed early 2011; and
- **Stage 7** – Long-term groundwater monitoring/Monitored Natural Attenuation (MNA) – October 2008 to September 2015.

In September 2015 Delta-Simons concluded that the source removal and ex-situ soil remediation was successful in removing the bulk of the soil contamination source and treating the contaminated soils. The active groundwater remediation phase was successful in removing free product from the groundwater. Free product was not recorded since March 2010 up to the last round of monitoring in September 2015. In addition, the soil vapour extraction system removed approximately 70 tonnes of volatile compounds from the soils beneath the former tank farm. The results of the long-term groundwater monitoring programme indicate that the groundwater remediation scheme has been effective in significantly reducing the dissolved phase hydrocarbon and VOC contamination within the source zone and the dissolved phase plume.

Delta-Simons noted, that contamination levels within the groundwater beneath the former tank farm remain elevated. Delta-Simons work at the Site was completed in September 2015 with the final report issued in March 2016.

2 Remediation Strategy

2.1 Introduction

After an updated site assessment, including a revised Detailed Quantitative Risk Assessment (DQRA)² was undertaken by EAME in 2017/2018, a formal Remediation Options Appraisal and Remediation Strategy was developed and submitted to the Welwyn Hatfield Borough Council (24/09/18) in relation to planning Condition 3 Part 2 of N6/2015/0294/PP. Prior to submission the outline proposed remediation works and programme was submitted (on 22/06/18) to the Environment Agency for comment. Where possible EA requests were incorporated into the Remediation Options Appraisal and Remediation Strategy.

The investigations and field measurements undertaken by EAME did not identify Non-Aqueous Phase Liquid (NAPL), but the concentrations of hydrocarbon in the samples, suggest it was likely to be present. Furthermore, some of the results were higher than had been observed in the last round of MNA monitoring undertaken by the previous developers. However, rather than this being an indication of a worsening of the situation, EAME believes this reflects a change in sampling techniques. During the earlier phase of remedial works (by Delta-Simons), groundwater samples were recovered by standard purge and pump techniques, which can agitate and disturb the water samples and release volatiles (thus showing less hydrocarbon in the analysis than might exist in reality). EAME used the more recently developed and EA recommended so called low-flow sampling technique, which causes minimal sample disturbance and gives a more accurate sample of the real-life conditions at that sampling point (*i.e.* higher values). The results were sufficient to indicate that the site would benefit from some further remedial intervention.

2.2 Roles and Responsibilities

The various roles and responsibilities related to the remediation scheme are outlined within *Table 2-1*.

Table 2-1: Remediation scheme roles and responsibilities

Role	Named Party	Responsibilities
Developer	Wheat Quarter Limited and Metropolitan Thames Valley Housing	Appointment of environmental consultant and remediation contractor.
Project Management	Scott Hill	Overall project management of the Wheat Quarter project.

Role	Named Party	Responsibilities
Environmental Consultant	EAME	Preparation of Remediation Options Appraisal and Remediation Strategy. Preparation and implementation of the Remediation Verification and Long-term Monitoring Plan.
Remediation Contractor	John F Hunt Remediation Ltd	Implementation of the remediation scheme in-line with Remediation Strategy.
Stakeholder	Environment Agency	Statutory consultee with respect to contaminated land and groundwater issues.
Stakeholder	Welwyn Hatfield Borough Council	Setting of planning conditions relating to the Proposed Development.

2.3 Remediation Objectives

CLR11⁶ defines remediation objectives as site-specific objectives that relate solely to the reduction or control of risks associated with one or more pollutant linkages that are demonstrated, through risk assessment, to represent unacceptable risks. The objectives should be achievable, having regard to risks to the identified receptors, costs and benefits, technical feasibility, sustainability criteria and the proposed end-use of the site.

The results of the Detailed Quantitative Risk Assessment (DQRA) suggested that there was potential for impacts on off-site groundwater quality from residual groundwater contamination associated with the residual petroleum hydrocarbon contamination present in the deeper soils and groundwater beneath the former tank farm/remediation area.

The principal objective was of the remediation strategy was:

a decrease in contaminant mass around the former tank farm/remediation area to achieve “betterment” in-line with EA expectations.....

It is important to note that there are no identified human health pollution linkages between the groundwater (located at circa 23 metres below ground level) and the proposed

⁶ Environment Agency (2004). Model Procedures for the Management of Land Contamination, Contaminated Land Report 11, ISBN: 1844322955

development end users, so the only remedial focus is betterment of the groundwater conditions, rather than a need to address any human health risk.

2.4 Remediation Criteria

CLR11 defines remediation criteria as measures (usually, but not necessarily, expressed in quantitative terms) against which compliance with remediation objectives will be assessed.

The Environment Agency required the programme to achieve betterment (contaminant reduction) and expressed a wish to see a reduction in NAPL mass of between 80-85% as evidence of such betterment. It is important to note, however, that the discontinuous/sporadic nature of the NAPL within the soil strata (as identified by the varying response of individual boreholes across the study area) means calculation of the initial baseline NAPL mass is extremely difficult to estimate. As a surrogate for NAPL mass NAPL thickness is proposed as an effective quantitative level with which to assess remedial effectiveness.

2.5 Consultation with the Environment Agency

Throughout the site investigation, DQRA and remediation design process the EA has been consulted via the assigned planning liaison officer, as outlined within *Table 2-2*.

Table 2-2: EA Consultation Record

Date	Type	Notes
29/03/18	Meeting held at EA offices in WGC	Provision of draft site investigation results in relation to the groundwater conditions on the southern site.
16/04/18	Minutes provided by EA of meeting held on 29/03/18.	EA requested ConSim spreadsheets to review input criteria and assumptions.
23/05/18	Letter from EA to EAME (Ref. NE/2018/128222/04-L01)	Review of Environmental Assessment (Southern Area), Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK (project reference 016-1512, Rev 00), PDF- DQRA inputs_ConSim" (ref 016-1512, Rev 00, dated March 2018), Remedial Targets Methodology (RTM) worksheets.

Date	Type	Notes
22/06/18	Letter from EAME to EA (Ref. 016-1512 Wheat Quarter Limited - Response to EA Letter of 23-05-18 REV00)	Review of the EA comments related specifically to the ConSim and RTM input parameters.
22/06/18	Letter from EAME to EA (Ref. 016-1512 Plutus Estates WGC EA Remediation Letter REV00)	Outlining proposed remediation works (including programme).
19/07/18	Letter from EA to EAME (Ref. NE/2018/128222/04-L01)	Review of Correspondence dated 22nd June 2018, re Proposed Development, Southern Area of Broadwater Road Site (EAME ref 016-1512 Wheat Quarter Limited Response to EA letter of 23-05-18 REV00), Correspondence dated 22nd June 2018, re Proposed remediation works at Broadwater Road site, Welwyn Garden City (EAME ref:01601512 Plutus Estates WGC EA Remediation Letter RECV00)
20/07/18	Letter from EAME to EA (Ref. 016-1512 Wheat Quarter Limited - Response to EA Letter of 19-07-18 REV00)	Comments regarding DQRA, proposed remedial works and betterment.
07/08/18	Letter from EA to EAME (Ref. NE/2018/128222/06-L01)	Review of Remediation Strategy (Southern Area), Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK (EAME, Rev00, ref 016-1512, June 2018) and Letter dated 20th July 2018, their ref: 016-1512 Wheat Quarter Limited - Response to EA Letter of 19-07-18 REV00.

3 Remediation Scheme (Implementation Phase)

3.1 Scope of Works

The groundwater remediation programme was implemented as per the previously submitted Remediation Strategy. The scope of works was set-out within the John F Hunt Remediation (JFHR) letter dated 11th June 2018 (Ref. 17090/SH/April18/003) and was extended (in-light of EA comments received on 19/07/18, Ref. NE/2018/128222/04-L01 and 07/08/18, Ref. NE/2018/128222/06-L01) as per JFHR letter dated 15th August 2018 (Ref. 17090/SH/Aug18/003).

Deviations from the previously stated programme were:

- some borehole positions were altered due to the location of the tree line and raised bank on the western edge of the site (*i.e.* access was not possible); and
- some boreholes were positioned based on historic information on the suspected source zone, along with information gathered in the field (visual and olfactory evidence of contamination) in order to improve borehole locations.

Overall, the spacing of the remediation wells were 5 to 6 metres which aligns to the proposed spacing stated in the Remediation Strategy.

3.2 Implementation Programme

The key dates associated with the works were:

- 5th June 2018 – 5th July 2018 – Construction of borehole grid
- 6th June 2018 – 29th July 2018 – Construction and commissioning of the Water Treatment Plant (WTP)
- 30th July 2018 – 19th August 2018 – Phase 1 groundwater pumping
- 20th August 2018 – 23rd August 2018 – Injection phase
- 24th August 2018 – 14th September 2018 – Phase 2 groundwater pumping (including extension)
- 17th September 2018 – Monitoring (post remediation)

All active groundwater remediation operations ceased on 14th September 2018.



Photograph 3-1: Remediation array with wastewater treatment plant (12/07/18)

The installed remediation and monitoring well array are outlined in *Figure 3-1*.



Figure 3-1: Installed remediation and monitoring array

Google Earth Imaging with the permission of Google – Licensed to Earth and Marine Environmental Consultants Ltd.

The location of the remediation wells is outlined within *Table 3-1*.

Table 3-1: Remediation and monitoring wells

Well Ref.	Location		m AOD
A2	524064	212765.5	85.718
A3	524073.4	212765.4	85.393
A4	524079.3	212763.8	85.405
A5	524084.9	212762.2	85.47
A6	524091	212760.6	85.508
B3	524071.9	212759.7	85.399
B4	524079.1	212755.5	85.412
B5	524084	212756.2	85.247
B6	524090.2	212754.5	85.383
BH1-17	524077.5	212758	85.207
BH31	524076.5	212752.6	85.436
BH31-RN31	524090.9	212758.3	85.344
BH36	524062.6	212759.3	85.926
C2	524067.5	212754.7	84.842
C3	524071.9	212753.8	85.55
C5	524082.9	212751	85.171
C6	524088.2	212749	85.429
C7	524094.7	212749.5	85.27
D2	524065.8	212748.7	85.385
D4	524074.2	212746.4	85.426
D5	524081.4	212745.4	85.346
Z5	524084.5	212767	85.318

3.3 Depth to Groundwater

The depth to groundwater was recorded daily by JFHR throughout the remediation works. This allowed JFHR to determine information such as:

- zone of influence (during pumping);
- indication of efficiency of pumping for the given ground conditions (pump yields);
- target pump depths;
- overall groundwater trends; and
- an indication of depth at which NAPL was present (utilising NAPL data).

The groundwater levels throughout the remediation process are outlined within *Figure 3-2*.

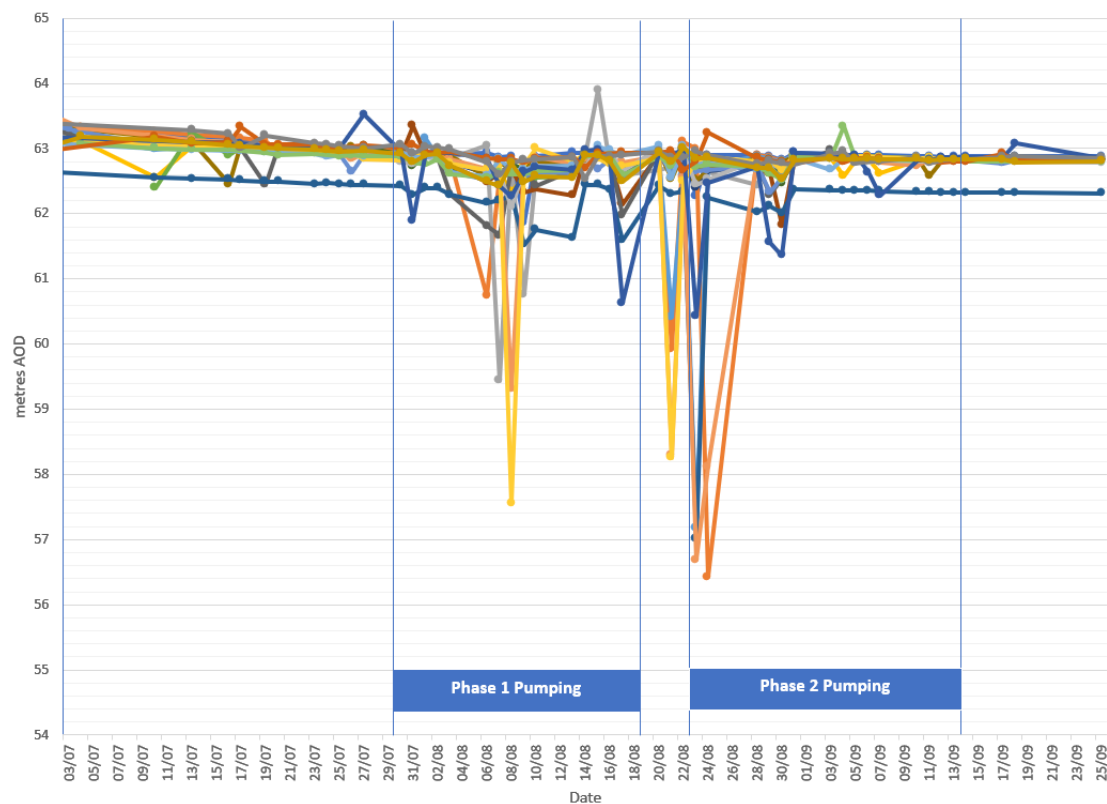


Figure 3-2: Groundwater levels during remediation process (July - September 2018)

The base groundwater data is provided in *Annex C*.

An overall trend of declining groundwater levels (between July and September) was observed which JFHR consider can be attributed to seasonal groundwater fluctuations. This summer there was a prolonged warm dry spell which limited groundwater recharge in the region enabling an overall drop in groundwater levels. In addition, the influence of the two groundwater pumping phases can clearly be observed. During phases where the pumps were set deeper within the individual boreholes *i.e.* to form a 'cone of depression', a significant response in the depth to groundwater can be observed. During this phase the groundwater flow direction would have been reversed (locally around the borehole) with groundwater being drawn into the source zone area for subsequent abstraction. During phases where pumps were set shallower *i.e.* to maximise NAPL removal through skimming, the groundwater levels were closer to 'natural' (resting) levels.

As indicated previously, the volume of water that could be physically abstracted throughout the active works was low. This was primarily due to the local hydrogeological conditions and can be observed in the depth to water data/trends (*Figure 3-2*). A reduction in groundwater levels of up to 6 metres was observed for a comparatively low pump volume, suggesting low recharge rates and flow conditions.

3.4 NAPL Thickness

Between 2010 and the last round of Delta-Simons monitoring in September 2015 measurable free product was not identified on the groundwater. Whilst limited evidence of NAPL had been detected prior to the remediation works (2017-2018), given the site history and the high dissolved phase concentrations (above solubility limits of specific determinands), the presence of NAPL was suspected, but proved difficult to observe.

NAPL thickness reduction is a key project objective and was recorded daily throughout the works. During the remediation works determination of NAPL thickness allowed boreholes with the highest recorded NAPL levels to be targeted (*i.e.* defined as primary targets for more active pumping) although any boreholes recording NAPL down to 'trace' levels were also actively pumped throughout the works as baseline recovery effort. The pumping programme was tuned this way daily to maximise product recovery.

The information collected throughout the drilling phase indicated the surface of the 'putty chalk' and 'competent chalk' to be undulating. Whilst there was a comparatively low number of boreholes exhibiting NAPL upon commencement of the works, it can be observed that the number of boreholes exhibiting NAPL during the works increased; this would have been caused by the remediation works themselves, which were designed to locally 'mobilise' the NAPL to the borehole array such that it could then be abstracted for treatment in a controlled manner (*Table 3-2*).

The spatial distribution of NAPL below the source area (chalk aquifer), and the ability to target/remove the contamination as part of the treatment works, would have been determined by the 'dual porosity' characteristics of the soil matrix. In addition, the local hydrogeological conditions, as determined throughout the drilling works and interpreted in *Annex A*, indicated the surface of the 'putty chalk' and 'competent chalk' to be inconsistent.

Both these factors would have made the identification and subsequent removal of NAPL at depth more difficult. This was observed first-hand at the site, where no NAPL had been detected prior to the JFHR drilling works, yet the dissolved phase concentrations of the contaminants of concern within the source area were significant, indicating product was present locally.

The NAPL trends observed throughout the treatment works accord with the anticipated understanding of the local ground conditions (including that associated with the dual porosity chalk matrix), along with historic information pertaining to the source area. Whilst there was a comparatively low number of boreholes exhibiting NAPL post drilling/upon commencement of the pumping works, it can be observed that the number of boreholes exhibiting NAPL during the treatment works increased. This increase can be attributed to the remediation works themselves, which were designed to locally 'mobilise' the NAPL such that it could then be abstracted for treatment.

During the pumping works, NAPL was observed to mobilise as a series of pulses. It is considered that this pulsing can be attributed to the nature of the dual porosity matrix and would also indicate that NAPL was not present in significant quantities across the source area. Combined, these challenging conditions made it difficult to remove the NAPL efficiently at depth, even though the pumping works achieved a localised 'cone of depression' and a degree of NAPL manipulation.

Table 3-2: NAPL data from remediation scheme (by stage)

Stage	No. Data points	Data Points >Zero	% NAPL Detection	Max. NAPL (mm)	Mean NAPL (mm)	SD	CI (95%)
Grid Construction	220	9	4.1 %	50 mm	0.773	5.612	± 0.742
WTP construction	396	41	10.4 %	140 mm	1.051	8.738	± 0.861
Phase 1 Pumping	330	39	11.8 %	60 mm	0.595	4.843	± 0.523
Injection Phase	66	11	16.7 %	50mm	4.464	12.404	± 2.993
Phase 2 Pumping	374	82	21.9 %	300 mm	4.045	24.053	± 2.438

Stage	No. Data points	Data Points >Zero	% NAPL Detection	Max. NAPL (mm)	Mean NAPL (mm)	SD	CI (95%)
Monitoring	198	7	3.5 %	0.1 mm	0.004	0.019	± 0.003
Notes No. data points - Groundwater monitoring events during which NAPL levels were recorded Data points > zero - Number of NAPL data points greater than zero. SD – Standard Deviation CI – Confidence Interval (95%)							

The greatest increase in NAPL thickness was observed during the injection works/pumping phase 2, which is as expected as the injection programme was designed to mobilise contamination prior to subsequent abstraction and discharge. This illustrates that the groundwater conditions were such that the removal of NAPL from the chalk matrix required a significant physical effort and manipulation.

Upon completion of the injection phase, the pumps were set at a shallower level in order that the removal of NAPL could be maximised. At the start of the monitoring phase *i.e.* upon completion of the active remediation works, only trace levels of NAPL (<1mm or 'globules') were recorded in a limited number of boreholes. The pump data (expressed as litres and m³) is outlined within *Annex E* for each borehole, along with the total volume. The tabulated data indicates which boreholes were targeted, depending on evidence of NAPL and/or high dissolved phase.

There is evidence to suggest that as groundwater levels reduce, the NAPL thickness increases. This indicates that the NAPL may be present/trapped at specific levels below the site *e.g.* for borehole B5, the NAPL thickness maximises between 63.3 m AOD to 62.3 m AOD approximately (*Figure 3-3*).

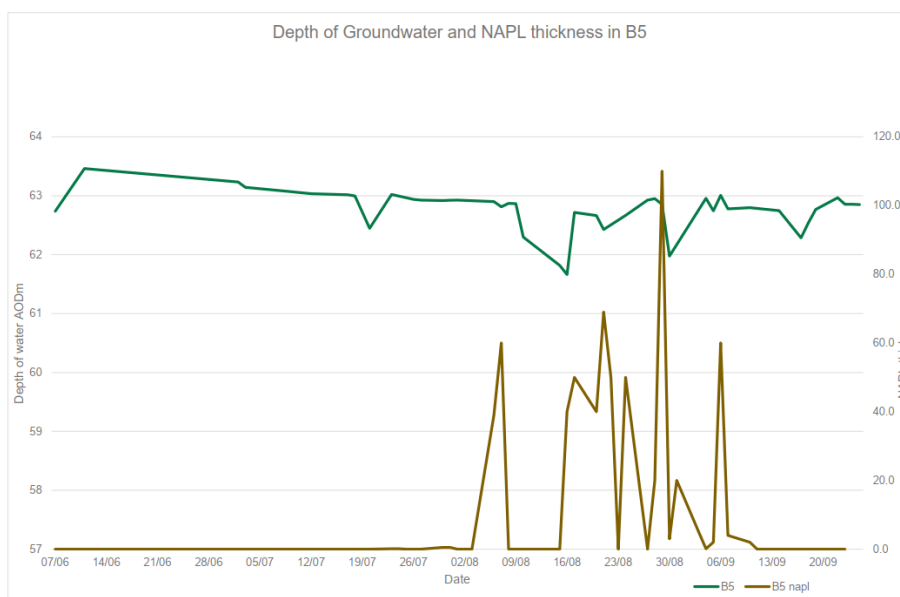


Figure 3-3: Borehole B5 NAPL vs Groundwater Level

For borehole C3, the NAPL thickness maximises between 63.2m AOD to 63.6m AOD approximately (Figure 3-4).

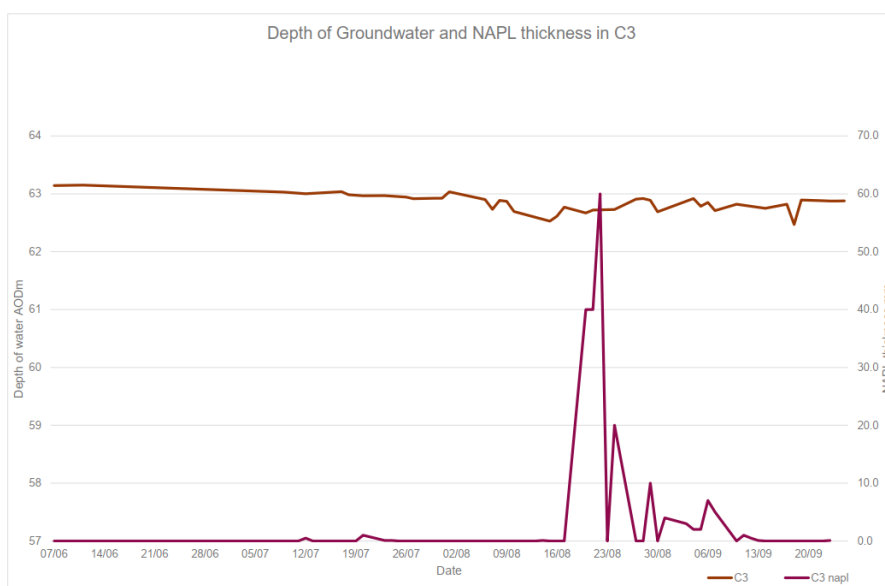


Figure 3-4: Borehole C3 NAPL vs Groundwater Level

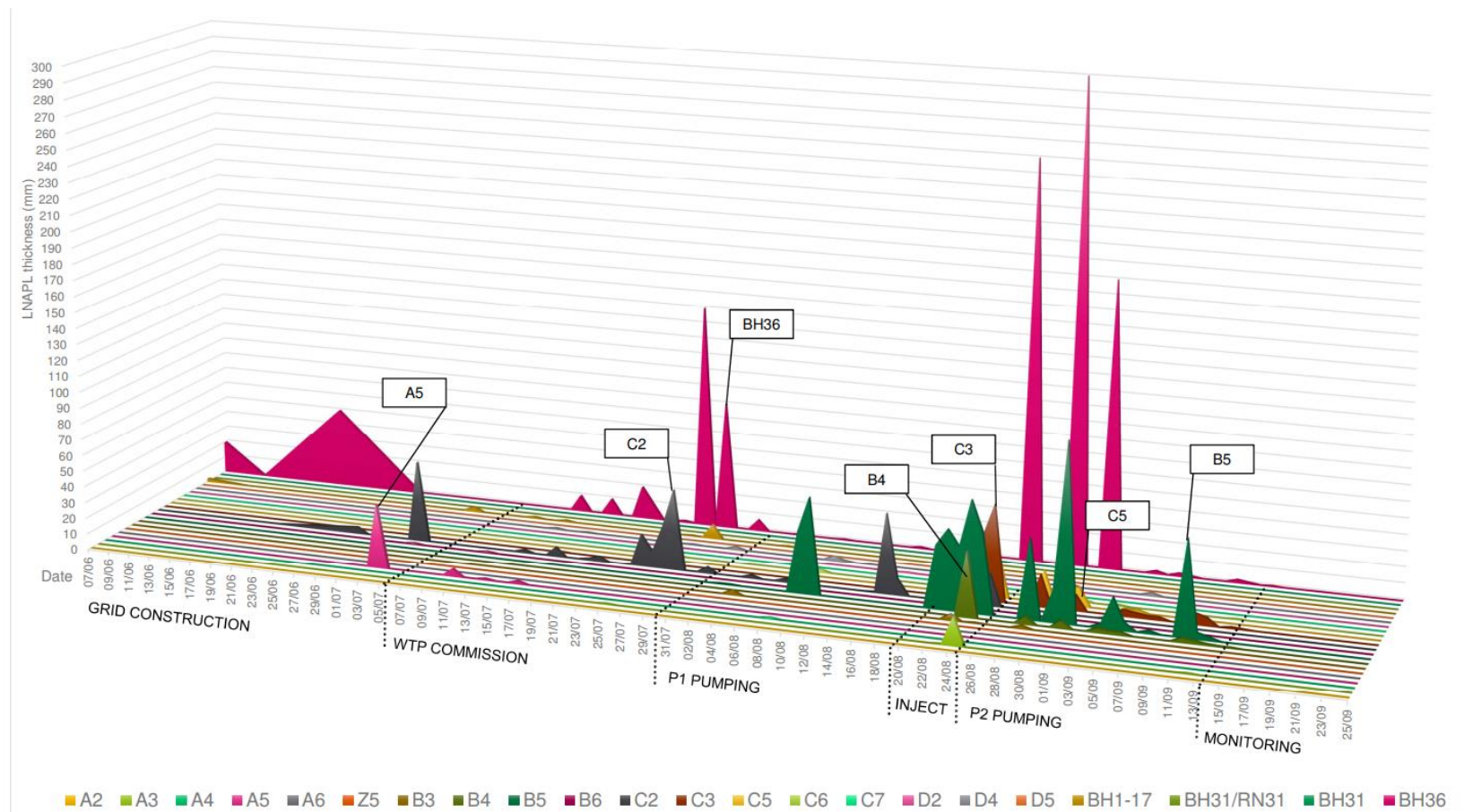
This fits with our understanding of the chalk matrix. It is therefore possible that NAPL may be detected in the future, depending on the natural groundwater cycle (*i.e.* NAPL may only be

formed should the resting groundwater levels be incident with the identified contamination depth). This dynamic makes it difficult to target and effect NAPL removal over a wide area as we are effectively dealing with isolated lenses of NAPL that periodically coincide with groundwater movements.

Whilst the thickness of NAPL was recorded at up to 300mm (BH36), it is considered that the total 'mass' of NAPL over the target area is low. This is evidenced by the fact that the thickness of NAPL was reduced to trace levels in all boreholes (including BH36) during the active remediation works, yet the volume of NAPL recovered in the Water Treatment Plant (WTP) was nominal (*Figure 3-5*). If there had been a large volume of NAPL and the works had reduced this to trace levels (as evidenced by the monitoring), then there should be a corresponding large amount of NAPL collected, rather than the few tens of litres actually collected.

Given that the 'mass' of NAPL was not known and/or could not be accurately estimated at the start of the works, and the observation that the NAPL appears to be sat in discrete lenses at specific horizons, EAME consider that it will not be possible to estimate the 'mass' of NAPL post remediation. It is not possible therefore, to confidently assess the mass reduction in pollutant because of the remedial works. NAPL was clearly present and was removed and in that regard, betterment has been achieved, but it cannot be quantified. Instead, a more useful metric under these conditions would be to examine NAPL thickness. As outlined within *Table 3-2* the initial maximum NAPL thickness during the grid construction phase was 50 mm and during the post remedial works monitoring phase 0.1 mm. This would equate to a 99.8% reduction in observed NAPL thickness (pre and post remediation).

Figure 3-5: NAPL Thickness in Boreholes During and Post-Remediation Works



3.5 Dissolved Phase – Chemical Data

A large body of data was collected with regards to the dissolved phase concentrations within the plume area and the historic EAME boreholes (*Annex F*). With respect to the plume area, whilst this information can be utilised to estimate dissolved phase contaminant mass reduction associated with the recent remedial works, given the sporadic and fragmented nature of the plume and presence of NAPL, it should not be used to determine specific groundwater trends in terms of pollutant behaviour. It was known prior to the remediation works that the dissolved phase concentrations of key contaminants of concern within the plume area were high, and this remains the case post remediation.

The dataset collected can be utilised from the plume area and wider historic boreholes as part of the planned long-term monitoring programme (*Section 3.5*).

An initial calculation of mass reduction (dissolved phase only) would indicate the following:

- Aromatic C₅ – C₃₅, 4.3 kg of contaminant mass removed (dissolved phase only).
- Dichloromethane, 8.5 kg of contaminant mass removed (dissolved phase only).

Note that the above are indications only using average pumping volumes over the entire remediation plume area.

The above calculations do not consider the physical NAPL removed as part of the works. As indicated previously, whilst NAPL was removed during the pumping works (as evidenced by the reduction in NAPL thickness), the overall volume observed within the WTP was small. JFHR estimate that between 25 – 50 litres of NAPL was removed by the WTP as part of the recent works.

3.6 Monitored Natural Attenuation (MNA)

A discussion of the potential for natural attenuation processes within the dissolved phase in the groundwater beneath the site was included within the original site investigation report².

Groundwater samples collected during the JFHR remediation were analysed for the following MNA indicator parameters (as outlined in EA document R&D P95)⁷, Dissolved Oxygen, Nitrate, Ferrous & Ferric Iron (Fe II & Fe III), Sulphate, Chloride and Dissolved Methane. The

⁷ Environment Agency (2000). Guidance on the Assessment and Monitoring of Natural Attenuation of Contaminants in Groundwater, R&D Publication 95, M. A. Carey¹, J. R. Finnimore², M. J. Morrey¹ & P.A. Marsland, ISBN: 1 85705 263 2

concentrations of the MNA parameters are provided in *Annex F*. We respect to the proposed long-term monitoring wells (*i.e.* BH36, A2, BH02-17, BH05-17 and BH06-17)⁸ the potential MNA conditions are as follows:

Dissolved Oxygen (DO) & Redox Potential (Eh) – The laboratory analytical results indicate that dissolved oxygen was elevated above 0.5 mg/l in all wells (*Figure 3-6*). There is a general trend of increasing DO down hydraulic gradient of the highest groundwater contaminant concentration suggest that down hydraulic gradient conditions are aerobic.

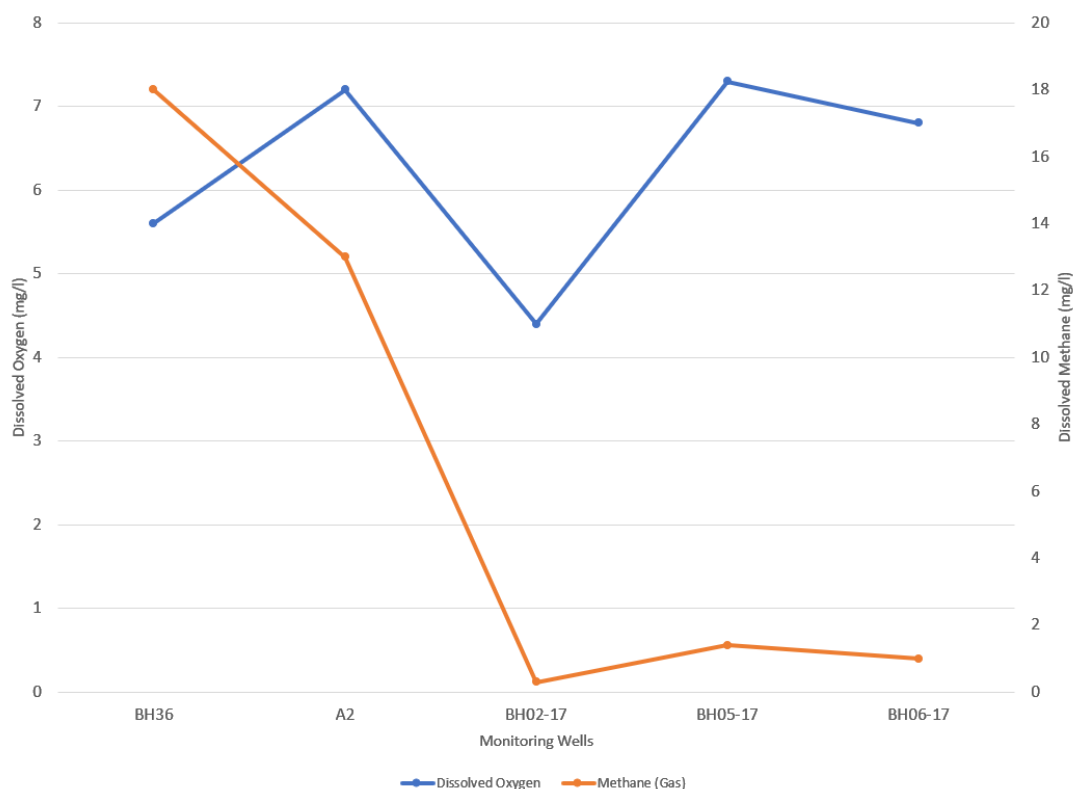


Figure 3-6: *Dissolved Oxygen and Dissolved Methane (mg/l)*

Nitrate – Nitrate concentrations are elevated in all monitoring wells. Thermodynamically, nitrate is the next most favourable electron acceptor after oxygen and the results suggest that denitrification during anaerobic degradation is not occurring.

Iron (Fe II) – Concentrations of Fe(II) are elevated in monitoring wells BH36, A2 and BH02-17 but depleted in monitoring wells BH05-17 and BH06-17. This could suggest that Fe(III) reduction during microbial degradation is occurring but Fe(III) concentrations are not

⁸ Boreholes BH302s and BH302d not monitored during remediation programme.

consistently depleted in the corresponding monitoring wells and thus it is unclear if this is an active process.

Sulphate – Sulphate concentrations were elevated in all monitoring wells, suggesting that sulphate reduction is not occurring, and it is not being used as an electron acceptor during biodegradation of organic contaminants.

Dissolved Methane (CH₄) – Concentrations of methane were observed to be elevated in all monitoring wells (*Figure 3-6*). The highest dissolved methane concentration has been recorded in monitoring wells BH36 and A2 where the highest groundwater contaminant concentrations were recorded. This could suggest the presence of methanogenic bacteria and near the wells *i.e.* the system has reached the point where methanogenesis is occurring.

Appraisal of primary and secondary lines of evidence suggests that on balance there is potential for natural attenuation processes to be active within the groundwater contaminant plume. It is proposed therefore that the remedial programme will move into a long term MNA monitoring phase to continue beyond the development construction works.

4 Long Term Monitoring Plan

4.1 Introduction

In-line with the commitments outlined within the Remediation Strategy two phases of monitoring (post-remediation) are to be undertaken:

- post remediation groundwater monitoring; and
- long-term groundwater monitoring.

4.2 Post-remediation Monitoring

John F Hunts Remediation (JFHR) are to undertake the following groundwater monitoring programme to assess trends and potential rebound post remediation (*Table 4-1*).

Table 4-1: *Post-remediation groundwater monitoring programme*

Month	Type	Monitoring Date	Notes
Month 0		September 2018	Completion of groundwater remediation scheme and removal and decommissioning of all equipment.
Month 0	Bi-monthly Monitoring	September 2018	Monitoring of selected injection grid wells + 5 wider site monitoring boreholes.
Month 2		November 2018	Monitoring of selected injection grid wells + 5 wider site monitoring boreholes.
Month 4		January 2019	Monitoring of selected injection grid wells + 5 wider site monitoring boreholes.
Month 6		March 2019	Monitoring of selected injection grid wells + 5 wider site monitoring boreholes.
Month 9	Quarterly Monitoring	June 2019	Monitoring selected injection grid wells + 5 wider site monitoring boreholes.
Month 12		September 2019	Monitoring of selected injection grid wells + 5 wider site monitoring boreholes.
Injection wells (A2, A6, Z5, C7, D4 + NAPL monitoring of BH36) and wider site boreholes – BH01-17, BH02-17, BH03-17, BH05d-17 and BH06d-17. It is important to note that this could change in-light of MHVT development schedules.			

The determinands proposed are aligned to the key risk drivers, identified within the Detailed Quantitative Risk Assessment (DQRA), and typical Monitored Natural Attenuation (MNA) parameters (e.g. dissolved oxygen, redox potential, nitrate, Iron II, sulphate and dissolved methane). Information recorded will include depth to water, presence/absence of NAPL and water sampling (via low flow technique) for chemical testing. Upon completion of the post-remediation groundwater monitoring programme a standalone factual report will be produced.

4.3 Long-term Monitoring

Following the demolition, site clearance and 2018 remediation works (undertaken by John F Hunts) the southern site contains thirty-one viable potential long-term monitoring wells. However, the potential accessibility of these wells needs to be balanced against the proposed development schedule and availability post-construction. As a result, Curtins Consulting, advising the site developer Metropolitan Thames Valley Housing (MHVT), were consulted (*Annex G*) to determine the most suitable locations that would be available post-construction considering buildings, roadways and landscaping (*Figure 4-1*). Where locations are potentially close to building footings (e.g. D2 and C2) these have also been discounted.

Table 4-2: *Proposed long-term monitoring wells*

Well Ref.	Location	Elevation (m AOD)	Notes
BH36 (RW37)	524219.398 212863.343	85.467 m	Bilfinger Berger Environmental Ltd remediation well (2008/2009). No borehole log available. Located within roadway.
A2	524064.043 212765.482	85.718 m	John F Hunt remediation well (drilled 2018). Borehole log available. Located within roadway.
BH302s	524160.612 212755.483	85.467 m	URS Dames & Moore well (drilled 1999/2000). No borehole log available. Located in landscaped area.
BH302d	524160.612 212755.483	85.213 m	URS Dames & Moore well (drilled 1999/2000). No borehole log available. Located in landscaped area.
BH02-17	524116.588 212766.212	85.467 m	EAME well (drilled 2017). Borehole log available. Located in car parking space.

Well Ref.	Location	Elevation (m AOD)	Notes
BH05d-17	524103.558 212711.406	85.316 m	EAME well (drilled 2017). Borehole log available. Located in car parking space.
BH06d-17	524167.876 212642.478	84.981 m	EAME well (drilled 2017). Borehole log available. Located in roadway.



Figure 4-1: Available long-term monitoring wells (post-construction)

Google Earth Imaging with the permission of Google – Licensed to Earth and Marine Environmental Consultants Ltd.

The seven proposed long-term groundwater monitoring wells are outlined within *Table 4-2*. These are located around the historic source *i.e.* the remediated tank farm (BH36, A2, BH02-17 and BH5d-17) and down gradient of the anticipated groundwater flow (BH06d-17, BH302s and BH302d). All borehole headworks will be protected during the construction phases activities and installed to allow long-term monitoring (*i.e.* post construction).

The data collected during the Post-remediation Monitoring will be utilised as a baseline against which the longer-term monitoring will be compared. The determinands proposed are aligned to the key risk drivers, identified within the Detailed Quantitative Risk Assessment (DQRA), and typical Monitored Natural Attenuation (MNA) parameters (e.g. dissolved oxygen, redox potential, nitrate, Iron II, sulphate and dissolved methane). Appraisal of primary and secondary lines of evidence suggests that there is potential for natural attenuation processes to be active within the groundwater contaminant plume. The proposed monitoring will be undertaken in accordance with the principals outlined within current EA guidance⁹.

The proposed long-term groundwater monitoring programme is outlined in *Table 4-3*.

Table 4-3: Long-term groundwater monitoring programme

Month	Type	Monitoring Date	Notes
Month 12		September 2019	Completion of post-remediation monitoring.
Month 18	Six-monthly Monitoring	March 2020	Monitoring of 7 monitoring wells.
Month 24		September 2020	Monitoring of 7 monitoring wells.
Month 30		April 2021	Monitoring of 7 monitoring wells.
Long-term monitoring wells – BH36 (RW37), A2, BH302s, BH302d, BH02-17, BH05d-17, BH06d-17			

The groundwater results will be compared to the post remediation baseline to assess on-going groundwater trends.

4.4 Sampling Procedure and Analysis

4.4.1 Purging and Sampling of Wells

All wells will be dipped prior to purging, using a Geotech Interface Meter to determine current well volume and to determine if any free-phase liquid is present. All wells were then purged using low-flow purging followed by low-flow sampling. If difficulties are encountered the fall-back position will be three-standard well volume methodology (where achievable)^{10,11} using Waterra Standard High-Density Polyethylene (HDPE) tubing (16 mm) and a Waterra PP1

⁹ Environment Agency (2000). Guidance on the Assessment and Monitoring of Natural Attenuation of Contaminants in Groundwater, R&D Publication 95

¹⁰ Environment Agency (2003). Guidance on monitoring of landfill leachate, groundwater and surface water. 283pp.

¹¹ ASTM (2012). ASTM D6542 2012. Standard guide for purging methods for wells used for groundwater quality investigations

Power-pack. In either case low-flow sampling will be undertaken. Pipework will be dedicated to each borehole and not re-used.

4.4.2 Headspace Testing

All groundwater samples will be tested by dynamic headspace analysis, for the presence of volatile organic compounds (VOCs) using a Photoionization Detector (PID). The PID screens for a wide range of volatile organic compounds including hydrocarbon compounds and certain chlorinated solvents but does not indicate a specific compound. The measurements obtained by the instrument in parts per million by volume (ppmv) provide a semi-quantitative indication of the concentration of hydrocarbon vapours that are.

4.4.3 Sample Integrity

All samples will be placed in containers appropriate to the type of analysis being undertaken and stored in cool boxes maintained at a low temperature (using ice packs), to avoid the loss of volatile compounds. Dispatch to the accredited laboratory will take place as soon as possible following the completion of the investigation.

All sampling will be undertaken using EAME in-house field procedures (available on request) and relevant guidance, such as BS ISO 5667-11:2009, BS 6068-6.11:2009 Water quality Sampling. Guidance on sampling of groundwaters.

All collected samples will be submitted to i2 Analytical Ltd a UKAS (ISO 17025) accredited laboratory for chemical analysis. All samples were given a unique reference number, dated and the information recorded on an appropriate Chain of Custody (CoC) form for dispatch with the samples to the appropriate laboratory.

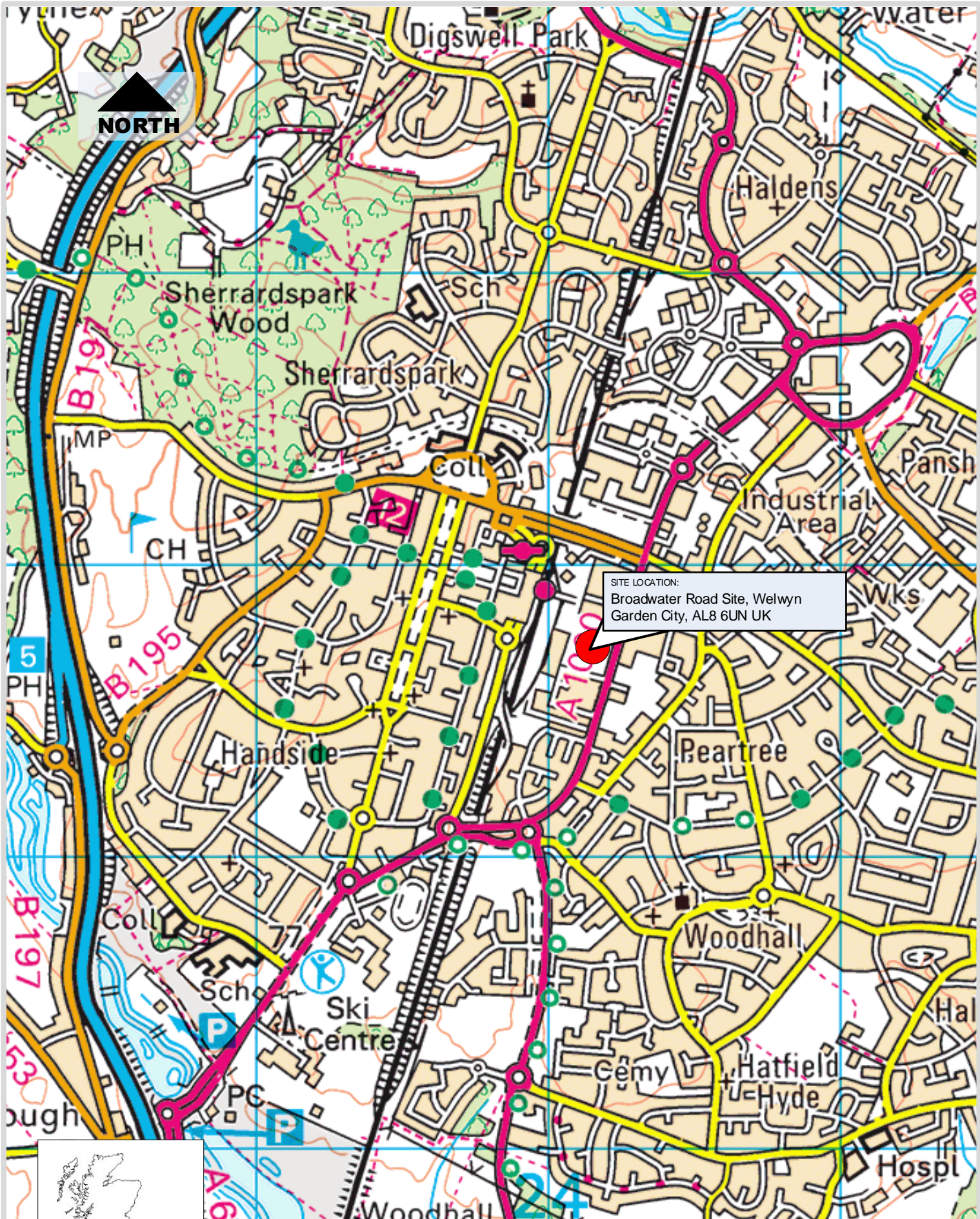
4.5 Reporting

After each round of groundwater monitoring a formal report shall be issued to the Local Authority outlining current groundwater conditions and trends.

4.6 Borehole Decommissioning

Once the agreed monitoring programme has been completed all on-site groundwater wells will require decommissioning in accordance with the methods and procedures detailed within Good Practise for Decommissioning Redundant Boreholes and Wells (Environment Agency 2004). Confirmation of effective decommissioning shall be submitted to the Local Authority.

Annex A – Figures



Ordnance Survey 1: 50,000 scale map with the permission of The Controller of Her Majesty's Stationery Office, Crown Copyright Earth and Marine Environmental Consultants Ltd, Licence No. 100050755

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Figure A1.
Site Location

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Wheat Quarter Limited

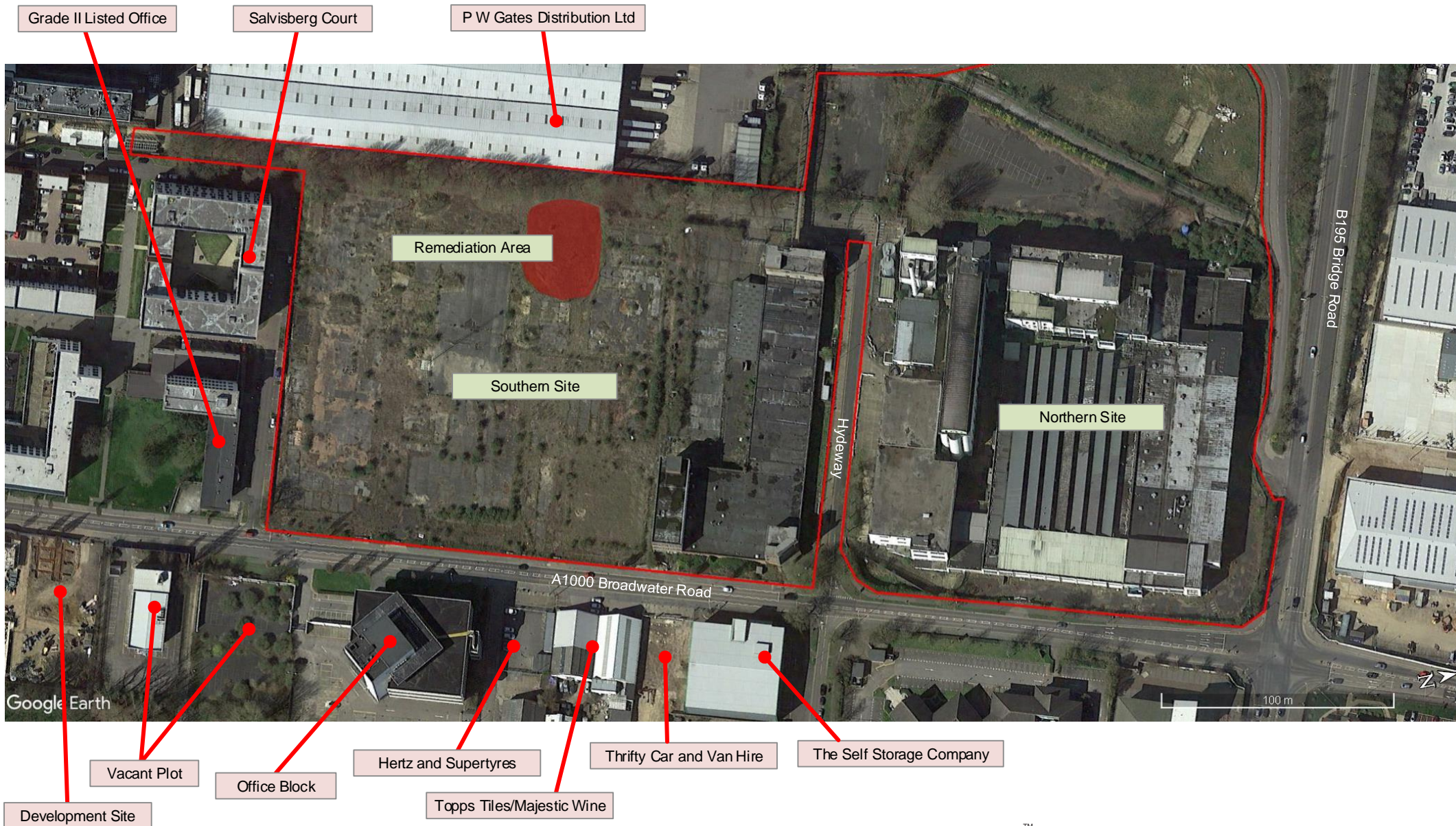
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016-1512
DATE:
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SCALE:
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DRAWN BY:
MJS

CHECKED BY:
SPR





- Planning Application Area
- Off-site features
- On-site features

Notes:

Site plan is based on March 2017 aerial photography.

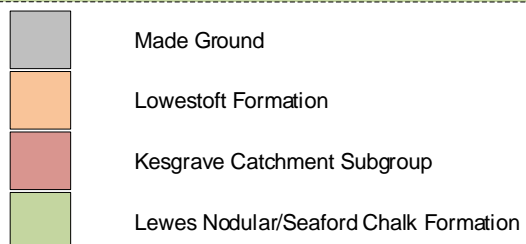
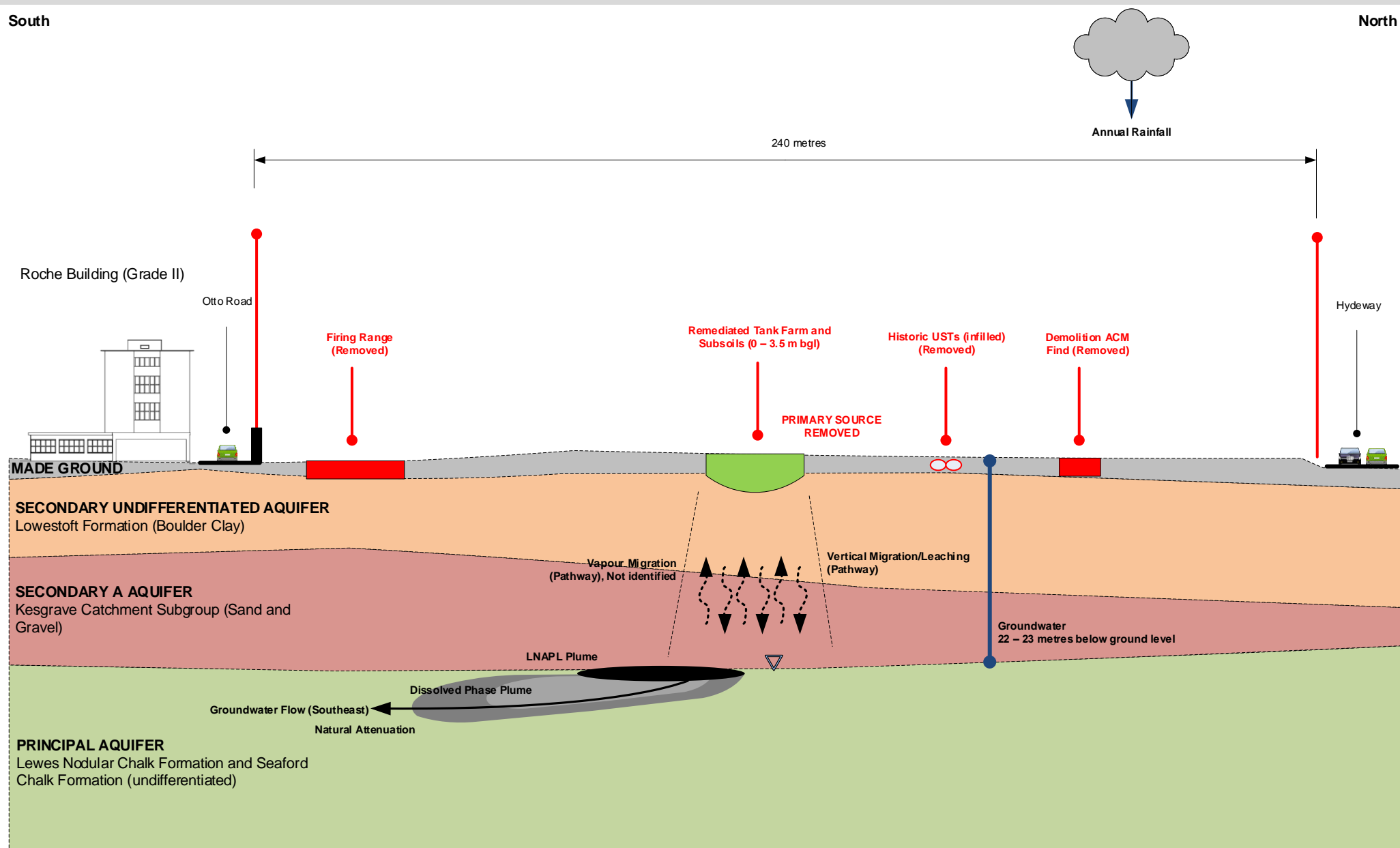
Based upon Google Earth Pro Imaging with the permission of Google™ Licensed to Earth and Marine Environmental Consultants Ltd

Figure A2. Site Layout	TITLE:	JOB REFERENCE:	REVISIONS:		
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Wheat Quarter Limited	As stated	MJS		SPR	



South

North



TITLE:
Figure A3.
Conceptual Site Model
(Pre-development/Demolition)

CLIENT:
Wheat Quarter Ltd

JOB REFERENCE:
016-1512
DATE:
September 12, 2018

SCALE:
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REVISIONS:

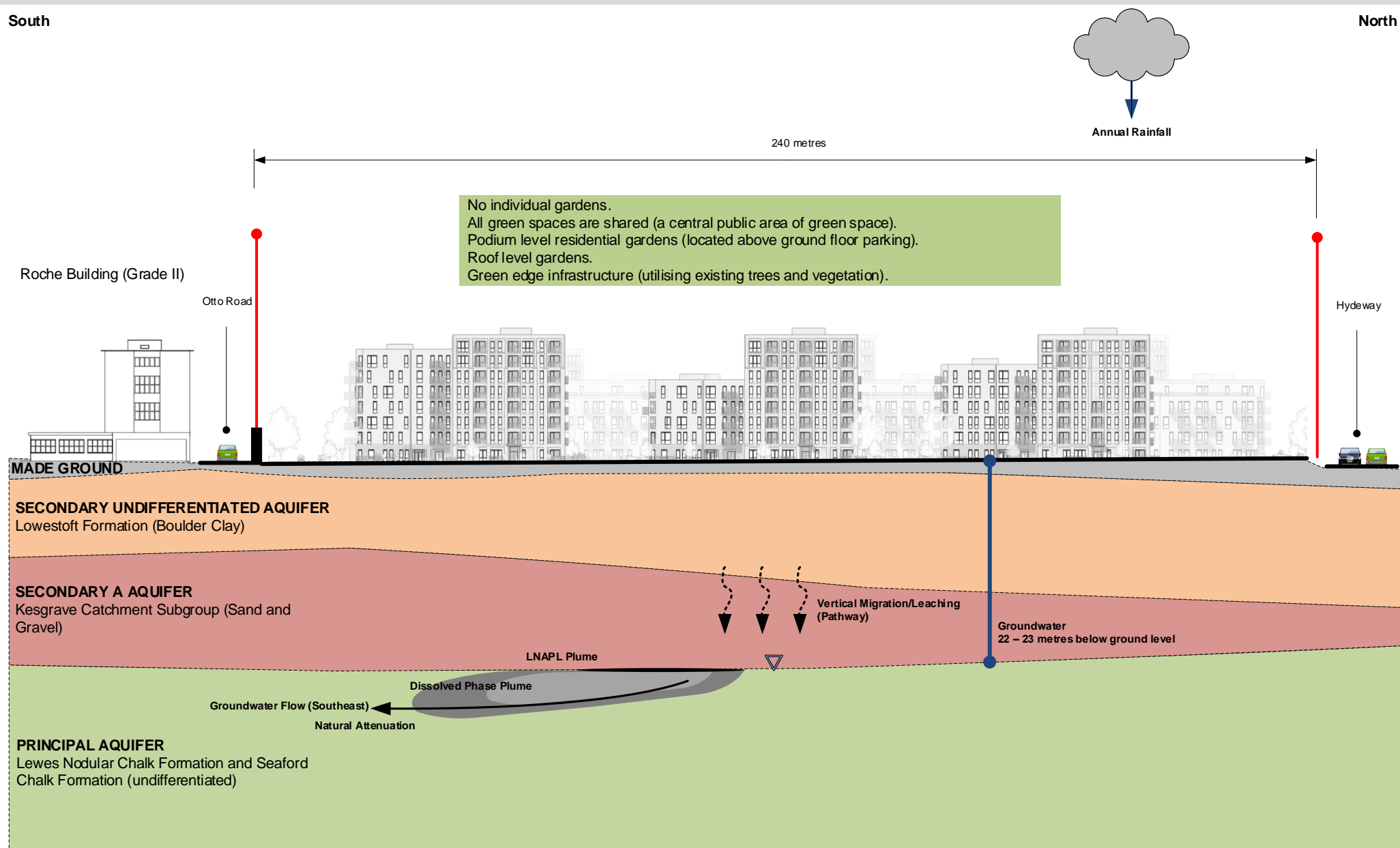
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DW




South

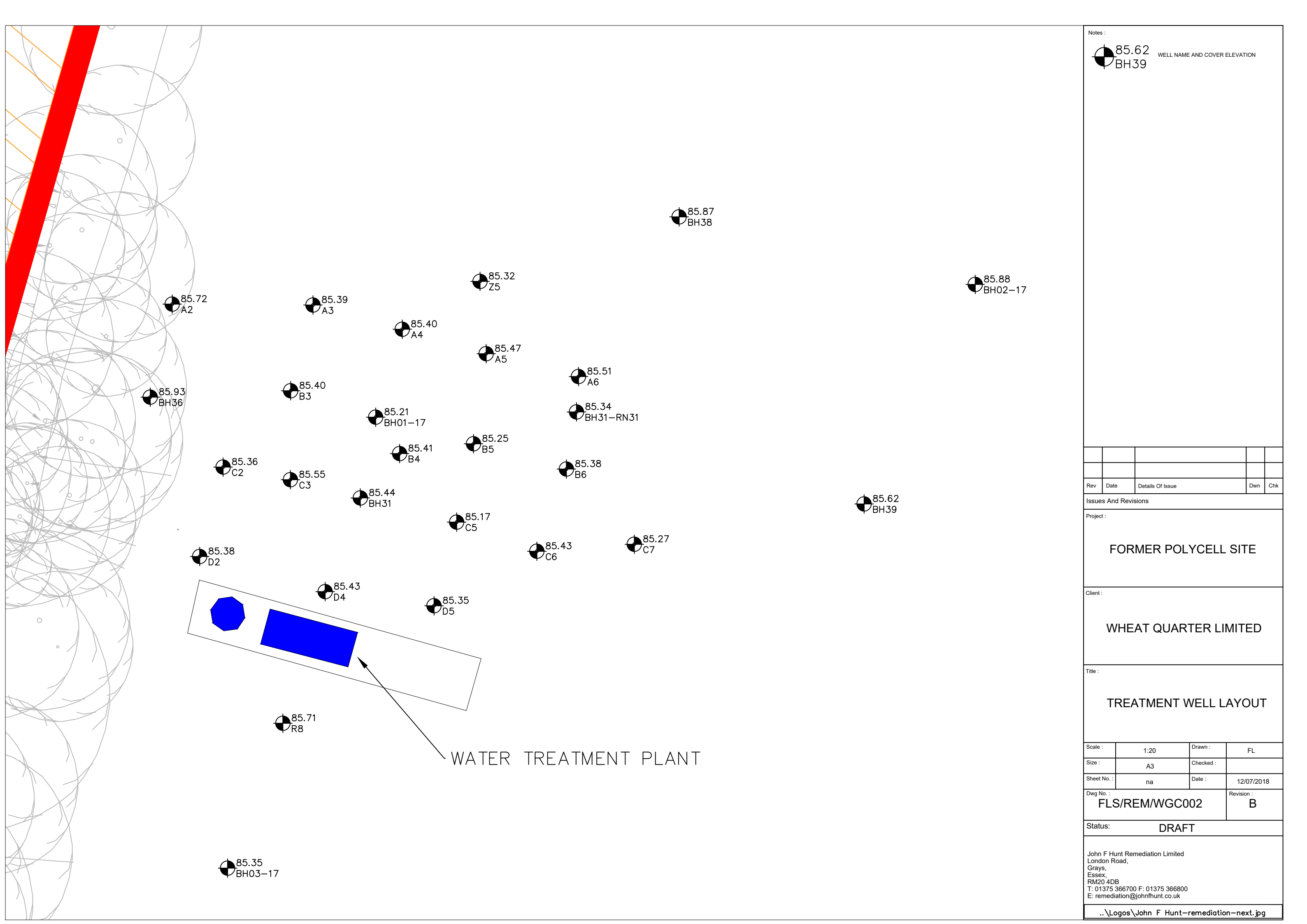
North



	Made Ground
	Lowestoft Formation
	Kesgrave Catchment Subgroup
	Lewes Nodular/Seaford Chalk Formation

TITLE: Figure A4. Conceptual Site Model (Post-development)	JOB REFERENCE :	REVISIONS:		
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Notes :
85.62
BH39 WELL NAME AND COVER ELEVATION

Rev	Date	Details Of Issue	Dwn	Chk

Issues And Revisions

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FORMER POLYCELL SITE

Client :

WHEAT QUARTER LIMITED

Title :

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Sheet No. :	na	Date :	12/07/2018

Dwg No. : FLS/REM/WGC002	Revision : B
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Status: DRAFT

John F Hunt Remediation Limited
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E: remediation@johnfhunt.co.uk



Notes :

85.62

BH39

WELL NAME AND COVER ELEVATION

Rev	Date	Details Of Issue	Dwn	Chk

Issues And Revisions

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FORMER POLYCELL SITE

Client :

WHEAT QUARTER LIMITED

Title :

TREATMENT AND MONITORING
WELL LAYOUT

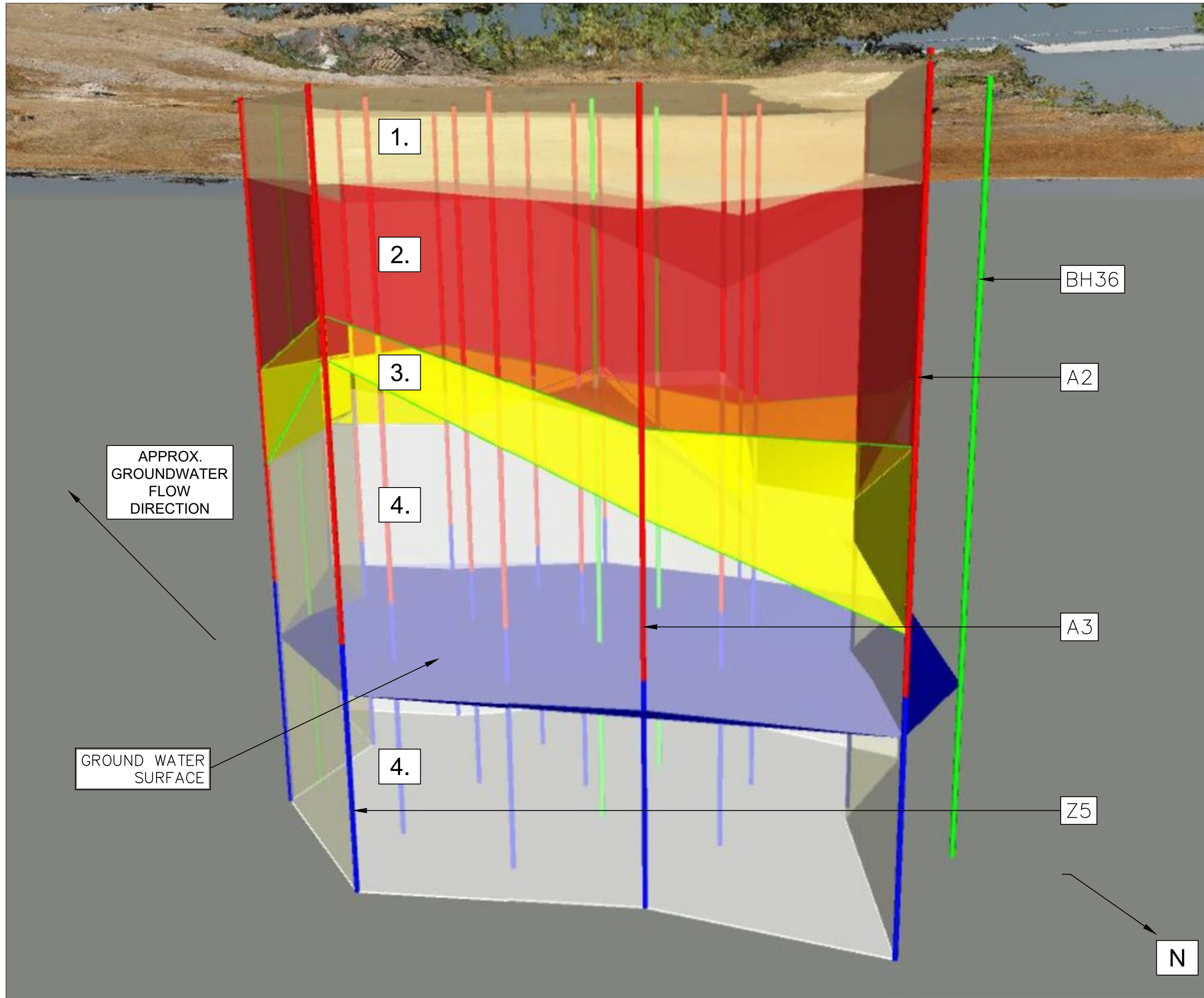
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Status: DRAFT

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John F Hunt

REMEDIATION Ltd



- KEY
- 1. MADE GROUND
 - 2. SAND AND GRAVELS
 - 3. PUTTY CHALK
 - 4. COMPETENT CHALK

Rev	Date	Details Of Issue	Dwn	Chk

Issues And Revisions

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FORMER POLYCELL SITE

Client :

WHEAT QUARTER LIMITED

Title :

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MODEL BELOW SOURCE ZONE

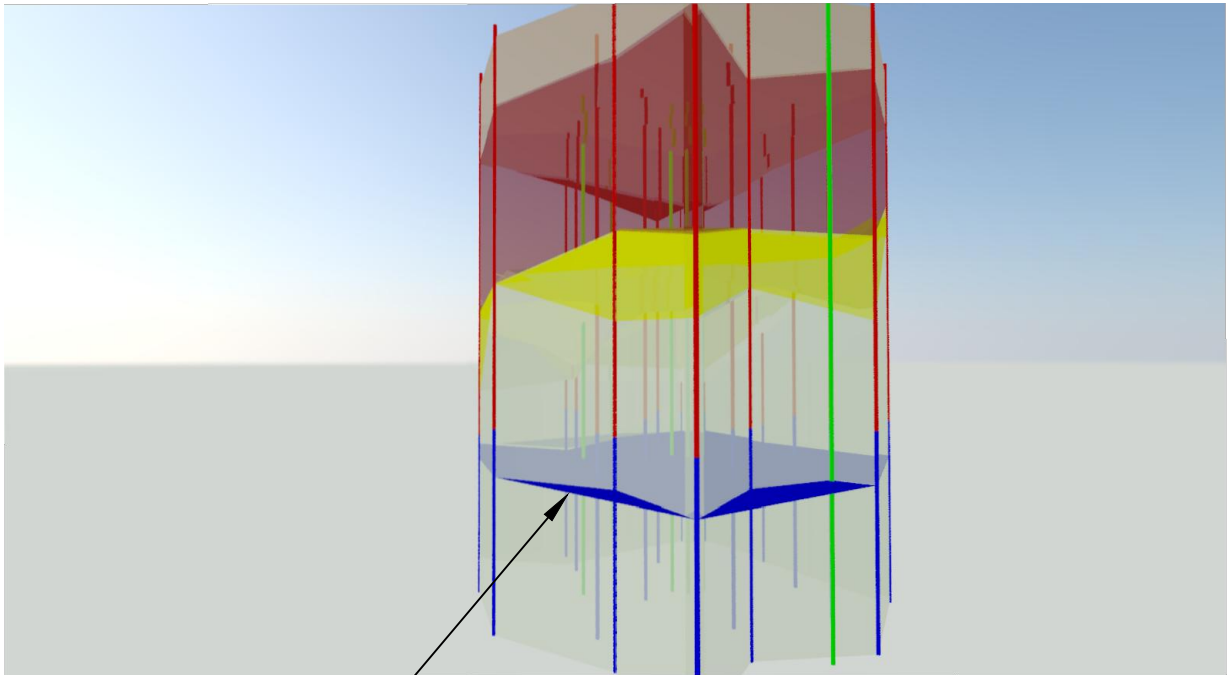
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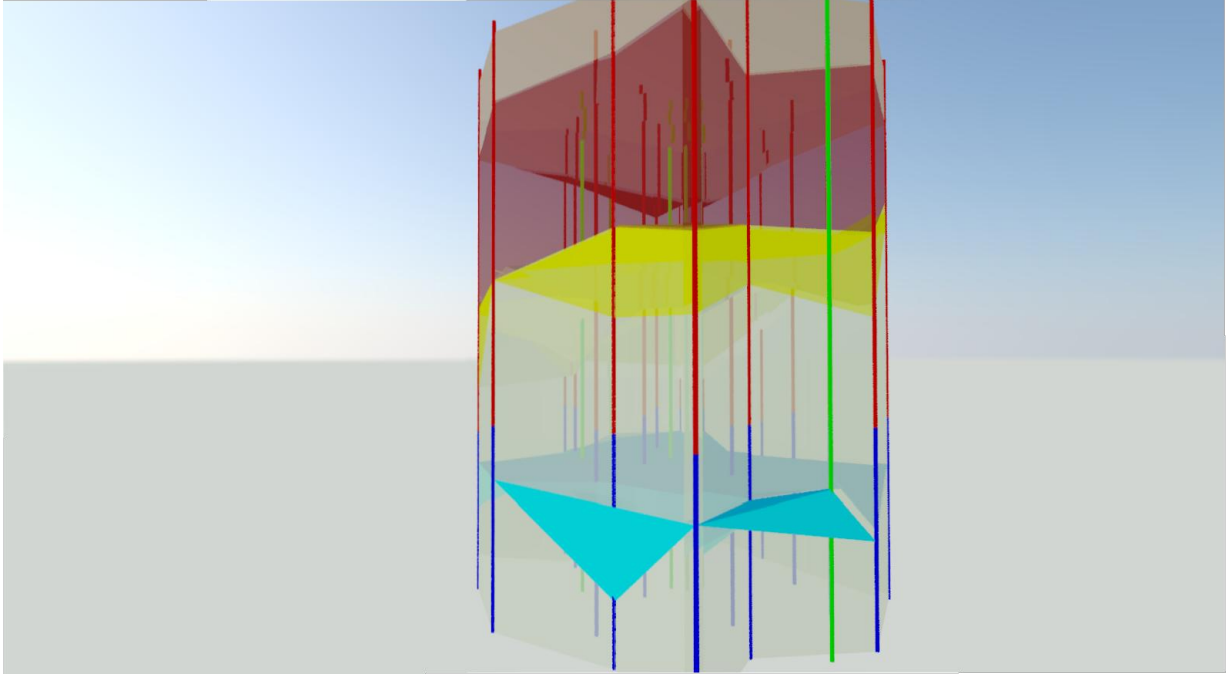
John F Hunt Remediation Limited
London Road,
Grays,
Essex,
RM20 4DB
T: 01375 366700 F: 01375 366800
E: remediation@johnfhunt.co.uk

11/07/2018 - GROUNDWATER PRE-ACTIVE PUMPING

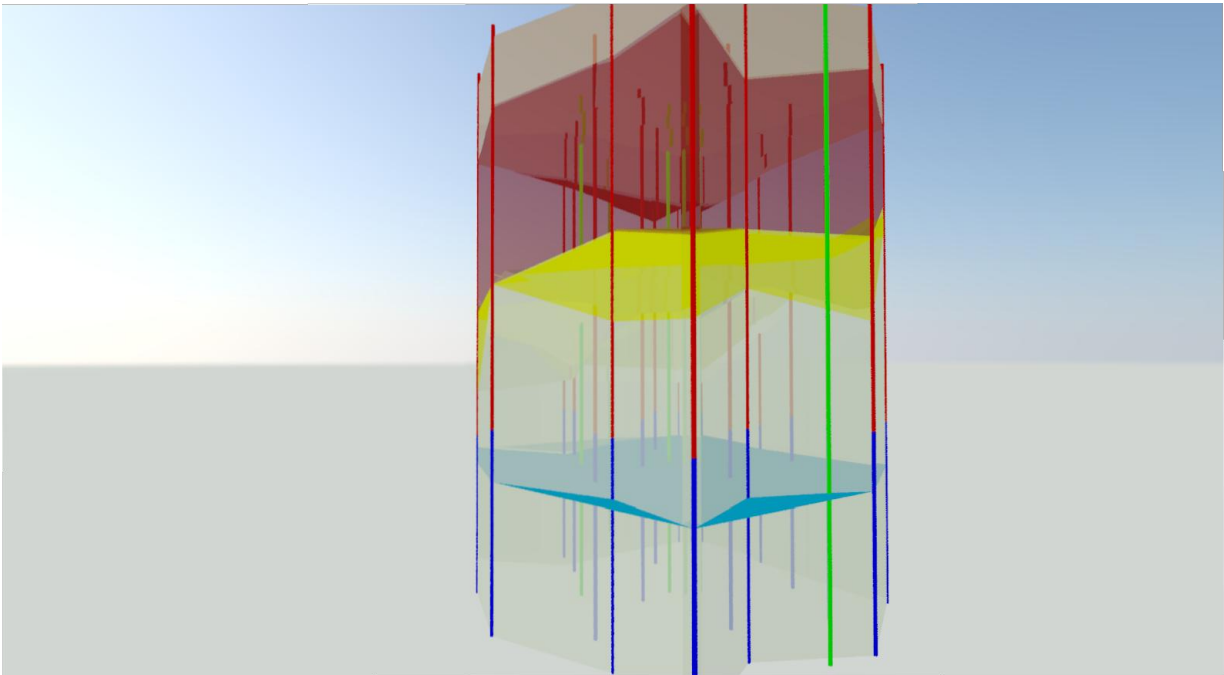


GROUND WATER

21/08/2018 - GROUNDWATER DURING ACTIVE PUMPING



25/09/2018 - GROUNDWATER END ACTIVE PUMPING



Rev	Date	Details Of Issue	Dwn	Chk

Issues And Revisions

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FORMER POLYCELL SITE

Client :

WHEAT QUARTER LIMITED

Title :

EXAMPLE OF GROUNDWATER
DRAWDOWN DURING PUMPING

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Sheet No. :	na	Date :	10/10/2018

Dwg No. :	Revision :
FLS/REM/WGC011	A

Status: DRAFT

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Annex B – Remediation Grid – Borehole Logs

BOREHOLE LOG

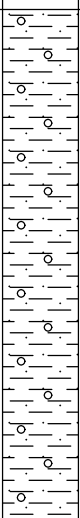
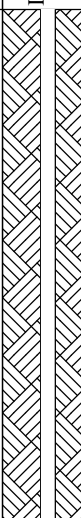


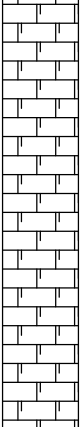
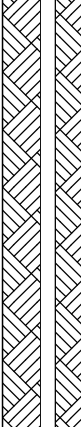
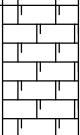
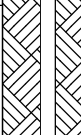
Project Former Polycell Site				BOREHOLE No A2 (BHD05)
Job No Former Polycell Site	Date 03-07-18 04-07-18	Ground Level (m) 85.34	Co-Ordinates () E 212,765.5 N 524,064.1	
Contractor John F Hunt Remediation				Sheet 1 of 4

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thick- ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
					(4.00)	INFERRED FROM DRILLER LOG: MADE GROUND - Brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded of flint, concrete.		
			81.34		4.00	INFERRED FROM DRILLER LOG: Sands, gravels and clays.		
					(7.50)			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
0.00	11.50	0					0-15.1m inferred from drillers logs. >15.1m, logged by engineer.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A2 (BHD05)	
Job No Former Polycell Site	Date 03-07-18 04-07-18	Ground Level (m) 85.34	Co-Ordinates () E 212,765.5 N 524,064.1		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
11.5	0		73.84		11.50	INFERRED FROM DRILLER LOG: Sands, gravels and clays. <i>(continued)</i>		
			73.34		(0.50) 12.00	((Poor recovery from 11.5-15m. Assumed soft putty chalk. Only gravels recovered.)) Brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of flint and quartz. INFERRED: Putty CHALK		
					(3.10)			
15.1	0		70.24		15.10	Soft offwhite putty CHALK with occasional subrounded flint gravels.		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
11.50 15.10	15.10 18.12	10 100					

 0-15.1m inferred from drillers logs.
 >15.1m, logged by engineer.

 All dimensions in metres
 Scale 1:50

 Client **Wheat Quarter Ltd**

 Method/ Plant Used **Rotary Sonic Rig with Core Recovery**

 Logged By
J Russell

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A2 (BHD05)	
Job No Former Polycell Site	Date 03-07-18 04-07-18	Ground Level (m) 85.34	Co-Ordinates () E 212,765.5 N 524,064.1		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
16.1	0				(3.00)	Soft offwhite putty CHALK with occasional subrounded flint gravels. (continued) 16.50 Orange yellow staining with a 70mm dia. subrounded flint cobble		
17.1	0					17.40 Orange yellow staining 17.60 Becoming firmer putty chalk		
18.1	0		67.24		18.10	Putty CHALK with chalk fragments <2cm dia. with occasional orange staining and flint gravels.		
			66.54		(0.70) 18.80			
19	0					Offwhite structureless CHALK		
20	0.6				(2.50)	20.30 Band of subrounded, fine to coarse flint gravels 20.60 - 20.80 Broken (angular) flints		
21	1.1		64.04		21.30	Offwhite slightly grey structureless CHALK with pockets of putty. Mild hydrocarbon odour.		
21.7	63.9		63.44		(0.60) 21.90	21.50 Band of flint 21.75 - 21.90 Band of dark grey staining around shattered flint. Orange brown staining around flint. Mild to moderate hydrocarbon odour.		
22	30.8					Offwhite structureless CHALK with occasional fine to medium, angular to rounded flint gravels 22.65 Band of flint gravels. Mild sewage/solvent odour. Mild hydrocarbon odour.		
23	12.8							
23.8	4					23.60 - 23.70 Brown rust coloured staining 23.70 Band of grey staining with a mild to moderate hydrocarbon odour		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
18.12 23.80	23.80 26.30	100 100					

0-15.1m inferred from drillers logs.
>15.1m, logged by engineer.

Report ID: JFH BH || Project: FORMER POLYCELL SITE GPU || Library: GINT STD AGS 4_0_GLB || Date: 2 October 2018

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A2 (BHD05)	
Job No Former Polycell Site	Date 03-07-18 04-07-18	Ground Level (m) 85.34	Co-Ordinates () E 212,765.5 N 524,064.1		
Contractor John F Hunt Remediation				Sheet 4 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
24.3	120					Offwhite structureless CHALK with occasional fine to medium, angular to rounded flint gravels (<i>continued</i>) 24.30 Mild sewage/solvent odour with a very mild hydrocarbon odour		
25.3	17.1					25.00 Occasional flint gravels		
26.3	10.1					25.90 - 26.20 Occasional flint gravels		
27	21.8				(9.10)	26.60 No hydrocarbon odour. Sewage/solvent odour remains. 27.00 - 27.10 Broken flint cobble		
28	6.8							
28.6	14.6					28.30 - 31.00 Occasional flint to medium angular flint gravel with orange staining		
30	6							
			54.34		31.00			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
26.30 28.60	28.60 31.00	100 100					

0-15.1m inferred from drillers logs.
>15.1m, logged by engineer.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A3 (BHD01)	
Job No Former Polycell Site	Date 05-06-18 06-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,765.5 N 524,073.3		
Contractor John F Hunt Remediation				Sheet 1 of 4	




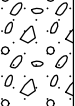
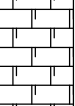


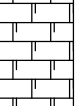
Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
0			84.59		0.25	Topsoil		
1	0				(1.85)	MADE GROUND - Grey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of concrete and brick.		
2	31.1					1.80 Becoming a dark grey sandy gravel with a mild hydrocarbon odour		
3	1824		82.74		2.10	MADE GROUND - Orange brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of concrete and brick. Moderate to strong hydrocarbon odour.		
3.5	490				(1.40)	3.00 Becoming slightly clayey and less odourous.		
4	295.5		81.34		3.50	Stiff to very stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium, subangular to rounded of flint. Some black mottling with a mild-moderate hydrocarbon odour in small patches. 4.00 - 4.50 Mild sewage/solvent odour		
4.5	0.1		80.34		4.50	Loose orange brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subrounded to rounded of flints.		
5	73.9		79.74		5.10	4.70 Becoming paler in colour toward base and dry (loose) with very mild to no odour		
6	4.9					Loose orange brown SANDS and GRAVELS. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of flint. No obvious hydrocarbon odour. Mild sewage/solvent odour.		
7	4							

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
0.00	2.10	100	5	20		Bentonite grouting lost into formation at 16m.	
2.10	3.50	100					
3.50	4.50	100					
4.50	5.10	100					
5.10	6.80	100					
6.80	8.50	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A3 (BHD01)
Job No Former Polycell Site	Date 05-06-18 06-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,765.5 N 524,073.3	
Contractor John F Hunt Remediation				
Sheet 2 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
8	11.9				(6.20)	Loose orange brown SANDS and GRAVELS. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of flint. No obvious hydrocarbon odour. Mild sewage/solvent odour. <i>(continued)</i> 8.50 Sand becoming medium to coarse		
9	0							
10	305							
11	1719		73.54		11.30	10.80 Solvent odour becoming strong with depth		
12	2064		72.44		(1.10)	Soft offwhite/pale yellow putty CHALK with orange staining and a strong solvent odour.		
13	202		71.04		(1.40)	Firm offwhite putty CHALK with chalk fragments <4cm dia. Occasional orange staining and a strong solvent odour. 12.90 - 13.60 Band of rounded flint cobbles <10cm dia.		
14	901				(1.20)	Firm offwhite putty CHALK with chalk fragments and horizontal fractures (<2cm spacing) in <4cm bands 14.30 Solvent odour becoming sweeter		
15	929		69.84		15.00	Weathered offwhite structureless CHALK with <1cm chalk fragments with occasional flint gravels (rounded <6cm)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
8.50	10.70	100					
10.70	12.00	100					
12.00	15.00	100					
15.00	17.80	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A3 (BHD01)
Job No Former Polycell Site	Date 05-06-18 06-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,765.5 N 524,073.3	
Contractor John F Hunt Remediation				
Sheet 3 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
16	357					Weathered offwhite structureless CHALK with <1cm chalk fragments with occasional flint gravels (rounded <6cm) <i>(continued)</i>		
17	625				(6.30)	17.50 Rounded flint cobble 7cm dia. 17.80 Chalk fragments becoming 1-5cm dia.		
18.8	377							
19	613					19.10 Band (<5cm) of horizontal fractures		
20	415					20.00 - 21.00 Solvent odour becoming mild, and a mild hydrocarbon odour. 20.50 Band of horizontal fractures <10cm dia.		
21	1465		63.54		21.30	Offwhite slightly grey structureless CHALK. Some chalk fragments <4cm. 21.60 - 21.70 Band of grey staining with a mild hydrocarbon odour		
22	1470				(1.60)	22.20 - 22.30 Band of grey staining with a mild hydrocarbon odour 22.45 - 22.90 Band of grey staining		
			61.94		22.90	22.80 - 22.90 Band of darker grey staining with a strong hydrocarbon odour		
23.2	275				(1.20)	Pale white structureless CHALK with pockets of putty. 23.00 Hydrocarbon odour decreasing and a mild sewage/solvent odour occurs		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
17.80 21.00 24.00	21.00 24.00 26.50	100 100 100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A3 (BHD01)	
Job No Former Polycell Site	Date 05-06-18 06-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,765.5 N 524,073.3		
Contractor John F Hunt Remediation				Sheet 4 of 4	

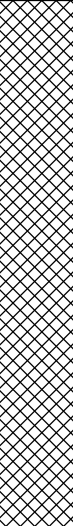



Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
24	334		60.74		24.10	Pale white structureless to weak structured CHALK with pockets of putty. Occasional horizontal fractures. Mild to moderate sewage/solvent odour.		
25	260					25.30 - 25.60 Putty chalk around a broken flint cobble with rare brown/orange staining		
26	230					26.20 - 26.30 Band of flint		
26.5	30				(6.05)			
27.5	35					27.60 - 27.90 Band of flint 27.80 - 27.90 Band of flint		
28.5	279							
29.7	315		54.69		30.15	29.40 Band of flint 29.70 Band of pale grey staining with a sewage seaweed odour		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
26.50 29.40	29.40 30.15	100 100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG





Project Former Polycell Site				BOREHOLE No A4
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,763.8 N 524,079.2	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			81.37		(3.50)	MADE GROUND - SANDS and GRAVELS with bands of CLAY and flints (depth inferred from drilled logs)		
					(7.00)	SANDS and GRAVELS with bands of CLAY and flints		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	30	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A4	
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,763.8 N 524,079.2		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			74.37		10.50	SANDS and GRAVELS with bands of CLAY and flints <i>(continued)</i>		
						CHALK		

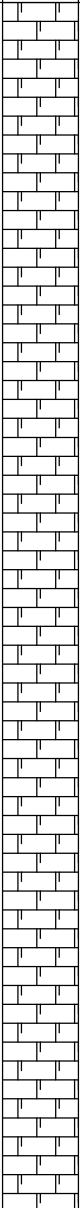
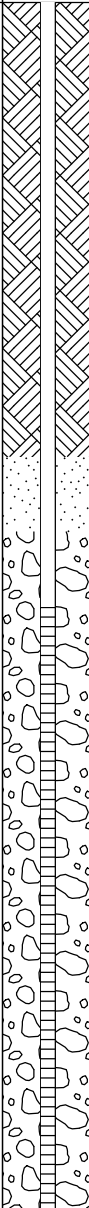
Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A4	
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,763.8 N 524,079.2		
Contractor John F Hunt Remediation				Sheet 3 of 4	

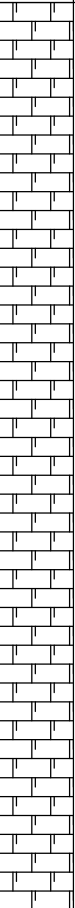
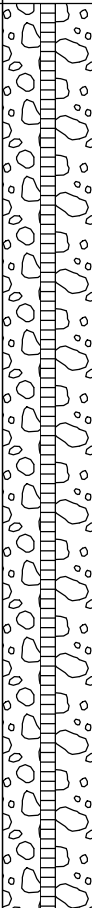
Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(19.50)	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A4	
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,763.8 N 524,079.2		
Contractor John F Hunt Remediation				Sheet 4 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			54.87		30.00	CHALK (<i>continued</i>)		

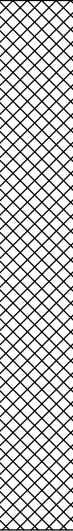

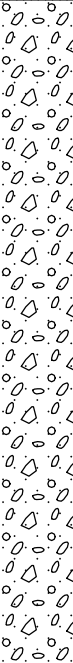

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG



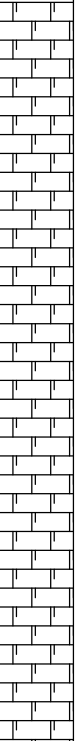

Project Former Polycell Site				BOREHOLE No A5
Job No Former Polycell Site	Date 26-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,762.3 N 524,084.9	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			81.37		(3.50)	MADE GROUND - SANDS and GRAVELS with bands of CLAY and flints (depth inferred from drilled logs)		
					(7.50)	SANDS and GRAVELS with bands of CLAY and flints		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	19	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A5	
Job No Former Polycell Site	Date 26-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,762.3 N 524,084.9		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			73.87		11.00	SANDS and GRAVELS with bands of CLAY and flints <i>(continued)</i>		
						CHALK		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres
Scale 1:50

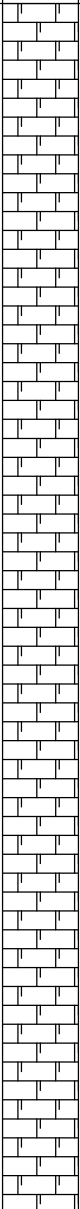
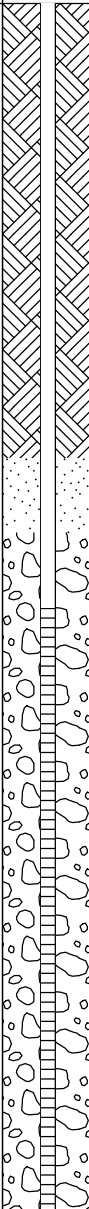
Client **Wheat Quarter Ltd**

Method/
Plant Used **Rotary Sonic Rig with Flush**

Logged By
SONIC DRILLING

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A5	
Job No Former Polycell Site	Date 26-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,762.3 N 524,084.9		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(19.00)	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			19	30	0	Flush return lost into formation	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

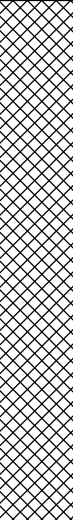



Project Former Polycell Site				BOREHOLE No A5
Job No Former Polycell Site	Date 26-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,762.3 N 524,084.9	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

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Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG







Project Former Polycell Site				BOREHOLE No A6
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.89	Co-Ordinates () E 212,760.6 N 524,090.8	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			81.39		(3.50) 3.50	MADE GROUND - Loose GRAVEL		
					(7.00)	SAND and GRAVEL with CLAY		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	15	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A6	
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.89	Co-Ordinates () E 212,760.6 N 524,090.8		
Contractor John F Hunt Remediation				Sheet 2 of 4	

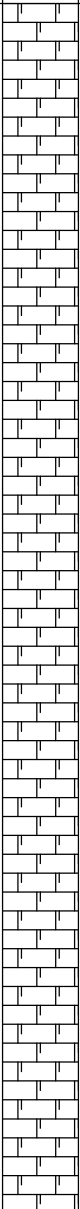
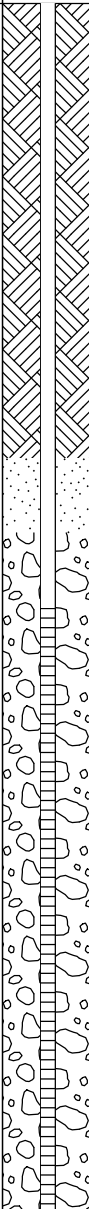
Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			74.39		10.50	SAND and GRAVEL with CLAY (<i>continued</i>)		
					(4.50)	Weak CHALK with flint (assumed putty chalk inferred from drilled logs)		
			69.89		15.00	Firm CHALK with flint (assumed structureless chalk, inferred from drilled logs)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			15	30	80		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No A6	
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.89	Co-Ordinates () E 212,760.6 N 524,090.8		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(15.00)	Firm CHALK with flint (assumed structureless chalk, inferred from drilled logs) <i>(continued)</i>		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG



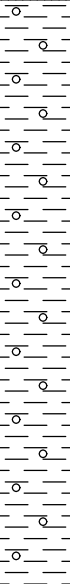



Project Former Polycell Site				BOREHOLE No A6
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.89	Co-Ordinates () E 212,760.6 N 524,090.8	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

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Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B3	
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,759.7 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 1 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(3.50)	MADE GROUND - SAND and GRAVEL fill		
			81.37		3.50	CLAY with gravel flints		
			77.37		7.50	Fine SAND and medium GRAVEL		





Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	10.5	100		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B3	
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,759.7 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(3.00)	Fine SAND and medium GRAVEL (<i>continued</i>)		
			74.37		10.50	CHALK with flint		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			10.5	30	80		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B3	
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,759.7 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 3 of 4	



Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(19.50)	CHALK with flint (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

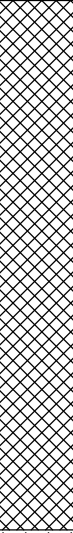



Project Former Polycell Site				BOREHOLE No B3
Job No Former Polycell Site	Date 22-06-18	Ground Level (m) 84.87	Co-Ordinates () E 212,759.7 N 524,072.0	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
						CHALK with flint <i>(continued)</i>		
			54.87		30.00			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG





Project Former Polycell Site				BOREHOLE No B4
Job No Former Polycell Site	Date 29-06-18	Ground Level (m) 84.91	Co-Ordinates () E 212,755.6 N 524,079.1	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			81.41		(3.50) 3.50	MADE GROUND - SAND and GRAVEL and CLAY (inferred from drilled logs)		
					(8.00)	SAND and GRAVEL and CLAY		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	17.5	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B4	
Job No Former Polycell Site	Date 29-06-18	Ground Level (m) 84.91	Co-Ordinates () E 212,755.6 N 524,079.1		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
						SAND and GRAVEL and CLAY <i>(continued)</i>		
			73.41		11.50	CHALK		



Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B4	
Job No Former Polycell Site	Date 29-06-18	Ground Level (m) 84.91	Co-Ordinates () E 212,755.6 N 524,079.1		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(18.50)	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			17.5	30	0	Flush return lost into formation	
No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.							

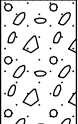



All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Report ID: JFH BH || Project: FORMER POLYCELL SITE.GPJ || Library: GINT STD AGS 4 0.GLB || Date: 2 October 2018

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B5
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,756.3 N 524,084.1	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thick- ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
			81.35		(3.50)	MADE GROUND - SANDS and GRAVELS with bands of CLAY and flints (inferred from drilled logs)		
					(8.00)	SANDS and GRAVELS with occasional bands of CLAY and flints		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	18.5	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B5	
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,756.3 N 524,084.1		
Contractor John F Hunt Remediation				Sheet 2 of 4	

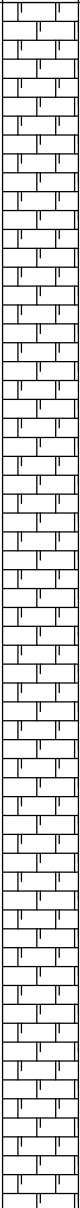

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
						SANDS and GRAVELS with occasional bands of CLAY and flints <i>(continued)</i>		
			73.35		11.50	CHALK		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B5	
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,756.3 N 524,084.1		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(18.50)	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			18.5	30	0	Flush return lost into formation	
No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.							

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B5
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,756.3 N 524,084.1	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

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Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B6 (BHD04)	
Job No Former Polycell Site	Date 13-06-18 14-06-18	Ground Level (m) 84.86	Co-Ordinates () E 212,754.6 N 524,090.2		
Contractor John F Hunt Remediation				Sheet 1 of 4	









Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
0	0					MADE GROUND - Brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded of flint, brick and concrete. Occasional glass fragments.		
2					(4.40)			
2.4								
4.4			80.46		4.40			
			79.96		(0.50)	Loose orange brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of flint.		
2.3					4.90			
5.4						Loose pale orange gravelly SAND. Sand is fine to medium. Gravel is fine to medium, subangular to rounded of flint.		
0.7						5.70 Gravels becoming fine to coarse		
6.2								
0.5					(3.60)	6.60 Becoming slightly gravelly with fine to medium gravels		
7	0							
7.6	1.3							

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
0.00	2.10	25					
2.10	4.40	50					
4.40	6.20	100					
6.20	7.60	100					
7.60	8.50	50					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B6 (BHD04)	
Job No Former Polycell Site	Date 13-06-18 14-06-18	Ground Level (m) 84.86	Co-Ordinates () E 212,754.6 N 524,090.2		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
8	0.3		76.36		8.50	Loose pale orange gravelly SAND. Sand is fine to medium. Gravel is fine to medium, subangular to rounded of flint. <i>(continued)</i>		
9	0				(1.90)	Orange brown gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, subrounded to rounded of flint. 9.00 (Barrel shoe was lost at 9m and could not be retrieved. The BH was backfilled and relocated 1m to the east and the BH reestablished.) 9.10 Sand becoming fine to medium		
10.1	0		74.46 74.26		10.40 10.60	Soft offwhite putty CHALK mixed with sand. Offwhite soft putty CHALK with orange staining.		
11	0				(2.90)	11.10 Fragments of chalk <10mm dia. increasing to 20mm with depth. Orange staining decreasing.		
12.2	0					12.10 - 12.20 Subrounded flint cobble 100mm dia. 12.20 - 12.30 Band of flint		
13	0.2		71.36		13.50	Offwhite putty to structureless CHALK with chalk frgements <20mm dia.		
14	4.2		70.66		(0.70) 14.20	14.10 Subrounded flint cobbles Offwhite slightly pale grey structureless CHALK.		
15	3.4					15.10 Band of pale grey staining with a very weak salty odour, with flint gravels		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
8.50	10.10	100					
10.10	12.20	100					
12.20	15.20	100					
15.20	18.20	75					
All dimensions in metres Scale 1:50			Client Wheat Quarter Ltd		Method/ Plant Used Rotary Sonic Rig with Core Recovery		Logged By J Russell

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B6 (BHD04)	
Job No Former Polycell Site	Date 13-06-18 14-06-18	Ground Level (m) 84.86	Co-Ordinates () E 212,754.6 N 524,090.2		
Contractor John F Hunt Remediation				Sheet 3 of 4	



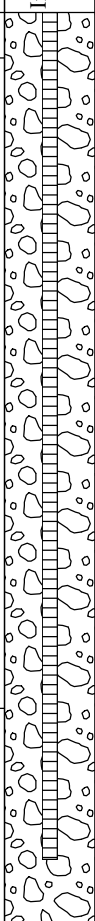











Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
16.5						Offwhite slightly pale grey structureless CHALK. <i>(continued)</i> 16.00 Salty odour becoming solvent based		
	4.1					17.40 Band of flint		
18					(8.20)	17.80 Weak horizontal fractures in 5cm band		
	4.6							
19						19.00 Band of pale grey staining with a mild to moderate salty solvent odour 19.20 Band of flint		
	1.9							
20						19.90 Band of pale grey staining		
	7.1					20.30 Band of flint 20.60 Band of pale grey staining		
21						21.10 - 21.30 Band of grey staining with a moderate to strong salty solvent odour with some orange staining		
	404.2							
22						22.20 - 22.40 Band of grey staining with a strong sweet solvent odour. Shattered flint. Possible NAPL staining with orange brown staining around flint.		
	299.5		62.46		22.40	Offwhite slightly grey structureless CHALK with occasional bands of weak horizontal fractures <20mm dia.		
22.5					(1.40)			
	23.6							
23.8			61.06		23.80	Firm putty CHALK		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
18.20	21.00	100					
21.00	23.80	100					
23.80	26.10	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No B6 (BHD04)	
Job No Former Polycell Site	Date 13-06-18 14-06-18	Ground Level (m) 84.86	Co-Ordinates () E 212,754.6 N 524,090.2		
Contractor John F Hunt Remediation				Sheet 4 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill	
	43.3		60.56		(0.50) 24.30	Firm putty CHALK (continued)			
						Offwhite structureless CHALK with bands of weak horizontal fractures. Salty odour becoming a mild sewage/solvent odour.			
25.5						25.10 - 25.30 Subrounded flint cobbles			
26.1	16.9					25.90 Subrounded flint cobbles			
	27.3				(4.30)	26.60 - 26.70 Subrounded flint cobbles			
27						27.20 Subrounded flint cobbles			
	32.3					27.40 Weak horizontal fractures with a mid sewage/solvent odour			
28						27.60 - 27.70 Subrounded flint cobbles			
28.6	18.2			56.26		28.60	Offwhite structureless CHALK with mild to moderate sewage/solvent odour.		
29	11.6						28.90 Band of flint		
	7				(1.50)				
			54.76		30.10				

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
26.10 28.60	28.60 30.10	100 100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C2 (BHD02)
Job No Former Polycell Site	Date 07-06-18 08-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,754.7 N 524,067.5	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
0	0.1		83.89		(0.95)	MADE GROUND - Brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded of flint, concrete and clinker.		
1	0.1				(1.75)	MADE GROUND - Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to rounded of flint.		
2	0.2		82.14		2.70	1.93 - 2.04 Black staining 2.00 ... Becoming very sandy 2.10 - 2.18 Band of coarse sand		
2.7	1.2		81.54		(0.60)	Brown gravelly CLAY. Gravel is fine to medium, subrounded to rounded of flint		
3.7	0.1		80.34		(1.20)	Dark brown very friable CLAY with some black staining. Occasional gravels, fine to medium of flint. No odour		
4.7	0				(1.00)	Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine, subround of flint. Some black staining present. 4.80 Band of coarse sand		
5.3			79.34		5.50			
			79.14		5.70	Loose brown orange coarse SAND.		
	1.6					Loose brown orange gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, rounded of flint. Occasional black staining. No odour.		
6.6	1.2					6.60 - 8.10 Mild to moderate sewage/solvent odour		
7.5	0.3							

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
0.00	2.70	100					
2.70	5.30	100					
5.30	6.60	100					
6.60	8.10	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C2 (BHD02)	
Job No Former Polycell Site	Date 07-06-18 08-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,754.7 N 524,067.5		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
8.1	0					Loose brown orange gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, rounded of flint. Occasional black staining. No odour. <i>(continued)</i> 8.40 - 8.47 Dark brown staining		
9.1	0.2				(7.60)			
10.1	0.3					10.45 Band of dark stained coarse sand		
12.2	0.9							
13.3	0		71.54		13.30	Loose dark brown gravelly SAND. Sand is coarse. Gravel is fine to medium subrounded to rounded of flint. Sand mixed with putty chalk 13.30 - 16.30		
					(3.00)			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
8.10	10.10	100	15	16		Bentonite grouting lost into formation at 16m	
10.10	13.30	100					
13.10	16.30	33					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C2 (BHD02)	
Job No Former Polycell Site	Date 07-06-18 08-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,754.7 N 524,067.5		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
16	0.3		68.54		16.30	Offwhite soft putty CHALK with dark yellow staining. Occasional fragments of competent chalk <6cm dia.		
16.3	0.8				(1.20)			
17.3	1		67.34		17.50	Offwhite structureless CHALK with pockets of putty chalk. 17.55 - 17.85 Band of dark yellow staining		
18.3	1				(2.40)	18.30 Band of yellow staining		
19.5	0.2		64.94		19.90	19.80 Band of orange staining		
20.2	183				(1.90)	Offwhite slightly grey structureless CHALK with grey bands of staining and strong hydrocarbon odour. 20.40 - 20.87 470mm band of grey staining with a strong hydrocarbon odour		
21.2	37.5		63.04		21.80	21.40 Band of grey staining		
22.2	384					Offwhite weakly structured CHALK with horizontal fractures in bands and pockets of putty chalk. Strong hydrocarbon odour		
23	34.5					22.58 Band of medium to coarse, subrounded flint gravels		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
16.30	19.30	100					
19.30	22.20	100					
22.20	25.00	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C2 (BHD02)	
Job No Former Polycell Site	Date 07-06-18 08-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,754.7 N 524,067.5		
Contractor John F Hunt Remediation				Sheet 4 of 4	







Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
24	80					Offwhite weakly structured CHALK with horizontal fractures in bands and pockets of putty chalk. Strong hydrocarbon odour (<i>continued</i>) 24.20 Band of dark grey staining ... below hydrocarbon odour decreases.		
25	22.2							
25.5	11.4				(8.30)	25.50 Mild hydrocarbon odour - decreasing. Moderate to strong sewage/solvent odour.		
26.5	11.4					26.00 Decreasing sewage/solvent odour		
27	0.6					27.00 Subrounded flint cobble		
27.3	13					27.30 50mm bands of weak structure in chalk - horizontal fractures		
28	0.3							
29	1							
			54.74		30.10			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
25.00	27.30	100					
27.30	29.30	100					
29.30	30.00	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C3	
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,753.9 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 1 of 4	





Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			82.15		(2.70) 2.70	MADE GROUND - SANDS and GRAVELS, with CLAY and flint (inferred from drilled logs)		
			78.85		(3.30) 6.00	SANDS and GRAVELS, with CLAY and flint		
					(2.20)	Weak ground - unidentified		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0 6	6 8.2	100 0	Bentonite lost into formation at 6-7m	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C3	
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,753.9 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			76.65		8.20	Weak ground - unidentified (<i>continued</i>) SANDS and GRAVELS, and flints.		
					15.50	Weak CHALK with flints (assumed putty chalk)		
			69.35					

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			8.2 12.5	12.5 18	100 50	Bentonite lost into formation at 11.7m	

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C3	
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,753.9 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(2.50)	Weak CHALK with flints (assumed putty chalk) <i>(continued)</i>		
			66.85		18.00	Firm CHALK with flints (assumed structureless chalk)		
					(4.00)			
			62.85		22.00	CHALK, with possible fissures and flints (Fissures assumed due to loss of flush on drilling)		

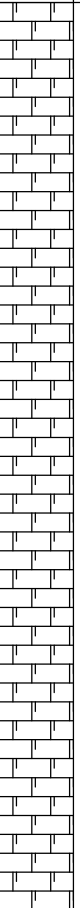

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			18 22	22 30	50 0		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C3	
Job No Former Polycell Site	Date 20-06-18	Ground Level (m) 84.85	Co-Ordinates () E 212,753.9 N 524,072.0		
Contractor John F Hunt Remediation				Sheet 4 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(8.00)	CHALK, with possible fissures and flints (Fissures assumed due to loss of flush on drilling) <i>(continued)</i>		
			54.85		30.00			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG





Project Former Polycell Site				BOREHOLE No C5
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,751.0 N 524,082.8	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thick- ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
					(4.00)	MADE GROUND - SANDS and GRAVELS with bands of CLAY (inferred from drilled logs)		
			80.82		4.00	SANDS and GRAVELS with bands of CLAY		
					(7.75)			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	11.75	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C5	
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,751.0 N 524,082.8		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
						SANDS and GRAVELS with bands of CLAY (<i>continued</i>)		
			73.07		11.75	CHALK		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			11.75	30	30	Bentonite lost into formation between 12-15m apx	

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

 All dimensions in metres
 Scale 1:50

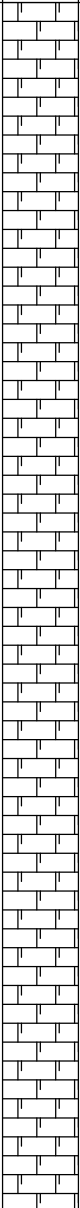

 Client **Wheat Quarter Ltd**

 Method/
 Plant Used **Rotary Sonic Rig with Flush**

 Logged By
SONIC DRILLING

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C5	
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,751.0 N 524,082.8		
Contractor John F Hunt Remediation				Sheet 3 of 4	

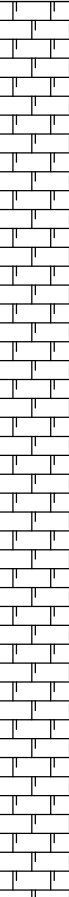

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(18.25)	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Use Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

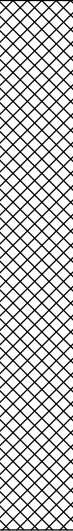
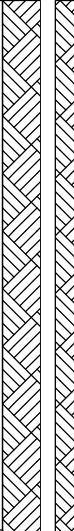
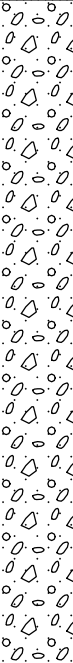
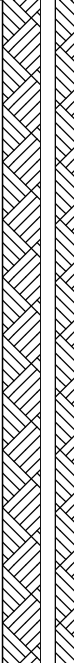
Project Former Polycell Site				BOREHOLE No C5
Job No Former Polycell Site	Date 27-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,751.0 N 524,082.8	
Contractor John F Hunt Remediation				Sheet 4 of 4

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thick- ness)	STRATA DESCRIPTION	Geology	Instrument/ Backfill
			54.82		30.00	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG







Project Former Polycell Site				BOREHOLE No C6
Job No Former Polycell Site	Date 15-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,748.9 N 524,088.1	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			81.34		(3.50)	MADE GROUND - Loose GRAVEL fill		
					(7.00)	SANDS and GRAVELS with CLAY		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	15	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C6	
Job No Former Polycell Site	Date 15-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,748.9 N 524,088.1		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			74.34		10.50	SANDS and GRAVELS with CLAY (<i>continued</i>)		
					(4.50)	Weak CHALK with flints (assumed to be putty chalk)		
			69.84		15.00	Firm CHALK with flints (assumed to be structureless chalk)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			15	30	80		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres
Scale 1:50

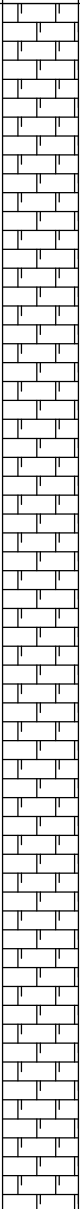
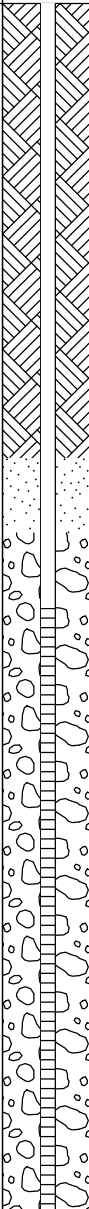
Client **Wheat Quarter Ltd**

Method/
Plant Used **Rotary Sonic Rig with Flush**

Logged By
SONIC DRILLING

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C6	
Job No Former Polycell Site	Date 15-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,748.9 N 524,088.1		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(15.00)	Firm CHALK with flints (assumed to be structureless chalk) <i>(continued)</i>		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

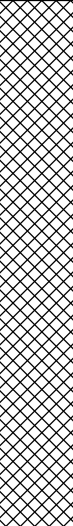
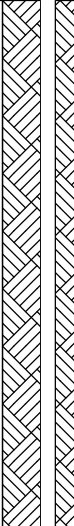

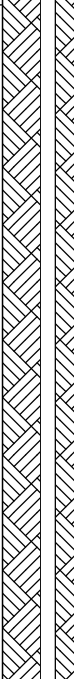
Project Former Polycell Site				BOREHOLE No C6
Job No Former Polycell Site	Date 15-06-18	Ground Level (m) 84.84	Co-Ordinates () E 212,748.9 N 524,088.1	
Contractor John F Hunt Remediation				Sheet 4 of 4

[illegible]

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

BOREHOLE LOG


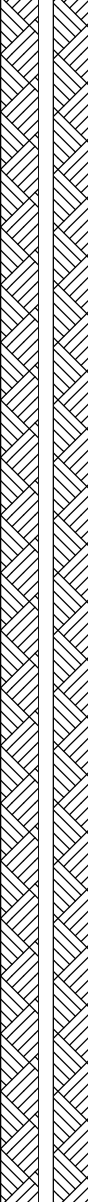


Project Former Polycell Site				BOREHOLE No C7
Job No Former Polycell Site	Date 04-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,749.4 N 524,094.8	
Contractor John F Hunt Remediation				
Sheet 1 of 4				

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
			81.30		(3.50)	MADE GROUND - SAND and GRAVEL and CLAY		
					(8.00)	SANDS and GRAVELS		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	21	100		No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C7	
Job No Former Polycell Site	Date 04-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,749.4 N 524,094.8		
Contractor John F Hunt Remediation				Sheet 2 of 4	

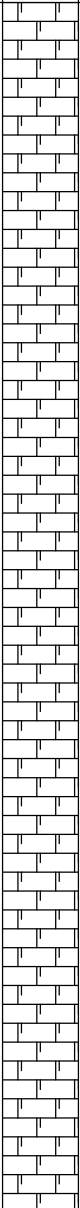

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
						SANDS and GRAVELS (<i>continued</i>)		
			73.30		11.50	Weak CHALK with flints (assumed to be putty chalk).		
					(3.50)			
			69.80		15.00	Firm CHALK with flints (assumed to be structureless chalk)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No C7	
Job No Former Polycell Site	Date 04-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,749.4 N 524,094.8		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(15.00)	Firm CHALK with flints (assumed to be structureless chalk <i>(continued)</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			21	30	30	Flush return lost into formation	
No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.							

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG





Project Former Polycell Site				BOREHOLE No C7
Job No Former Polycell Site	Date 04-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,749.4 N 524,094.8	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

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Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D2	
Job No Former Polycell Site	Date 28-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,748.8 N 524,066.0		
Contractor John F Hunt Remediation				Sheet 1 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(2.70)	MADE GROUND - SANDS and GRAVELS with bands of CLAY.		
			82.12		2.70	SANDS and GRAVELS with bands of CLAY.		
					(9.30)			





Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	12	100		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By Sonic Drilling
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D2	
Job No Former Polycell Site	Date 28-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,748.8 N 524,066.0		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
						SANDS and GRAVELS with bands of CLAY. <i>(continued)</i>		
			72.82		12.00	CHALK		

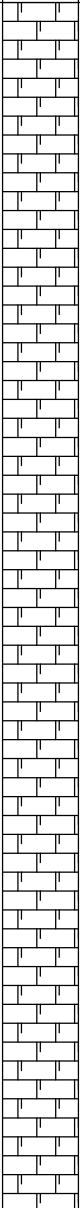
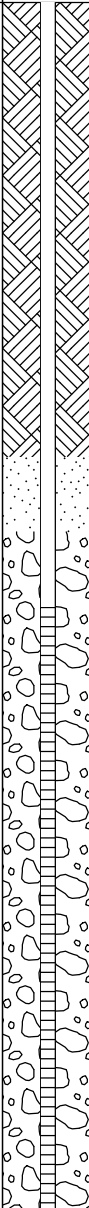
Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			12	30	80		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By Sonic Drilling
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D2	
Job No Former Polycell Site	Date 28-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,748.8 N 524,066.0		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(18.00)	CHALK (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Use Rotary Sonic Rig with Flush	Logged By Sonic Drilling
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D2
Job No Former Polycell Site	Date 28-06-18	Ground Level (m) 84.82	Co-Ordinates () E 212,748.8 N 524,066.0	
Contractor John F Hunt Remediation				Sheet 4 of 4

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Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D4 (BHD03)	
Job No Former Polycell Site	Date 11-06-18 12-06-18	Ground Level (m) 84.73	Co-Ordinates () E 212,747.0 N 524,074.5		
Contractor John F Hunt Remediation				Sheet 1 of 4	

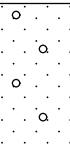

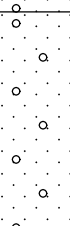

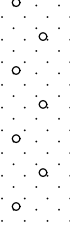

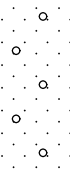







Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
0	0					MADE GROUND - Brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of flint, brick and concrete.		
1.3								
1.1					(4.00)	2.00 - 2.20 20cm band of sandy crushed concrete gravels 2.50 Becoming more clayey with depth		
3								
0.7			80.73		4.00			
					(1.10)	Stiff dark brown slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of flint.		
5			79.63		5.10	4.80 Slightly sandy		
0.1						Loose brown orange gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subrounded to rounded of flint.		
6	0.2					5.60 Sand becoming fine to medium		
7					(3.90)			

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
0.00	2.50	100					
2.50	5.00	100					
5.00	6.50	100					
6.50	9.00	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D4 (BHD03)	
Job No Former Polycell Site	Date 11-06-18 12-06-18	Ground Level (m) 84.73	Co-Ordinates () E 212,747.0 N 524,074.5		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
9	0.1		75.73		9.00	Loose brown orange gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subrounded to rounded of flint. <i>(continued)</i>		
	0				(4.20)	Loose brown orange gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subrounded to rounded of flint. ((Poor recovery 9-12m))		
12	0							
13	0		71.53		13.20	13.00 Becoming chalky		
	0					Offwhite soft putty CHALK with occasional orange staining. ((Poor recovery due to flint stuck in barrel 15-18m))		
14	0					13.50 Occasional fragments of chalk <40mm dia in putty chalk		
15	0				(5.40)	14.70 Band of flint		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
9.00	12.00	33					
12.00	15.00	100					
15.00	18.00	30					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D4 (BHD03)	
Job No Former Polycell Site	Date 11-06-18 12-06-18	Ground Level (m) 84.73	Co-Ordinates () E 212,747.0 N 524,074.5		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
16	0					Offwhite soft putty CHALK with occasional orange staining. ((Poor recovery due to flint stuck in barrel 15-18m)) <i>(continued)</i>		
17	0							
18	0		66.13		18.60			
19	0					Offwhite structureless CHALK with chalk fragments <60mm dia. and pockets of putty chalk.		
20	0.6				(2.40)	19.50 Band of flint		
21	6.2		63.73		21.00	Offwhite structureless CHALK with occasional bands (<50mm dia). of weak horizontal fractures . 21.40 Band of pale grey staining and a mild hydrocarbon odour		
22	152					22.20 - 22.40 Band of pale grey staining and a moderate hydrocarbon odour. Flint gravels		
23	17.3				(4.30)	23.10 Hydrocarbon odour decreasing and a mild to moderate sewage/solvent odour appearing (patchy)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
18.00	21.00	100					
21.00	24.00	100					
24.00	27.20	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D4 (BHD03)	
Job No Former Polycell Site	Date 11-06-18 12-06-18	Ground Level (m) 84.73	Co-Ordinates () E 212,747.0 N 524,074.5		
Contractor John F Hunt Remediation				Sheet 4 of 4	



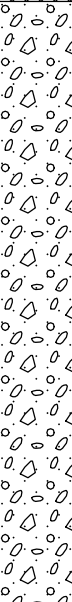

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
24	400					Offwhite structureless CHALK with occasional bands (<50mm dia). of weak horizontal fractures . <i>(continued)</i>		
25			59.43		25.30	24.70 Band of flint		
26	307					Weak structured offwhite CHALK with pockets of putty chalk. Horizontal fractures <10mm dia. 25.60 Band of flint		
27	17.3				(4.70)	26.20 Very weak irregular horizontal fractures <40mm dia.		
28	28.3					27.80 Band of flint		
29	6.4					28.40 Band of flint 28.40 - 28.55 Band of grey staining with a mild to moderate sewage/solvent odour.		
	2.2		54.73		30.00	29.70 Band of flint		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
27.20	30.00	100					

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Core Recovery	Logged By J Russell
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D5	
Job No Former Polycell Site	Date 03-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,745.4 N 524,081.5		
Contractor John F Hunt Remediation				Sheet 1 of 4	





Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(4.00)	MADE GROUND - SAND and GRAVEL with bands of CLAY (inferred from drilled logs)		
			80.80		4.00	SAND and GRAVEL with bands of CLAY		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0	12.3	100		
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D5	
Job No Former Polycell Site	Date 03-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,745.4 N 524,081.5		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(8.30)	SAND and GRAVEL with bands of CLAY <i>(continued)</i>		
			72.50		12.30	CHALK with flint		

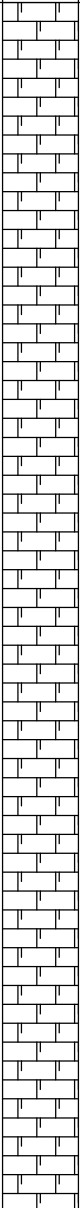

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			12.3	16.5	50		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No D5	
Job No Former Polycell Site	Date 03-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,745.4 N 524,081.5		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(17.70)	CHALK with flint (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			16.5	30	0	Flush return lost into formation at 16.5m.	No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By
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BOREHOLE LOG


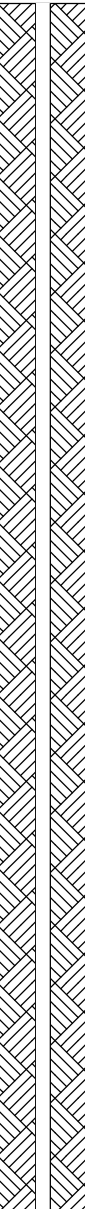

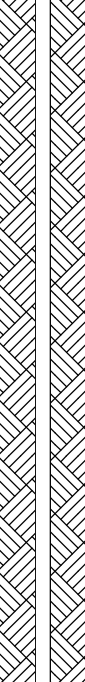



Project Former Polycell Site				BOREHOLE No D5
Job No Former Polycell Site	Date 03-07-18	Ground Level (m) 84.80	Co-Ordinates () E 212,745.4 N 524,081.5	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

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Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No Z5	
Job No Former Polycell Site	Date 05-07-18	Ground Level (m) 84.82	Co-Ordinates () E 212,766.8 N 524,084.6		
Contractor John F Hunt Remediation				Sheet 1 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(3.50)	MADE GROUND - SAND and GRAVEL and CLAY		
			81.32		3.50	SAND and GRAVEL and CLAY		
			77.32		7.50			
						Very loose ground - possible putty chalk or void. No returned material.		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			0 7.5	7.5 9.5	100 0	Loose material - putty chalk?	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No Z5	
Job No Former Polycell Site	Date 05-07-18	Ground Level (m) 84.82	Co-Ordinates () E 212,766.8 N 524,084.6		
Contractor John F Hunt Remediation				Sheet 2 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(2.00)	Very loose ground - possible putty chalk or void. No returned material. <i>(continued)</i>		
			75.32		9.50	Firm CHALK with flints		

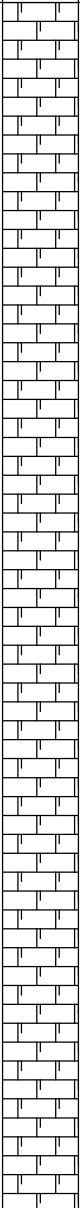

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
			9.5	30	100		

No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No Z5	
Job No Former Polycell Site	Date 05-07-18	Ground Level (m) 84.82	Co-Ordinates () E 212,766.8 N 524,084.6		
Contractor John F Hunt Remediation				Sheet 3 of 4	

Depth	PID Result (ppm)	Water	Reduced Level	Legend	Depth (Thickness)	STRATA DESCRIPTION	Geology	Instrument/Backfill
					(20.50)	Firm CHALK with flints (<i>continued</i>)		

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activities. Static levels below 20m.

All dimensions in metres Scale 1:50	Client Wheat Quarter Ltd	Method/ Plant Used Rotary Sonic Rig with Flush	Logged By SONIC DRILLING
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BOREHOLE LOG

Project Former Polycell Site				BOREHOLE No Z5
Job No Former Polycell Site	Date 05-07-18	Ground Level (m) 84.82	Co-Ordinates () E 212,766.8 N 524,084.6	
Contractor John F Hunt Remediation				
Sheet 4 of 4				

[illegible]

Borehole Core Recovery			Borehole Drilling Flush Return				GENERAL REMARKS
Top of Run (m)	Base of Run (m)	Core Recovery (%)	Top of Run (m)	Base of Run (m)	Flush Return %	Remarks	
							No recoverable material available. Log completed by drillers during flush activities. Based on presented sediment and from drilled logs. Water strike depths not added due to flushing activites. Static levels below 20m.

Annex C – Groundwater Level Data

		Depth of Ground Water (AODm) in Boreholes																						
Phase	Date	A2	A3	A4	A5	A6	Z5	B3	B4	B5	B6	C2	C3	C5	C6	C7	D2	D4	D5	BH36	BH31	BH31/RN31	BH01-17	
Grid Construction	6/7/2018																			63.266	62.842		62.547	
	6/11/2018																							
	6/19/2018																			63.266		63.504	62.307	
	6/27/2018		63.423	63.65	64.148	63.464		63.649		62.737	63.718	62.68	63.142	64.076	63.91			63.111				62.874		
	6/28/2018							63.152		63.462			63.151	63.559				63.12				62.876		
	6/29/2018																							
	6/30/2018																							
	7/1/2018																							
	7/2/2018																							
	7/3/2018			63.16	63.218	63.272		63.101		63.235	63.319				63.298			63.106	63.059					
7/4/2018		63.319			63.178				63.103	63.144					63.31				63.081				63.185	
7/5/2018																								
WTP Commission	7/6/2018																							
	7/7/2018																							
	7/8/2018																							
	7/9/2018																							
	7/10/2018	63.204	63.263	63.09	62.554	62.983	62.396	63.031	63.035	63.073	63.179	62.561	63.031	63.042	63.191	63.09	63.045	63.002	63.002		63.186		63.127	
	7/11/2018																							
	7/12/2018																							
	7/13/2018	63.173	63.211	63.037	63.027	63.029	63.244	63.016	62.991	63.035	63.117	62.538	63.002	63.01	63.131	63.038	63.025	62.978	62.986	63.104	63.081	63.285	63.09	
	7/14/2018																							
	7/15/2018																							
	7/16/2018	63.158	63.179	63.02	63.005	63.011	62.905	63.005	62.995	63.017	62.454	62.527	63.037	63.001	63.104	63.016	63.019	62.972	62.981	63.103	63.101	63.224	63.054	
	7/17/2018	63.125	63.158	63.007	62.994	63.003	63.018	62.994	62.982	62.997	63.07	62.51	62.985	62.991	63.084	63.002	63.005	62.961	62.966	63.081	63.333	63.004	63.037	
	7/18/2018																							
	7/19/2018	63.008	63.121	62.977	62.965	62.978	62.985	62.969	62.962	62.447	63.029	62.493	62.966	62.966	63.042	62.97	62.986	62.942	62.938	63.049	63.059	63.203	63.009	
	7/20/2018	63.013	62.95	62.975	62.95	62.974	62.979	62.968	62.963	63.021	63.016	62.494	62.969	62.958	63.035	62.98	62.965	62.94	62.905	63.006	63.061		63.005	
	7/21/2018																							
	7/22/2018																							
	7/23/2018	62.989	63.032	62.949	62.928	62.949	62.953	62.944	62.938	62.94	62.98	62.45	62.943	62.935	62.976	62.945	62.965	62.915	62.918	63.028	63.063	63.08	62.981	
	7/24/2018	62.984	62.99	62.933	62.964	62.933	62.947	62.927	62.919	62.926	62.967	62.469	62.916	62.922	62.948	62.934	62.95	62.873	62.908	63.02	63.004	63.057	62.971	
	7/25/2018	62.976	62.981	62.924	62.912	62.922	62.936	62.925	62.917	62.918	62.966	62.45	62.925	62.917	62.941	62.923	62.936	62.903	62.887	63.004	63.009	63.038	62.947	
	7/26/2018	62.98	62.977	62.926	62.918	62.925	62.941	62.929	62.919	62.924	63.033	62.438	62.925	62.646	62.839	62.92	62.941	62.904	62.901					
	7/27/2018	62.973	62.99	62.913	62.909	62.914	62.988	62.915	62.888	62.926	62.961	62.442	63.035	62.908	62.934	62.906	62.838	62.881	62.89	63.522	63.049	63.001	62.964	
	7/28/2018																							
	7/29/2018																							
	Phase 1 Pumping	7/30/2018	62.947	62.967	62.893	62.882	62.896	62.898	62.893	62.894	62.901	62.934	62.423	62.902	62.896	62.906	62.798	62.824	62.95	62.886	62.95	63.01	63.058	62.921
		7/31/2018	62.908	62.882	62.84	62.815	62.838	62.832	62.814	63.352	62.812	62.818	62.287	62.732	62.788	62.875	62.745	62.9	62.875	62.781	61.891	63.06	62.918	62.781
8/1/2018		62.934	62.926	62.876	62.864	63.147	62.893	62.882	62.879	62.871	62.914	62.391	62.886	62.864	62.884	62.865	62.891	62.86	62.749	62.944	62.953	63.03	62.907	
8/2/2018		62.929	62.93	62.874	62.863	62.873	62.886	62.873	62.864	62.867	62.914	62.393	62.872	62.856	62.883	62.848	62.879	62.894	62.829	62.936	62.939	63.012	62.911	
8/3/2018		62.923	62.823	62.849	62.833	62.844	62.849	62.784	62.731	62.299	62.889	62.286	62.694	62.637	62.838	62.767	62.769	62.641	62.613	62.937	62.956	62.989	62.735	
8/4/2018																								
8/5/2018																								
8/6/2018		62.928	60.733	63.042	62.607	62.607	62.59	62.62	62.482	61.816	62.565	62.168	62.528	62.529	62.683	62.669	62.674	62.566	62.562	62.85	62.845	62.788	62.494	
8/7/2018		62.868	62.593	59.435	62.62	62.601	62.553	62.602	62.618	61.663	62.768	62.218	62.614	62.648	62.734	62.624	62.739	62.838	62.621	62.419	62.829	62.587	62.423	
8/8/2018		62.883	62.733	62.71	62.34	62.698	62.623	62.729	62.682	62.717	62.713	62.272	62.77	62.671	59.309	62.1	57.555	62.676	62.612	62.256	62.836	62.786	62.767	
8/9/2018		61.858	62.633	60.759	62.56	62.598	62.508	62.619	62.328	62.665	62.703	61.525	62.67	62.571	62.794	62.67	62.745	62.676	62.606	62.646	62.786	62.824	62.487	
8/10/2018		62.888	62.693	62.655	62.62	62.648	62.558	62.669	62.382	62.427	62.803	61.752	62.72	62.641	62.869	62.74	63.005	62.716	62.656	62.726	62.846	62.834	62.577	
8/11/2018																								
8/12/2018																								
8/13/2018		62.938	62.729	62.659	62.635	62.658	62.579	62.686	62.282	62.667	62.743	61.632	62.73	62.626	62.769	62.72	62.8	62.736	62.666	62.666	62.866	62.864	62.557	
8/14/2018		62.938																						

Annex D – NAPL Level Data

		Thickness (mm) of Product (LNAPL) in Boreholes																						
Phase	Date	A2	A3	A4	A5	A6	Z5	B3	B4	B5	B6	C2	C3	C5	C6	C7	D2	D4	D5	BH36	BH31	BH31/RN31	BH01-17	
Grid Construction	6/7/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	2.0	
	6/11/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6/19/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.1	
	6/27/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6/28/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6/29/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/2/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/3/2018	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/4/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	
7/5/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
WTP Commission	7/6/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/7/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/8/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/9/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/10/2018	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
	7/11/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/12/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/13/2018	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	10.0	0.0	0.0	1.0	
	7/16/2018	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0	10.0	0.0	0.0	0.0	
	7/17/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/18/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/19/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	
	7/20/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	
	7/23/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	
	7/24/2018	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	20.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7/25/2018	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	10.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	140.0	0.1	0.0	0.5
	7/26/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	27.0	0.1	0.0	0.5	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	
7/27/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	9.0		
Phase 1 Pumping	7/30/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	7.0	0.0	0.0	0.0	
	7/31/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/1/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/2/2018	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/3/2018	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.5	
	8/6/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	
	8/7/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	
	8/8/2018	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	39.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.1	
	8/9/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	
	8/10/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/13/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/14/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	1.0	0.0	0.0	0.0	
	8/15/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	
	8/16/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	10.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	
	8/17/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Injection	8/20/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/21/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/22/2018	0.0	0.5	0.0	0.0	0.0	0.0	4.0	0.1	40.0	0.0	40.0	40.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Phase 2 Pumping	8/23/2018	0.0	18.0	0.0	0.0	0.0	0.0	0.0	41.0	69.0	0.0	7.0	40.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8/24/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	50.0	0.0	20.0	60.0	30.0	0.0	0.0	0.0	0.0	0.0	250.0	0.0	0.0	0.0	
	8/27/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	8/28/2018	0.0	0.1	0.0	0.0	0.0	0.0	2.0	5.0	50.0	0.0	0.0	20.0	20.0	0.0	0.0	0.1	0.0	0.0	300.0	0.0	0.0	0.0	
	8/29/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0		
	8/30/2018	0.0																						

Annex E – Groundwater Pumping Data

		Total Volume of Groundwater Removed and Treated																								
	Date	Cumilative Daily Discharge Reading (m3)	m3 per Day	No of Pumps Running	Volume Pumped (l/day)	Volume Pumped (m3/day)	A2	A3	A4	A5	A6	B3	B4	B5	B6	C2	C3	C5	C6	D2	D4	D5	Z5	BH36	BH31	
							Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)	Volume (l)
Phase 1 Pumping	7/30/2018	0	0	0	2	0.0										1	2							0		
	7/31/2018	2	2	4	3327	3.3										753	925				787			862		
	8/1/2018	4	2	4	1437	1.4										301	374				548			215		
	8/2/2018	5	1	5	825	0.8		81								3	0				659			82		
	8/3/2018	7	2	4	5204	5.2		541						1358			1282				1183			840		
	8/4/2018	14	7	4	4671	4.7								1192			1193				1407			879		
	8/5/2018	21	7	4	6478	6.5						1077		1724			1698				1980					
	8/6/2018	29	7	3	6173	6.2						0		1935			1882				2356					
	8/7/2018	35	6	4	6355	6.4				1927									1260	1279		1890				
	8/8/2018	40	5	4	7832	7.8				1848			1952				1519		401	407			1706			
	8/9/2018	45	5	3	7606	7.6							2132	1890			1666						1918			
	8/10/2018	51	6	4	7437	7.4								2086	1890		1556						1905			
	8/11/2018	56	5	4	5810	5.8								1000	1470		1391						1949			
	8/12/2018	62	6	4	5735	5.7								1000	1470		1360						1906			
	8/13/2018	70	8	4	7506	7.5								1743	1967		1885						1912			
	8/14/2018	73	3	3	6454	6.5		1080					952	1306	2025						1091					
	8/15/2018	73	0	0	1658	1.7		159					1499													
	8/16/2018	78	5	3	4335	4.3		1091					2152								1091					
8/17/2018	83	5	3	5993	6.0							648	1205	1980		2160										
Injection	8/20/2018	87	4	5	8773	8.8		2241	220		896			1200		1440			886				1890			
	8/21/2018	93	6	5	7782	7.8	1458	1113			1845								1476				1890			
	8/22/2018	95	2	5	1581	1.6					1581															
Phase 2 Pumping	8/23/2018	98	3	3	2654	2.7	1036												1618							
	8/24/2018	103	5	7	5397	5.4	1260	469						549				1440	592				328	760		
	8/27/2018	105	2	7	2199	2.2							51	272		276	277	76					454	794		
	8/28/2018	110	5	6	5404	5.4							833	749		949	1208	493						1173		
	8/29/2018	116	6	7	7447	7.4							1419	1260		507	743	1654				537		1329		
	8/30/2018	125	9	7	8273	8.3								1240		1890	1470	780				1163		1730		
	8/31/2018	132	7	6	7104	7.1								1196			1523	1366				954		447	1620	
	9/3/2018	138	6	6	5613	5.6				258				1276			1660	890						839	691	
	9/4/2018	143	5	5	4600	4.6							431	809			1063	407		1890						
	9/5/2018	149	6	5	3153	3.2				960			269	354			808					635		129		
	9/6/2018	154	5	5	5072	5.1		702		672				99			1680		711		1			1208		
	9/7/2018	160	6	5	6664	6.7				564		1620		1050			1448		968					1015		
	9/10/2018	165	5	5	2987	3.0								1203	66		1289		90					340		
	9/11/2018	167	2	5	845	0.8							158	192	9		356							130		
	9/12/2018	167	0	5	1340	1.3							415	259			533							134		
	9/13/2018	169	2	5	1922	1.9							486	228			671		248					289		
	9/14/2018	172	3	5	1215	1.2							304				415			135				361		
Monitoring	9/17/2018	174	2	0	0	0.0																				
	9/18/2018	176	2	0	0	0.0																				
	9/19/2018	177	1	0	0	0.0																				
	TOTALS (m3)	177				184.9	3.75	7.48	0.22	6.23	4.32	7.95	16.79	30.83	0.07	17.65	22.50	7.10	8.25	5.89	12.21	1.89	15.86	13.56	2.31	
	TOTALS (l)	177000			184856		3754	7477	220	6228	4322	7948	16786	30832	75	17654	22495	7105	8248	5893	12207	1890	15857	13555	2311	

NOTES ** It should be noted that the flow meter at the discharge point was occasionally blocked by carbon pellets from the treatment of the water and is therefore assumed to have underread on the water volumed treated. The volumes pumped from each borehole are estimated based on number of pump cycles and volume pumped into a measuring container.

Targetted Pumping

Evidence of NAPL

Trace NAPL

High Dissolved Phase

Annex F – Soil, Groundwater and NAPL Analytical Results

Groundwater Overview

Project: Former Polycell Site
Site Address: Welwyn Garden City
Document title: Chemical Tracking Document

Laboratory	Date of sample	Date sent to lab	Results issued	Sample ID	Lab Sample ID	Report Lab ID	Water, Soil	Sample description	Remediation	Sample Scheduling (Soil Suites)
i2	8.06.18	9.06.18	15.06.18	BHD02	977867	18-88372	Soil	Chalk	Drilling Phase	BTEX, TPHCWG, Product ID
i2	12.06.18	12.06.18	19.06.18	BH01-17	980101	18-88733	Water	Predrilling sample historic BHs	Post Drilling	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.06.18	12.06.18	19.06.18	BH03-17	980102	18-88733	Water	Predrilling sample historic BHs	Post Drilling	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.06.18	12.06.18	19.06.18	BH02-17	980103	18-88733	Water	Predrilling sample historic BHs	Post Drilling	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.06.18	12.06.18	19.06.18	BH06d-17	980104	18-88733	Water	Predrilling sample historic BHs	Post Drilling	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.06.18	12.06.18	19.06.18	BH05d-17	980105	18-88733	Water	Predrilling sample historic BHs	Post Drilling	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	13.06.18	14.06.18	21.06.18	BH36	982048	18-89053	Product	NAPL	NAPL ID	Product ID
i2	15.6.18	15.06.18	22.06.18	BHD04 28.6-30	982765	18-89175	soil	Chalk	Post drilling / WTP Commissioning	PAH,BTEX, Naphthalene, TPHCWG,VOCs
i2	24.07.18	24.07.18	31.07.18	BH06d-17	1007596	18-93676	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	24.07.18	24.07.18	31.07.18	BH05d-17	1007597	18-93676	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	24.07.18	24.07.18	31.07.18	BH03-17	1007598	18-93676	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	25.07.18	25.07.18	01.08.18	BH02-17	1008596	18-93862	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	25.07.18	25.07.18	01.08.18	BH31/RW31	1008597	18-93862	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	25.07.18	25.07.18	01.08.18	A6	1008598	18-93862	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	26.07.18	26.07.18	02.08.18	B6	1009742	18-94058	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	26.07.18	26.07.18	02.08.18	C6	1009743	18-94058	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	26.07.18	26.07.18	02.08.18	C7	1009744	18-94058	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	26.07.18	26.07.18	02.08.18	D2	1009745	18-94058	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	26.07.18	26.07.18	02.08.18	D4	1009746	18-94058	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	26.07.18	26.07.18	02.08.18	D5	1009747	18-94058	Water	GW	Post drilling / WTP Commissioning	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	30.07.18	30.07.18	06.08.18	A2	1011476	18-94400	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	30.07.18	30.07.18	06.08.18	C2	1011477	18-94400	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	30.07.18	30.07.18	06.08.18	C3	1011478	18-94400	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	30.07.18	30.07.18	06.08.18	Z5	1011479	18-94400	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	30.07.18	30.07.18	06.08.18	BH11-17	1011480	18-94400	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	30.07.18	30.07.18	06.08.18	BH 36	1011481	18-94400	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	31.07.18	31.07.18	07.08.18	B3	1012501	18-94561	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	31.07.18	31.07.18	07.08.18	B5	1012502	18-94561	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	31.07.18	31.07.18	07.08.18	A3	1012503	18-94561	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	08.08.18	08.08.18	16.08.18	BH02-17	1019838	18-95815	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	08.08.18	08.08.18	16.08.18	BH03-17	1019839	18-95815	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	08.08.18	08.08.18	16.08.18	BH06d-17	1019840	18-95815	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	08.08.18	08.08.18	16.08.18	BH05d-17	1019841	18-95815	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	09.08.18	09.08.18	16.08.18	BH11-17	1021246	18-96027	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.08.18	10.08.18	18.08.18	A3	1021271	18-96039	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	13.08.18	13.08.18	21.08.18	A2	1023050	18-96359	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	13.08.18	13.08.18	21.08.18	D5	1023051	18-96359	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	13.08.18	13.08.18	21.08.18	D4	1023052	18-96359	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	13.08.18	13.08.18	21.08.18	D2	1023053	18-96359	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	A6	1024181	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	B6	1024182	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	C7	1024183	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	C6	1024184	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	BH36	1024185	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	C2	1024186	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	B4	1024187	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	B5	1024188	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	14.08.18	14.08.18	22.08.18	Z5	1024189	18-96583	Water	GW	Phase 1 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	22.08.18	23.08.18	03.08.18	BH02-17	1031514	18-97811	Water	GW	Injection Phase	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	22.08.18	23.08.18	03.08.18	BH03-17	1031515	18-97811	Water	GW	Injection Phase	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	22.08.18	23.08.18	03.08.18	BH05D-17	1031516	18-97811	Water	GW	Injection Phase	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	23.08.18	23.08.18	03.08.18	BH06D-17	1031517	18-97811	Water	GW	Injection Phase	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	04.09.18	04.09.18	10.09.18	BH36	1038810	18-99022	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	A2	1038815	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	A3	1038816	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	A6	1038817	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	B4	1038818	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	B5	1038819	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	B6	1038820	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)

Project: Former Polycell Site
Site Address: Welwyn Garden City
Document title: Chemical Tracking Document

Laboratory	Date of sample	Date sent to lab	Results issued	Sample ID	Lab Sample ID	Report Lab ID	Water, Soil	Sample description	Remediation	Sample Scheduling (Soil Suites)
i2	03.09.18	04.09.18	10.09.18	C2	1038821	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	C6	1038822	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	C7	1038823	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	D2	1038824	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	D5	1038825	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	B3	1038826	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	Z5	1038827	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	A5	1038828	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	D4	1038829	18-99025	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	03.09.18	04.09.18	10.09.18	BH1-17	1038832	18-99027	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	B4	1043121	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	B5	1043122	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	B6	1043123	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	D2	1043124	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	C2	1043125	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	A2	1043126	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	A3	1043127	18-99770	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	11.09.18	17.09.18	BH1-17	1043224	18-99801	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	10.09.18	10.p.9.18	17.09.18	BH36	1043389	18-99834	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.09.18	12.09.18	19.09.18	Z5	1043935	18-99937	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.09.18	12.09.18	19.09.18	A6	1043936	18-99937	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.09.18	12.09.18	19.09.18	C7	1043937	18-99937	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.09.18	12.09.18	19.09.18	C6	1043938	18-99937	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.09.18	12.09.18	19.09.18	D5	1043939	18-99937	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	12.09.18	12.09.18	19.09.18	D4	1043940	18-99937	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	05.09.18	06.09.18	13.09.18	BH02-17	1038702	18-99008	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	05.09.18	06.09.18	13.09.18	BH03-17	1038703	18-99008	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	05.09.18	06.09.18	13.09.18	BH05-17	1038704	18-99008	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	05.09.18	06.09.18	13.09.18	BH06-17	1038705	18-99008	Water	GW	Phase 2 Pump - fortnight monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	17.09.18	25.09.18	25.09.18	A3	1047975	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	17.09.18	25.09.18	25.09.18	BH1-17	1047976	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	17.09.18	25.09.18	25.09.18	A5	1047977	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	17.09.18	25.09.18	25.09.18	B5	1047978	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	17.09.18	25.09.18	25.09.18	B4	1047979	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	17.09.18	25.09.18	25.09.18	Z5	1047980	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	25.09.18	25.09.18	A2	1047981	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	25.09.18	25.09.18	BH36	1047982	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	25.09.18	25.09.18	D2	1047983	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	25.09.18	25.09.18	C2	1047984	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	25.09.18	25.09.18	C3	1047985	18-10787	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	19.09.18	26.09.18	26.09.18	BH02-17	1049510	18-11067	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	19.09.18	26.09.18	26.09.18	BH03-17	1049511	18-11067	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	19.09.18	26.09.18	26.09.18	BH05d-17	1049512	18-11067	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	19.09.18	26.09.18	26.09.18	BH06d-17	1049513	18-11067	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	26.09.18	26.09.18	A6	1049514	18-11068	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	26.09.18	26.09.18	B6	1049515	18-11068	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	26.09.18	26.09.18	C6	1049516	18-11068	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	18.09.18	26.09.18	26.09.18	C7	1049517	18-11068	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	19.09.18	26.09.18	26.09.18	D4	1049518	18-11068	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)
i2	19.09.18	26.09.18	26.09.18	D5	1049519	18-11068	Water	GW	Post Works Monitoring	MNA Parameters, Petroleum Hydrocarbons, PAH Species, VOCs (selected)

Project:			Former Polycell Site					
Document Title:			Analysis summary sheet for BH36			<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			Historic borehole on edge of main plume					
			Product ID	Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			982048	1011481	1024185	1038810	1043389	1047982
Sample Reference			BH36	BH 36	BH36	BH36	BH36	BH36
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled			13/06/2018	27/07/2018	14/08/2018	04/09/2018	10/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection						
General Inorganics								
pH	pH Units	N/A		6.7	6.7	6.6	6.7	6.7
Sulphate as SO ₄	µg/l	45		30100	17200	21600	10900	13300
Sulphate as SO ₄	mg/l	0.045		30.1	17.2	21.6	10.9	13.3
Chloride	mg/l	0.15		230	240	630	650	550
Nitrate as N	mg/l	0.01		0.1	0.08	0.01	0.05	0.08
Nitrate as NO ₃	mg/l	0.05		0.44	0.38	0.05	0.21	0.37
Chemical Oxygen Demand (Total)	mg/l	2		300	170	420	510	370
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1		210	79	240	3	1.3
Redox Potential	mV	-800		58.4	46.6	204.6	0.8	-32.60
Dissolved Oxygen	mg/l	1		3	3.1	1.6	2.9	5.6
Speciated PAHs								
Naphthalene	µg/l	0.01		149	58.8	60.6	113	54.4
Heavy Metals / Metalloids								
Iron (dissolved)	mg/l	0.004		1.2	1.1	3.4	0.63	1.4
Fe ²⁺	mg/l	0.2		1.04	0.86	0.26	0.6	1.32
Fe ³⁺	mg/l	0.2		< 0.20	< 0.20	3.12	< 0.20	< 0.20
Monoaromatics								
Benzene	µg/l	1		4.7	< 1.0	6.5	4.6	10.6
Toluene	µg/l	1		46.9	38.6	40.4	31	59.9
Ethylbenzene	µg/l	1		86.3	181	289	340	280
p & m-xylene	µg/l	1		2230	1570	1280	3970	1210
o-xylene	µg/l	1		1210	1030	984	2420	856
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1		8	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10		450	< 10	< 10	220	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10		< 10	< 10	< 10	250	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1		4.7	< 1.0	6.5	4.6	11
TPH-CWG - Aromatic >C7 - C8	µg/l	1		47	39	40	31	60
TPH-CWG - Aromatic >C8 - C10	µg/l	1		23000	12000	9900	35000	13000
TPH-CWG - Aromatic >C10 - C12	µg/l	10		9100	1800	8200	5200	1600
TPH-CWG - Aromatic >C12 - C16	µg/l	10		1100	44	330	220	180
TPH-CWG - Aromatic >C16 - C21	µg/l	10		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10		< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10		460	< 10	< 10	470	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10		33000	14000	19000	40000	15000
VOCs								
1,3,5-Trimethylbenzene	µg/l	1		4760	1940	1440	5620	2030
1,2,3-Trichloropropane	µg/l	1				< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100		5400	5400	11000	17000	43000
Carbon disulphide	µg/l	1		< 1.0	< 1.0	40	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics								
Gases								
Methane	mg/l	0.1		13	14	24	19	18


Project:	Former Polycell Site							
Document Title:	Analysis summary sheet for BH1-17				<div>John F Hunt</div> REMEDIATION			
Borehole Rationale:	EAME 2017 borehole - overall GW trends							
			Baseline	Post Drill	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			980101	1011480	1021246	1038832	1043224	1047976
Sample Reference			BH01-17	BH01-17	BH01-17	BH1-17	BH1-17	BH1-17
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled			11/06/2018	27/07/2018	09/08/2018	03/09/2018	10/09/2018	17/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection						
General Inorganics								
pH	pH Units	N/A		6.3	6.6	10.3	9.9	9.3
Sulphate as SO ₄	µg/l	45	11000	15000	12500	114000	106000	83800
Sulphate as SO ₄	mg/l	0.045	11	15	12.5	114	106	83.8
Chloride	mg/l	0.15	400	570	420	440	520	490
Nitrate as N	mg/l	0.01	0.13	0.17	0.19	1.35	0.57	0.40
Nitrate as NO ₃	mg/l	0.05	0.58	0.77	0.82	5.96	2.5	1.76
Chemical Oxygen Demand (Total)	mg/l	2		3200	1200	1500	1500	960
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1		830	440	560	1400	520
Redox Potential	mV	-800	9.4	21.3	17.6	122.8	-123.6	57.30
Dissolved Oxygen	mg/l	1	1.5	2.4	1.2	2.8	1.5	1.3
Speciated PAHs								
Naphthalene	µg/l	0.01	62.3	650	31.6	36.7	7.87	18.3
Heavy Metals / Metalloids								
Iron (dissolved)	mg/l	0.004	21	0.017	2.1	1.4	0.39	0.59
Fe ²⁺	mg/l	0.2	14.9	< 0.20	2.1	< 0.20	< 0.20	< 0.20
Fe ³⁺	mg/l	0.2	6.15	< 0.20	< 0.20	1.41	0.39	0.59
Monoaromatics								
Benzene	µg/l	1	6.5	11.7	12.9	4.8	4.9	6.3
Toluene	µg/l	1	63.9	182	192	52.5	64.4	85.1
Ethylbenzene	µg/l	1	119	408	352	106	121	176
p & m-xylene	µg/l	1	760	9190	2060	592	658	991
o-xylene	µg/l	1	668	11200	2080	905	1080	1020
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	83	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	66	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	6.5	12	13	4.8	4.9	6.3
TPH-CWG - Aromatic >C7 - C8	µg/l	1	64	180	190	53	64	85
TPH-CWG - Aromatic >C8 - C10	µg/l	1	4700	85000	16000	5500	6100	5700
TPH-CWG - Aromatic >C10 - C12	µg/l	10	7300	7600	10000	4900	350	1600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	860	4000	1200	2000	83	390
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	190	< 10	92	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	150	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	13000	97000	28000	13000	6600	7800
VOCs								
1,3,5-Trimethylbenzene	µg/l	1	665	19200	2340	737	1110	844
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	100	11000	8900	100	14000	47000
Carbon disulphide	µg/l	1		< 1.0	< 1.0	8000	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics								
Gases								
Methane	mg/l	0.1	17	24	33	9.2	18	12

Project:		Former Polycell Site						
Document Title:		Analysis summary sheet for						
Borehole Rationale:		BH02-17						
		EAME 2017 borehole - overall						
		GW trends						
			Baseline	Post Drill	Phase 1 Pump	Post Injection	Phase 2 Pump	Start Monitoring
Lab Sample Number			980103	1008596	1019838	1031514	1038702	1049510
Sample Reference			BH02-17	BH02-17	BH02-17	BH02-17	BH02-17	BH02-17
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled			11/06/2018	25/07/2018	08/08/2018	24/08/2018	05/09/2018	19/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection						
General Inorganics								
pH	pH Units	N/A		6.6	6.5	7	6.9	6.5
Sulphate as SO ₄	µg/l	45	9120	80200	41400	58700	45700	40500
Sulphate as SO ₄	mg/l	0.045	9.1	80.2	41.4	58.7	45.7	40.5
Chloride	mg/l	0.15	1300	400	630	500	610	710
Nitrate as N	mg/l	0.01	0.08	0.04	0.05	0.06	0.15	0.14
Nitrate as NO ₃	mg/l	0.05	0.37	0.16	0.22	0.27	0.64	0.64
Chemical Oxygen Demand (Total)	mg/l	2	110	170	160	190	510	
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1		1.2	19	97	2.1	U/S
Redox Potential	mV	-800	21.4	-33.2	4.5	204.3	164.4	-35.90
Dissolved Oxygen	mg/l	1	2	3	6.8	2	8.2	4.4
Speciated PAHs								
Naphthalene	µg/l	0.01	11.7	5.38	6.49	5.4	0.88	16.0
Heavy Metals / Metalloids								
Iron (dissolved)	mg/l	0.004	20	4.9	10	6.4	2.2	15
Fe ²⁺	mg/l	0.2	6.35	< 0.20	8.8	4.25	0.63	1.24
Fe ³⁺	mg/l	0.2	13.9	4.78	1.38	2.12	1.53	14.1
Monoaromatics								
Benzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	25.9	< 1.0	< 1.0	< 1.0	4.4	14.4
p & m-xylene	µg/l	1	223	29.5	8.9	83	45.8	130
o-xylene	µg/l	1	202	39.8	8.1	70.6	37.9	100
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	3400	910	420	2900	1500	3100
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1600	1100	420	700	7200	2500
TPH-CWG - Aromatic >C12 - C16	µg/l	10	51	25	< 10	59	5200	250
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	2400	100
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	5000	2100	840	3700	16000	5900
VOCs								
1,3,5-Trimethylbenzene	µg/l	1	564	< 1.0	110	742	290	697
1,2,3-Trichloropropane	µg/l	1					< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	40000	100	4900	11000	47000	6400
Carbon disulphide	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics								
Gases								
Methane	mg/l	0.1	0.7	0.4	0.5	0.4	0.6	0.3

Project:	Former Polycell Site							
Document Title:	Analysis summary sheet for BH03-17				<div>John F Hunt</div> REMEDIATION			
Borehole Rationale:	EAME 2017 borehole - overall GW trends							
				Baseline	Post Drill	Phase 1 Pump	Post Injection	Phase 2 Pump
Lab Sample Number				980102	1007600	1019839	1031515	1038703
Sample Reference				BH03-17	BH03-17	BH03-17	BH03-17	BH03-17
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				11/06/2018	23/07/2018	08/08/2018	24/08/2018	05/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection						
General Inorganics								
pH	pH Units	N/A			6.8	6.7	7	7.5
Sulphate as SO ₄	µg/l	45	263000	232000	197000	203000	3630	208000
Sulphate as SO ₄	mg/l	0.045	263	232	197	203	3.6	208
Chloride	mg/l	0.15	260	280	340	330	110	370
Nitrate as N	mg/l	0.01	0.1	0.07	0.04	0.05	0.05	0.08
Nitrate as NO ₃	mg/l	0.05	0.42	0.33	0.16	0.21	0.21	0.37
Chemical Oxygen Demand (Total)	mg/l	2		44	40	43	54	46
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1		1.5	2.5	3.1	3.4	U/S
Redox Potential	mV	-800	35.1	-62.6	18.9	198.1	148.8	-52.80
Dissolved Oxygen	mg/l	1	1.7	3.5	5.6	1	8.7	5.4
Speciated PAHs								
Naphthalene	µg/l	0.01	5.69	19.6	12	10.6	0.19	32.1
Heavy Metals / Metalloids								
Iron (dissolved)	mg/l	0.004	3.6	0.005	2.9	0.038	1.7	4.5
Fe ²⁺	mg/l	0.2	3.59	< 0.20	2.8	< 0.20	< 0.20	0.76
Fe ³⁺	mg/l	0.2	< 0.20	< 0.20	< 0.20	< 0.20	1.71	3.77
Monoaromatics								
Benzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	5.1	87.9	1.6	4.4	< 1.0	8.6
p & m-xylene	µg/l	1	299	376	30.8	123	< 1.0	172
o-xylene	µg/l	1	16.2	6.2	< 1.0	5.6	< 1.0	10.7
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	1500	4100	370	1300	8.8	1800
TPH-CWG - Aromatic >C10 - C12	µg/l	10	2100	920	160	320	110	1200
TPH-CWG - Aromatic >C12 - C16	µg/l	10	< 10	100	< 10	190	140	260
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	33	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	3600	5100	530	1800	290	3300
VOCs								
1,3,5-Trimethylbenzene	µg/l	1	270	870	81.2	340	4.3	421
1,2,3-Trichloropropane	µg/l	1					< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	< 100	< 100	< 100	< 100	< 100	110
Carbon disulphide	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics								
Gases								
Methane	mg/l	0.1	0.9	0.2	1.5	1.1	1.9	1.4

Project:	Former Polycell Site							
Document Title:	Analysis summary sheet for BH05d-17				<div>John F Hunt</div> REMEDIATION			
Borehole Rationale:	EAME 2017 borehole - overall GW trends							
			Baseline	Post Drill	Phase 1 Pump	Post Injection	Phase 2 Pump	Start Monitoring
Lab Sample Number			980105	1007599	1019841	1031516	1038704	1049512
Sample Reference			BH05d-17	BH05d-17	BH05d-17	BH05D-17	BH05D-17	BH05d-17
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled			12/06/2018	23/07/2018	08/08/2018	24/08/2018	05/09/2018	19/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection						
General Inorganics								
pH	pH Units	N/A		7	7	7.4	7.4	7.0
Sulphate as SO ₄	µg/l	45	32200	93700	92000	116000	107000	118000
Sulphate as SO ₄	mg/l	0.045	32.2	93.7	92	116	107	118
Chloride	mg/l	0.15	180	68	75	74	160	81
Nitrate as N	mg/l	0.01	0.12	3.52	2.76	2.17	1.81	1.20
Nitrate as NO ₃	mg/l	0.05	0.53	15.6	12.2	9.61	8	5.33
Chemical Oxygen Demand (Total)	mg/l	2		41	12	11	51	23
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1		< 1.0	< 1.0	1.2	2.6	2.7
Redox Potential	mV	-800	23.9	117.2	90.9	191.8	154.9	-47.50
Dissolved Oxygen	mg/l	1	3.1	7.2	8.3	1.2	8.7	7.3
Speciated PAHs								
Naphthalene	µg/l	0.01	1.3	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Heavy Metals / Metalloids								
Iron (dissolved)	mg/l	0.004	3.6	0.018	0.005	0.027	0.062	0.017
Fe ²⁺	mg/l	0.2	3.55	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Fe ³⁺	mg/l	0.2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Monoaromatics								
Benzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	2.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	2.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	15.1	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	43	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	130	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	130	10	10	10	43	10
VOCs								
1,3,5-Trimethylbenzene	µg/l	1	11.9	< 1.0	< 1.0	< 1.0	27.8	< 1.0
1,2,3-Trichloropropane	µg/l	1					< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	< 100	< 100	< 100	< 100	< 100	1200
Carbon disulphide	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics								
Gases								
Methane	mg/l	0.1	4.8	< 0.1	0.8	1.9	3.2	1.4

Project:	Former Polycell Site							
Document Title:	Analysis summary sheet for BH06d-17				<div>John F Hunt</div> REMEDIATION			
Borehole Rationale:	EAME 2017 borehole - overall GW trends							
			Baseline	Post Drill	Phase 1 Pump	Post Injection	Phase 2 Pump	Start Monitoring
Lab Sample Number			980104	1007598	1019840	1031517	1038705	1049513
Sample Reference			BH06d-17	BH06d-17	BH06d-17	BH06d-17	BH06-17	BH06d-27
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled			11/06/2018	23/07/2018	08/08/2018	24/08/2018	05/09/2018	19/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection						
General Inorganics								
pH	pH Units	N/A		7.1	6.9	7.2	7.1	6.8
Sulphate as SO ₄	µg/l	45	6070	1860	2490	10000	217000	250000
Sulphate as SO ₄	mg/l	0.045	6.1	1.9	2.5	10	217	250
Chloride	mg/l	0.15	130	100	110	97	300	300
Nitrate as N	mg/l	0.01	0.11	0.05	0.07	0.07	0.17	0.12
Nitrate as NO ₃	mg/l	0.05	0.48	0.22	0.33	0.32	0.75	0.53
Chemical Oxygen Demand (Total)	mg/l	2		15	14	19	51	71
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1		1.7	1.6	1.7	1.7	U/S
Redox Potential	mV	-800	15.1	62.4	62.4	187.7	163.6	-45.10
Dissolved Oxygen	mg/l	1	1.9	7.6	4.7	1.1	8.3	6.8
Speciated PAHs								
Naphthalene	µg/l	0.01	2.11	0.82	1.17	1.95	13.6	68.1
Heavy Metals / Metalloids								
Iron (dissolved)	mg/l	0.004	4.6	1.6	0.92	0.2	0.58	2.4
Fe ²⁺	mg/l	0.2	4.51	< 0.20	0.9	< 0.20	< 0.20	0.21
Fe ³⁺	mg/l	0.2	< 0.20	1.59	< 0.20	< 0.20	0.58	2.20
Monoaromatics								
Benzene	µg/l	1	1.5	2.2	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	< 1.0	5.1	< 1.0	< 1.0	< 1.0	26.9
p & m-xylene	µg/l	1	4.5	2.4	< 1.0	< 1.0	104	304
o-xylene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	6.4	3.6
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	1.5	2.2	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	70	39	6.1	6.9	1100	3600
TPH-CWG - Aromatic >C10 - C12	µg/l	10	300	54	43	130	740	3200
TPH-CWG - Aromatic >C12 - C16	µg/l	10	< 10	64	< 10	41	190	330
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	370	160	49	180	2000	7100
VOCs								
1,2,3-Trichloropropane	µg/l	1					< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	< 100	< 100	< 100	< 100	340	< 100
Carbon disulphide	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics								
Gases								
Methane	mg/l	0.1	4.4	< 0.1	6.7	5.9	3.3	1.0

Project:	Former Polycell Site		
Document Title:	Analysis summary sheet for BH31/RN31		
Borehole Rationale:	Historic borehole - centre of plume		
			Post Drill
Lab Sample Number			1008597
Sample Reference			BH31/RN31
Sample Number			None Supplied
Depth (m)			None Supplied
Date Sampled			25/07/2018
Time Taken			None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	
General Inorganics			
pH	pH Units	N/A	6.7
Sulphate as SO ₄	µg/l	45	10900
Sulphate as SO ₄	mg/l	0.045	10.9
Chloride	mg/l	0.15	200
Nitrate as N	mg/l	0.01	< 0.01
Nitrate as NO ₃	mg/l	0.05	< 0.05
Chemical Oxygen Demand (Total)	mg/l	2	150
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0
Redox Potential	mV	-800	-50
Dissolved Oxygen	mg/l	1	2
Speciated PAHs			
Naphthalene	µg/l	0.01	12.9
Heavy Metals / Metalloids			
Iron (dissolved)	mg/l	0.004	2.3
Fe ²⁺	mg/l	0.2	< 0.20
Fe ³⁺	mg/l	0.2	2.23
Monoaromatics			
Benzene	µg/l	1	< 1.0
Toluene	µg/l	1	19.8
Ethylbenzene	µg/l	1	< 1.0
p & m-xylene	µg/l	1	58.9
o-xylene	µg/l	1	1310
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0
Petroleum Hydrocarbons			
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	20
TPH-CWG - Aromatic >C8 - C10	µg/l	1	2100
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1200
TPH-CWG - Aromatic >C12 - C16	µg/l	10	120
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	3400
VOCs			
1,3,5-Trimethylbenzene	µg/l	1	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0
Bromochloromethane	µg/l	1	< 1.0
Dichloromethane	µg/l	100	< 100
Carbon disulphide	µg/l	1	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0
Environmental Forensics			
Gases			
Methane	mg/l	0.1	7.7

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for A2		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Post Drill	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1011476	1023050	1038815	1043126	1047981
Sample Reference			A2	A2	A2	A2	A2
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			27/07/2018	13/08/2018	04/09/2018	10/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.6	6.6	6.7	6.7
Sulphate as SO ₄	µg/l	45	6960	7800	6060	5960	6360
Sulphate as SO ₄	mg/l	0.045	7	7.8	6.1	6	6.4
Chloride	mg/l	0.15	580	820	480	510	560
Nitrate as N	mg/l	0.01	0.15	0.07	< 0.01	0.1	0.07
Nitrate as NO ₃	mg/l	0.05	0.66	0.32	< 0.05	0.43	0.32
Chemical Oxygen Demand (Total)	mg/l	2	74	70	48	71	100
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	59	31	30	4.9	1.1
Redox Potential	mV	-800	89.6	13.1	197.5	-30.7	-46.90
Dissolved Oxygen	mg/l	1	4.3	1.6	3.2	1.4	7.2
Speciated PAHs							
Napthalene	µg/l	0.01	31.1	50.9	35	40.2	48.2
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	4.3	6.2	4.1	1.8	3.2
Fe ²⁺	mg/l	0.2	2.86	5.8	< 0.20	1.8	3.00
Fe ³⁺	mg/l	0.2	1.47	0.4	4.1	< 0.20	< 0.20
Monoaromatics							
Benzene	µg/l	1	< 1.0	< 1.0	< 1.0	1.5	2.3
Toluene	µg/l	1	24	18.2	< 1.0	14.6	21.3
Ethylbenzene	µg/l	1	< 1.0	75.3	< 1.0	52.4	141
p & m-xylene	µg/l	1	990	971	452	804	1200
o-xylene	µg/l	1	1120	1170	397	709	602
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	< 1.0	< 1.0	< 1.0	1.5	2.3
TPH-CWG - Aromatic >C7 - C8	µg/l	1	24	18	< 1.0	15	21
TPH-CWG - Aromatic >C8 - C10	µg/l	1	6200	6500	4300	6100	8200
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1400	4000	2900	4200	1500
TPH-CWG - Aromatic >C12 - C16	µg/l	10	1100	1100	420	500	150
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	8600	12000	7600	11000	9900
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	971	838	705	986	1250
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	630	1100	2600	2600	4200
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	13	15	21	18	13

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for A3		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Start Phase 1 Pump	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1012503	1021271	1038816	1043127	1047975
Sample Reference			A3	A3	A3	A3	A3
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			30/07/2018	10/08/2018	04/09/2018	10/09/2018	17/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.8	6.6	6.7	6.8	6.8
Sulphate as SO ₄	µg/l	45	8300	8160	11100	7260	7900
Sulphate as SO ₄	mg/l	0.045	8.3	8.2	11.1	7.3	7.9
Chloride	mg/l	0.15	180	250	260	260	240
Nitrate as N	mg/l	0.01	0.14	0.16	0.07	0.11	0.14
Nitrate as NO ₃	mg/l	0.05	0.6	0.71	0.32	0.48	0.64
Chemical Oxygen Demand (Total)	mg/l	2	370	380	430	420	390
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	110	280	210	170	210
Redox Potential	mV	-800	69	34.6	191.1	-16.7	63.60
Dissolved Oxygen	mg/l	1	6.2	3.3	1.3	1.7	2.7
Speciated PAHs							
Naphthalene	µg/l	0.01	91.4	123	114	86.1	52.2
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	0.079	2	3.9	0.46	0.83
Fe ²⁺	mg/l	0.2	< 0.20	2	< 0.20	0.22	0.80
Fe ³⁺	mg/l	0.2	< 0.20	< 0.20	3.91	0.24	< 0.20
Monoaromatics							
Benzene	µg/l	1	5.5	11.6	8.1	5	6.1
Toluene	µg/l	1	187	298	175	118	122
Ethylbenzene	µg/l	1	233	237	239	170	199
p & m-xylene	µg/l	1	1730	2040	1570	1290	841
o-xylene	µg/l	1	2500	2490	2370	1800	1510
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	490	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	5.5	12	8.1	5	6.1
TPH-CWG - Aromatic >C7 - C8	µg/l	1	190	300	170	120	120
TPH-CWG - Aromatic >C8 - C10	µg/l	1	15000	11000	17000	14000	10000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1400	8500	12000	11000	2700
TPH-CWG - Aromatic >C12 - C16	µg/l	10	900	5200	5800	4800	670
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	18000	25000	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	10	490	36000	30000	14000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	2260	1200	2790	2030	1210
1,2,3-Trichloropropane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	660	1	4000	5100	4900
Carbon disulphide	µg/l	1	< 1.0	2800	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	8.6	8	5.2	3.6	6.0

Project:	Former Polycell Site			
Document Title:	Analysis summary sheet for A5		<div>John F Hunt REMEDICATION</div>	
Borehole Rationale:	2018 JFHR - remediation grid			
			Phase 2 Pump	Start Monitoring
Lab Sample Number			1038828	1047977
Sample Reference			A5	A5
Sample Number			None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied
Date Sampled			04/09/2018	17/09/2018
Time Taken			None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection		
General Inorganics				
pH	pH Units	N/A	10.5	10.3
Sulphate as SO ₄	µg/l	45	87100	87800
Sulphate as SO ₄	mg/l	0.045	87.1	87.8
Chloride	mg/l	0.15	730	780
Nitrate as N	mg/l	0.01	0.53	0.19
Nitrate as NO ₃	mg/l	0.05	2.36	0.85
Chemical Oxygen Demand (Total)	mg/l	2	1200	1600
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	460	75
Redox Potential	mV	-800	123.1	39.10
Dissolved Oxygen	mg/l	1	17	11
Speciated PAHs				
Naphthalene	µg/l	0.01	72.4	< 0.01
Heavy Metals / Metalloids				
Iron (dissolved)	mg/l	0.004	0.31	0.11
Fe ²⁺	mg/l	0.2	< 0.20	< 0.20
Fe ³⁺	mg/l	0.2	0.31	< 0.20
Monoaromatics				
Benzene	µg/l	1	5.3	7.5
Toluene	µg/l	1	144	99.3
Ethylbenzene	µg/l	1	301	203
p & m-xylene	µg/l	1	1940	653
o-xylene	µg/l	1	2570	1080
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	510	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	5.3	7.5
TPH-CWG - Aromatic >C7 - C8	µg/l	1	140	99
TPH-CWG - Aromatic >C8 - C10	µg/l	1	25000	6500
TPH-CWG - Aromatic >C10 - C12	µg/l	10	14000	2700
TPH-CWG - Aromatic >C12 - C16	µg/l	10	2000	1200
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	510	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	41000	10000
VOCs				
1,3,5-Trimethylbenzene	µg/l	1	4390	715
1,2,3-Trichloropropane	µg/l	1	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0
Dichloromethane	µg/l	100	180000	130000
Carbon disulphide	µg/l	1	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0
Environmental Forensics				
Gases				
Methane	mg/l	0.1	1	1.4

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for A6		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1008598	1024181	1038817	1043936	1049514
Sample Reference			A6	A6	A6	A6	A6
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			25/07/2018	14/08/2018	03/09/2018	12/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.6	6.8	6.6	6.6
Sulphate as SO ₄	µg/l	45	18500	11600	18000	11900	11800
Sulphate as SO ₄	mg/l	0.045	18.5	11.6	18	11.9	11.8
Chloride	mg/l	0.15	330	390	360	490	420
Nitrate as N	mg/l	0.01	< 0.01	0.1	0.01	0.08	0.10
Nitrate as NO ₃	mg/l	0.05	< 0.05	0.43	0.05	0.37	0.43
Chemical Oxygen Demand (Total)	mg/l	2	290	840	470	910	550
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0	330	190	< 1.0	260
Redox Potential	mV	-800	-35.6	19.7	189.3	41.9	-32.50
Dissolved Oxygen	mg/l	1	3.8	1.8	1.5	7	1.3
Speciated PAHs							
Naphthalene	µg/l	0.01	31.2	37.1	44.5	72.4	52.6
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	2.9	5.1	1.6	2	2.6
Fe ²⁺	mg/l	0.2	< 0.20	0.62	< 0.20	1.92	1.12
Fe ³⁺	mg/l	0.2	2.95	4.47	1.54	< 0.20	1.49
Monoaromatics							
Benzene	µg/l	1	< 1.0	< 1.0	3.6	4.4	1.7
Toluene	µg/l	1	31.4	11.5	44.3	66.6	37.0
Ethylbenzene	µg/l	1	49.3	22.4	66	126	80.5
p & m-xylene	µg/l	1	1090	135	633	1020	734
o-xylene	µg/l	1	1670	244	964	1370	944
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	< 1.0	< 1.0	3.6	4.4	1.7
TPH-CWG - Aromatic >C7 - C8	µg/l	1	31	12	44	67	37
TPH-CWG - Aromatic >C8 - C10	µg/l	1	6800	930	5500	6600	4400
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1300	1600	5400	5200	3600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	100	1000	1400	1600	3600
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	8200	3600	12000	13000	12000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	< 1.0	92.9	760	736	597
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	100	120000	31000	29000	4500
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	2.1	5.2	2.7	8.3	3.9

Project:	Former Polycell Site						
Document Title:	Analysis summary sheet for Z5		<div>John F Hunt</div> REMEDIATION				
Borehole Rationale:	2018 JFHR - remediation grid						
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1011479	1024189	1038827	1043935	1047980
Sample Reference			Z5	Z5	Z5	Z5	Z5
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			27/07/2018	15/08/2018	04/09/2018	12/09/2018	17/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.7	6.8	6.7	6.8
Sulphate as SO ₄	µg/l	45	27800	14700	25000	19000	16700
Sulphate as SO ₄	mg/l	0.045	27.8	14.7	25	19	16.7
Chloride	mg/l	0.15	320	490	420	470	530
Nitrate as N	mg/l	0.01	0.11	0.07	0.1	0.1	0.05
Nitrate as NO ₃	mg/l	0.05	0.49	0.32	0.43	0.43	0.21
Chemical Oxygen Demand (Total)	mg/l	2	150	240	200	200	190
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	70	U/S	72	< 1.0	130
Redox Potential	mV	-800	-13.9	16.7	165.1	34	-51.20
Dissolved Oxygen	mg/l	1	3.9	7.8	2.6	6.4	1.9
Speciated PAHs							
Naphthalene	µg/l	0.01	28.6	21.8	62.4	40.6	22.9
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	5.5	8	7.5	5.6	2.3
Fe ²⁺	mg/l	0.2	3.17	0.26	< 0.20	1.2	2.12
Fe ³⁺	mg/l	0.2	2.3	7.79	7.45	4.43	< 0.20
Monoaromatics							
Benzene	µg/l	1	1.8	< 1.0	2.8	2.9	3.9
Toluene	µg/l	1	104	68.5	113	101	99.9
Ethylbenzene	µg/l	1	166	87	160	107	109
p & m-xylene	µg/l	1	823	757	1440	1170	1070
o-xylene	µg/l	1	1330	1250	2310	1840	1520
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	1.8	< 1.0	2.8	2.9	3.9
TPH-CWG - Aromatic >C7 - C8	µg/l	1	100	70	110	100	100
TPH-CWG - Aromatic >C8 - C10	µg/l	1	7200	6700	14000	8600	7000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	2100	2300	7200	2500	1600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	2100	1200	2700	3500	1100
TPH-CWG - Aromatic >C16 - C21	µg/l	10	140	< 10	31	59	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	12000	10000	24000	15000	9800
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	1180	921	2000	966	1030
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	200	930	3700	4500	4800
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	2.8	4.5	3.2	3.9	2.0

Project:	Former Polycell Site			
Document Title:	Analysis summary sheet for B3		<div>John F Hunt</div> REMEDIATION	
Borehole Rationale:	2018 JFHR - remediation grid			
			Post Drill / Start Pump	Phase 1 Pump
Lab Sample Number			1012501	1038826
Sample Reference			B3	B3
Sample Number			None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied
Date Sampled			30/07/2018	04/09/2018
Time Taken			None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection		
General Inorganics				
pH	pH Units	N/A	6.5	7.6
Sulphate as SO ₄	µg/l	45	15500	58100
Sulphate as SO ₄	mg/l	0.045	15.5	58.1
Chloride	mg/l	0.15	350	320
Nitrate as N	mg/l	0.01	0.17	0.11
Nitrate as NO ₃	mg/l	0.05	0.77	0.48
Chemical Oxygen Demand (Total)	mg/l	2	5200	7400
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	730	650
Redox Potential	mV	-800	45.5	180.4
Dissolved Oxygen	mg/l	1	6	2
Speciated PAHs				
Naphthalene	µg/l	0.01	67.7	54.8
Heavy Metals / Metalloids				
Iron (dissolved)	mg/l	0.004	2.6	0.16
Fe ²⁺	mg/l	0.2	2.62	< 0.20
Fe ³⁺	mg/l	0.2	< 0.20	< 0.20
Monoaromatics				
Benzene	µg/l	1	15.7	13.5
Toluene	µg/l	1	152	178
Ethylbenzene	µg/l	1	193	318
p & m-xylene	µg/l	1	847	2150
o-xylene	µg/l	1	1060	2780
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	16	14
TPH-CWG - Aromatic >C7 - C8	µg/l	1	150	180
TPH-CWG - Aromatic >C8 - C10	µg/l	1	8000	21000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	3700	8900
TPH-CWG - Aromatic >C12 - C16	µg/l	10	4000	3100
TPH-CWG - Aromatic >C16 - C21	µg/l	10	97	52
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	16000	33000
VOCs				
1,3,5-Trimethylbenzene	µg/l	1	1270	3360
1,2,3-Trichloropropane	µg/l	1	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0
Dichloromethane	µg/l	100	18000	240000
Carbon disulphide	µg/l	1	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0
Environmental Forensics				
Gases				
Methane	mg/l	0.1	25	17
U/S = Unsuitable Sample I/S = Insufficient Sample				

Project:	Former Polycell Site					
Document Title:	Analysis summary sheet for B4					
Borehole Rationale:	2018 JFHR - remediation grid					
			Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1024187	1038818	1043121	1047979
Sample Reference			B4	B4	B4	B4
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled			15/08/2018	03/09/2018	10/09/2018	17/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection				
General Inorganics						
pH	pH Units	N/A	6.6	7.1	6.9	6.8
Sulphate as SO ₄	µg/l	45	17200	42700	40600	20800
Sulphate as SO ₄	mg/l	0.045	17.2	42.7	40.6	20.8
Chloride	mg/l	0.15	350	480	490	560
Nitrate as N	mg/l	0.01	0.04	< 0.01	0.08	0.06
Nitrate as NO ₃	mg/l	0.05	0.16	< 0.05	0.37	0.27
Chemical Oxygen Demand (Total)	mg/l	2	1200	640	460	1800
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	U/S	300	250	930
Redox Potential	mV	-800	22.7	192.3	-82.5	-76.20
Dissolved Oxygen	mg/l	1	9	1.3	2.1	1.8
Speciated PAHs						
Naphthalene	µg/l	0.01	29.7	30.2	57.1	55.9
Heavy Metals / Metalloids						
Iron (dissolved)	mg/l	0.004	7.8	2.1	0.31	4.4
Fe ²⁺	mg/l	0.2	1.35	< 0.20	0.3	4.20
Fe ³⁺	mg/l	0.2	6.48	2.03	< 0.20	0.25
Monoaromatics						
Benzene	µg/l	1	5.4	11.5	5.8	5.8
Toluene	µg/l	1	38	38.9	38.5	86.6
Ethylbenzene	µg/l	1	63.2	77.2	131	215
p & m-xylene	µg/l	1	408	440	1120	904
o-xylene	µg/l	1	551	549	850	1170
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons						
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	600
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	5.4	12	5.8	5.8
TPH-CWG - Aromatic >C7 - C8	µg/l	1	38	39	39	87
TPH-CWG - Aromatic >C8 - C10	µg/l	1	4500	5400	11000	15000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	2100	5300	2900	5200
TPH-CWG - Aromatic >C12 - C16	µg/l	10	400	1600	490	890
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	52	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	600
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	7000	12000	14000	22000
VOCs						
1,3,5-Trimethylbenzene	µg/l	1	585	771	1740	2660
1,2,3-Trichloropropane	µg/l	1		< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	37000	24000	12000	91000
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics						
Gases						
Methane	mg/l	0.1	20	> 25	29	19

			Post Drill / Start Pump	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1012502	1024188	1038819	1043122	1047978
Sample Reference			B5	B5	B5	B5	B5
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			30/07/2018	15/08/2018	03/09/2018	10/09/2018	17/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.5	6.5	6.8	6.7	6.6
Sulphate as SO ₄	µg/l	45	11800	12200	48800	32800	18700
Sulphate as SO ₄	mg/l	0.045	11.8	12.2	48.8	32.8	18.7
Chloride	mg/l	0.15	780	620	650	750	900
Nitrate as N	mg/l	0.01	0.26	0.06	0.02	0.06	0.05
Nitrate as NO ₃	mg/l	0.05	1.15	0.27	0.11	0.27	0.21
Chemical Oxygen Demand (Total)	mg/l	2	3900	2000	1300	890	3300
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	820	U/S	570	360	1300
Redox Potential	mV	-800	30.8	16.1	188.6	-76.1	-67.80
Dissolved Oxygen	mg/l	1	6	8.8	1.1	1.5	2.4
Speciated PAHs							
Naphthalene	µg/l	0.01	45	47.8	165	51	16.8
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	6.1	12	1.4	0.16	8.1
Fe ²⁺	mg/l	0.2	3.23	2.72	< 0.20	< 0.20	8.00
Fe ³⁺	mg/l	0.2	2.82	9.1	1.42	< 0.20	< 0.20
Monoaromatics							
Benzene	µg/l	1	9	8.5	8.7	8.9	9.0
Toluene	µg/l	1	232	103	127	62.9	159
Ethylbenzene	µg/l	1	275	149	1010	225	272
p & m-xylene	µg/l	1	1030	905	< 1.0	747	1210
o-xylene	µg/l	1	1480	1120	1670	618	1540
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	1600	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	700	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	9	8.5	8.7	8.9	9.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	230	100	130	63	160
TPH-CWG - Aromatic >C8 - C10	µg/l	1	13000	8500	19000	7500	14000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	2900	3100	60000	7800	2600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	1800	1700	1700	4200	880
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	2300	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	18000	13000	81000	20000	18000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	1940	1250	3060	1170	2070
1,2,3-Trichloropropane	µg/l	1	< 1.0		< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	20000	71000	71000	17000	290000
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	26	22	> 25	32	19

Project:	Former Polycell Site						
Document Title:	Analysis summary sheet for B6		<div>John F Hunt</div> REMEDIATION				
Borehole Rationale:	2018 JFHR - remediation grid						
			Post Drill	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1009742	1024182	1038820	1043123	1049515
Sample Reference			B6	B6	B6	B6	B6
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			25/06/2018	14/08/2018	03/09/2018	10/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.7	6.5	6.6	6.5	6.5
Sulphate as SO ₄	µg/l	45	16000	13900	14000	12600	12600
Sulphate as SO ₄	mg/l	0.045	16	13.9	14	12.6	12.6
Chloride	mg/l	0.15	670	650	750	810	820
Nitrate as N	mg/l	0.01	0.06	0.13	0.06	0.05	0.11
Nitrate as NO ₃	mg/l	0.05	0.27	0.59	0.27	0.21	0.48
Chemical Oxygen Demand (Total)	mg/l	2	2900	1900	2100	2500	2200
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	940	510	660	1200	500
Redox Potential	mV	-800	52.6	30.2	189.5	-29.5	-22.60
Dissolved Oxygen	mg/l	1	7.4	2.2	1.8	2.6	1.7
Speciated PAHs							
Naphthalene	µg/l	0.01	14.6	67.1	32.8	38.2	84.4
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	1.9	3.8	2.2	1.1	5.9
Fe ²⁺	mg/l	0.2	< 0.20	1.29	0.28	1.04	2.12
Fe ³⁺	mg/l	0.2	1.89	2.52	1.92	< 0.20	3.76
Monoaromatics							
Benzene	µg/l	1	5.4	< 1.0	7.1	6.7	8.4
Toluene	µg/l	1	131	19.3	112	134	201
Ethylbenzene	µg/l	1	133	17.2	152	244	338
p & m-xylene	µg/l	1	770	99.1	801	981	772
o-xylene	µg/l	1	1110	180	1120	1110	964
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	1400
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	5.4	< 1.0	7.1	6.7	8.4
TPH-CWG - Aromatic >C7 - C8	µg/l	1	130	19	110	130	200
TPH-CWG - Aromatic >C8 - C10	µg/l	1	5700	980	8100	13000	9800
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1800	3600	4500	5600	17000
TPH-CWG - Aromatic >C12 - C16	µg/l	10	340	610	3300	300	8000
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	1400
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	8000	5200	16000	19000	35000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	947	114	1080	2520	< 1.0
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	11000	180000	210000	31000	11000
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	14	16	17	18	21

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for C2		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1011477	1024186	1038821	1043125	1047984
Sample Reference			C2	C2	C2	C2	C2
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			27/07/2018	15/08/2018	04/09/2018	10/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.5	7.1	7.1	7.3
Sulphate as SO ₄	µg/l	45	13900	16800	51600	39800	49400
Sulphate as SO ₄	mg/l	0.045	13.9	16.8	51.6	39.8	49.4
Chloride	mg/l	0.15	470	450	470	500	490
Nitrate as N	mg/l	0.01	0.14	0.05	0.1	0.08	0.06
Nitrate as NO ₃	mg/l	0.05	0.6	0.21	0.43	0.37	0.27
Chemical Oxygen Demand (Total)	mg/l	2	630	400	690	390	220
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	95	U/S	400	130	< 1.0
Redox Potential	mV	-800	38.7	24	177.6	-75.1	29.40
Dissolved Oxygen	mg/l	1	3.6	9.3	< 1.0	1.3	6.2
Speciated PAHs							
Naphthalene	µg/l	0.01	534	66.9	128	191	73.8
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	3	6.3	1.8	0.52	0.057
Fe ²⁺	mg/l	0.2	2.6	0.28	< 0.20	< 0.20	< 0.20
Fe ³⁺	mg/l	0.2	0.42	6.05	1.84	0.4	< 0.20
Monoaromatics							
Benzene	µg/l	1	6.1	7.7	4.4	2.3	3.5
Toluene	µg/l	1	119	48.9	99.5	32.2	46.9
Ethylbenzene	µg/l	1	292	201	537	160	191
p & m-xylene	µg/l	1	1540	1330	3650	1360	778
o-xylene	µg/l	1	1500	1330	3860	1350	819
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	27	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	830	< 10	4700	800	240
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	110	< 10	790	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	6.1	7.7	4.4	2.3	3.5
TPH-CWG - Aromatic >C7 - C8	µg/l	1	120	49	100	32	47
TPH-CWG - Aromatic >C8 - C10	µg/l	1	17000	16000	140000	29000	12000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	10000	1100	29000	19000	3300
TPH-CWG - Aromatic >C12 - C16	µg/l	10	1300	55	540	1700	250
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	970	< 10	5500	800	240
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	29000	17000	170000	50000	16000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	2770	2340	34500	5900	2160
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	7500	71000	15000	7100	10000
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	19	20	23	21	16

Project:	Former Polycell Site			
Document Title:	Analysis summary sheet for C3		<div>John F Hunt</div> REMEDICATION	
Borehole Rationale:	2018 JFHR - remediation grid			
			Post Drill	Start Monitoring
Lab Sample Number			1011478	1047985
Sample Reference			C3	C3
Sample Number			None Supplied	None Supplied
Depth (m)			None Supplied	None Supplied
Date Sampled			27/07/2018	18/09/2018
Time Taken			None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection		
General Inorganics				
pH	pH Units	N/A	6.4	6.8
Sulphate as SO ₄	µg/l	45	13200	29800
Sulphate as SO ₄	mg/l	0.045	13.2	29.8
Chloride	mg/l	0.15	690	490
Nitrate as N	mg/l	0.01	0.17	0.05
Nitrate as NO ₃	mg/l	0.05	0.77	0.21
Chemical Oxygen Demand (Total)	mg/l	2	760	730
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	440	< 1.0
Redox Potential	mV	-800	18.9	-80.80
Dissolved Oxygen	mg/l	1	3.6	4.7
Speciated PAHs				
Naphthalene	µg/l	0.01	32	52.4
Heavy Metals / Metalloids				
Iron (dissolved)	mg/l	0.004	1.4	11
Fe ²⁺	mg/l	0.2	1.3	10.5
Fe ³⁺	mg/l	0.2	< 0.20	0.37
Monoaromatics				
Benzene	µg/l	1	6.2	4.4
Toluene	µg/l	1	72.4	49.2
Ethylbenzene	µg/l	1	100	240
p & m-xylene	µg/l	1	666	1750
o-xylene	µg/l	1	1200	1810
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0
Petroleum Hydrocarbons				
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	210
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	720
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	6.2	4.4
TPH-CWG - Aromatic >C7 - C8	µg/l	1	72	49
TPH-CWG - Aromatic >C8 - C10	µg/l	1	6600	32000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	2200	3900
TPH-CWG - Aromatic >C12 - C16	µg/l	10	860	190
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	930
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	9700	36000
VOCs				
1,3,5-Trimethylbenzene	µg/l	1	901	5660
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0
Dichloromethane	µg/l	100	10000	75000
Carbon disulphide	µg/l	1	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0
Environmental Forensics				
Gases				
Methane	mg/l	0.1	23	13

Project:		Former Polycell Site					
Document Title:		Analysis summary sheet for C6		<div>John F Hunt</div> REMEDIATION			
Borehole Rationale:		2018 JFHR - remediation grid					
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1009743	1024184	1038822	1043938	1049516
Sample Reference			C6	C6	C6	C6	C6
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			26/07/2018	14/08/2018	03/09/2018	12/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.4	6.5	6.4	6.4
Sulphate as SO ₄	µg/l	45	8710	8370	10300	7150	8820
Sulphate as SO ₄	mg/l	0.045	8.7	8.4	10.3	7.2	8.8
Chloride	mg/l	0.15	680	720	740	800	810
Nitrate as N	mg/l	0.01	0.06	0.06	0.22	0.13	0.22
Nitrate as NO ₃	mg/l	0.05	0.27	0.27	0.97	0.59	0.96
Chemical Oxygen Demand (Total)	mg/l	2	1500	880	880	780	1200
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0	280	260	< 1.0	430
Redox Potential	mV	-800	66.4	23.3	193	33.6	-28.10
Dissolved Oxygen	mg/l	1	6.3	1.3	2.3	9.2	1.1
Speciated PAHs							
Naphthalene	µg/l	0.01	19.6	39.4	23.4	28.6	116
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	1.9	9.9	8.2	6.8	7.3
Fe ²⁺	mg/l	0.2	0.66	3.1	2.79	4.2	2.66
Fe ³⁺	mg/l	0.2	1.26	6.81	5.46	2.64	4.62
Monoaromatics							
Benzene	µg/l	1	5.3	7.7	7.5	10.8	4.4
Toluene	µg/l	1	68.4	95.9	138	83.5	68.6
Ethylbenzene	µg/l	1	89.1	144	220	140	149
p & m-xylene	µg/l	1	502	856	1420	857	775
o-xylene	µg/l	1	535	657	1970	1020	1590
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	2300
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	5.3	7.7	7.5	11	4.4
TPH-CWG - Aromatic >C7 - C8	µg/l	1	68	96	140	84	69
TPH-CWG - Aromatic >C8 - C10	µg/l	1	4300	5500	17000	6300	11000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1700	1900	6700	3100	31000
TPH-CWG - Aromatic >C12 - C16	µg/l	10	< 10	210	3000	1200	7200
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	2300
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	6100	7700	27000	11000	49000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	1030	684	2850	705	4570
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	9200	110000	250000	30000	4800
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	13	15	6	17	12

Project:	Former Polycell Site						
Document Title:	Analysis summary sheet for C7			<div>John F Hunt</div> REMEDIATION			
Borehole Rationale:	2018 JFHR - remediation grid						
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1009744	1024183	1038823	1043937	1049517
Sample Reference			C7	C7	C7	C7	C7
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			26/07/2018	14/08/2018	03/09/2018	12/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.4	6.6	6.4	6.5
Sulphate as SO ₄	µg/l	45	4130	5470	9290	7820	7760
Sulphate as SO ₄	mg/l	0.045	4.1	5.5	9.3	7.8	7.8
Chloride	mg/l	0.15	730	760	770	810	830
Nitrate as N	mg/l	0.01	0.05	0.04	0.1	0.11	0.17
Nitrate as NO ₃	mg/l	0.05	0.22	0.16	0.43	0.48	0.75
Chemical Oxygen Demand (Total)	mg/l	2	1300	930	970	730	990
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0	210	330	< 1.0	300
Redox Potential	mV	-800	74.3	37.9	196.3	42.9	-9.80
Dissolved Oxygen	mg/l	1	7.2	2.1	2.4	8.5	1.4
Speciated PAHs							
Naphthalene	µg/l	0.01	14.9	48.3	25.2	26.5	62.4
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	0.72	3.9	2.3	3.8	3.8
Fe ²⁺	mg/l	0.2	< 0.20	0.77	0.72	2.4	1.99
Fe ³⁺	mg/l	0.2	0.68	3.1	1.55	1.4	1.86
Monoaromatics							
Benzene	µg/l	1	16.9	7.3	7.7	16	6.1
Toluene	µg/l	1	182	87.5	128	148	102
Ethylbenzene	µg/l	1	137	139	173	271	189
p & m-xylene	µg/l	1	920	879	794	1690	766
o-xylene	µg/l	1	939	1040	1200	2140	991
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	17	7.3	7.7	16	6.1
TPH-CWG - Aromatic >C7 - C8	µg/l	1	180	88	130	150	100
TPH-CWG - Aromatic >C8 - C10	µg/l	1	6200	11000	11000	15000	7900
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1700	3800	5800	3000	8600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	50	68	890	720	3300
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	8200	15000	17000	19000	20000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	923	1700	1590	2110	1750
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	33000	140000	310000	36000	9300
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	17	18	7.2	22	18

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for D2		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1009745	1023053	1038824	1043124	1047983
Sample Reference			D2	D2	D2	D2	D2
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			26/07/2018	13/08/2018	04/09/2018	10/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.8	6.6	7	6.8	6.8
Sulphate as SO ₄	µg/l	45	8160	17500	41700	17200	40800
Sulphate as SO ₄	mg/l	0.045	8.2	17.5	41.7	17.2	40.8
Chloride	mg/l	0.15	380	480	440	420	390
Nitrate as N	mg/l	0.01	< 0.01	0.05	0.07	0.07	0.06
Nitrate as NO ₃	mg/l	0.05	< 0.05	0.21	0.32	0.32	0.27
Chemical Oxygen Demand (Total)	mg/l	2	420	180	390	240	290
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0	46	120	46	< 1.0
Redox Potential	mV	-800	91.2	33.9	166.9	-31.4	-32.80
Dissolved Oxygen	mg/l	1	7	1.1	1.5	1.3	5.4
Speciated PAHs							
Naphthalene	µg/l	0.01	13.4	74.9	12.1	51.4	67.7
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	0.051	1.8	0.16	0.048	1.4
Fe ²⁺	mg/l	0.2	< 0.20	1.77	< 0.20	< 0.20	1.25
Fe ³⁺	mg/l	0.2	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Monoaromatics							
Benzene	µg/l	1	10.1	16.5	10.7	8.9	12.2
Toluene	µg/l	1	33.5	40.4	41.7	36.6	32.7
Ethylbenzene	µg/l	1	79.1	157	183	117	163
p & m-xylene	µg/l	1	483	1030	859	936	917
o-xylene	µg/l	1	491	854	863	758	482
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	77	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	310
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	10	17	11	8.9	12
TPH-CWG - Aromatic >C7 - C8	µg/l	1	34	40	42	37	33
TPH-CWG - Aromatic >C8 - C10	µg/l	1	4800	20000	14000	9400	9300
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1300	8000	5600	6800	3800
TPH-CWG - Aromatic >C12 - C16	µg/l	10	86	630	990	1600	250
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	77	< 10	< 10	310
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	6200	28000	20000	18000	13000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	1020	3860	2130	1510	1610
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	9900	27000	130000	18000	35000
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	18	14	> 25	25	14

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for D4		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1009746	1023052	1038829	1043940	1049518
Sample Reference			D4	D4	D4	D4	D4
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			26/07/2018	13/08/2018	04/09/2018	12/09/2018	19/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.6	6.6	6.9	6.8	6.7
Sulphate as SO ₄	µg/l	45	10700	15200	37500	28200	24300
Sulphate as SO ₄	mg/l	0.045	10.7	15.2	37.5	28.2	24.3
Chloride	mg/l	0.15	520	510	410	410	640
Nitrate as N	mg/l	0.01	< 0.01	0.08	0.11	0.08	0.08
Nitrate as NO ₃	mg/l	0.05	< 0.05	0.38	0.48	0.37	0.37
Chemical Oxygen Demand (Total)	mg/l	2	440	160	160	170	420
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0	52	84	< 1.0	U/S
Redox Potential	mV	-800	66.4	22.1	157.5	25.3	-69.90
Dissolved Oxygen	mg/l	1	5.5	1.9	2.3	6.8	4.0
Speciated PAHs							
Naphthalene	µg/l	0.01	13.9	35.3	48.5	40.7	68.7
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	2.1	5.4	8.7	7.2	12
Fe ²⁺	mg/l	0.2	1.27	5.4	1.08	1.7	1.86
Fe ³⁺	mg/l	0.2	0.83	< 0.20	7.63	5.52	10.6
Monoaromatics							
Benzene	µg/l	1	5.1	3.2	3.2	2.1	1.7
Toluene	µg/l	1	34.5	28	67	20.1	23.6
Ethylbenzene	µg/l	1	80.5	55.7	171	78.3	112
p & m-xylene	µg/l	1	523	473	1050	562	844
o-xylene	µg/l	1	738	730	1390	648	1080
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	190
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	5.1	3.2	3.2	2.1	1.7
TPH-CWG - Aromatic >C7 - C8	µg/l	1	35	28	67	20	24
TPH-CWG - Aromatic >C8 - C10	µg/l	1	5500	8300	13000	9000	12000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	1100	3600	5700	4100	6100
TPH-CWG - Aromatic >C12 - C16	µg/l	10	200	750	650	450	1400
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	190
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	6900	13000	19000	14000	20000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	1080	1600	2070	1350	5320
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	8400	12000	15000	6800	3500
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	19	18	24	20	17

Project:			Former Polycell Site				
Document Title:			Analysis summary sheet for D5		<div>John F Hunt</div> REMEDIATION		
Borehole Rationale:			2018 JFHR - remediation grid				
			Post Drill / Commission	Phase 1 Pump	Phase 2 Pump	Phase 2 Pump	Start Monitoring
Lab Sample Number			1009747	1023051	1038825	1043939	1049519
Sample Reference			D5	D5	D5	D5	D5
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			26/07/2018	13/08/2018	Deviating	12/09/2018	18/09/2018
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection					
General Inorganics							
pH	pH Units	N/A	6.8	6.5	6.7	6.7	6.6
Sulphate as SO ₄	µg/l	45	15200	11100	24900	11800	9960
Sulphate as SO ₄	mg/l	0.045	15.2	11.1	24.9	11.8	10.0
Chloride	mg/l	0.15	610	710	570	460	610
Nitrate as N	mg/l	0.01	0.02	0.1	0.13	0.1	0.11
Nitrate as NO ₃	mg/l	0.05	0.11	0.43	0.59	0.43	0.48
Chemical Oxygen Demand (Total)	mg/l	2	430	360	420	180	420
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	< 1.0	49	160	< 1.0	100
Redox Potential	mV	-800	68.3	18.9	179.9	34.6	-57.40
Dissolved Oxygen	mg/l	1	5.9	6.2	2.3	8.2	1.5
Speciated PAHs							
Naphthalene	µg/l	0.01	6.24	24.3	41.7	25.1	41.5
Heavy Metals / Metalloids							
Iron (dissolved)	mg/l	0.004	0.65	6.4	8.2	4.1	8.6
Fe ²⁺	mg/l	0.2	0.24	6.2	1.17	1.4	1.92
Fe ³⁺	mg/l	0.2	0.41	0.22	6.99	2.67	6.66
Monoaromatics							
Benzene	µg/l	1	4.1	6.1	13.5	6.6	2.7
Toluene	µg/l	1	28.3	26.1	91.4	27.7	28.3
Ethylbenzene	µg/l	1	48.8	52.2	258	85.9	70.0
p & m-xylene	µg/l	1	291	385	1530	558	441
o-xylene	µg/l	1	336	529	1870	647	511
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	< 10	< 10	< 10	< 10	140
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	4.1	6.1	14	6.6	2.7
TPH-CWG - Aromatic >C7 - C8	µg/l	1	28	26	91	28	28
TPH-CWG - Aromatic >C8 - C10	µg/l	1	2900	4800	22000	8100	4200
TPH-CWG - Aromatic >C10 - C12	µg/l	10	800	2600	8900	2400	10000
TPH-CWG - Aromatic >C12 - C16	µg/l	10	97	760	1400	850	2400
TPH-CWG - Aromatic >C16 - C21	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	< 10	< 10	< 10	< 10	140
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	3800	8300	32000	11000	17000
VOCs							
1,3,5-Trimethylbenzene	µg/l	1	504	797	3870	1240	814
1,2,3-Trichloropropane	µg/l	1			< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	9400	12000	56000	14000	3800
Carbon disulphide	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Environmental Forensics							
Gases							
Methane	mg/l	0.1	17	21	21	17	23

Wheat Quarter Limited

Remediation Verification and Long-term Monitoring Plan (Southern Area)
Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

Groundwater

1st June 2018

**Jennifer Russell**

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Analytical Report Number : 18-88733

Replaces Analytical Report Number : 18-88733, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	12/06/2018
Your job number:		Samples instructed on:	12/06/2018
Your order number:	R-1339-7909-1005	Analysis completed by:	06/07/2018
Report Issue Number:	2	Report issued on:	06/07/2018
Samples Analysed:	5 water samples		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-88733

Project / Site name: Former Polycell Site

Your Order No: R-1339-7909-1005

Lab Sample Number				980101	980102	980103	980104	980105
Sample Reference				BH01-17	BH03-17	BH02-17	BH06d-17	BH05d-17
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				11/06/2018	11/06/2018	11/06/2018	11/06/2018	12/06/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

Sulphate as SO ₄	µg/l	45	ISO 17025	11000	263000	9120	6070	32200
Sulphate as SO ₄	mg/l	0.045	ISO 17025	11.0	263	9.1	6.1	32.2
Chloride	mg/l	0.15	ISO 17025	400	260	1300	130	180
Nitrate as N	mg/l	0.01	ISO 17025	0.13	0.10	0.08	0.11	0.12
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.58	0.42	0.37	0.48	0.53
Redox Potential	mV	-800	NONE	9.40	35.10	21.40	15.10	23.90
Dissolved Oxygen	mg/l	1	NONE	1.5	1.7	2.0	1.9	3.1

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	62.3	5.69	11.7	2.11	1.30
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	21	3.6	20	4.6	3.6
Fe ²⁺	mg/l	0.2	NONE	14.9	3.59	6.35	4.51	3.55
Fe ³⁺	mg/l	0.2	NONE	6.15	< 0.20	13.9	< 0.20	< 0.20

Monoaromatics

Benzene	µg/l	1	ISO 17025	6.5	< 1.0	< 1.0	1.5	< 1.0
Toluene	µg/l	1	ISO 17025	63.9	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	119	5.1	25.9	< 1.0	2.2
p & m-xylene	µg/l	1	ISO 17025	760	299	223	4.5	2.5
o-xylene	µg/l	1	ISO 17025	668	16.2	202	< 1.0	< 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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	6.5	< 1.0	< 1.0	1.5	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	64	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	4700	1500	3400	70	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	7300	2100	1600	300	130
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	860	< 10	51	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >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 - C35)	µg/l	10	NONE	13000	3600	5000	370	130



Analytical Report Number: 18-88733

Project / Site name: Former Polycell Site

Your Order No: R-1339-7909-1005

Lab Sample Number				980101	980102	980103	980104	980105
Sample Reference				BH01-17	BH03-17	BH02-17	BH06d-17	BH05d-17
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				11/06/2018	11/06/2018	11/06/2018	11/06/2018	12/06/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	665	270	564	31.3	11.9
Dichloromethane	µg/l	100	NONE	< 100	< 100	40000	< 100	< 100

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	17	0.9	0.7	4.4	4.8
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-88733

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH01-17		W	18-88733	980101	c	Dissolved Oxygen in water	L086-PL	c
BH02-17		W	18-88733	980103	c	Dissolved Oxygen in water	L086-PL	c
BH03-17		W	18-88733	980102	c	Dissolved Oxygen in water	L086-PL	c
BH06d-17		W	18-88733	980104	c	Dissolved Oxygen in water	L086-PL	c

Wheat Quarter Limited

Remediation Verification and Long-term Monitoring Plan (Southern Area)
Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

Groundwater

2nd July 2018



Jennifer Russell

John F. Hunt Remediation UK
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t: [REDACTED]
e: [REDACTED]

t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-93676

Project / Site name:	Former Polycell Site	Samples received on:	24/07/2018
Your job number:		Samples instructed on:	24/07/2018
Your order number:	12-1339-7909-1005	Analysis completed by:	31/07/2018
Report Issue Number:	1	Report issued on:	31/07/2018
Samples Analysed:	3 water samples		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-93676

Project / Site name: Former Polycell Site

Your Order No: 12-1339-7909-1005

Lab Sample Number				1007598	1007599	1007600		
Sample Reference				BH06d-17	BH05d-17	BH03-17		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				23/07/2018	23/07/2018	23/07/2018		
Time Taken				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	7.1	7.0	6.8		
Sulphate as SO ₄	µg/l	45	ISO 17025	1860	93700	232000		
Sulphate as SO ₄	mg/l	0.045	ISO 17025	1.9	93.7	232		
Chloride	mg/l	0.15	ISO 17025	100	68	280		
Nitrate as N	mg/l	0.01	ISO 17025	0.05	3.52	0.07		
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.22	15.6	0.33		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	15	41	44		
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	1.7	< 1.0	1.5		
Redox Potential	mV	-800	NONE	62.40	117.20	-62.60		
Dissolved Oxygen	mg/l	1	NONE	7.6	7.2	3.5		

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.82	< 0.01	19.6		
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	1.6	0.018	0.005		
Fe ²⁺	mg/l	0.2	NONE	< 0.20	< 0.20	< 0.20		
Fe ³⁺	mg/l	0.2	NONE	1.59	< 0.20	< 0.20		

Monoaromatics

Benzene	µg/l	1	ISO 17025	2.2	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	5.1	< 1.0	87.9		
p & m-xylene	µg/l	1	ISO 17025	2.4	< 1.0	376		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	6.2		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	2.2	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	39	< 1.0	4100		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	54	< 10	920		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	64	< 10	100		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	160	< 10	5100		



Analytical Report Number: 18-93676

Project / Site name: Former Polycell Site

Your Order No: 12-1339-7909-1005

Lab Sample Number				1007598	1007599	1007600		
Sample Reference				BH06d-17	BH05d-17	BH03-17		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				23/07/2018	23/07/2018	23/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	4.7	< 1.0	870		
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100		
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	< 0.1	< 0.1	0.2		
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-93676

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE



Analytical Report Number : 18-93676

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH03-17		W	18-93676	1007600	c	Biological oxygen demand (total) of water	L086A-UK	c
BH03-17		W	18-93676	1007600	c	Dissolved Oxygen in water	L086-PL	c
BH05d-17		W	18-93676	1007599	c	Biological oxygen demand (total) of water	L086A-UK	c
BH05d-17		W	18-93676	1007599	c	Dissolved Oxygen in water	L086-PL	c
BH06d-17		W	18-93676	1007598	c	Biological oxygen demand (total) of water	L086A-UK	c
BH06d-17		W	18-93676	1007598	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t: [REDACTED]
e: [REDACTED]

t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-93862

Project / Site name:	Former Polycell Site	Samples received on:	25/07/2018
Your job number:		Samples instructed on:	25/07/2018
Your order number:		Analysis completed by:	01/08/2018
Report Issue Number:	1	Report issued on:	01/08/2018
Samples Analysed:	3 water samples		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-93862

Project / Site name: Former Polycell Site

Lab Sample Number				1008596	1008597	1008598		
Sample Reference				BH02-17	BH31/RW31	A6		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				25/07/2018	25/07/2018	25/07/2018		
Time Taken				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	6.6	6.7	6.6		
Sulphate as SO ₄	µg/l	45	ISO 17025	80200	10900	18500		
Sulphate as SO ₄	mg/l	0.045	ISO 17025	80.2	10.9	18.5		
Chloride	mg/l	0.15	ISO 17025	400	200	330		
Nitrate as N	mg/l	0.01	ISO 17025	0.04	< 0.01	< 0.01		
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.16	< 0.05	< 0.05		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	110	150	290		
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	1.2	< 1.0	< 1.0		
Redox Potential	mV	-800	NONE	-33.20	-50.00	-35.60		
Dissolved Oxygen	mg/l	1	NONE	3.0	2.0	3.8		

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	5.38	12.9	31.2		
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	4.9	2.3	2.9		
Fe ²⁺	mg/l	0.2	NONE	< 0.20	< 0.20	< 0.20		
Fe ³⁺	mg/l	0.2	NONE	4.78	2.23	2.95		

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	19.8	31.4		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	49.3		
p & m-xylene	µg/l	1	ISO 17025	29.5	58.9	1090		
o-xylene	µg/l	1	ISO 17025	39.8	1310	1670		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	20	31		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	910	2100	6800		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1100	1200	1300		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	25	120	100		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	2100	3400	8200		



Analytical Report Number: 18-93862

Project / Site name: Former Polycell Site

Lab Sample Number				1008596	1008597	1008598		
Sample Reference				BH02-17	BH31/RW31	A6		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				25/07/2018	25/07/2018	25/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100		
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	0.4	7.7	2.1		
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-93862

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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



Analytical Report Number : 18-93862

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.



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t:
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t:
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Analytical Report Number : 18-94058

Project / Site name: Former Polycell Site

Samples received on: 26/07/2018

Your job number:

Samples instructed on: 26/07/2018

Your order number:

Analysis completed by: 03/08/2018

Report Issue Number: 1

Report issued on: 03/08/2018

Samples Analysed: 6 water samples

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-94058

Project / Site name: Former Polycell Site

Lab Sample Number				1009742	1009743	1009744	1009745	1009746
Sample Reference				B6	C6	C7	D2	D4
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				25/06/2018	26/07/2018	26/07/2018	26/07/2018	26/07/2018
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	6.7	6.6	6.6	6.8	6.6
Sulphate as SO ₄	µg/l	45	ISO 17025	16000	8710	4130	8160	10700
Sulphate as SO ₄	mg/l	0.045	ISO 17025	16.0	8.7	4.1	8.2	10.7
Chloride	mg/l	0.15	ISO 17025	670	680	730	380	520
Nitrate as N	mg/l	0.01	ISO 17025	0.06	0.06	0.05	< 0.01	< 0.01
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.27	0.27	0.22	< 0.05	< 0.05
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	2900	1500	1300	420	440
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	940	-	-	-	-
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Redox Potential	mV	-800	NONE	52.60	66.40	74.30	91.20	66.40
Dissolved Oxygen	mg/l	1	NONE	7.4	6.3	7.2	7.0	5.5

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	14.6	19.6	14.9	13.4	13.9
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	1.9	1.9	0.72	0.051	2.1
Fe ²⁺	mg/l	0.2	NONE	< 0.20	0.66	< 0.20	< 0.20	1.27
Fe ³⁺	mg/l	0.2	NONE	1.89	1.26	0.68	< 0.20	0.83

Monoaromatics

Benzene	µg/l	1	ISO 17025	5.4	5.3	16.9	10.1	5.1
Toluene	µg/l	1	ISO 17025	131	68.4	182	33.5	34.5
Ethylbenzene	µg/l	1	ISO 17025	133	89.1	137	79.1	80.5
p & m-xylene	µg/l	1	ISO 17025	770	502	920	483	523
o-xylene	µg/l	1	ISO 17025	1110	535	939	491	738
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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	5.4	5.3	17	10	5.1
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	130	68	180	34	35
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	5700	4300	6200	4800	5500
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1800	1700	1700	1300	1100
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	340	< 10	50	86	200
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >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 - C35)	µg/l	10	NONE	8000	6100	8200	6200	6900



Analytical Report Number: 18-94058

Project / Site name: Former Polycell Site

Lab Sample Number				1009742	1009743	1009744	1009745	1009746
Sample Reference				B6	C6	C7	D2	D4
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				25/06/2018	26/07/2018	26/07/2018	26/07/2018	26/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	947	1030	923	1020	1080
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	11000	9200	33000	9900	8400
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	14	13	17	18	19
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-94058

Project / Site name: Former Polycell Site

Lab Sample Number				1009747				
Sample Reference				D5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				26/07/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.8				
Sulphate as SO ₄	µg/l	45	ISO 17025	15200				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	15.2				
Chloride	mg/l	0.15	ISO 17025	610				
Nitrate as N	mg/l	0.01	ISO 17025	0.02				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.11				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	430				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	-				
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	< 1.0				
Redox Potential	mV	-800	NONE	68.30				
Dissolved Oxygen	mg/l	1	NONE	5.9				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	6.24				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.65				
Fe ²⁺	mg/l	0.2	NONE	0.24				
Fe ³⁺	mg/l	0.2	NONE	0.41				

Monoaromatics

Benzene	µg/l	1	ISO 17025	4.1				
Toluene	µg/l	1	ISO 17025	28.3				
Ethylbenzene	µg/l	1	ISO 17025	48.8				
p & m-xylene	µg/l	1	ISO 17025	291				
o-xylene	µg/l	1	ISO 17025	336				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	4.1				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	28				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	2900				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	800				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	97				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	3800				



Analytical Report Number: 18-94058

Project / Site name: Former Polycell Site

Lab Sample Number				1009747				
Sample Reference				D5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				26/07/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	504				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	9400				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	17				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-94058

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-PL	W	ISO 17025
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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



Analytical Report Number : 18-94058

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
B6		W	18-94058	1009742	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
B6		W	18-94058	1009742	c	Biological oxygen demand (total) of water	L086-PL	c
B6		W	18-94058	1009742	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
B6		W	18-94058	1009742	c	Chloride in water	L082-PL	c
B6		W	18-94058	1009742	c	Dissolved Oxygen in water	L086-PL	c
B6		W	18-94058	1009742	c	Iron (II) and Iron (III) in water	L079-PL	c
B6		W	18-94058	1009742	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
B6		W	18-94058	1009742	c	Nitrate as N in water	L078-PL	c
B6		W	18-94058	1009742	c	Nitrate in water	L078-PL	c
B6		W	18-94058	1009742	c	Redox Potential of waters	L084-PL	c
B6		W	18-94058	1009742	c	Speciated EPA-16 PAHs in water	L102B-PL	c
B6		W	18-94058	1009742	c	Sulphate in water	L039-PL	c
B6		W	18-94058	1009742	c	TO - Gases C1-C4		c
B6		W	18-94058	1009742	c	TPHCWG (Waters)	L070-PL	c
B6		W	18-94058	1009742	c	Volatile organic compounds in water	L073B-PL	c
B6		W	18-94058	1009742	c	Volatile organic compounds in water extended	L073B-PL	c
B6		W	18-94058	1009742	c	pH at 20oC in water (automated)	L099-PL	c



Jennifer Russell

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t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-94400

Project / Site name:	Former Polycell Site	Samples received on:	30/07/2018
Your job number:		Samples instructed on:	30/07/2018
Your order number:	R 1339 7907 1005	Analysis completed by:	07/08/2018
Report Issue Number:	1	Report issued on:	07/08/2018
Samples Analysed:	6 water samples		

Signed: [REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-94400

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1011476	1011477	1011478	1011479	1011480
Sample Reference				A2	C2	C3	Z5	BH1-17
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				27/07/2018	27/07/2018	27/07/2018	27/07/2018	27/07/2018
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	6.6	6.6	6.4	6.6	6.3
Sulphate as SO ₄	µg/l	45	ISO 17025	6960	13900	13200	27800	15000
Sulphate as SO ₄	mg/l	0.045	ISO 17025	7.0	13.9	13.2	27.8	15.0
Chloride	mg/l	0.15	ISO 17025	580	470	690	320	570
Nitrate as N	mg/l	0.01	ISO 17025	0.15	0.14	0.17	0.11	0.17
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.66	0.60	0.77	0.49	0.77
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	74	630	760	150	3200
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	59	95	440	70	830
Redox Potential	mV	-800	NONE	89.60	38.70	18.90	-13.90	21.30
Dissolved Oxygen	mg/l	1	NONE	4.3	3.6	3.6	3.9	2.4

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	31.1	534	32.0	28.6	650
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	4.3	3.0	1.4	5.5	0.017
Fe ²⁺	mg/l	0.2	NONE	2.86	2.60	1.30	3.17	< 0.20
Fe ³⁺	mg/l	0.2	NONE	1.47	0.42	< 0.20	2.30	< 0.20

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	6.1	6.2	1.8	11.7
Toluene	µg/l	1	ISO 17025	24.0	119	72.4	104	182
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	292	100	166	408
p & m-xylene	µg/l	1	ISO 17025	990	1540	666	823	9190
o-xylene	µg/l	1	ISO 17025	1120	1500	1200	1330	11200
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	27	< 1.0	< 1.0	83
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	830	< 10	< 10	66
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	110	< 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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	6.1	6.2	1.8	12
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	24	120	72	100	180
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6200	17000	6600	7200	85000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1400	10000	2200	2100	7600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1100	1300	860	2100	4000
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	140	190
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	970	< 10	< 10	150
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	8600	29000	9700	12000	97000



Analytical Report Number: 18-94400

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1011476	1011477	1011478	1011479	1011480
Sample Reference				A2	C2	C3	Z5	BH1-17
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				27/07/2018	27/07/2018	27/07/2018	27/07/2018	27/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	971	2770	901	1180	19200
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	630	7500	10000	200	11000
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	13	19	23	2.8	24
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-94400

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1011481				
Sample Reference				BH 36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				27/07/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.7				
Sulphate as SO ₄	µg/l	45	ISO 17025	30100				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	30.1				
Chloride	mg/l	0.15	ISO 17025	230				
Nitrate as N	mg/l	0.01	ISO 17025	0.10				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.44				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	300				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	210				
Redox Potential	mV	-800	NONE	58.40				
Dissolved Oxygen	mg/l	1	NONE	3.0				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	149				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	1.2				
Fe ²⁺	mg/l	0.2	NONE	1.04				
Fe ³⁺	mg/l	0.2	NONE	< 0.20				

Monoaromatics

Benzene	µg/l	1	ISO 17025	4.7				
Toluene	µg/l	1	ISO 17025	46.9				
Ethylbenzene	µg/l	1	ISO 17025	86.3				
p & m-xylene	µg/l	1	ISO 17025	2230				
o-xylene	µg/l	1	ISO 17025	1210				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	8.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	450				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	4.7				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	47				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	23000				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	9100				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1100				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	460				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	33000				



Analytical Report Number: 18-94400

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1011481				
Sample Reference				BH 36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				27/07/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	4760				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	5400				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	13				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-94400

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-94400

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A2		W	18-94400	1011476	c	Biological oxygen demand (total) of water	L086-PL	c
A2		W	18-94400	1011476	c	Dissolved Oxygen in water	L086-PL	c
A2		W	18-94400	1011476	c	Iron (II) and Iron (III) in water	L079-PL	c
A2		W	18-94400	1011476	c	Redox Potential of waters	L084-PL	c
A2		W	18-94400	1011476	c	pH at 20oC in water (automated)	L099-PL	c
BH 36		W	18-94400	1011481	c	Biological oxygen demand (total) of water	L086-PL	c
BH 36		W	18-94400	1011481	c	Dissolved Oxygen in water	L086-PL	c
BH 36		W	18-94400	1011481	c	Iron (II) and Iron (III) in water	L079-PL	c
BH 36		W	18-94400	1011481	c	Redox Potential of waters	L084-PL	c
BH 36		W	18-94400	1011481	c	pH at 20oC in water (automated)	L099-PL	c
BH1-17		W	18-94400	1011480	c	Biological oxygen demand (total) of water	L086-PL	c
BH1-17		W	18-94400	1011480	c	Dissolved Oxygen in water	L086-PL	c
BH1-17		W	18-94400	1011480	c	Iron (II) and Iron (III) in water	L079-PL	c
BH1-17		W	18-94400	1011480	c	Redox Potential of waters	L084-PL	c
BH1-17		W	18-94400	1011480	c	pH at 20oC in water (automated)	L099-PL	c
C2		W	18-94400	1011477	c	Biological oxygen demand (total) of water	L086-PL	c
C2		W	18-94400	1011477	c	Dissolved Oxygen in water	L086-PL	c
C2		W	18-94400	1011477	c	Iron (II) and Iron (III) in water	L079-PL	c
C2		W	18-94400	1011477	c	Redox Potential of waters	L084-PL	c
C2		W	18-94400	1011477	c	pH at 20oC in water (automated)	L099-PL	c
C3		W	18-94400	1011478	c	Biological oxygen demand (total) of water	L086-PL	c
C3		W	18-94400	1011478	c	Dissolved Oxygen in water	L086-PL	c
C3		W	18-94400	1011478	c	Iron (II) and Iron (III) in water	L079-PL	c
C3		W	18-94400	1011478	c	Redox Potential of waters	L084-PL	c
C3		W	18-94400	1011478	c	pH at 20oC in water (automated)	L099-PL	c
Z5		W	18-94400	1011479	c	Biological oxygen demand (total) of water	L086-PL	c
Z5		W	18-94400	1011479	c	Dissolved Oxygen in water	L086-PL	c
Z5		W	18-94400	1011479	c	Iron (II) and Iron (III) in water	L079-PL	c
Z5		W	18-94400	1011479	c	Redox Potential of waters	L084-PL	c
Z5		W	18-94400	1011479	c	pH at 20oC in water (automated)	L099-PL	c



Jennifer Russell

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Analytical Report Number : 18-94561

Project / Site name:	Former Polycell Site	Samples received on:	31/07/2018
Your job number:		Samples instructed on:	31/07/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	08/08/2018
Report Issue Number:	1	Report issued on:	08/08/2018
Samples Analysed:	3 water samples		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-94561

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1012501	1012502	1012503		
Sample Reference				B3	B5	A3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				30/07/2018	30/07/2018	30/07/2018		
Time Taken				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	6.5	6.5	6.8		
Sulphate as SO ₄	µg/l	45	ISO 17025	15500	11800	8300		
Sulphate as SO ₄	mg/l	0.045	ISO 17025	15.5	11.8	8.3		
Chloride	mg/l	0.15	ISO 17025	350	780	180		
Nitrate as N	mg/l	0.01	ISO 17025	0.17	0.26	0.14		
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.77	1.15	0.60		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	5200	3900	370		
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	730	820	110		
Redox Potential	mV	-800	NONE	45.50	30.80	69.00		
Dissolved Oxygen	mg/l	1	NONE	6.0	6.0	6.2		

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	67.7	45.0	91.4		
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	2.6	6.1	0.079		
Fe ²⁺	mg/l	0.2	NONE	2.62	3.23	< 0.20		
Fe ³⁺	mg/l	0.2	NONE	< 0.20	2.82	< 0.20		

Monoaromatics

Benzene	µg/l	1	ISO 17025	15.7	9.0	5.5		
Toluene	µg/l	1	ISO 17025	152	232	187		
Ethylbenzene	µg/l	1	ISO 17025	193	275	233		
p & m-xylene	µg/l	1	ISO 17025	847	1030	1730		
o-xylene	µg/l	1	ISO 17025	1060	1480	2500		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	16	9.0	5.5		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	150	230	190		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	8000	13000	15000		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	3700	2900	1400		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	4000	1800	900		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	97	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	16000	18000	18000		



Analytical Report Number: 18-94561

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1012501	1012502	1012503		
Sample Reference				B3	B5	A3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				30/07/2018	30/07/2018	30/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1270	1940	2260		
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dichloromethane	µg/l	100	NONE	18000	20000	660		
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	25	26	8.6		
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-94561

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-94561

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A3		W	18-94561	1012503	c	Biological oxygen demand (total) of water	L086-PL	c
A3		W	18-94561	1012503	c	Dissolved Oxygen in water	L086-PL	c
B3		W	18-94561	1012501	c	Biological oxygen demand (total) of water	L086-PL	c
B3		W	18-94561	1012501	c	Dissolved Oxygen in water	L086-PL	c
B5		W	18-94561	1012502	c	Biological oxygen demand (total) of water	L086-PL	c
B5		W	18-94561	1012502	c	Dissolved Oxygen in water	L086-PL	c

Wheat Quarter Limited

Remediation Verification and Long-term Monitoring Plan (Southern Area)
Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

Groundwater

3rd August 2018



Jennifer Russell

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t:
e:

t:
f:
e:

Analytical Report Number : 18-95815

Project / Site name: Former Polycell Site

Samples received on: 09/08/2018

Your job number:

Samples instructed on: 09/08/2018

Your order number: R-1339-7907-1005

Analysis completed by: 17/08/2018

Report Issue Number: 1

Report issued on: 17/08/2018

Samples Analysed: 4 water samples

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-95815

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1019838	1019839	1019840	1019841	
Sample Reference				BH02-17	BH03-17	BH06d-17	BH05d-17	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				08/08/2018	08/08/2018	08/08/2018	08/08/2018	
Time Taken				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	6.5	6.7	6.9	7.0	
Sulphate as SO ₄	µg/l	45	ISO 17025	41400	197000	2490	92000	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	41.4	197	2.5	92.0	
Chloride	mg/l	0.15	ISO 17025	630	340	110	75	
Nitrate as N	mg/l	0.01	ISO 17025	0.05	0.04	0.07	2.76	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.22	0.16	0.33	12.2	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	170	40	14	12	
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	19	2.5	1.6	< 1.0	
Redox Potential	mV	-800	NONE	4.50	18.90	62.40	90.90	
Dissolved Oxygen	mg/l	1	NONE	6.8	5.6	4.7	8.3	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	6.49	12.0	1.17	< 0.01	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	10	2.9	0.92	0.005	
Fe ²⁺	mg/l	0.2	NONE	8.80	2.80	0.90	< 0.20	
Fe ³⁺	mg/l	0.2	NONE	1.38	< 0.20	< 0.20	< 0.20	

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	1.6	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	8.9	30.8	< 1.0	< 1.0	
o-xylene	µg/l	1	ISO 17025	8.1	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 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	
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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	420	370	6.1	< 1.0	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	420	160	43	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >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 - C35)	µg/l	10	NONE	840	530	49	< 10	



Analytical Report Number: 18-95815

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1019838	1019839	1019840	1019841	
Sample Reference				BH02-17	BH03-17	BH06d-17	BH05d-17	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				08/08/2018	08/08/2018	08/08/2018	08/08/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	110	81.2	6.1	< 1.0	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	4900	< 100	< 100	< 100	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	0.5	1.5	6.7	0.8	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-95815

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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



Analytical Report Number : 18-95815

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02-17		W	18-95815	1019838	c	Biological oxygen demand (total) of water	L086-PL	c
BH02-17		W	18-95815	1019838	c	Dissolved Oxygen in water	L086-PL	c
BH03-17		W	18-95815	1019839	c	Biological oxygen demand (total) of water	L086-PL	c
BH03-17		W	18-95815	1019839	c	Dissolved Oxygen in water	L086-PL	c
BH05d-17		W	18-95815	1019841	c	Biological oxygen demand (total) of water	L086-PL	c
BH05d-17		W	18-95815	1019841	c	Dissolved Oxygen in water	L086-PL	c
BH06d-17		W	18-95815	1019840	c	Biological oxygen demand (total) of water	L086-PL	c
BH06d-17		W	18-95815	1019840	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-96037

Project / Site name: Former Polycell Site

Samples received on: 10/08/2018

Your job number:

Samples instructed on: 10/08/2018

Your order number: R-1339-7907-1005

Analysis completed by: 20/08/2018

Report Issue Number: 1

Report issued on: 20/08/2018

Samples Analysed: 1 water sample

Signed: [REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-96037

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1021246				
Sample Reference				BH01-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				09/08/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.6				
Sulphate as SO ₄	µg/l	45	ISO 17025	12500				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	12.5				
Chloride	mg/l	0.15	ISO 17025	420				
Nitrate as N	mg/l	0.01	ISO 17025	0.19				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.82				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	1200				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	440				
Redox Potential	mV	-800	NONE	17.60				
Dissolved Oxygen	mg/l	1	NONE	1.2				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	31.6				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	2.1				
Fe ²⁺	mg/l	0.2	NONE	2.10				
Fe ³⁺	mg/l	0.2	NONE	< 0.20				

Monoaromatics

Benzene	µg/l	1	ISO 17025	12.9				
Toluene	µg/l	1	ISO 17025	192				
Ethylbenzene	µg/l	1	ISO 17025	352				
p & m-xylene	µg/l	1	ISO 17025	2060				
o-xylene	µg/l	1	ISO 17025	2080				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	13				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	190				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	16000				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	10000				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1200				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	28000				



Analytical Report Number: 18-96037

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1021246				
Sample Reference				BH01-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				09/08/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	2340				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	8900				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	33				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-96037

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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



Analytical Report Number : 18-96037

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH01-17		W	18-96037	1021246	c	Biological oxygen demand (total) of water	L086-PL	c
BH01-17		W	18-96037	1021246	c	Dissolved Oxygen in water	L086-PL	c
BH01-17		W	18-96037	1021246	c	Iron (II) and Iron (III) in water	L079-PL	c
BH01-17		W	18-96037	1021246	c	Redox Potential of waters	L084-PL	c
BH01-17		W	18-96037	1021246	c	pH at 20oC in water (automated)	L099-PL	c



Jennifer Russell

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f: [REDACTED]
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Analytical Report Number : 18-96359

Project / Site name:	Former Polycell Site	Samples received on:	14/08/2018
Your job number:		Samples instructed on:	14/08/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	21/08/2018
Report Issue Number:	1	Report issued on:	21/08/2018
Samples Analysed:	4 water samples		

Signed: [REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-96359

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1023050	1023051	1023052	1023053	
Sample Reference				A3	D5	D4	D2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				13/08/2018	13/08/2018	13/08/2018	13/08/2018	
Time Taken				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	6.6	6.5	6.6	6.6	
Sulphate as SO ₄	µg/l	45	ISO 17025	7800	11100	15200	17500	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	7.8	11.1	15.2	17.5	
Chloride	mg/l	0.15	ISO 17025	820	710	510	480	
Nitrate as N	mg/l	0.01	ISO 17025	0.07	0.10	0.08	0.05	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.32	0.43	0.38	0.21	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	70	360	160	180	
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	31	49	52	46	
Redox Potential	mV	-800	NONE	13.10	18.90	22.10	33.90	
Dissolved Oxygen	mg/l	1	NONE	1.6	6.2	1.9	1.1	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	50.9	24.3	35.3	74.9	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	6.2	6.4	5.4	1.8	
Fe ²⁺	mg/l	0.2	NONE	5.80	6.20	5.40	1.77	
Fe ³⁺	mg/l	0.2	NONE	0.40	0.22	< 0.20	< 0.20	

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	6.1	3.2	16.5	
Toluene	µg/l	1	ISO 17025	18.2	26.1	28.0	40.4	
Ethylbenzene	µg/l	1	ISO 17025	75.3	52.2	55.7	157	
p & m-xylene	µg/l	1	ISO 17025	971	385	473	1030	
o-xylene	µg/l	1	ISO 17025	1170	529	730	854	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 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	
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	77	
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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	6.1	3.2	17	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	18	26	28	40	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6500	4800	8300	20000	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	4000	2600	3600	8000	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1100	760	750	630	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	77	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	12000	8300	13000	28000	



Analytical Report Number: 18-96359

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1023050	1023051	1023052	1023053	
Sample Reference				A3	D5	D4	D2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				13/08/2018	13/08/2018	13/08/2018	13/08/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	838	797	1600	3860	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	1100	12000	12000	27000	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	15	21	18	14	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-96359

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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



Analytical Report Number : 18-96359

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A3		W	18-96359	1023050	c	Biological oxygen demand (total) of water	L086-PL	c
A3		W	18-96359	1023050	c	Dissolved Oxygen in water	L086-PL	c
D2		W	18-96359	1023053	c	Biological oxygen demand (total) of water	L086-PL	c
D2		W	18-96359	1023053	c	Dissolved Oxygen in water	L086-PL	c
D4		W	18-96359	1023052	c	Biological oxygen demand (total) of water	L086-PL	c
D4		W	18-96359	1023052	c	Dissolved Oxygen in water	L086-PL	c
D5		W	18-96359	1023051	c	Biological oxygen demand (total) of water	L086-PL	c
D5		W	18-96359	1023051	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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Analytical Report Number : 18-96359

Replaces Analytical Report Number : 18-96359, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	14/08/2018
Your job number:		Samples instructed on:	14/08/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	30/08/2018
Report Issue Number:	2	Report issued on:	30/08/2018
Samples Analysed:	4 water samples		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-96359

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1023050	1023051	1023052	1023053	
Sample Reference				A2	D5	D4	D2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				13/08/2018	13/08/2018	13/08/2018	13/08/2018	
Time Taken				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	6.6	6.5	6.6	6.6	
Sulphate as SO ₄	µg/l	45	ISO 17025	7800	11100	15200	17500	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	7.8	11.1	15.2	17.5	
Chloride	mg/l	0.15	ISO 17025	820	710	510	480	
Nitrate as N	mg/l	0.01	ISO 17025	0.07	0.10	0.08	0.05	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.32	0.43	0.38	0.21	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	70	360	160	180	
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	31	49	52	46	
Redox Potential	mV	-800	NONE	13.10	18.90	22.10	33.90	
Dissolved Oxygen	mg/l	1	NONE	1.6	6.2	1.9	1.1	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	50.9	24.3	35.3	74.9	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	6.2	6.4	5.4	1.8	
Fe ²⁺	mg/l	0.2	NONE	5.80	6.20	5.40	1.77	
Fe ³⁺	mg/l	0.2	NONE	0.40	0.22	< 0.20	< 0.20	

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	6.1	3.2	16.5	
Toluene	µg/l	1	ISO 17025	18.2	26.1	28.0	40.4	
Ethylbenzene	µg/l	1	ISO 17025	75.3	52.2	55.7	157	
p & m-xylene	µg/l	1	ISO 17025	971	385	473	1030	
o-xylene	µg/l	1	ISO 17025	1170	529	730	854	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	



Analytical Report Number: 18-96359

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1023050	1023051	1023052	1023053	
Sample Reference				A2	D5	D4	D2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				13/08/2018	13/08/2018	13/08/2018	13/08/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

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	77	
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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	6.1	3.2	17	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	18	26	28	40	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6500	4800	8300	20000	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	4000	2600	3600	8000	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1100	760	750	630	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	

TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	77	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	12000	8300	13000	28000	



Analytical Report Number: 18-96359

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1023050	1023051	1023052	1023053	
Sample Reference				A2	D5	D4	D2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				13/08/2018	13/08/2018	13/08/2018	13/08/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	838	797	1600	3860	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	1100	12000	12000	27000	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	15	21	18	14	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-96359

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025



Analytical Report Number : 18-96359

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A2		W	18-96359	1023050	c	Biological oxygen demand (total) of water	L086-PL	c
A2		W	18-96359	1023050	c	Dissolved Oxygen in water	L086-PL	c
D2		W	18-96359	1023053	c	Biological oxygen demand (total) of water	L086-PL	c
D2		W	18-96359	1023053	c	Dissolved Oxygen in water	L086-PL	c
D4		W	18-96359	1023052	c	Biological oxygen demand (total) of water	L086-PL	c
D4		W	18-96359	1023052	c	Dissolved Oxygen in water	L086-PL	c
D5		W	18-96359	1023051	c	Biological oxygen demand (total) of water	L086-PL	c
D5		W	18-96359	1023051	c	Dissolved Oxygen in water	L086-PL	c



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Analytical Report Number : 18-96583

Project / Site name:	Former Polycell Site	Samples received on:	15/08/2018
Your job number:		Samples instructed on:	15/08/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	22/08/2018
Report Issue Number:	1	Report issued on:	22/08/2018
Samples Analysed:	9 water samples		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-96583

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1024181	1024182	1024183	1024184	1024185
Sample Reference				A6	B6	C7	C6	BH36
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				14/08/2018	14/08/2018	14/08/2018	14/08/2018	14/08/2018
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 Units	N/A	ISO 17025	6.6	6.5	6.4	6.4	6.7
pH								
Sulphate as SO ₄	µg/l	45	ISO 17025	11600	13900	5470	8370	17200
Sulphate as SO ₄	mg/l	0.045	ISO 17025	11.6	13.9	5.5	8.4	17.2
Chloride	mg/l	0.15	ISO 17025	390	650	760	720	240
Nitrate as N	mg/l	0.01	ISO 17025	0.10	0.13	0.04	0.06	0.08
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.43	0.59	0.16	0.27	0.38
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	840	1900	930	880	170
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	330	510	210	280	79
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	-	-	-	-	-
Redox Potential	mV	-800	NONE	19.70	30.20	37.90	23.30	46.60
Dissolved Oxygen	mg/l	1	NONE	1.8	2.2	2.1	1.3	3.1

Speciated PAHs

	µg/l	0.01	ISO 17025	37.1	67.1	48.3	39.4	58.8
Naphthalene								

Heavy Metals / Metalloids

	mg/l	0.004	ISO 17025	5.1	3.8	3.9	9.9	1.1
Iron (dissolved)								
Fe ²⁺	mg/l	0.2	NONE	0.62	1.29	0.77	3.10	0.86
Fe ³⁺	mg/l	0.2	NONE	4.47	2.52	3.10	6.81	< 0.20

Monoaromatics

	µg/l	1	ISO 17025	< 1.0	< 1.0	7.3	7.7	< 1.0
Benzene								
Toluene	µg/l	1	ISO 17025	11.5	19.3	87.5	95.9	38.6
Ethylbenzene	µg/l	1	ISO 17025	22.4	17.2	139	144	181
p & m-xylene	µg/l	1	ISO 17025	135	99.1	879	856	1570
o-xylene	µg/l	1	ISO 17025	244	180	1040	657	1030
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



Analytical Report Number: 18-96583

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1024181	1024182	1024183	1024184	1024185
Sample Reference				A6	B6	C7	C6	BH36
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				14/08/2018	14/08/2018	14/08/2018	14/08/2018	14/08/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	7.3	7.7	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	12	19	88	96	39
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	930	980	11000	5500	12000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1600	3600	3800	1900	1800
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1000	610	68	210	44
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >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 - C35)	µg/l	10	NONE	3600	5200	15000	7700	14000

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	92.9	114	1700	684	1940
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	120000	180000	140000	110000	5400
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	5.2	16	18	15	14
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-96583

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1024186	1024187	1024188	1024189	
Sample Reference				C2	B4	B5	Z5	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				15/08/2018	15/08/2018	15/08/2018	15/08/2018	
Time Taken				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	6.5	6.6	6.5	6.7	
Sulphate as SO ₄	µg/l	45	ISO 17025	16800	17200	12200	14700	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	16.8	17.2	12.2	14.7	
Chloride	mg/l	0.15	ISO 17025	450	350	620	490	
Nitrate as N	mg/l	0.01	ISO 17025	0.05	0.04	0.06	0.07	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.21	0.16	0.27	0.32	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	400	1200	2000	240	
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	-	-	-	-	
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	U/S	U/S	U/S	U/S	
Redox Potential	mV	-800	NONE	24.00	22.70	16.10	16.70	
Dissolved Oxygen	mg/l	1	NONE	9.3	9.0	8.8	7.8	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	66.9	29.7	47.8	21.8	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	6.3	7.8	12	8.0	
Fe ²⁺	mg/l	0.2	NONE	0.28	1.35	2.72	0.26	
Fe ³⁺	mg/l	0.2	NONE	6.05	6.48	9.10	7.79	

Monoaromatics

Benzene	µg/l	1	ISO 17025	7.7	5.4	8.5	< 1.0	
Toluene	µg/l	1	ISO 17025	48.9	38.0	103	68.5	
Ethylbenzene	µg/l	1	ISO 17025	201	63.2	149	87.0	
p & m-xylene	µg/l	1	ISO 17025	1330	408	905	757	
o-xylene	µg/l	1	ISO 17025	1330	551	1120	1250	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	



Analytical Report Number: 18-96583

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1024186	1024187	1024188	1024189	
Sample Reference				C2	B4	B5	Z5	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				15/08/2018	15/08/2018	15/08/2018	15/08/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	7.7	5.4	8.5	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	49	38	100	70	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	16000	4500	8500	6700	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1100	2100	3100	2300	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	55	400	1700	1200	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >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 - C35)	µg/l	10	NONE	17000	7000	13000	10000	

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	2340	585	1250	921	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	71000	37000	71000	930	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	20	20	22	4.5	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-96583

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-PL	W	ISO 17025
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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



Analytical Report Number : 18-96583

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A6		W	18-96583	1024181	c	Biological oxygen demand (total) of water	L086-PL	c
A6		W	18-96583	1024181	c	Dissolved Oxygen in water	L086-PL	c
B6		W	18-96583	1024182	c	Biological oxygen demand (total) of water	L086-PL	c
B6		W	18-96583	1024182	c	Dissolved Oxygen in water	L086-PL	c
BH36		W	18-96583	1024185	c	Biological oxygen demand (total) of water	L086-PL	c
BH36		W	18-96583	1024185	c	Dissolved Oxygen in water	L086-PL	c
C6		W	18-96583	1024184	c	Biological oxygen demand (total) of water	L086-PL	c
C6		W	18-96583	1024184	c	Dissolved Oxygen in water	L086-PL	c
C7		W	18-96583	1024183	c	Biological oxygen demand (total) of water	L086-PL	c
C7		W	18-96583	1024183	c	Dissolved Oxygen in water	L086-PL	c



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t:

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t:

f:

e:

Analytical Report Number : 18-97811

Project / Site name: Former Polycell

Samples received on: 24/08/2018

Your job number:

Samples instructed on: 24/08/2018

Your order number:

Analysis completed by: 03/09/2018

Report Issue Number: 1

Report issued on: 03/09/2018

Samples Analysed: 4 water samples

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-97811

Project / Site name: Former Polycell

Lab Sample Number				1031514	1031515	1031516	1031517	
Sample Reference				BH02-17	BH03-17	BH05D-17	BH06D-17	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				24/08/2018	24/08/2018	24/08/2018	24/08/2018	
Time Taken				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	7.0	7.0	7.4	7.2	
Sulphate as SO ₄	µg/l	45	ISO 17025	58700	203000	116000	10000	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	58.7	203	116	10.0	
Chloride	mg/l	0.15	ISO 17025	500	330	74	97	
Nitrate as N	mg/l	0.01	ISO 17025	0.06	0.05	2.17	0.07	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.27	0.21	9.61	0.32	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	160	43	11	19	
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	97	3.1	1.2	1.7	
Redox Potential	mV	-800	NONE	204.30	198.10	191.80	187.70	
Dissolved Oxygen	mg/l	1	NONE	2.0	1.0	1.2	1.1	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	5.40	10.6	< 0.01	1.95	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	6.4	0.038	0.027	0.20	
Fe ²⁺	mg/l	0.2	NONE	4.25	< 0.20	< 0.20	< 0.20	
Fe ³⁺	mg/l	0.2	NONE	2.12	< 0.20	< 0.20	< 0.20	

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	4.4	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	83.0	123	< 1.0	< 1.0	
o-xylene	µg/l	1	ISO 17025	70.6	5.6	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 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	
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 - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	2900	1300	< 1.0	6.9	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	700	320	< 10	130	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	59	190	< 10	41	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >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 - C35)	µg/l	10	NONE	3700	1800	< 10	180	



Analytical Report Number: 18-97811

Project / Site name: Former Polycell

Lab Sample Number				1031514	1031515	1031516	1031517	
Sample Reference				BH02-17	BH03-17	BH05D-17	BH06D-17	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				24/08/2018	24/08/2018	24/08/2018	24/08/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	742	340	< 1.0	6.9	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	11000	< 100	< 100	< 100	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	0.4	1.1	1.9	5.9	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-97811

Project / Site name: Former Polycell

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-97811

Project / Site name: Former Polycell

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02-17		W	18-97811	1031514	c	Biological oxygen demand (total) of water	L086-PL	c
BH02-17		W	18-97811	1031514	c	Dissolved Oxygen in water	L086-PL	c
BH02-17		W	18-97811	1031514	c	Iron (II) and Iron (III) in water	L079-PL	c
BH02-17		W	18-97811	1031514	c	Redox Potential of waters	L084-PL	c
BH02-17		W	18-97811	1031514	c	pH at 20oC in water (automated)	L099-PL	c
BH03-17		W	18-97811	1031515	c	Biological oxygen demand (total) of water	L086-PL	c
BH03-17		W	18-97811	1031515	c	Dissolved Oxygen in water	L086-PL	c
BH03-17		W	18-97811	1031515	c	Iron (II) and Iron (III) in water	L079-PL	c
BH03-17		W	18-97811	1031515	c	Redox Potential of waters	L084-PL	c
BH03-17		W	18-97811	1031515	c	pH at 20oC in water (automated)	L099-PL	c
BH05D-17		W	18-97811	1031516	c	Biological oxygen demand (total) of water	L086-PL	c
BH05D-17		W	18-97811	1031516	c	Dissolved Oxygen in water	L086-PL	c
BH05D-17		W	18-97811	1031516	c	Iron (II) and Iron (III) in water	L079-PL	c
BH05D-17		W	18-97811	1031516	c	Redox Potential of waters	L084-PL	c
BH05D-17		W	18-97811	1031516	c	pH at 20oC in water (automated)	L099-PL	c
BH06D-17		W	18-97811	1031517	c	Biological oxygen demand (total) of water	L086-PL	c
BH06D-17		W	18-97811	1031517	c	Dissolved Oxygen in water	L086-PL	c
BH06D-17		W	18-97811	1031517	c	Iron (II) and Iron (III) in water	L079-PL	c
BH06D-17		W	18-97811	1031517	c	Redox Potential of waters	L084-PL	c
BH06D-17		W	18-97811	1031517	c	pH at 20oC in water (automated)	L099-PL	c

Wheat Quarter Limited

Remediation Verification and Long-term Monitoring Plan (Southern Area)
Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

Groundwater

4th September 2018



Jennifer Russell

John F. Hunt Remediation UK
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Grays
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t:

f:

e:

Analytical Report Number : 18-10787-A

Project / Site name: Former Polycell Site

Samples received on: 18/09/2018

Your job number:

Samples instructed on: 18/09/2018

Your order number: R-1339-7907-1005

Analysis completed by: 25/09/2018

Report Issue Number: 1

Report issued on: 25/09/2018

Samples Analysed: 10 water samples

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1047975	1047977	1047978	1047979	1047980
Sample Reference				A3	A5	B5	B4	Z5
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				17/09/2018	17/09/2018	17/09/2018	17/09/2018	17/09/2018
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	6.8	10.3	6.6	6.8	6.8
Sulphate as SO ₄	µg/l	45	ISO 17025	7900	87800	18700	20800	16700
Sulphate as SO ₄	mg/l	0.045	ISO 17025	7.9	87.8	18.7	20.8	16.7
Chloride	mg/l	0.15	ISO 17025	240	780	900	560	530
Nitrate as N	mg/l	0.01	ISO 17025	0.14	0.19	0.05	0.06	0.05
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.64	0.85	0.21	0.27	0.21
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	390	1600	3300	1800	190
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	210	75	1300	930	130
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	-	-	-	-	-
Redox Potential	mV	-800	NONE	63.60	39.10	-67.80	-76.20	-51.20
Dissolved Oxygen	mg/l	1	NONE	2.7	11	2.4	1.8	1.9

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	52.2	< 0.01	16.8	55.9	22.9
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.83	0.11	8.1	4.4	2.3
Fe ²⁺	mg/l	0.2	NONE	0.80	< 0.20	8.00	4.20	2.12
Fe ³⁺	mg/l	0.2	NONE	< 0.20	< 0.20	< 0.20	0.25	< 0.20

Monoaromatics

Benzene	µg/l	1	ISO 17025	6.1	7.5	9.0	5.8	3.9
Toluene	µg/l	1	ISO 17025	122	99.3	159	86.6	99.9
Ethylbenzene	µg/l	1	ISO 17025	199	203	272	215	109
p & m-xylene	µg/l	1	ISO 17025	841	653	1210	904	1070
o-xylene	µg/l	1	ISO 17025	1510	1080	1540	1170	1520
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	600	< 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	600	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	6.1	7.5	9.0	5.8	3.9
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	120	99	160	87	100
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	10000	6500	14000	15000	7000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	2700	2700	2600	5200	1600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	670	1200	880	890	1100
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	14000	10000	18000	22000	9800



Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number	1047975	1047977	1047978	1047979	1047980
Sample Reference	A3	A5	B5	B4	Z5
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	17/09/2018	17/09/2018	17/09/2018	17/09/2018	17/09/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1210	715	2070	2660	1030
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	4900	130000	290000	91000	4800
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	6.0	1.4	19	19	2.0
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1047981	1047982	1047983	1047984	1047985
Sample Reference				A2	BH36	D2	C2	C3
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				18/09/2018	18/09/2018	18/09/2018	18/09/2018	18/09/2018
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	6.7	6.7	6.8	7.3	6.8
Sulphate as SO ₄	µg/l	45	ISO 17025	6360	13300	40800	49400	29800
Sulphate as SO ₄	mg/l	0.045	ISO 17025	6.4	13.3	40.8	49.4	29.8
Chloride	mg/l	0.15	ISO 17025	560	550	390	490	490
Nitrate as N	mg/l	0.01	ISO 17025	0.07	0.08	0.06	0.06	0.05
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.32	0.37	0.27	0.27	0.21
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	100	370	290	220	730
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	-	-	-	-	-
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	1.1	1.3	< 1.0	< 1.0	< 1.0
Redox Potential	mV	-800	NONE	-46.90	-32.60	-32.80	29.40	-80.80
Dissolved Oxygen	mg/l	1	NONE	7.2	5.6	5.4	6.2	4.7

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	48.2	54.4	67.7	73.8	52.4
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	3.2	1.4	1.4	0.057	11
Fe ²⁺	mg/l	0.2	NONE	3.00	1.32	1.25	< 0.20	10.5
Fe ³⁺	mg/l	0.2	NONE	< 0.20	< 0.20	< 0.20	< 0.20	0.37

Monoaromatics

Benzene	µg/l	1	ISO 17025	2.3	10.6	12.2	3.5	4.4
Toluene	µg/l	1	ISO 17025	21.3	59.9	32.7	46.9	49.2
Ethylbenzene	µg/l	1	ISO 17025	141	280	163	191	240
p & m-xylene	µg/l	1	ISO 17025	1200	1210	917	778	1750
o-xylene	µg/l	1	ISO 17025	602	856	482	819	1810
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	210
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	310	240	720
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	310	240	930

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	2.3	11	12	3.5	4.4
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	21	60	33	47	49
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	8200	13000	9300	12000	32000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1500	1600	3800	3300	3900
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	150	180	250	250	190
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	9900	15000	13000	16000	36000



Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1047981	1047982	1047983	1047984	1047985
Sample Reference				A2	BH36	D2	C2	C3
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				18/09/2018	18/09/2018	18/09/2018	18/09/2018	18/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1250	2030	1610	2160	5660
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	4200	43000	35000	10000	75000
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	13	18	14	16	13
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-10787

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-PL	W	ISO 17025
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-10787

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A3		W	18-10787	1047975	c	Biological oxygen demand (total) of water	L086-PL	c
A3		W	18-10787	1047975	c	Dissolved Oxygen in water	L086-PL	c
A5		W	18-10787	1047977	c	Biological oxygen demand (total) of water	L086-PL	c
A5		W	18-10787	1047977	c	Dissolved Oxygen in water	L086-PL	c
B4		W	18-10787	1047979	c	Biological oxygen demand (total) of water	L086-PL	c
B4		W	18-10787	1047979	c	Dissolved Oxygen in water	L086-PL	c
B5		W	18-10787	1047978	c	Biological oxygen demand (total) of water	L086-PL	c
B5		W	18-10787	1047978	c	Dissolved Oxygen in water	L086-PL	c
Z5		W	18-10787	1047980	c	Biological oxygen demand (total) of water	L086-PL	c
Z5		W	18-10787	1047980	c	Dissolved Oxygen in water	L086-PL	c

**Jennifer Russell**

John F. Hunt Remediation UK
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RM20 4DB

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WD18 8YS

t:
e:

t:
f:
e:

Analytical Report Number : 18-10787-B

Project / Site name:	Former Polycell Site	Samples received on:	18/09/2018
Your job number:		Samples instructed on:	18/09/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	25/09/2018
Report Issue Number:	1	Report issued on:	25/09/2018
Samples Analysed:	1 water sample		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1047976				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				17/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	9.3				
Sulphate as SO ₄	µg/l	45	ISO 17025	83800				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	83.8				
Chloride	mg/l	0.15	ISO 17025	490				
Nitrate as N	mg/l	0.01	ISO 17025	0.40				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	1.76				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	960				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	520				
Redox Potential	mV	-800	NONE	57.30				
Dissolved Oxygen	mg/l	1	NONE	1.3				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	18.3				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.59				
Fe ²⁺	mg/l	0.2	NONE	< 0.20				
Fe ³⁺	mg/l	0.2	NONE	0.59				

Monoaromatics

Benzene	µg/l	1	ISO 17025	6.3				
Toluene	µg/l	1	ISO 17025	85.1				
Ethylbenzene	µg/l	1	ISO 17025	176				
p & m-xylene	µg/l	1	ISO 17025	991				
o-xylene	µg/l	1	ISO 17025	1020				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	6.3				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	85				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	5700				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	1600				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	390				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	7800				



Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1047976				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				17/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	844				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	47000				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				



Analytical Report Number: 18-10787

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1047976				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				17/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	12				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-10787

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-10787

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH1-17		W	18-10787	1047976	c	Biological oxygen demand (total) of water	L086-PL	c
BH1-17		W	18-10787	1047976	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t:
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t:
f:
e:

Analytical Report Number : 18-11067

Replaces Analytical Report Number : 18-11067, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	19/09/2018
Your job number:		Samples instructed on:	20/09/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	26/09/2018
Report Issue Number:	2	Report issued on:	26/09/2018
Samples Analysed:	4 water samples		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-11067

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1049510	1049511	1049512	1049513	
Sample Reference				BH02-17	BH03-17	BH05d-17	BH06d-27	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				19/09/2018	19/09/2018	19/09/2018	19/09/2018	
Time Taken				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	6.5	6.7	7.0	6.8	
Sulphate as SO ₄	µg/l	45	ISO 17025	40500	208000	118000	250000	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	40.5	208	118	250	
Chloride	mg/l	0.15	ISO 17025	710	370	81	300	
Nitrate as N	mg/l	0.01	ISO 17025	0.14	0.08	1.20	0.12	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.64	0.37	5.33	0.53	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	510	46	23	71	
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	U/S	U/S	2.7	U/S	
Redox Potential	mV	-800	NONE	-35.90	-52.80	-47.50	-45.10	
Dissolved Oxygen	mg/l	1	NONE	4.4	5.4	7.3	6.8	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	16.0	32.1	< 0.01	68.1	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	15	4.5	0.017	2.4	
Fe ²⁺	mg/l	0.2	NONE	1.24	0.76	< 0.20	0.21	
Fe ³⁺	mg/l	0.2	NONE	14.1	3.77	< 0.20	2.20	

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	2.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	14.4	8.6	< 1.0	26.9	
p & m-xylene	µg/l	1	ISO 17025	130	172	< 1.0	304	
o-xylene	µg/l	1	ISO 17025	100	10.7	< 1.0	3.6	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	



Analytical Report Number: 18-11067

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1049510	1049511	1049512	1049513	
Sample Reference				BH02-17	BH03-17	BH05d-17	BH06d-27	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				19/09/2018	19/09/2018	19/09/2018	19/09/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

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	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	2.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	3100	1800	< 1.0	3600	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	2500	1200	< 10	3200	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	250	260	< 10	330	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	100	< 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	5900	3300	< 10	7100	

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	697	421	< 1.0	849	
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	6400	110	1200	< 100	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	0.3	1.4	1.4	1.0	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-11067

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE



Analytical Report Number : 18-11067

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

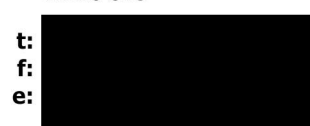
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Jennifer Russell

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Analytical Report Number : 18-11068

Replaces Analytical Report Number : 18-11068, issue no. 2

Project / Site name:	Former Polycell Site	Samples received on:	19/09/2018
Your job number:		Samples instructed on:	20/09/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	26/09/2018
Report Issue Number:	3	Report issued on:	26/09/2018
Samples Analysed:	6 water samples		

Signed:



Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-11068

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1049514	1049515	1049516	1049517	1049518
Sample Reference				A6	B6	C6	C7	D4
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				18/09/2018	18/09/2018	18/09/2018	18/09/2018	19/09/2018
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	6.6	6.5	6.4	6.5	6.7
Sulphate as SO ₄	µg/l	45	ISO 17025	11800	12600	8820	7760	24300
Sulphate as SO ₄	mg/l	0.045	ISO 17025	11.8	12.6	8.8	7.8	24.3
Chloride	mg/l	0.15	ISO 17025	420	820	810	830	640
Nitrate as N	mg/l	0.01	ISO 17025	0.10	0.11	0.22	0.17	0.08
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.43	0.48	0.96	0.75	0.37
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	550	2200	1200	990	420
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	260	500	430	300	-
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	-	-	-	-	U/S
Redox Potential	mV	-800	NONE	-32.50	-22.60	-28.10	-9.80	-69.90
Dissolved Oxygen	mg/l	1	NONE	1.3	1.7	1.1	1.4	4.0

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	52.6	84.4	116	62.4	68.7
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	2.6	5.9	7.3	3.8	12
Fe ²⁺	mg/l	0.2	NONE	1.12	2.12	2.66	1.99	1.86
Fe ³⁺	mg/l	0.2	NONE	1.49	3.76	4.62	1.86	10.6

Monoaromatics

Benzene	µg/l	1	ISO 17025	1.7	8.4	4.4	6.1	1.7
Toluene	µg/l	1	ISO 17025	37.0	201	68.6	102	23.6
Ethylbenzene	µg/l	1	ISO 17025	80.5	338	149	189	112
p & m-xylene	µg/l	1	ISO 17025	734	772	775	766	844
o-xylene	µg/l	1	ISO 17025	944	964	1590	991	1080
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



Analytical Report Number: 18-11068

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1049514	1049515	1049516	1049517	1049518
Sample Reference				A6	B6	C6	C7	D4
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				18/09/2018	18/09/2018	18/09/2018	18/09/2018	19/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

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	1400	2300	< 10	190
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	1400	2300	< 10	190

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	1.7	8.4	4.4	6.1	1.7
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	37	200	69	100	24
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	4400	9800	11000	7900	12000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	3600	17000	31000	8600	6100
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	3600	8000	7200	3300	1400
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	12000	35000	49000	20000	20000

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	597	< 1.0	4570	1750	5320
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	4500	11000	4800	9300	3500
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	3.9	21	12	18	17
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-11068

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1049519				
Sample Reference				D5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				18/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.6				
Sulphate as SO ₄	µg/l	45	ISO 17025	9960				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	10.0				
Chloride	mg/l	0.15	ISO 17025	610				
Nitrate as N	mg/l	0.01	ISO 17025	0.11				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.48				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	420				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	100				
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	-				
Redox Potential	mV	-800	NONE	-57.40				
Dissolved Oxygen	mg/l	1	NONE	1.5				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	41.5				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	8.6				
Fe ²⁺	mg/l	0.2	NONE	1.92				
Fe ³⁺	mg/l	0.2	NONE	6.66				

Monoaromatics

Benzene	µg/l	1	ISO 17025	2.7				
Toluene	µg/l	1	ISO 17025	28.3				
Ethylbenzene	µg/l	1	ISO 17025	70.0				
p & m-xylene	µg/l	1	ISO 17025	441				
o-xylene	µg/l	1	ISO 17025	511				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				



Analytical Report Number: 18-11068

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1049519				
Sample Reference				D5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				18/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	140				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	140				

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	2.7				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	28				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	4200				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	10000				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	2400				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	17000				

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	814				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	3800				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	23				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-11068

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-PL	W	ISO 17025
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-11068

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A6		W	18-11068	1049514	c	Biological oxygen demand (total) of water	L086-PL	c
A6		W	18-11068	1049514	c	Dissolved Oxygen in water	L086-PL	c
B6		W	18-11068	1049515	c	Biological oxygen demand (total) of water	L086-PL	c
B6		W	18-11068	1049515	c	Dissolved Oxygen in water	L086-PL	c
C6		W	18-11068	1049516	c	Biological oxygen demand (total) of water	L086-PL	c
C6		W	18-11068	1049516	c	Dissolved Oxygen in water	L086-PL	c
C7		W	18-11068	1049517	c	Biological oxygen demand (total) of water	L086-PL	c
C7		W	18-11068	1049517	c	Dissolved Oxygen in water	L086-PL	c
D5		W	18-11068	1049519	c	Biological oxygen demand (total) of water	L086-PL	c
D5		W	18-11068	1049519	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-99008

Project / Site name:	Former Polycell Site	Samples received on:	05/09/2018
Your job number:		Samples instructed on:	05/09/2018
Your order number:	R 1339 7907 1005	Analysis completed by:	12/09/2018
Report Issue Number:	1	Report issued on:	12/09/2018
Samples Analysed:	4 water samples		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99008

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038702	1038703	1038704	1038705	
Sample Reference				BH02-17	BH03-17	BH05-17	BH06-17	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				05/09/2018	05/09/2018	05/09/2018	05/09/2018	
Time Taken				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	6.9	7.5	7.4	7.1	
Sulphate as SO ₄	µg/l	45	ISO 17025	45700	3630	107000	217000	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	45.7	3.6	107	217	
Chloride	mg/l	0.15	ISO 17025	610	110	160	300	
Nitrate as N	mg/l	0.01	ISO 17025	0.15	0.05	1.81	0.17	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.64	0.21	8.00	0.75	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	190	54	51	51	
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	2.1	3.4	2.6	1.7	
Redox Potential	mV	-800	NONE	164.40	148.80	154.90	163.60	
Dissolved Oxygen	mg/l	1	NONE	8.2	8.7	8.7	8.3	

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.88	0.19	< 0.01	13.6	
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	2.2	1.7	0.062	0.58	
Fe ²⁺	mg/l	0.2	NONE	0.63	< 0.20	< 0.20	< 0.20	
Fe ³⁺	mg/l	0.2	NONE	1.53	1.71	< 0.20	0.58	

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	4.4	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	45.8	< 1.0	< 1.0	104	
o-xylene	µg/l	1	ISO 17025	37.9	< 1.0	15.1	6.4	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 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	
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	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	1500	8.8	43	1100	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	7200	110	< 10	740	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	5200	140	< 10	190	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	2400	33	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	16000	290	43	2000	



Analytical Report Number: 18-99008

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038702	1038703	1038704	1038705	
Sample Reference				BH02-17	BH03-17	BH05-17	BH06-17	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				05/09/2018	05/09/2018	05/09/2018	05/09/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	290	4.3	27.8	218	
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	47000	< 100	< 100	340	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	0.6	1.9	3.2	3.3	
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99008

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-99008

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.



Jennifer Russell

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t:
e:

t:
f:
e:

Analytical Report Number : 18-99022

Project / Site name: Former Polycell Site

Samples received on: 05/09/2018

Your job number:

Samples instructed on: 05/09/2018

Your order number: R 1339 7907 1005

Analysis completed by: 12/09/2018

Report Issue Number: 1

Report issued on: 12/09/2018

Samples Analysed: 1 water sample

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99022

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038810				
Sample Reference				BH36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				04/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.6				
Sulphate as SO ₄	µg/l	45	ISO 17025	21600				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	21.6				
Chloride	mg/l	0.15	ISO 17025	630				
Nitrate as N	mg/l	0.01	ISO 17025	0.01				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.05				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	420				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	240				
Redox Potential	mV	-800	NONE	204.60				
Dissolved Oxygen	mg/l	1	NONE	1.6				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	60.6				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	3.4				
Fe ²⁺	mg/l	0.2	NONE	0.26				
Fe ³⁺	mg/l	0.2	NONE	3.12				

Monoaromatics

Benzene	µg/l	1	ISO 17025	6.5				
Toluene	µg/l	1	ISO 17025	40.4				
Ethylbenzene	µg/l	1	ISO 17025	289				
p & m-xylene	µg/l	1	ISO 17025	1280				
o-xylene	µg/l	1	ISO 17025	984				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	6.5				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	40				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	9900				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	8200				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	330				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	19000				



Analytical Report Number: 18-99022

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038810				
Sample Reference				BH36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				04/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1440				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	11000				
Carbon disulphide	µg/l	1	NONE	40				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	24				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99022

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-99022

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH36		W	18-99022	1038810	c	Biological oxygen demand (total) of water	L086-PL	c
BH36		W	18-99022	1038810	c	Dissolved Oxygen in water	L086-PL	c



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e: [REDACTED]

t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-99025

Project / Site name:	Former Polycell Site	Samples received on:	05/09/2018
Your job number:		Samples instructed on:	05/09/2018
Your order number:	R 1339 7907 1005	Analysis completed by:	12/09/2018
Report Issue Number:	1	Report issued on:	12/09/2018
Samples Analysed:	15 water samples		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99025

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038815	1038816	1038817	1038818	1038819
Sample Reference				A2	A3	A6	B4	B5
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				04/09/2018	04/09/2018	03/09/2018	03/09/2018	03/09/2018
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	6.6	6.7	6.8	7.1	6.8
Sulphate as SO ₄	µg/l	45	ISO 17025	6060	11100	18000	42700	48800
Sulphate as SO ₄	mg/l	0.045	ISO 17025	6.1	11.1	18.0	42.7	48.8
Chloride	mg/l	0.15	ISO 17025	480	260	360	480	650
Nitrate as N	mg/l	0.01	ISO 17025	< 0.01	0.07	0.01	< 0.01	0.02
Nitrate as NO ₃	mg/l	0.05	ISO 17025	< 0.05	0.32	0.05	< 0.05	0.11
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	48	430	470	640	1300
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	30	210	190	300	570
Redox Potential	mV	-800	NONE	197.50	191.10	189.30	192.30	188.60
Dissolved Oxygen	mg/l	1	NONE	3.2	1.3	1.5	1.3	1.1

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	35.0	114	44.5	30.2	165
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	4.1	3.9	1.6	2.1	1.4
Fe ²⁺	mg/l	0.2	NONE	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Fe ³⁺	mg/l	0.2	NONE	4.10	3.91	1.54	2.03	1.42

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	8.1	3.6	11.5	8.7
Toluene	µg/l	1	ISO 17025	< 1.0	175	44.3	38.9	127
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	239	66.0	77.2	1010
p & m-xylene	µg/l	1	ISO 17025	452	1570	633	440	< 1.0
o-xylene	µg/l	1	ISO 17025	397	2370	964	549	1670
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	1600
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	700
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	2300

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	8.1	3.6	12	8.7
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	170	44	39	130
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	4300	17000	5500	5400	19000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	2900	12000	5400	5300	60000
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	420	5800	1400	1600	1700
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	52	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	7600	36000	12000	12000	81000



Analytical Report Number: 18-99025

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038815	1038816	1038817	1038818	1038819
Sample Reference				A2	A3	A6	B4	B5
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				04/09/2018	04/09/2018	03/09/2018	03/09/2018	03/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	705	2790	760	771	3060
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	2600	4000	31000	24000	71000
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	21	5.2	2.7	> 25	> 25
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-99025

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038820	1038821	1038822	1038823	1038824
Sample Reference				B6	C2	C6	C7	D2
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				03/09/2018	04/09/2018	03/09/2018	03/09/2018	04/09/2018
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	6.6	7.1	6.5	6.6	7.0
Sulphate as SO ₄	µg/l	45	ISO 17025	14000	51600	10300	9290	41700
Sulphate as SO ₄	mg/l	0.045	ISO 17025	14.0	51.6	10.3	9.3	41.7
Chloride	mg/l	0.15	ISO 17025	750	470	740	770	440
Nitrate as N	mg/l	0.01	ISO 17025	0.06	0.10	0.22	0.10	0.07
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.27	0.43	0.97	0.43	0.32
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	2100	690	880	970	390
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	660	400	260	330	120
Redox Potential	mV	-800	NONE	189.50	177.60	193.00	196.30	166.90
Dissolved Oxygen	mg/l	1	NONE	1.8	< 1.0	2.3	2.4	1.5

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	32.8	128	23.4	25.2	12.1
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	2.2	1.8	8.2	2.3	0.16
Fe ²⁺	mg/l	0.2	NONE	0.28	< 0.20	2.79	0.72	< 0.20
Fe ³⁺	mg/l	0.2	NONE	1.92	1.84	5.46	1.55	< 0.20

Monoaromatics

Benzene	µg/l	1	ISO 17025	7.1	4.4	7.5	7.7	10.7
Toluene	µg/l	1	ISO 17025	112	99.5	138	128	41.7
Ethylbenzene	µg/l	1	ISO 17025	152	537	220	173	183
p & m-xylene	µg/l	1	ISO 17025	801	3650	1420	794	859
o-xylene	µg/l	1	ISO 17025	1120	3860	1970	1200	863
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	4700	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	790	< 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	5500	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	7.1	4.4	7.5	7.7	11
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	110	100	140	130	42
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	8100	140000	17000	11000	14000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	4500	29000	6700	5800	5600
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	3300	540	3000	890	990
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	16000	170000	27000	17000	20000



Analytical Report Number: 18-99025

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038820	1038821	1038822	1038823	1038824
Sample Reference				B6	C2	C6	C7	D2
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				03/09/2018	04/09/2018	03/09/2018	03/09/2018	04/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1080	34500	2850	1590	2130
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	210000	15000	250000	310000	130000
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	17	23	6.0	7.2	> 25
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-99025

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038825	1038826	1038827	1038828	1038829
Sample Reference				D5	B3	Z5	A5	D4
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				Deviating	04/09/2018	04/09/2018	04/09/2018	04/09/2018
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	6.7	7.6	6.8	10.5	6.9
Sulphate as SO ₄	µg/l	45	ISO 17025	24900	58100	25000	87100	37500
Sulphate as SO ₄	mg/l	0.045	ISO 17025	24.9	58.1	25.0	87.1	37.5
Chloride	mg/l	0.15	ISO 17025	570	320	420	730	410
Nitrate as N	mg/l	0.01	ISO 17025	0.13	0.11	0.10	0.53	0.11
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.59	0.48	0.43	2.36	0.48
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	420	7400	200	1200	160
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	160	650	72	460	84
Redox Potential	mV	-800	NONE	179.90	180.40	165.10	123.10	157.50
Dissolved Oxygen	mg/l	1	NONE	2.3	2.0	2.6	17	2.3

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	41.7	54.8	62.4	72.4	48.5
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	8.2	0.16	7.5	0.31	8.7
Fe ²⁺	mg/l	0.2	NONE	1.17	< 0.20	< 0.20	< 0.20	1.08
Fe ³⁺	mg/l	0.2	NONE	6.99	< 0.20	7.45	0.31	7.63

Monoaromatics

Benzene	µg/l	1	ISO 17025	13.5	13.5	2.8	5.3	3.2
Toluene	µg/l	1	ISO 17025	91.4	178	113	144	67.0
Ethylbenzene	µg/l	1	ISO 17025	258	318	160	301	171
p & m-xylene	µg/l	1	ISO 17025	1530	2150	1440	1940	1050
o-xylene	µg/l	1	ISO 17025	1870	2780	2310	2570	1390
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	510	< 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	510	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	14	14	2.8	5.3	3.2
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	91	180	110	140	67
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	22000	21000	14000	25000	13000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	8900	8900	7200	14000	5700
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	1400	3100	2700	2000	650
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	52	31	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	32000	33000	24000	41000	19000



Analytical Report Number: 18-99025

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038825	1038826	1038827	1038828	1038829
Sample Reference				D5	B3	Z5	A5	D4
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				Deviating	04/09/2018	04/09/2018	04/09/2018	04/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	3870	3360	2000	4390	2070
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	56000	240000	3700	180000	15000
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	21	17	3.2	1.0	24
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99025

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

Iss No 18-99025-1 Former Polycell Site

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The results included within the report are representative of the samples submitted for analysis.

Page 8 of 10



Analytical Report Number : 18-99025

Project / Site name: Former Polycell Site

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

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A2		W	18-99025	1038815	c	Biological oxygen demand (total) of water	L086-PL	c
A2		W	18-99025	1038815	c	Dissolved Oxygen in water	L086-PL	c
A3		W	18-99025	1038816	c	Biological oxygen demand (total) of water	L086-PL	c
A3		W	18-99025	1038816	c	Dissolved Oxygen in water	L086-PL	c
A5		W	18-99025	1038828	c	Biological oxygen demand (total) of water	L086-PL	c
A5		W	18-99025	1038828	c	Dissolved Oxygen in water	L086-PL	c
A6		W	18-99025	1038817	c	Biological oxygen demand (total) of water	L086-PL	c
A6		W	18-99025	1038817	c	Dissolved Oxygen in water	L086-PL	c
B3		W	18-99025	1038826	c	Biological oxygen demand (total) of water	L086-PL	c
B3		W	18-99025	1038826	c	Dissolved Oxygen in water	L086-PL	c
B4		W	18-99025	1038818	c	Biological oxygen demand (total) of water	L086-PL	c
B4		W	18-99025	1038818	c	Dissolved Oxygen in water	L086-PL	c
B5		W	18-99025	1038819	c	Biological oxygen demand (total) of water	L086-PL	c
B5		W	18-99025	1038819	c	Dissolved Oxygen in water	L086-PL	c
B6		W	18-99025	1038820	c	Biological oxygen demand (total) of water	L086-PL	c
B6		W	18-99025	1038820	c	Dissolved Oxygen in water	L086-PL	c
C2		W	18-99025	1038821	c	Biological oxygen demand (total) of water	L086-PL	c
C2		W	18-99025	1038821	c	Dissolved Oxygen in water	L086-PL	c
C6		W	18-99025	1038822	c	Biological oxygen demand (total) of water	L086-PL	c
C6		W	18-99025	1038822	c	Dissolved Oxygen in water	L086-PL	c
C7		W	18-99025	1038823	c	Biological oxygen demand (total) of water	L086-PL	c
C7		W	18-99025	1038823	c	Dissolved Oxygen in water	L086-PL	c
D2		W	18-99025	1038824	c	Biological oxygen demand (total) of water	L086-PL	c
D2		W	18-99025	1038824	c	Dissolved Oxygen in water	L086-PL	c
D4		W	18-99025	1038829	c	Biological oxygen demand (total) of water	L086-PL	c
D4		W	18-99025	1038829	c	Dissolved Oxygen in water	L086-PL	c
D5		W	18-99025	1038825	a			
Z5		W	18-99025	1038827	c	Biological oxygen demand (total) of water	L086-PL	c
Z5		W	18-99025	1038827	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t: [REDACTED]
e: [REDACTED]

t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-99027

Project / Site name: Former Polycell Site

Samples received on: 05/09/2018

Your job number:

Samples instructed on: 05/09/2018

Your order number: R 1339 7907 1005

Analysis completed by: 12/09/2018

Report Issue Number: 1

Report issued on: 12/09/2018

Samples Analysed: 1 water sample

Signed: [REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99027

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038832				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				03/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	10.3				
Sulphate as SO ₄	µg/l	45	ISO 17025	114000				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	114				
Chloride	mg/l	0.15	ISO 17025	440				
Nitrate as N	mg/l	0.01	ISO 17025	1.35				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	5.96				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	1500				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	560				
Redox Potential	mV	-800	NONE	122.80				
Dissolved Oxygen	mg/l	1	NONE	2.8				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	36.7				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	1.4				
Fe ²⁺	mg/l	0.2	NONE	< 0.20				
Fe ³⁺	mg/l	0.2	NONE	1.41				

Monoaromatics

Benzene	µg/l	1	ISO 17025	4.8				
Toluene	µg/l	1	ISO 17025	52.5				
Ethylbenzene	µg/l	1	ISO 17025	106				
p & m-xylene	µg/l	1	ISO 17025	592				
o-xylene	µg/l	1	ISO 17025	905				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	4.8				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	53				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	5500				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	4900				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	2000				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	92				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	13000				

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	737				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	8000				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				



Analytical Report Number: 18-99027

Project / Site name: Former Polycell Site

Your Order No: R 1339 7907 1005

Lab Sample Number				1038832				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				03/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	9.2				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99027

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-99027

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH1-17		W	18-99027	1038832	c	Biological oxygen demand (total) of water	L086-PL	c
BH1-17		W	18-99027	1038832	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t:

e:

t:

f:

e:

Analytical Report Number : 18-99770

Project / Site name: Former Polycell Site

Samples received on: 11/09/2018

Your job number:

Samples instructed on: 11/09/2018

Your order number: R-1339-7907-1005

Analysis completed by: 18/09/2018

Report Issue Number: 1

Report issued on: 18/09/2018

Samples Analysed: 7 water samples

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99770

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043121	1043122	1043123	1043124	1043125
Sample Reference				B4	B5	B6	D2	C2
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				10/09/2018	10/09/2018	10/09/2018	10/09/2018	10/09/2018
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	6.9	6.7	6.5	6.8	7.1
Sulphate as SO ₄	µg/l	45	ISO 17025	40600	32800	12600	17200	39800
Sulphate as SO ₄	mg/l	0.045	ISO 17025	40.6	32.8	12.6	17.2	39.8
Chloride	mg/l	0.15	ISO 17025	490	750	810	420	500
Nitrate as N	mg/l	0.01	ISO 17025	0.08	0.06	0.05	0.07	0.08
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.37	0.27	0.21	0.32	0.37
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	460	890	2500	240	390
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	250	360	1200	46	130
Redox Potential	mV	-800	NONE	-82.50	-76.10	-29.50	-31.40	-75.10
Dissolved Oxygen	mg/l	1	NONE	2.1	1.5	2.6	1.3	1.3

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	57.1	51.0	38.2	51.4	191
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.31	0.16	1.1	0.048	0.52
Fe ²⁺	mg/l	0.2	NONE	0.30	< 0.20	1.04	< 0.20	< 0.20
Fe ³⁺	mg/l	0.2	NONE	< 0.20	< 0.20	< 0.20	< 0.20	0.40

Monoaromatics

Benzene	µg/l	1	ISO 17025	5.8	8.9	6.7	8.9	2.3
Toluene	µg/l	1	ISO 17025	38.5	62.9	134	36.6	32.2
Ethylbenzene	µg/l	1	ISO 17025	131	225	244	117	160
p & m-xylene	µg/l	1	ISO 17025	1120	747	981	936	1360
o-xylene	µg/l	1	ISO 17025	850	618	1110	758	1350
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	800
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	800

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	5.8	8.9	6.7	8.9	2.3
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	39	63	130	37	32
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	11000	7500	13000	9400	29000
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	2900	7800	5600	6800	19000
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	490	4200	300	1600	1700
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	14000	20000	19000	18000	50000



Analytical Report Number: 18-99770

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043121	1043122	1043123	1043124	1043125
Sample Reference				B4	B5	B6	D2	C2
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				10/09/2018	10/09/2018	10/09/2018	10/09/2018	10/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1740	1170	2520	1510	5900
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	12000	17000	31000	18000	7100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	29	32	18	25	21
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-99770

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043126	1043127			
Sample Reference				A2	A3			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				10/09/2018	10/09/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.7	6.8			
Sulphate as SO ₄	µg/l	45	ISO 17025	5960	7260			
Sulphate as SO ₄	mg/l	0.045	ISO 17025	6.0	7.3			
Chloride	mg/l	0.15	ISO 17025	510	260			
Nitrate as N	mg/l	0.01	ISO 17025	0.10	0.11			
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.43	0.48			
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	71	420			
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	4.9	170			
Redox Potential	mV	-800	NONE	-30.70	-16.70			
Dissolved Oxygen	mg/l	1	NONE	1.4	1.7			

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	40.2	86.1			
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	1.8	0.46			
Fe ²⁺	mg/l	0.2	NONE	1.80	0.22			
Fe ³⁺	mg/l	0.2	NONE	< 0.20	0.24			

Monoaromatics

Benzene	µg/l	1	ISO 17025	1.5	5.0			
Toluene	µg/l	1	ISO 17025	14.6	118			
Ethylbenzene	µg/l	1	ISO 17025	52.4	170			
p & m-xylene	µg/l	1	ISO 17025	804	1290			
o-xylene	µg/l	1	ISO 17025	709	1800			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	1.5	5.0			
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	15	120			
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6100	14000			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	4200	11000			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	500	4800			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	11000	30000			



Analytical Report Number: 18-99770

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043126	1043127			
Sample Reference				A2	A3			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				10/09/2018	10/09/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	986	2030			
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0			
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0			
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Dichloromethane	µg/l	100	NONE	2600	5100			
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0			
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0			

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	18	3.6			
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99770

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025



Analytical Report Number : 18-99770

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
A2		W	18-99770	1043126	c	Biological oxygen demand (total) of water	L086-PL	c
A2		W	18-99770	1043126	c	Dissolved Oxygen in water	L086-PL	c
A3		W	18-99770	1043127	c	Biological oxygen demand (total) of water	L086-PL	c
A3		W	18-99770	1043127	c	Dissolved Oxygen in water	L086-PL	c
B4		W	18-99770	1043121	c	Biological oxygen demand (total) of water	L086-PL	c
B4		W	18-99770	1043121	c	Dissolved Oxygen in water	L086-PL	c
B5		W	18-99770	1043122	c	Biological oxygen demand (total) of water	L086-PL	c
B5		W	18-99770	1043122	c	Dissolved Oxygen in water	L086-PL	c
B6		W	18-99770	1043123	c	Biological oxygen demand (total) of water	L086-PL	c
B6		W	18-99770	1043123	c	Dissolved Oxygen in water	L086-PL	c
C2		W	18-99770	1043125	c	Biological oxygen demand (total) of water	L086-PL	c
C2		W	18-99770	1043125	c	Dissolved Oxygen in water	L086-PL	c
D2		W	18-99770	1043124	c	Biological oxygen demand (total) of water	L086-PL	c
D2		W	18-99770	1043124	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t:
e:

t:
f:
e:

Analytical Report Number : 18-99801

Project / Site name:	Former Polycell Site	Samples received on:	11/09/2018
Your job number:		Samples instructed on:	11/09/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	18/09/2018
Report Issue Number:	1	Report issued on:	18/09/2018
Samples Analysed:	1 water sample		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99801

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043224				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	9.9				
Sulphate as SO ₄	µg/l	45	ISO 17025	106000				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	106				
Chloride	mg/l	0.15	ISO 17025	520				
Nitrate as N	mg/l	0.01	ISO 17025	0.57				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	2.50				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	1500				
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	1400				
Redox Potential	mV	-800	NONE	-123.60				
Dissolved Oxygen	mg/l	1	NONE	1.5				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	7.87				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.39				
Fe ²⁺	mg/l	0.2	NONE	< 0.20				
Fe ³⁺	mg/l	0.2	NONE	0.39				

Monoaromatics

Benzene	µg/l	1	ISO 17025	4.9				
Toluene	µg/l	1	ISO 17025	64.4				
Ethylbenzene	µg/l	1	ISO 17025	121				
p & m-xylene	µg/l	1	ISO 17025	658				
o-xylene	µg/l	1	ISO 17025	1080				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	4.9				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	64				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6100				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	350				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	83				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	6600				



Analytical Report Number: 18-99801

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043224				
Sample Reference				BH1-17				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1110				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	14000				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	18				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99801

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE



Analytical Report Number : 18-99801

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH1-17		W	18-99801	1043224	c	Biological oxygen demand (total) of water	L086-PL	c
BH1-17		W	18-99801	1043224	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t:
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f:
e:

Analytical Report Number : 18-99834-A

Replaces Analytical Report Number : 18-99834, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	11/09/2018
Your job number:		Samples instructed on:	12/09/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	20/09/2018
Report Issue Number:	2	Report issued on:	21/09/2018
Samples Analysed:	1 water sample		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99834

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043389				
Sample Reference				BH36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.7				
Sulphate as SO ₄	µg/l	45	ISO 17025	10900				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	10.9				
Chloride	mg/l	0.15	ISO 17025	650				
Nitrate as N	mg/l	0.01	ISO 17025	0.05				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.21				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	510				
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	3.0				
Redox Potential	mV	-800	NONE	0.80				
Dissolved Oxygen	mg/l	1	NONE	2.9				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	113				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	0.63				
Fe ²⁺	mg/l	0.2	NONE	0.60				
Fe ³⁺	mg/l	0.2	NONE	< 0.20				

Monoaromatics

Benzene	µg/l	1	ISO 17025	4.6				
Toluene	µg/l	1	ISO 17025	31.0				
Ethylbenzene	µg/l	1	ISO 17025	340				
p & m-xylene	µg/l	1	ISO 17025	3970				
o-xylene	µg/l	1	ISO 17025	2420				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	220				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	250				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	470				

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	4.6				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	31				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	35000				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	5200				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	220				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	40000				



Analytical Report Number: 18-99834

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043389				
Sample Reference				BH36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	5620				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	17000				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	19				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99834

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025



Analytical Report Number : 18-99834

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH36		W	18-99834	1043389	c	Biological oxygen demand (total) of water	L086A-UK	c
BH36		W	18-99834	1043389	c	Dissolved Oxygen in water	L086-PL	c



Jennifer Russell

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t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-99937-A

Replaces Analytical Report Number : 18-99937, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	12/09/2018
Your job number:		Samples instructed on:	12/09/2018
Your order number:	R-1339-7907-1005	Analysis completed by:	20/09/2018
Report Issue Number:	2	Report issued on:	21/09/2018
Samples Analysed:	6 water samples		

Signed: [REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-99937

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043935	1043936	1043937	1043938	1043939
Sample Reference				Z5	A6	C7	C6	D5
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				12/09/2018	12/09/2018	12/09/2018	12/09/2018	12/09/2018
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	6.7	6.6	6.4	6.4	6.7
Sulphate as SO ₄	µg/l	45	ISO 17025	19000	11900	7820	7150	11800
Sulphate as SO ₄	mg/l	0.045	ISO 17025	19.0	11.9	7.8	7.2	11.8
Chloride	mg/l	0.15	ISO 17025	470	490	810	800	460
Nitrate as N	mg/l	0.01	ISO 17025	0.10	0.08	0.11	0.13	0.10
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.43	0.37	0.48	0.59	0.43
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	200	910	730	780	180
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Redox Potential	mV	-800	NONE	34.00	41.90	42.90	33.60	34.60
Dissolved Oxygen	mg/l	1	NONE	6.4	7.0	8.5	9.2	8.2

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	40.6	72.4	26.5	28.6	25.1
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	5.6	2.0	3.8	6.8	4.1
Fe ²⁺	mg/l	0.2	NONE	1.20	1.92	2.40	4.20	1.40
Fe ³⁺	mg/l	0.2	NONE	4.43	< 0.20	1.40	2.64	2.67

Monoaromatics

Benzene	µg/l	1	ISO 17025	2.9	4.4	16.0	10.8	6.6
Toluene	µg/l	1	ISO 17025	101	66.6	148	83.5	27.7
Ethylbenzene	µg/l	1	ISO 17025	107	126	271	140	85.9
p & m-xylene	µg/l	1	ISO 17025	1170	1020	1690	857	558
o-xylene	µg/l	1	ISO 17025	1840	1370	2140	1020	647
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	2.9	4.4	16	11	6.6
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	100	67	150	84	28
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	8600	6600	15000	6300	8100
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	2500	5200	3000	3100	2400
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	3500	1600	720	1200	850
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	59	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	15000	13000	19000	11000	11000



Analytical Report Number: 18-99937

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043935	1043936	1043937	1043938	1043939
Sample Reference				Z5	A6	C7	C6	D5
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				12/09/2018	12/09/2018	12/09/2018	12/09/2018	12/09/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	966	736	2110	705	1240
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	4500	29000	36000	30000	14000
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	3.9	8.3	22	17	17
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 18-99937

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043940				
Sample Reference				D4				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				12/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	6.8				
Sulphate as SO ₄	µg/l	45	ISO 17025	28200				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	28.2				
Chloride	mg/l	0.15	ISO 17025	410				
Nitrate as N	mg/l	0.01	ISO 17025	0.08				
Nitrate as NO ₃	mg/l	0.05	ISO 17025	0.37				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	170				
BOD (Biochemical Oxygen Demand) (Total) - UK	mg/l	1	ISO 17025	< 1.0				
Redox Potential	mV	-800	NONE	25.30				
Dissolved Oxygen	mg/l	1	NONE	6.8				

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	40.7				
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Heavy Metals / Metalloids

Iron (dissolved)	mg/l	0.004	ISO 17025	7.2				
Fe ²⁺	mg/l	0.2	NONE	1.70				
Fe ³⁺	mg/l	0.2	NONE	5.52				

Monoaromatics

Benzene	µg/l	1	ISO 17025	2.1				
Toluene	µg/l	1	ISO 17025	20.1				
Ethylbenzene	µg/l	1	ISO 17025	78.3				
p & m-xylene	µg/l	1	ISO 17025	562				
o-xylene	µg/l	1	ISO 17025	648				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	2.1				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	20				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	9000				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	4100				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	450				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	14000				



Analytical Report Number: 18-99937

Project / Site name: Former Polycell Site

Your Order No: R-1339-7907-1005

Lab Sample Number				1043940				
Sample Reference				D4				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				12/09/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	1350				
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	6800				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				

Environmental Forensics

Gases

Methane	mg/l	0.1	NONE	20				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-99937

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B	L086A-UK	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
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K ₂ Cr ₂ O ₇ followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-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
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Iron (II) and Iron (III) in water	Determination of Iron II and Iron III in water by coloration with phenanthroline and calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L079-PL	W	NONE
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
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In-house method based on BS1377 Part 3, 1990 In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L084-PL	W	NONE
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



Analytical Report Number : 18-99937

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TO - Gases C1-C4	Determination of volatile hydrocarbons by GC-MS Headspace.	In-house method		W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

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.

Wheat Quarter Limited

Remediation Verification and Long-term Monitoring Plan (Southern Area)
Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

NAPL ID



Jennifer Russell

John F. Hunt Remediation UK
Europa Park
London Road,
Grays
Essex
RM20 4DB

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

t: [REDACTED]
e: [REDACTED]

t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-89053

Replaces Analytical Report Number : 18-89053, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	14/06/2018
Your job number:		Samples instructed on:	14/06/2018
Your order number:	R/1339/7909/1005	Analysis completed by:	06/07/2018
Report Issue Number:	2	Report issued on:	06/07/2018
Samples Analysed:	1 water sample		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-89053

Project / Site name: Former Polycell Site

Your Order No: R/1339/7909/1005

Lab Sample Number				982048				
Sample Reference				BH36				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				13/06/2018				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Miscellaneous Organics

Product ID		N/A	NONE	See Attached				
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 18-89053

Project / Site name: Former Polycell Site

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Product ID	Determination of product ID by interpretation against standard chromatograms - Water.	In-house method	L070-PL/UK	W	NONE

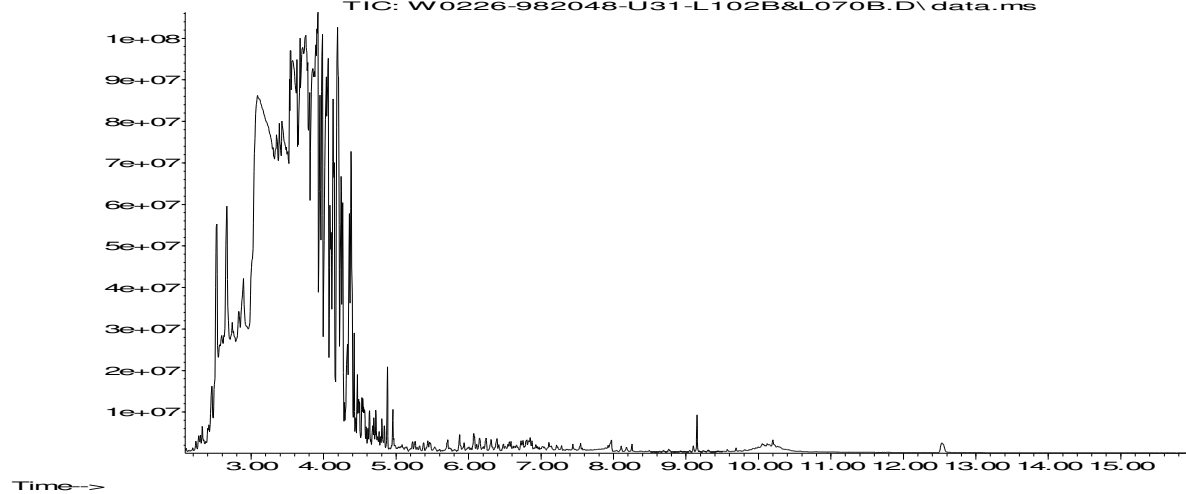
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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.

Abundance

TIC: W0226-982048-U31-L102B&L070B.D\data.ms



The total ion count (TIC trace) shows a carbon range from C8 to C35.
The sample TIC trace is complex, showing mainly aromatic and some aliphatic product sources.
The trace does not match the standard product profiles but is suggestive of a mixture of white spirit and kerosene.

Wheat Quarter Limited

Remediation Verification and Long-term Monitoring Plan (Southern Area)
Broadwater Road Site, Welwyn Garden City, AL8 6UN, UK

Soils

**Sam Hall**

John F. Hunt Remediation UK
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RM20 4DB

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

t: [REDACTED]
e: [REDACTED]

t: [REDACTED]
f: [REDACTED]
e: [REDACTED]

Analytical Report Number : 18-88372

Replaces Analytical Report Number : 18-88372, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	08/06/2018
Your job number:		Samples instructed on:	08/06/2018
Your order number:	R-1339-7909-1005	Analysis completed by:	06/07/2018
Report Issue Number:	2	Report issued on:	06/07/2018
Samples Analysed:	1 soil sample		

Signed:

[REDACTED]

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-88372

Project / Site name: Former Polycell Site

Your Order No: R-1339-7909-1005

Lab Sample Number				977867				
Sample Reference				BHD02				
Sample Number				None Supplied				
Depth (m)				25.00-27.30				
Date Sampled				08/06/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	20				
Total mass of sample received	kg	0.001	NONE	0.60				

Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	ug/kg	1	MCERTS	< 1.0				
Ethylbenzene	ug/kg	1	MCERTS	68				
p & m-xylene	ug/kg	1	MCERTS	500				
o-xylene	ug/kg	1	MCERTS	430				
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0				

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 - 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	13				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	13				

Miscellaneous Organics

Product ID		N/A	NONE	See Attached				
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Analytical Report Number : 18-88372

Project / Site name: Former Polycell Site

* 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 *
977867	BHD02	None Supplied	25.00-27.30	White clay and sand with chalk and gravel.

Analytical Report Number : 18-88372

Project / Site name: Former Polycell Site

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

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
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Product ID in soil	Determination of product ID by interpretation against standard chromatograms - Soil.	In-house method	L064-PL/UK	W	NONE
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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

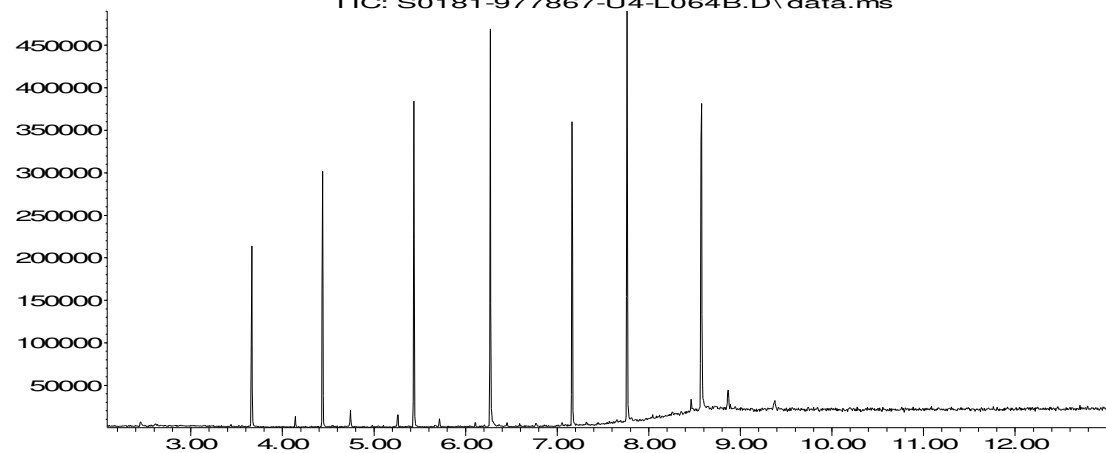
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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.

Abundance

TIC: S0181-977867-U4-L064B.D\data.ms



Time-->

The total ion count (TIC trace) shows a carbon range from C8 to C35.
The sample TIC trace is simple, showing aromatic (below LOD) product sources.
The trace does not match the standard product profiles.

Jennifer Russell

John F. Hunt Remediation UK
Europa Park
London Road,
Grays
Essex
RM20 4DB

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Watford,
Herts,
WD18 8YS

t:
e:

t:
f:
e:

Analytical Report Number : 18-89175

Replaces Analytical Report Number : 18-89175, issue no. 1

Project / Site name:	Former Polycell Site	Samples received on:	15/06/2018
Your job number:		Samples instructed on:	15/06/2018
Your order number:		Analysis completed by:	06/07/2018
Report Issue Number:	2	Report issued on:	06/07/2018
Samples Analysed:	1 soil sample		

Signed:

Jordan Hill
Reporting Manager
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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Analytical Report Number: 18-89175

Project / Site name: Former Polycell Site

Lab Sample Number				982765				
Sample Reference				BHD04				
Sample Number				None Supplied				
Depth (m)				28.60-30.00				
Date Sampled				15/06/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	22				
Total mass of sample received	kg	0.001	NONE	0.59				

General Inorganics

Total Sulphate as SO ₄	mg/kg	50	NONE	430				
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	NONE	0.015				
Total Chloride	mg/kg	5	NONE	180				
Water Soluble Chloride (2:1)	mg/kg	1	NONE	150				

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	< 0.05				
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Monoaromatics

Benzene	ug/kg	1	NONE	< 1.0				
Toluene	ug/kg	1	NONE	< 1.0				
Ethylbenzene	ug/kg	1	NONE	4.8				
p & m-xylene	ug/kg	1	NONE	26				
o-xylene	ug/kg	1	NONE	16				
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	NONE	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	NONE	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	NONE	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	NONE	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	NONE	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	NONE	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	NONE	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	NONE	< 8.0				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	NONE	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	NONE	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	NONE	0.30				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	NONE	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	NONE	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	NONE	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	NONE	< 10				

TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	NONE	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	NONE	< 10				

VOCs

1,3,5-Trimethylbenzene	ug/kg	1	NONE	56				
1,2,4-Trimethylbenzene	ug/kg	1	NONE	190				
Dichloromethane	ug/kg	100	NONE	< 100				

Analytical Report Number : 18-89175

Project / Site name: Former Polycell Site

* 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 *
982765	BHD04	None Supplied	28.60-30.00	White chalk with gravel. **

** Non MCERTS matrix.

Analytical Report Number : 18-89175

Project / Site name: Former Polycell Site

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

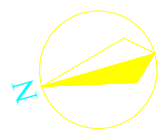
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride in soil	Determination of acid soluble chloride in soil by extraction with nitric acid, addition of silver nitrate followed by titration against thiocyanate.	In-house method	L075-PL	D	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	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
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
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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-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.

Annex G – Post-remediation and Long-term Monitoring Plan



GENERAL NOTES:

1. This drawing is to be read in conjunction with all relevant Architects and Engineers drawings and specifications.
2. Do not scale from this drawing. All details and dimensions and levels are to be checked by the contractor prior to commencement of construction. Any discrepancies are to be reported to the Engineer.
3. All levels are in meters & dimensions in millimeters unless noted otherwise.
4. Design based on topographical survey and CCTV survey information available at the time of design. All existing sewers, connections, pipe sizes and invert levels to be confirmed by contractor prior to commencement of works to ensure connectivity. Any variance from the information shown should be reported to the engineer for review.
5. Where existing drainage is being used, allowances should be made to remediate this drainage in line with available CCTV survey information.
6. Where there is no requirement to keep existing drainage, allowances should be made to abandon this in line with Curtins drainage specification.
7. Any new gully and external surface water inlet positions and associated falls to them are shown indicatively and are to be designed set out by the Landscape Architect.
8. Cover levels should be confirmed against Landscape Architects level design. Any discrepancy should be noted and coordinated to the engineer ASAP.
9. All internal drainage points are shown indicatively and are to be designed and set out by the M&E engineer.
10. Any drainage runs and their connections damaged through construction works should be replaced to sufficient standard.
11. Diversion and abandonment of services associated with these designs by others.
12. Lateral connections from internal drain points should be sized to match above ground designs, with minimum size of 1000.
13. Infiltration to ground from permeable paving areas to be confirmed by further geo-technical review.
14. Surface water restricted to Greenfield runoff rates. 5 l/s/ha for total site area of 3.79 Ha equates to 19.58 l/s for the entire site.
15. S108 Application required for new connection to public sewer.
16. Pipe diameter indicative only. Capacity check to be carried out to confirm proposals.
17. Further co-ordination required with Structural Engineers.
18. Current drawing taken from Proposed Drainage Layout including pile caps.

KEY

- RW/BH Potential Long Term Monitoring Borehole (Delta Simons, 2015)
- BH01-17 Potential Long Term Monitoring Borehole (EAME, 2017)
- A,B,C,D,Z Potential Long Term Monitoring Borehole (JFH, 2018)
- To be retained until September 2019
- To be retained until April 2021

P01	STAGE 4 ISSUE	28.08.19	FD	AS
T02	FOUL NETWORK REVISED TO GRAVITY	01.08.18	NMH	AS
T01	STAGE 3 ISSUE	20.04.19	DSR	AS

Rev	Description	Date	By	Check



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STAGE 4

SHREDDED WHEAT, METROPOLITAN

LONG TERM MONITORING
BOREHOLE PLAN

Date	Drawn By	Designed By	Checked By
02.11.2018	W SPRAGGS	W SPRAGGS	D HAMMOND
Scale: 1:250			
Project No	Originator	Zone	Level
067358 - CUR - 00 - 00 - DR - GE - 00003	-P01		

SURFACE WATER TO BE RESTRICTED TO 5 l/s/ha

DISTRIBUTION OF ATTENUATION VOLUME ACROSS SITE TO BE CONFIRMED BY DETAILED HYDRAULIC MODELLING AND CONFIRMATION OF SUDS PROPOSALS FROM PLANNERS.

PERMEABLE PAVING AREAS DESIGNED TO SELF ATTENUATE DUE TO UNDERLYING CHALK. YARD GULLIES IN PATIO AREAS MY BE ABLE TO DISCHARGE TO GROUND INFILTRATION TO BE CONFIRMED BY GEO-TECHNICAL REVIEW.