



Verification Report for Data Centre Block 2 (UP2/EC2), Block 3 (UP3/EC3) and Visitor Reception 2

Union Park,
North Hyde Gardens,
Hayes,
UB3 4QQ

A REPORT PREPARED FOR AND ON BEHALF OF:
Ark Data Centres

Issue Date: 26 February 2025
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For and on behalf of
Colliers Building Consultancy Limited

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VERIFICATION REPORT

CLIENT NAME: Ark Data Centres

PROPERTY ADDRESS: Union Park,
North Hyde Gardens,
Hayes,
UB3 4QQ

INSPECTION DATE: N/A



1.0 INSTRUCTIONS

- 1.1** Colliers Project and Building Consultancy (Colliers) was instructed by Ark Data Centres to complete a Verification Report for the initial phase of a redevelopment at a site referred to as Union Park, North Hyde Gardens, Hayes, UB3 4QQ. These works have been completed in connection with the construction of a data centre for Data Centre 2 (Union Park 2/UP2), Energy Centre 2 (EC2), Data Centre 3 (Union Park 3/UP3), Energy Centre 3 (EC3) and Visitor Reception 2. Verification reports for subsequent phases will be supplied separately. A copy of the phasing plan for the site is included within Appendix 1.

2.0 AIMS AND OBJECTIVES

- 2.1** The aims of this report are:
- Confirm that the remediation requirements, set out by Paragon Building Consultancy (now Colliers) in the Remediation Strategy (Reference: 20.0023/CK/LSG Revision E. Dated: 2 September 2021) have been completed to an acceptable standard.
 - Confirm that risks to human health, controlled waters and the property are reduced to an acceptable level to allow the discharge of relevant planning conditions.
- 2.2** The aims are to be completed by:
- Completing site inspections throughout development to monitor progress and review information provided by the main contractor relating to unexpected contamination, the installation of the potable water supply network, decommissioning of boreholes, installation of a gas membrane and imported soils.

3.0 SCOPE OF WORKS

3.1	<p>The scope of the report was agreed with the client and comprised the following:</p> <ul style="list-style-type: none"> • Site inspections throughout the development; • The review of the potable supply pipework information; • The review of the gas membrane installation documentation; • The review of the imported soil proposal; and • The provision of a verification report detailing completion of the above.
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4.0 BACKGROUND

4.1	<p>Site Location</p>
4.1.1	<p>The site is centred around National Grid Reference 510423, 179309 and is approximately 3.5Ha. The approximate elevation of the site is 31m Above Ordnance Datum (mAOD). Site information gathered during the preliminary report is summarised below and a Site Location Plan is provided as Figure 1 in Appendix 1.</p>
4.1.2	<p>At the time of the original reporting, the site comprised five main parcels of land that were predominantly used for commercial and industrial uses, which are summarised below.</p> <ul style="list-style-type: none"> • Vodafone; • British Airways (BA); • Abellio Bus Garage (Abellio); • Addison Lee; and • FM Conway.
4.1.3	<p>The wider surrounding area comprises industrial and commercial land use, with a rail line bounding the north of the site. The River Crane (also known as the Yeading Brook) runs through the eastern part of the site. In addition, the Grand Union Canal is off site and located within 5m of the southern boundary of the site, beyond a towpath.</p>
4.1.4	<p>At the time of writing the original reports, the former BA building had been demolished to create a large open area of hardstanding with stockpiles of crushed concrete. Furthermore, the Vodafone, Addison Lee and Abellio buildings were planned to be demolished.</p>
4.2	<p>Proposed Development and Planning</p>
4.2.1	<p>The proposed development includes: "Site clearance and preparation, including the demolition of remaining buildings, and the redevelopment of the site to provide: a new data centre Use Class B8), a HV Sub-Station, works to the highway, car parking, cycle parking, associated infrastructure, enclosures and necessary physical security systems, hard and soft landscaping (including works to the River Crane) and ancillary uses, as well as associated external works."</p>

4.2.2	Planning permission was granted for this development by the London Borough of Hillingdon under planning reference 75111/APP/2020/1955.
4.2.3	<p>Application 75111/APP/2020/1955 was granted with the following environmental planning conditions:</p> <ul style="list-style-type: none"> • Condition 31: Provision of a Phase 1, Phase 2, Remediation Strategy and Verification Report. • Condition 32: Provision of a Piling Works Risk Assessment. • Condition 33: Provision of a Remediation Strategy. • Condition 34: Provision of a Verification Report. • Condition 35: Completion of Long Term Groundwater Monitoring. • Condition 36: Completion of a Discovery Strategy. • Condition 38: Decommissioning of Boreholes.
4.2.4	This report meets the final requirements of Conditions 31, 34, 35, 36 and 38 (for Phase 1). The remaining conditions have already been discharged (for Phase 1).
4.2.5	Subsequently, an additional planning application was made to include the former Abellio plot: 75111/APP/2022/1007.
4.2.6	<p>Application 75111/APP/2022/1007 was granted with the following environmental planning conditions:</p> <ul style="list-style-type: none"> • Condition 27: Provision of a Piling Works Risk Assessment. • Condition 28: Provision of a Phase 1, Phase 2, Remediation Strategy and Verification Report. • Condition 29: Provision of a Remediation Strategy. • Condition 30: Provision of a Verification Report. • Condition 31: Completion of Long Term Groundwater Monitoring. • Condition 32: Completion of a Discovery Strategy.
4.2.7	The above application relates specifically to the former Abellio plot.
4.2.8	At present, Data Centre 1 (Union Park 1/UP1), Energy Centre 1 (EC1), the Visitor Reception 1, and the Electrical Substation have been completed. As shown within the phasing plan in Figure 3, Appendix 1.
4.3	Summary of Previous Reports
4.3.1	<p>Colliers (formerly Paragon) have completed the reports listed below:</p> <ul style="list-style-type: none"> • Paragon, 2021. Phase 1 Preliminary Risk Assessment. Reference: 19.0633/CB/NW Revision D. Dated: 11 November 2021. • Paragon, 2021. Phase 2 Ground Investigation Report. Reference: 20.0023/CB/DCN Revision D. Dated: 11 November 2021. • Paragon, 2021. Detailed Quantitative Risk Assessment (DQRA). Reference: 20.0023/CK/KJH Revision C. Dated: 11 November 2021.

	<ul style="list-style-type: none"> • Paragon, 2021. Remediation Strategy. Reference: 20.0023/CK/LSG Revision E. Dated: 2 September 2021. • Paragon, 2021. Piling Works Risk Assessment. Reference: 21.0198/CB/NW. Dated: 22 February 2021. • Paragon, 2021. Groundwater Monitoring Initial Summary. Reference: 211423/CB/NW. Dated: 21 December 2021. • Paragon, 2022. Groundwater Monitoring Report 2. Reference: 211423/AH/GWR 2. Dated: 17 March 2022. • Paragon, 2022. Groundwater Monitoring Report 3. Reference: 211423/CB/GWR 3. Dated: 13 July 2022. • Paragon, 2022. Groundwater Monitoring Report 4. Reference: 211423/CB/GWR 4. Dated: 12 September 2022. • Colliers, 2023. Verification Report for Data Centre 1 (Union Park 1/UP1), Energy Centre 1 (EC1) and Visitor Reception. Dated: 10 November 2023. • Colliers, 2023. Contamination Report for the Incoming Water Supply for Data Centre 1 (Union Park 1/UP1) and Energy Centre 1 (EC1) Union Park Data Centre. Dated: 23 November 2023. • Colliers, 2024. Block 1, Union Park – Environment Agency Comments: Colliers Response Letter. Dated: 12 January 2024. • Colliers, 2024. Union Park, Hayes – UP3/EC3 Ground Conditions Summary. Reference: 0311821/CB/LC/v2. Dated: 14 May 2024. • Colliers, 2024. Union Park, Hayes – Block 1 and Abellio Preliminary Assessment for the Environmental Permit. Dated: 8 November 2024. <p>4.3.2 The British Geological Survey (BGS) mapping for the site identified it is underlain by artificial ground (worked ground), and subsequently the Lynch Hill Gravel Member, over the London Clay Formation.</p> <p>4.3.3 The boreholes drilled onsite encountered hardstanding over Made Ground (cohesive and granular lenses) to a maximum depth of 5.8mbgl over Lynch Hill Gravel (cohesive and granular lenses) to 10.2mbgl over London Clay Formation to a maximum drilled depth of 35mbgl.</p> <p>4.3.4 Groundwater was encountered in the Lynch Hill Gravel at around 29mAOD in the centre of the site and closest to the river at 26.76-26.57mAOD. In comparison, the base of the River Crane channel adjacent to the site is around 25.00mAOD based on Environment Agency LiDAR data. Perched groundwater was also encountered in the Made Ground and London Clay.</p> <p>4.3.5 The soil and groundwater samples recovered from the boreholes were submitted for laboratory testing for a range of contaminants in line with the historical uses of the site and findings of the previous investigations.</p> <p>4.3.6 The results identified asbestos fibres were present within the shallow Made Ground across the site. The extensive hardstanding mitigates risks to site users in the current site layout, however when construction commences and hardstanding is broken out there will be a potential release of fibres to air. As such, careful management of the soils will be required throughout the construction phase to mitigate risks to construction workers and off-site receptors.</p>
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4.3.7 The concentrations of Polycyclic Aromatic Hydrocarbons (PAH) and Total Petroleum Hydrocarbons (TPH) within the groundwater exceeded the Environmental Quality Standard (EQS), which was used to assess the risks to the River Crane/Yeading Brook (considered the most sensitive Controlled Water assessment). However, a Detailed Quantitative Risk Assessment (DQRA) was subsequently undertaken using the Remedial Targets Methodology which has shown that the site does not pose any significant risks to Controlled Waters (River Crane). As such, following the site investigations and DQRA undertaken to date it is considered unlikely that the contamination identified in site soils or groundwater would warrant remediation. Also, due to the presence of high levels of Ammonia already in the River Crane, it is unlikely that any remediation carried out on the Bulls Bridge would result in a measurable benefit to the River Crane.

4.3.8 The results from the gas monitoring and vapour analysis have identified slightly elevated concentrations of carbon dioxide, and elevated concentrations of the naphthalene in one location. As such, there is a potential gas and vapour risk.

4.4 Summary of Conceptual Site Model

4.4.1 Based on the foregoing, a conceptual site model has been prepared to reflect the current conditions of the site. This is presented in Table 1.

4.4.2 *Table 1. Conceptual Site Model*

Receptor	Potential sources	Pathways	Risk	Justification
Human Health				
Construction and maintenance workers / Users of the site	Organic and metal contamination	Direct contact, ingestion, and inhalation via outdoor soils or translocated soils and dust indoors.		Low to Moderate risk: Ingestion, inhalation and dermal contact with contaminated soils in excavations or stockpiles cannot be discounted. Personal Protective Equipment (PPE) and Risk Assessments and Method Statements are required.
	Ground gas and vapours	Inhalation, Migration through granular and fractured soils into confined spaces.		Low to Moderate risk: Inhalation of vapours from contaminated soils or groundwater below the site cannot be discounted due to the historical use of the site and the extent of previously untested areas.
Future site users	Organic and metal contamination in soils and groundwater	Direct contact, ingestion, and inhalation of outdoor soils or translocated soils and dust indoors.		Low to Moderate risk: Inhalation of vapours from contaminated soils or groundwater below the site and contact with Made Ground in areas of soft landscaping may be possible.
	Ground gas and vapour	Inhalation, migration through granular and fractured soils into confined spaces.		Low to Moderate risk: Inhalation of vapours from contaminated soils or groundwater below the site cannot be discounted.
Offsite Residents (250m southwest)	Organic and metal contamination in soils, groundwater and gas	Direct contact, ingestion, and inhalation of outdoor soils or translocated soils and dust indoors.		Low risk: Residents 300m southwest are unlikely to be at risk from contaminants arising from the site as they will be cut off by the Grand Union canal. The likelihood for migration to properties a similar distance to the northwest is minimal given the considerable distance to the properties and several other areas of industrial land in between.

Table 1. Conceptual Site Model (Continued)

Receptor	Potential sources	Pathways	Risk	Justification
Property				
Site structures and services	TPH in site soils	Direct contact between soil and structures or services.		Low to Moderate risk: Direct contact of building materials including foundations and buried services with contaminated soils and groundwater is low to moderate based on laboratory testing.
	Ground gas and vapour	Migration through granular and fractured soils into confined spaces.		Moderate risk: The results of the investigation suggest that there is the potential for migration of gases and vapour through soil pore space and to the surface from underlying Made Ground and historical ground workings cannot be discounted.
Plants /Landscaping	Metals and organic contamination in soils	Root contact and uptake		Low risk: The results of the soil analysis have been compared to BS3882 and the risk to existing plants is low. However, a capping system is likely to be required due to the presence of asbestos within the shallow Made Ground.
Adjacent Property				
Building fabric of adjacent properties	Metals and organic contamination in soils	Soil leaching and migration and translocation as dust of soil contamination.		Low risk: Direct contact of building materials including foundations and buried services with contaminated soils and groundwater is low based on the low level of contaminants identified near to off-site property in the wider estate.
Groundwater				
Principal Aquifer	Metals and organic contamination in soils	Soil leaching and migration of potential soil contamination to dissolved phase in groundwater		Low risk: The assessment from the DQRA has determined that the site does not pose a significant risk to Controlled Waters.
Surface Waters				
River Crane/Yeading Brook (onsite) Grand Union Canal (5m south)	Leachable metals and organic contamination	Soil leaching and migration into drains and sewers which discharge into the ditch.		Low risk: The assessment from the DQRA has determined that the site does not pose a significant risk to Controlled Waters.

4.4.3 As such some degree of remediation was required to mitigate the risks.

4.5 Construction and Design Team

4.5.1 A summary of the Management Team working on the project is presented below.

4.5.2	<p>Table 2. Management Team</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Role</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Ark Data Centres</td> <td>Client</td> <td></td> </tr> <tr> <td>Concert</td> <td>Project Manager</td> <td></td> </tr> <tr> <td>HDR / Hurley Palmer Flatt</td> <td>Principal Designer</td> <td></td> </tr> <tr> <td>Sweet Projects</td> <td>Main Contractor</td> <td>Main site</td> </tr> <tr> <td>JSM</td> <td>Main Contractor</td> <td>Separate instruction for Vodafone / Substation build</td> </tr> <tr> <td>Gallagher</td> <td>Subcontractor</td> <td>Groundworks</td> </tr> <tr> <td>Toureen</td> <td>Subcontractor</td> <td>Groundworks and Development of UP2, EC2, UP3, EC3 and Visitor Reception 2.</td> </tr> </tbody> </table>	Name	Role	Notes	Ark Data Centres	Client		Concert	Project Manager		HDR / Hurley Palmer Flatt	Principal Designer		Sweet Projects	Main Contractor	Main site	JSM	Main Contractor	Separate instruction for Vodafone / Substation build	Gallagher	Subcontractor	Groundworks	Toureen	Subcontractor	Groundworks and Development of UP2, EC2, UP3, EC3 and Visitor Reception 2.
Name	Role	Notes																							
Ark Data Centres	Client																								
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Toureen	Subcontractor	Groundworks and Development of UP2, EC2, UP3, EC3 and Visitor Reception 2.																							
4.5.3	<p>Colliers (formerly Paragon) have been supporting Ark Data Centres as their Environmental Advisors.</p>																								

5.0 REMEDIATION STRATEGY

5.1	<p>Remediation Strategy</p>
5.1.1	<p>The chemical analysis has identified asbestos within the soil and elevated concentrations of TPH and PAH within the groundwater. In addition, a potential gas and vapour risk has been identified. These impacts are considered to relate to the historical development of the site, which has a longstanding industrial legacy as a creosote works and power station. Therefore, to facilitate the development, the following recommendations were made:</p> <ul style="list-style-type: none"> • Site clearance and demolition including the removal of the generator / above ground tank in the Vodafone plot (completed in spring / summer 2020); • Personal Protective Equipment and health and safety controls; • Watching brief and discovery strategy in the event that previously unidentified contamination is encountered; • Ongoing monitoring of groundwater (a monitoring plan is included within this strategy); • Capping layers in soft landscaped areas; • Gas (methane and carbon dioxide) and vapour resistant membranes within future enclosed structures; • Asbestos control measures and materials management; • Barrier pipework for new drinking water supply pipework; • Decommissioning of boreholes; and • Piling Works Risk Assessment; and • Remediation and Verification reporting.

<p>5.2</p>	<p>Verification Plan</p>
<p>5.2.1</p>	<p>To confirm that the mitigation measures outlined by the Remediation Strategy are implemented, a Verification Plan has been produced and is included in detail within the following report. The strategy sets out the requirements of the main contractor(s) in terms of collating information during development and the responsibilities of an environmental consultant in reporting the findings of third-party verification activities. The verification plan involves:</p> <ul style="list-style-type: none"> • Recording the findings of a watching brief and any onsite control measures such as dampening down; • Recording findings and outcomes of a discovery strategy should unforeseen contamination be encountered; • Provision of photographs around the removal of the tank ; • Findings of inspections and compliance testing; • Maintenance and provision of duty of care records (for importation and exportation of materials); • Site photographs; • Provenance data for imported topsoil / subsoil; • Chemical analysis data of soils and ongoing groundwater and surface water sampling; • Verification records of gas / vapour protection including specification of the design and As Built drawings; • Concrete design specification; • Borehole decommissioning information; • Confirmation of drinking water supply pipework material used and records of any communication with the local water supply company; and • Records of any permits / exemptions (if relevant).

6.0 VERIFICATION WORKS

<p>6.1</p>	<p>Site Visits</p>
<p>6.1.1</p>	<p>In summary, Colliers are completing ongoing visits of the development site and records of each remediation item are being collated. Depending on the purpose of the visit, photographs, and/or soil or water samples were collected. In addition, several visits were completed for general update purposes, in which no sampling was required. A list of the verification visits is included below, and a selection of photographs is presented in Appendix 2:</p>

6.1.2

Table 3. Verification Visits

Number	Date	Description
1	21 September 2020	General Inspection
2	5 November 2020	General Inspection
3	19 November 2020	General Inspection
4	22 January 2021	General Inspection
5	17 February 2021	General Inspection
6	7 June 2021	Soil Testing Hayes
7	8 June 2021	Soil Testing Hayes
8	22 June 2021	MMP Soil Supervision
9	29 June 2021	MMP Soil Supervision
10	30 June 2021	MMP Soil Supervision
11	1 July 2021	MMP Soil Supervision
12	5 August 2021	Borehole Drilling (Groundwater Monitoring set up)
13	2 September 2021	Set up of vibration equipment
14	10 March 2022	Site Meeting
15	23 March 2022	Site Inspection
16	31 March 2022	Groundwater Sampling (Paragon Inspection)
17	24 June 2022	Japanese Knotweed Inspection
18	8 August 2022	Soil and groundwater sampling visit
19	2 June 2023	Site Inspection
20	13 July 2023	Site Inspection
21	25 July 2023	Site Inspection
22	1 November 2023	Verification Inspection
23	6 November 2023	Site Inspection
24	7 November 2023	Site Inspection
25	8 March 2024	Site Inspection
26	12 November 2024	Topsoil Testing of Block 1

6.2 Construction Management Plan

6.2.1 A Construction Management Plan was required as part of the planning submission. The document was submitted to the Local Authority as part of the planning application:

- Sweet Projects, 2021. Construction Management Plan. Dated: 28 May 2021.

6.2.2 The report identifies how the critical construction activities were to be undertaken, and specifically covers the environmental, public health and safety aspects of the development.

6.2.3 A decision notice is available on the planning portal (Ref: 75111/APP/2021/1515) that states that the requirements for Condition 20 (Construction Management Plan) have been met.

6.2.4 Separately, Sweet Projects undertake daily site inductions and briefings for workers on the contaminants that may be encountered during groundworks.

6.3 Watching Brief / Discovery Strategy

6.3.1 Sweet Projects has completed a Watching Brief throughout the development. A single source of unexpected contamination was identified during the initial groundworks and breaking out of below ground structures in 2021. This resulted in the presence of an area of black oil pooling on water.

6.3.2 Sweet Projects initiated the Discovery Strategy and Colliers visited the site to inspect and take samples. It was determined that the oily water was to be removed from site using tankers.

6.3.3 No other unexpected sources of contamination have been identified during the works. Toureen have prepared a covering email to Sweet Projects, stating they have not encountered any unexpected contamination.

6.4 Groundwater Monitoring

6.4.1 The reports on long term groundwater quality have been written under separate cover between 2021 and 2022. The monitoring was undertaken to determine whether piling impacted the River Crane. A summary of the monitoring visits is presented below:

6.4.2 **Table 4. Monitoring Visits Completed**

Monitoring Round		Borehole Reference		
		BH101	BH102	BH103
Baseline				
05/08/21	Initial Baseline Visit	✓	✓	✓
During Piling				
19/08/21	Round 1	✓	✓	✓
31/08/21	Round 2	✓	✓	✓
14/09/21	Round 3	✓	✓	✓
30/09/21	Round 4	✓	✓	✓
13/10/21	Round 5	✓	✓	✓
28/10/21	Round 6	✓	✓	✓
10/11/21	Round 7	✓	✓	✓
23/11/21	Round 8	✓	✓	✓
07/12/21	Round 9	✓	✓	✓
20/12/21	Round 10	✓	✓	x ¹
05/01/22	Round 11	✓	✓	✓
19/01/22	Round 12	✓	✓	✓
31/01/22	Round 13	✓	✓	✓
17/02/22	Round 14	✓	✓	✓
Post Piling				
31/03/22	Round 15	✓	✓	✓
26/05/22	Round 16	✓	✓	✓
29/06/22	Round 17	✓	✓	✓
25/06/22	Round 18	x ²	✓	✓
17/08/22	Round 19	✓	✓	✓

Note To Table:

¹BH103 ran dry during monitoring on round 10 so no sample was taken during this visit.

²BH101 was inaccessible during monitoring round 18 due to stockpiles of soil.

It should be noted that no monitoring visits were completed in April due to illnesses within the monitoring team.

6.4.3 In summary, the results of the groundwater monitoring have shown that the contaminant concentrations are in the same magnitude as the concentrations identified prior to piling (i.e. same as the DQRA and the baseline monitoring round). Furthermore, the monthly monitoring has shown a broad decrease in concentrations of contaminants over time. Based on the above, it was concluded that it is unlikely that piling activities or groundworks have impacted the River Crane.

6.5 Capping Material

6.5.1 Due to the presence of contamination encountered within the shallow Made Ground during the Phase 2 Ground Investigation, it was recommended that areas of soft landscaping would be surfaced with a clean cover layer. This was to comprise:

6.5.2 *Table 5. Composition of Capping Layer*

Layer	Minimum Thickness
Topsoil	150
Subsoil	450
Geotextile	Terram 1,000 or similar

6.5.3 At the time of writing, the areas of soft landscaping were not ready to be tested as the soil had not been imported. Colliers undertook topsoil testing on 12 November 2024 of the soft landscaping surrounding the completion of Block 1 as part of the permit report for this section of the site. It is understood that similar topsoil will be imported to the Block 2 and 3 part of the site. Testing results from Block 1 determined that no exceedances above acceptable thresholds for a commercial land use were identified.

Sweet Projects have indicated the same source of topsoil they will be importing for Block 2 and 3 and provided test certificates. These certificates are presented in Appendix 4.

6.5.4 It is proposed that the verification testing of the cover system will be completed under separate cover.

6.6 Gas Protection Measures

6.6.1 Gas protection measures were determined to be required as part of the remedial works. It was determined that a gas and vapour membrane would be sufficient. The gas and vapour membrane has been fitted to all buildings. A layout plan from Sweet Projects showing the locations of the membrane is presented in Figure 4, Appendix 1.

6.6.2 A datasheet for the gas and vapour membrane, photographs and the installation records are presented in Appendix 5.

6.7 Materials Management and Waste

6.7.1 A Waste Management Plan (WMP) and a Materials Management Plan (MMP) were put in place as part of the wider development:

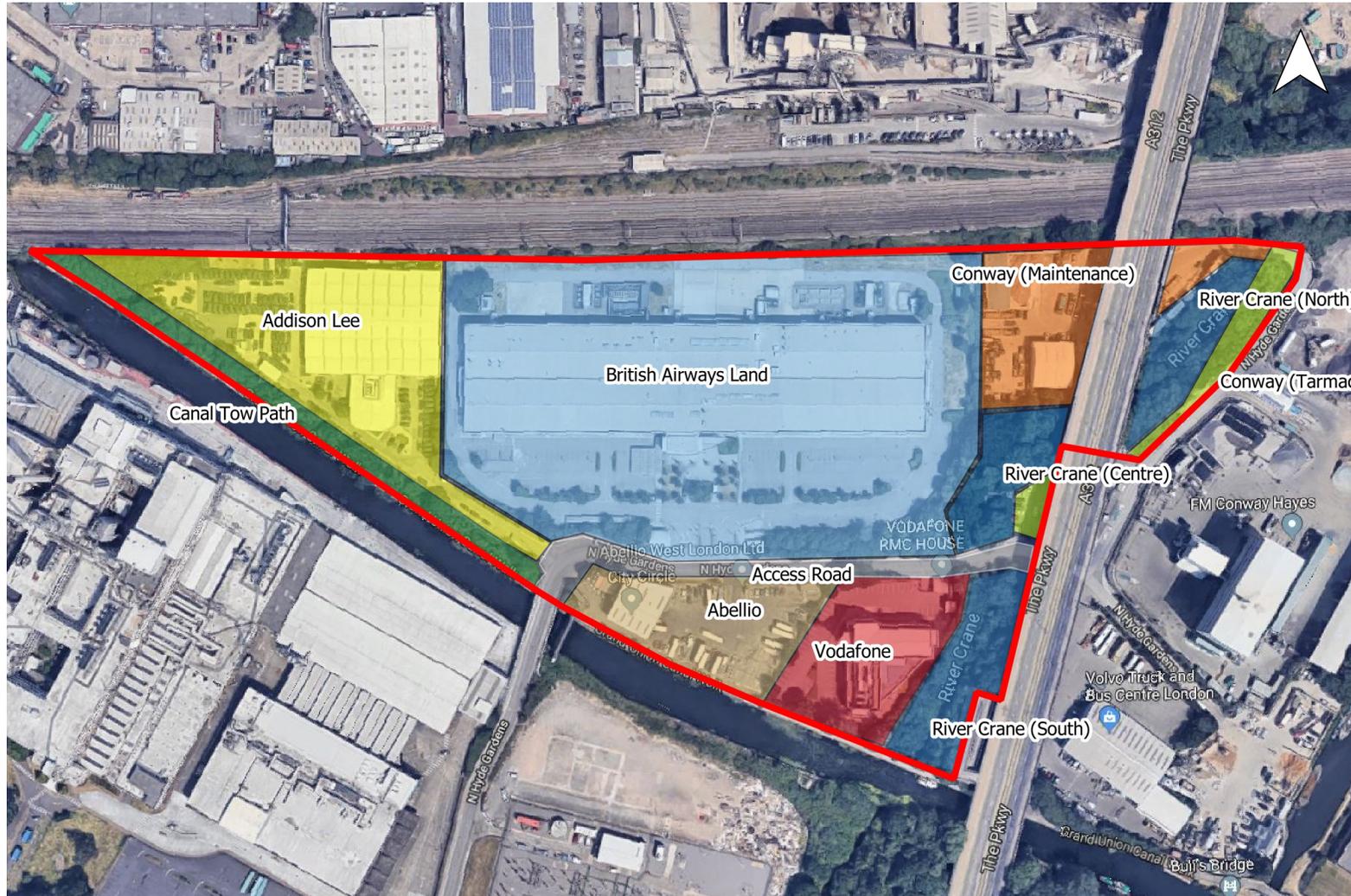
- Paragon, 2020. Waste Management Plan. Reference: 20.1054/CB/KJH. Dated: 9 November 2020.
- Paragon, 2021. Materials Management Plan. Reference: 201054/CB/RMc. Dated: 9 June 2021.

6.7.2	In addition, Sweet Projects, Gallagher and Toureen maintain a record of soil movement onsite. Further information is presented in Appendix 6.
6.7.3	The WMP and MMP are live documents for the entire development and the waste movement records will continue to be monitored until the end of the development.
6.8	Water Supply Pipes
6.8.1	Based on the contaminants identified during the site investigation, all materials in contact with water intended for human consumption were to comply with the Water Supply (Water Quality) Regulations 2016. As such a pipe system was to be installed to ensure the long-term safety and quality of water supply.
6.8.2	The pipework installed was PE80 SDR11 63mm MDPE barrier water pipe. Records of the order and installation are presented in Appendix 7.
6.9	Decommissioning of Boreholes
6.9.1	Sweet Projects decommissioned the boreholes as part of the site wide groundworks. The boreholes drilled along the eastern part of the site were removed prior to installation of the road. Confirmation from Sweet Projects is presented in Appendix 8.
6.10	Piling Works Risk Assessment
6.10.1	A Piling Works Risk Assessment was required as part of the planning submission. The document was submitted to the Local Authority as part of the planning application.
6.10.2	The PWRA covers UP2, EC2, UP3, EC3, UP1, EC1, Visitor Reception 2 and the substation.
6.10.3	The results of the PWRA confirmed that there is a low environmental risk associated with piling. No environmental incidents were reported by Sweet Projects.
6.10.4	A decision notice is available on the planning portal (Ref: 75111/APP/2022/3428) that states that the requirements for Condition 27 (Piling Method Statement) have been met.
6.11	Concrete Classification
6.11.1	Aggressive ground conditions of a DS2 ACEC AC-2 classification were determined for the site across both the Made Ground, Lynch Hill Gravels and London Clay. The HDR structural specification (HDR, 105 Structural Specification – Concrete Works. Dated 14 January 2022. Ref: PUR15469 Revision 2) provided, confirms the appropriate use of concrete resistant to chemical attack.

7.0 CONCLUSION

7.1	Conclusions
7.1.1	Based on the foregoing, it is considered that the development of UP3, EC3, UP2 and EC2 and Visitor Reception 2 has been completed in accordance with the Remediation Strategy. As such, the planning conditions relating to the verification report of UP3, EC3, UP2, EC2 and Visitor Reception 2 can be discharged.
7.2	Outstanding Actions
7.1.2	Colliers are awaiting final records of import and export certificates, as well as gas membrane documents for VRC2 and UP3. This report will be updated following availability of these documents. All other records provided to Colliers thus far have been completed in accordance with the Remediation Strategy.
7.1.3	The clean cover system will be laid in the near future. As such, Colliers will revisit the site to confirm the thickness of the capping layer and collect samples for analysis and produce appropriate validation reporting. No further actions are considered necessary for UP3, EC3, UP2, EC2 and Visitor Reception 2.

APPENDIX 1: FIGURES



Key

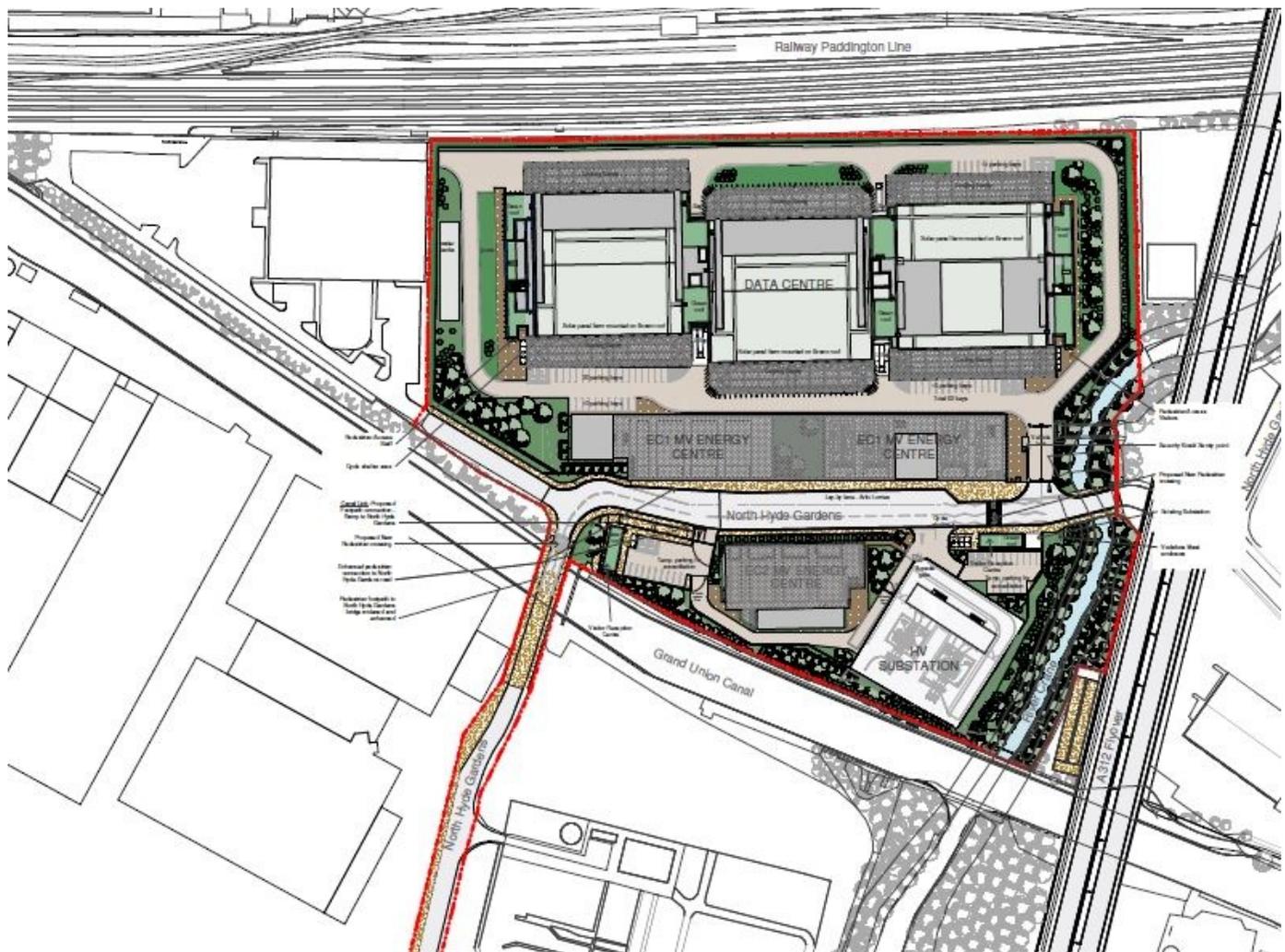
Site Boundary

Site Areas

- Access Road
- Addison Lee
- British Airways Land
- Canal Tow Path
- Conway (Maintenance)
- Conway (Tarmac)
- River Crane (North)
- River Crane (Centre)
- River Crane (South)
- Vodafone
- Abellio

Rev	Description	Date

Project Bulls Bridge, Hayes	Scale 1:3000
	Drawn by CB
	Approved By CK
Title Site Areas Plan	Drawing Number 2
	Date 21/05/2020



Paragon Building Consultancy
 65 Southwark Street
 London
 SE1 0HR
 020 7125 0112
 www.paragonbc.co.uk

Notes:

Drawing based on Nicholas Webb Architects plc, Project Union A90 - External Works Site Plan, Aerial View. Ref: NWA-0471-SN-ZZ-DR-A-90-005. P01. Dated 27/03/20, amended 18/08/2021.

 Development Plot

Rev	Description	Date

Project Bulls Bridge, Hayes	Scale	Not to scale
	Drawn by	CB
	Approved By	CK
Title Proposed Development Plan	Drawing Number	2
	Date	03/11/2021

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NOTES:

- DO NOT SCALE OFF THIS DRAWING. ALWAYS WORK TO NOTED DIMENSIONS.
- ALL DIMENSIONS MUST BE VERIFIED ON SITE BEFORE COMPLETING SHOP DRAWINGS OR SETTING OUT THE WORKS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SCOPE OF WORKS AS PREPARED BY HDR | Hurley Palmer Flatt
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND STRUCTURAL ENGINEER'S DRAWINGS AND ASSOCIATED HDR | Hurley Palmer Flatt DRAWINGS.
- THIS PACKAGE OF DESIGN INFORMATION IS PERTAINING TO THE PLASMA CONSTRUCTION DEMISE ONLY.

LEGEND

- PLANNING BOUNDARY
- PHASE ONE CONSTRUCTION BOUNDARY
- VEHICULAR PERMEABLE ASPHALT PAVING 345mm COARSE GRADED AGGREGATE
- VEHICULAR PERMEABLE BLOCK PAVING 350mm COARSE GRADED AGGREGATE
- VEHICULAR PERMEABLE ASPHALT PAVING 600mm COARSE GRADED AGGREGATE
- PERMEABLE LIGHT PAVED FOOTPATH
- LIGHT PAVED FOOTPATH
- CONCRETE HARDSTANDING
- MAIN CAMPUS - HRA
- FLEXIBLE HEAVY DUTY ROAD - HRA
- IMPERMEABLE MACADAM FOOTPATH
- PERMEABLE PEDESTRIAN ASPHALT
- ASPHALT RESURFACING
- TACTILE PAVING
- REINFORCED GRASS SURFACING
- SOFT LANDSCAPING

T6	STAGE 4 ISSUE	13.10.23
T5	STAGE 4 ISSUE	12.10.23
T4	STAGE 4 ISSUE	04.10.23
T3	STAGE 4 ISSUE	10.01.23
T2	STAGE 4 ISSUE	10.10.22
T1	STAGE 4 ISSUE	01.04.22

Rev	Description	Date
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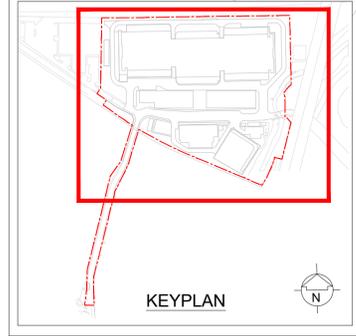
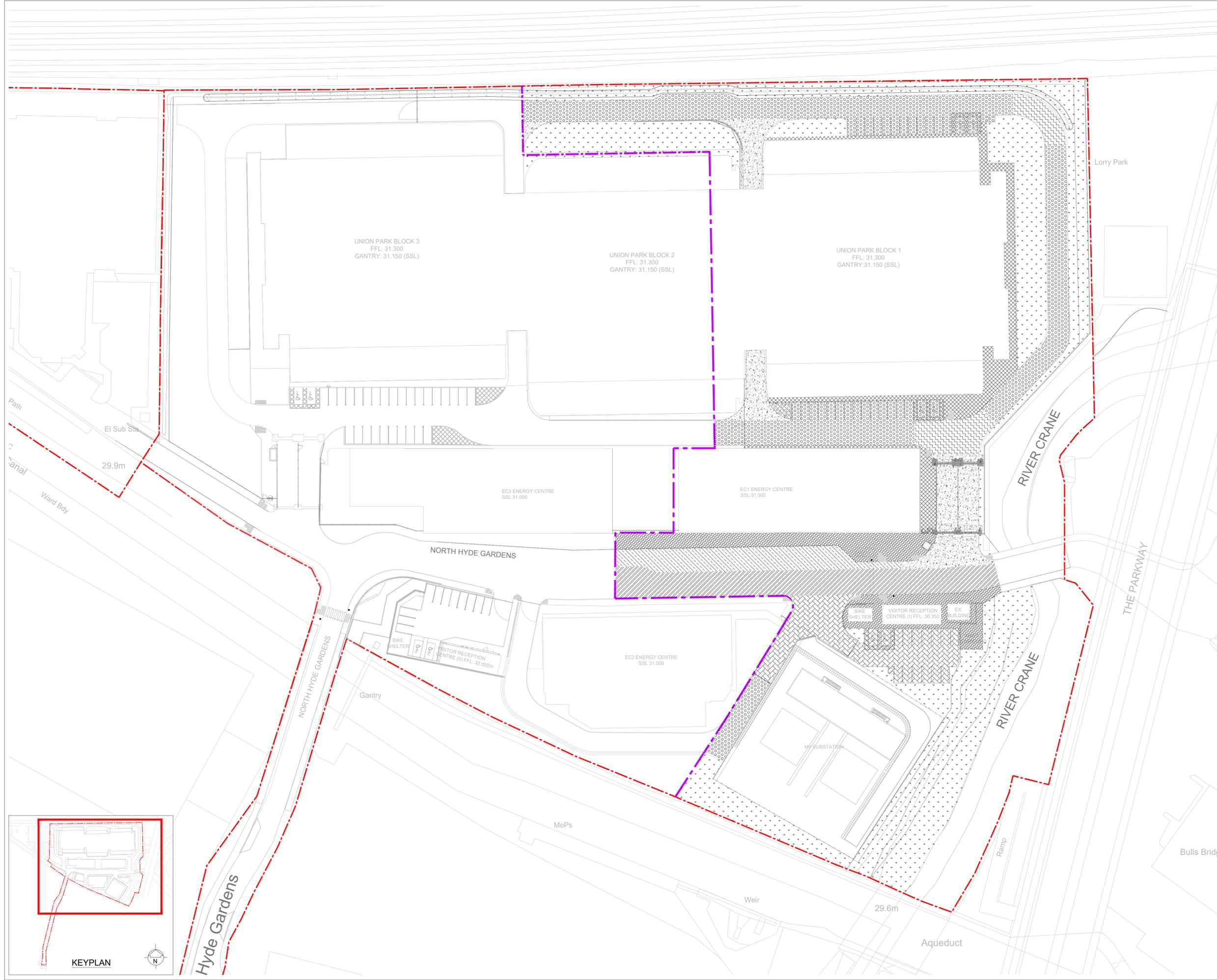
Drawing Status:	FOR APPROVAL	Suitability:	S4
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HDR | Hurley Palmer Flatt

4th Floor t: +44 (0)20 8763 5900
 Knollys House e: info@hurleypalmerflatt.com
 17 Addiscombe Road w: www.hurleypalmerflatt.com
 Croydon, CR0 6SR
 United Kingdom

Client:	SWEET PROJECTS
Architect:	NWA
Project:	UNION PARK
Title:	HIGHWAYS SURFACE LAYOUT

HDR HPF Project Number:		PUR17155	
Cad File Name:			
HPF-0471-SEW-GL-DR-C-95010			
Drawn:	HA/DE	Date:	13.10.2023
Checked/Approved:	JJUG	Scale @ A1:	1:500
Drawing Number:	HPF-0471-SEW-GL-DR-C-95010		Revision:
			T6



0 10 50 100
 Scalebar 100mm at scale 1:1

File: \\HPRH-FS01\DATA\REGIONAL WORKS\DRIVE\HURLEY\17000\PUR17155 SWEET GROUP UNION STG 4\16.0 CAD BIM\6.2 WIP\6.2.2 CAD\5 CIVIL\DRAWINGS\HPF-0471-SEW-GL-DR-C-95010.DWG User: Jensen, Jason Sheet: HPF-0471-SEW-GL-DR-C-95010 Plot Date: 13/10/2023 18:11:57



KEY:

SOFT LANDSCAPING
150mm TOPSOIL
450mm SUBSOIL
(600mm CLEAN CAPPING)

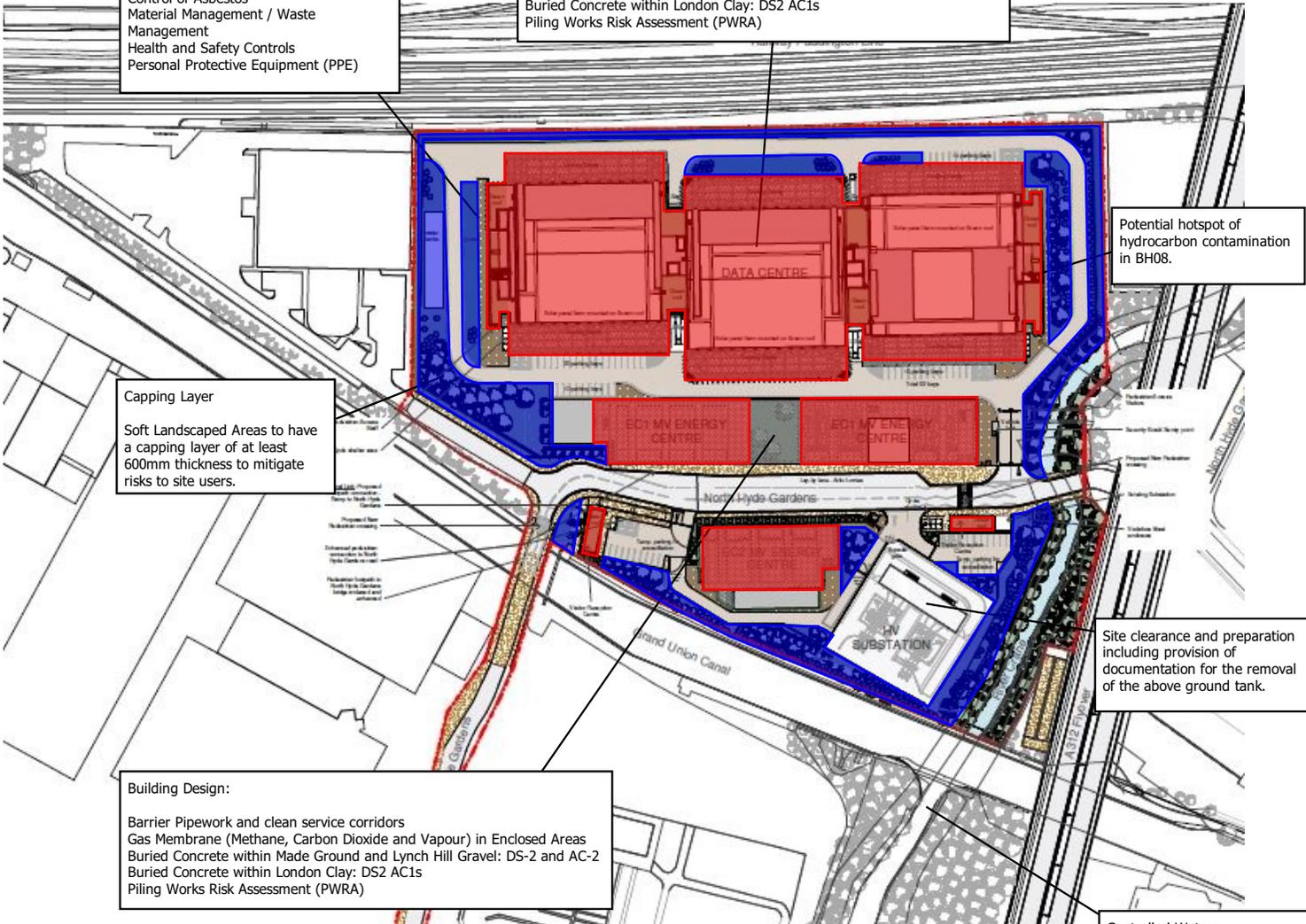
SOLCO GAS MEMBRANE TO ALL
BUILDINGS SITE WIDE

During Demolition and Construction:

- Control of Asbestos
- Material Management / Waste Management
- Health and Safety Controls
- Personal Protective Equipment (PPE)

Building Design:

- Barrier Pipework and clean service corridors
- Gas Membrane (Methane, Carbon Dioxide and Vapour)
- Buried Concrete within Made Ground and Lynch Hill Gravel: DS-2 and AC-2
- Buried Concrete within London Clay: DS2 AC1s
- Piling Works Risk Assessment (PWRA)



Potential hotspot of hydrocarbon contamination in BH08.

Capping Layer

Soft Landscaped Areas to have a capping layer of at least 600mm thickness to mitigate risks to site users.

Site clearance and preparation including provision of documentation for the removal of the above ground tank.

Building Design:

- Barrier Pipework and clean service corridors
- Gas Membrane (Methane, Carbon Dioxide and Vapour) in Enclosed Areas
- Buried Concrete within Made Ground and Lynch Hill Gravel: DS-2 and AC-2
- Buried Concrete within London Clay: DS2 AC1s
- Piling Works Risk Assessment (PWRA)

Controlled Waters:

The DQRA determined that there are no remediation requirements but long term monitoring will be completed to check the quality of the river.

SWEET PROJECTS LIMITED
SOILING PLAN AND GAS MEMBRANE EXTENTS
09/11/2023

APPENDIX 2: PHOTOGRAPHS



01: EC2 October 2023



02: EC2 December 2023



03: EC2 April 2024



04: EC2 June 2024



05: EC2 August 2024



06: EC2 October 2024



07: EC2 December 2024



08: EC2 February 2025



09: UP2 September 2023



10: UP2 December 2023



11: UP2 February 2024



12: UP2 April 2024



13: UP2 June 2024



14: UP2 October 2024



15: UP2 December 2024



16: UP2 February 2025



17: UP3 November 2023



18: UP3 May 2024



19: UP3 October 2024



20: UP3 January 2025



21: EC3 November 2023



22: EC3 November 2023



23: EC3 November 2024



24: EC3 November 2024



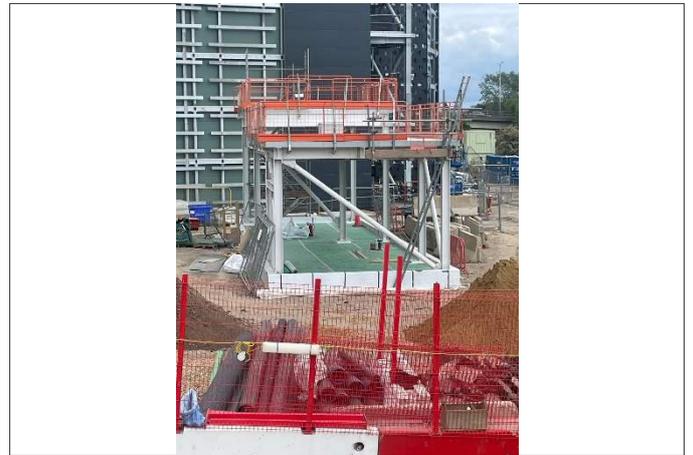
25: Visitor Reception 2 February 2025



26: Visitor Reception 2 February 2025



27: VRC2 Gas Membrane



28: VRC2 Gas Membrane

APPENDIX 3: DISCOVERY STRATEGY – COLLIERS GROUND CONDITION REPORT



0311821/CB/LC/v2

14 May 2024

BY EMAIL ONLY

Alhasan Sheriff
Sweet Projects

Dear Alhasan

UNION PARK, HAYES – UP3/EC3 GROUND CONDITIONS SUMMARY

Introduction

Further to your instruction, we present our ground condition summary for the proposed data centre and energy centre known as UP3 and EC3 respectively, which are to be developed at Union Park, North Hyde Gardens, Hayes, UB3 4QR. This review has been completed to support the construction of piles for the proposed development.

A site location plan for the wider development plot is presented as Figure 1, Appendix 1. UP3 is situated in the western part of the development plot as shown in Figure 2, Appendix 1. EC3 is shown in the southwest part of the development plot.

The scope of works included preparing a summary of the geological information by extracting key information from previously completed reports at the site.

Previous Investigations

The site has been subject to a number of ground investigations. The two reports that provide information in the southwest corner of the development plot are presented below.

- Jomas Associated Ltd, 2018. Geo-environmental and Geotechnical Assessment Ground Investigation Report for North Hyde Gardens, Hayes, UB3 4QR. Reference: P1470J1364/SL. Dated: May 2018.
- Paragon, 2021. Ground Investigation Report for former British Airways and Vodafone Plots. Reference: 20.0023/CB/DCN. Dated: 11 November 2021.

Background

At the time of the Jomas and Paragon investigations, the wider industrial estate comprised five main parcels of land: Vodafone, Abellio, British Airways, Addison Lee and FM Conway (Maintenance Yard). This report relates only to the southwestern part of the British Airways plot.

Generally, the development site was relatively flat with reduced elevations in the eastern part of the site where the River Crane (also known as the Yeading Brook) is situated. In addition, the Grand Union Canal is off site and located within 5m of the southern boundary of the Vodafone plot.



Historically, the site was used as a creosote works, an oil fired power station and a railway. It is also understood from British Geological Survey (BGS) mapping that the site comprises artificial ground which is presumed to be from informal landfilling at the site.

The ground investigations by Jomas and Paragon comprised a series of boreholes, trial pits and hand pits across the wider industrial estate. In addition, insitu testing and chemical and geotechnical laboratory analysis were completed. The results are summarised in the following sections.

Ground Conditions

The BGS describe the site as being underlain by artificial ground, the Lynch Hill Gravel Member, over the London Clay Formation.

In addition, the previous ground investigations by Jomas (2018) and Paragon (2021) describe the ground conditions as hardstanding over Made Ground (cohesive and granular lenses) to a maximum depth of 5.8mbgl over the Lynch Hill Gravel (cohesive and granular lenses) to 10.2mbgl over the London Clay Formation to a maximum drilled depth of (35mbgl). The Lynch Hill Gravel Member was notably clayey in places and only around 1.8m thick on average.

Groundwater was encountered in the Lynch Hill Gravel at around 29mAOD in the centre of the site and closest to the river at 26.76-26.57mAOD. Perched groundwater was also present within the shallow Made Ground.

In the location of UP3 and EC3, four key exploratory holes were completed. An Exploratory Hole Location Plan is presented as Figure 3, Appendix 1. A summary of the exploratory holes is presented below:

Table 1. Exploratory Hole Summary

Exploratory Hole Name	Consultant	Completed Depth (mbgl)	Additional Information
WS5	Jomas 2018	5.00	<ul style="list-style-type: none">• Drilled using a Windowless Sample Drilling Rig.• SPTs undertaken.• Soil samples collected for environmental and geotechnical analysis.
BH3	Jomas 2018	15.45	<ul style="list-style-type: none">• Three attempts made due to obstructions in Made Ground at 0.50mbgl.• Drilled using a cable percussion drilling rig.• SPTs undertaken.• U100s collected.• Soil samples collected for environmental and geotechnical analysis.



Table 1. Exploratory Hole Summary - Continued

Exploratory Hole Name	Consultant	Completed Depth (mbgl)	Additional Information
WS4	Paragon 2021	4.00	<ul style="list-style-type: none"> Two attempts due to concrete slab found at 0.70mbgl in the core. Drilled using a Windowless Sample Drilling Rig. SPTs undertaken. Soil samples collected for environmental and geotechnical analysis.
TP2	Paragon 2021	2.75	<ul style="list-style-type: none"> Excavated using a mechanical excavator. Soil samples collected for environmental analysis.

In addition, a summary of the ground conditions is presented below.

Table 2. Ground Conditions Summary

Exploratory Hole Name	Ground Conditions Description	Contamination Remarks	Groundwater Remarks
WS5	GL – 0.15mbgl: Asphalt 0.15 – 4.70mbgl: Made Ground 4.70 – 5.00mbgl: Gravel	No remarks on odours or staining.	Not present
BH3	GL – 0.20mbgl: Asphalt 0.15 – 5.00mbgl: Made Ground 5.00 – 6.00mbgl: Gravel 6.00 – 15.45mbgl: Clay	No remarks on odours or staining.	1.50mbgl
WS4	GL – 0.25mbgl: Topsoil 0.25 – 4.00mbgl: Made Ground	Made Ground contained clinker. No remarks on odours or staining. PID values <LOD	Not present
TP2	GL – 0.15mbgl: Asphalt 0.15 – 0.75mbgl: Made Ground 0.75 – 1.15mbgl: Sand 1.15 – 2.75mbgl: Gravel	No remarks on odours or staining.	2.40mbgl

No additional exploratory holes have been completed in this area.



Chemical / Geotechnical Laboratory Results Summary

As part of the Jomas and Paragon investigations soil sampling, chemical laboratory analysis and geotechnical laboratory analysis was undertaken. The laboratory test certificates are presented in Appendix 3. Particular reference is made below to the contaminant analysis and the sulphate analysis.

It is understood that Sweet Projects and Toureen have also undertake some more recent testing on arisings that were to be disposed of offsite. Sample location plans are presented as Figure 4 and Figure 5, Appendix 1 and the results are presented in Appendix 4 and 5.

Toureen undertook the initial sampling exercise on 19 February 2024, where three samples were taken for testing prior to offsite disposal. The testing included a general contaminant suite of testing (asbestos, heavy metals, Polyaromatic Hydrocarbons, Petroleum Hydrocarbons, BTEX, pH and sulphates) and a Waste Acceptance Criteria Test Suite.

Sweet Projects undertook a second round of sampling on 25 March 2024, which included a Waste Acceptance Criteria test suite on three samples.

A summary of the results is presented below:

Table 3. Laboratory Analysis Summary

Exploratory Hole Name	Consultant	Depth (mbgl)	Soil Type	pH	Sulphate (mg/l)	Other contaminants
WS5	Jomas 2018	0.50	MG	8.8	83.3	Amosite asbestos (quantified to be below the limit of detection <0.001). No other concerns.
		1.00	MG	8.8	71.4	No significant concerns
BH3	Jomas 2018	0.50	MG	11.3	336	Chrysotile asbestos (quantified to be below the limit of detection <0.001). No other concerns.
		1.00	MG	N/A	N/A	No significant concerns
		7.00	Natural	8.4	200	No significant concerns
		14.00	Natural	8.7	160	No significant concerns
WS4	Paragon 2021	0.80	MG	8.4	200	No significant concerns
TP2	Paragon 2021	Not tested				
S001 Location 1	Sweet Projects 2024	Not recorded	Not recorded	8.7	22	No significant concerns
S002 Location 2	Sweet Projects 2024	Not recorded	Not recorded	8.5	29	No significant concerns
S003 Location 3	Sweet Projects 2024	Not recorded	Not recorded	8.3	75	No significant concerns



Table 3. Laboratory Analysis Summary – Continued

Exploratory Hole Name	Consultant	Depth (mbgl)	Soil Type	pH	Sulphate (mg/l)	Other contaminants
EC3 B4 WAC	Toureen 2024	Not recorded	Not recorded	9.9	54	No significant concerns
EC3 B4 General Analysis	Toureen 2024	Not recorded	Not recorded	9.4	748	No significant concerns
EC3 B5 WAC	Toureen 2024	Not recorded	Not recorded	9.9	83	No significant concerns
EC3 B5 General Analysis	Toureen 2024	Not recorded	Not recorded	10.1	1060	No significant concerns
EC3 C4 WAC	Toureen 2024	Not recorded	Not recorded	10.3	52	No significant concerns
EC3 C4 General Analysis	Toureen 2024	Not recorded	Not recorded	9.9	1100	No significant concerns

The sulphate test results were used to inform the aggressive chemical environmental of future underground concrete structures at the site (BRE Special Digest 1). The results in the table above from Jomas, Paragon and the most recent testing from Sweet Projects and Toureen have been compared to the guidance and determined the Made Ground and natural soils fall within DS1 AC-1s. The most recent results from Toureen in 2024 determined that the Made Ground and natural soils fall within DS2 AC-1s.

It should be noted that the site wide classification within the Jomas and Paragon reports was on the worst-case scenario. Jomas concluded DS2 AC-2 for the Made Ground and DS1 AC-1s for the natural soils. Paragon concluded: *“Based on the results of the pH and sulphate testing carried out on samples from the Made Ground and Lynch Hill Gravel Member, the DS and ACEC classification for these strata is DS-2 and AC-2. The DS and ACEC classification for the London Clay Stratum is dependent on the level to which the soil is disturbed and subsequently oxidised. Unweathered London Clay Formation typically contains pyrite, which when oxidised causes an increase the availability of Total Potential Sulphate (TPS). This leads to an increase in sulphate ions, which can reach the concrete and cause sulphate attack. For construction processes that avoid ground disturbance and subsequent oxidisation of the soil (such as precast or cast-in-situ piles) the DS and ACEC classification is DS-2 and AC-1s. For activities such as spread footings constructed in an excavation the classification is DS-4 and AC-3s.”*



Summary

Based on the foregoing, Made Ground is anticipated to a maximum depth of approximately 5.00mbgl over sand or gravel to approximately 6.00mbgl, over the London Clay Formation. Some perched groundwater may be present within the shallow Made Ground or sand and gravel. Furthermore, no significant concentrations of contaminants were found in the location of UP3/EC3. In addition, the sulphate analysis in the location of UP3/EC3 has confirmed a concrete design class of DS2-AC-1s is appropriate. This is the same as our previous reporting in 2021.

In accordance with the Remediation Strategy that was submitted as part of the Planning Application, in the event that previously unidentified contamination is identified then works should cease and guidance should be sought from an environmental consultant. This is referenced in the Remediation Strategy as the Watching Brief and Discovery Strategy.

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

Yours sincerely

A handwritten signature in black ink, appearing to read "Charlie Bruinvels".

Charlie Bruinvels BSc MSc CEnv C.WEM
Director – Environment
Colliers
M: 07730096894 / E: Charles.bruinvels@colliers.com

Encs:

Appendix 1: Figures

Appendix 2: Borehole Logs

Appendix 3: Historical Chemical Analysis

Appendix 4: Sweet Projects Chemical Analysis

Appendix 5: Toureen's Chemical Analysis

Appendix 6: Extent of Survey and Limitations

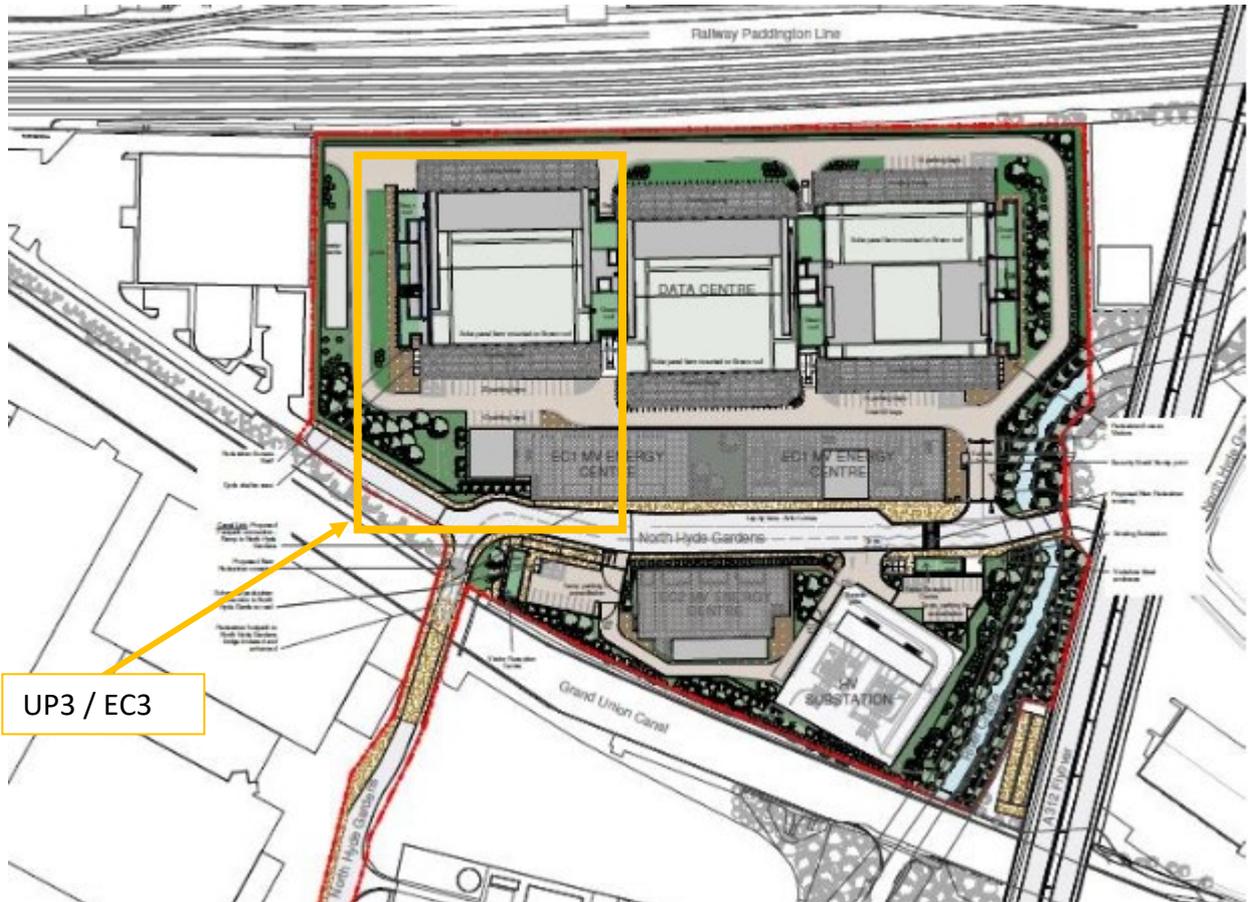


Appendix 1:
Figures

Figure 1: Site Plan



Figure 2: Development Plan: UP3



UP3 / EC3

Figure 4: Sweet Projects Sampling Location Plan

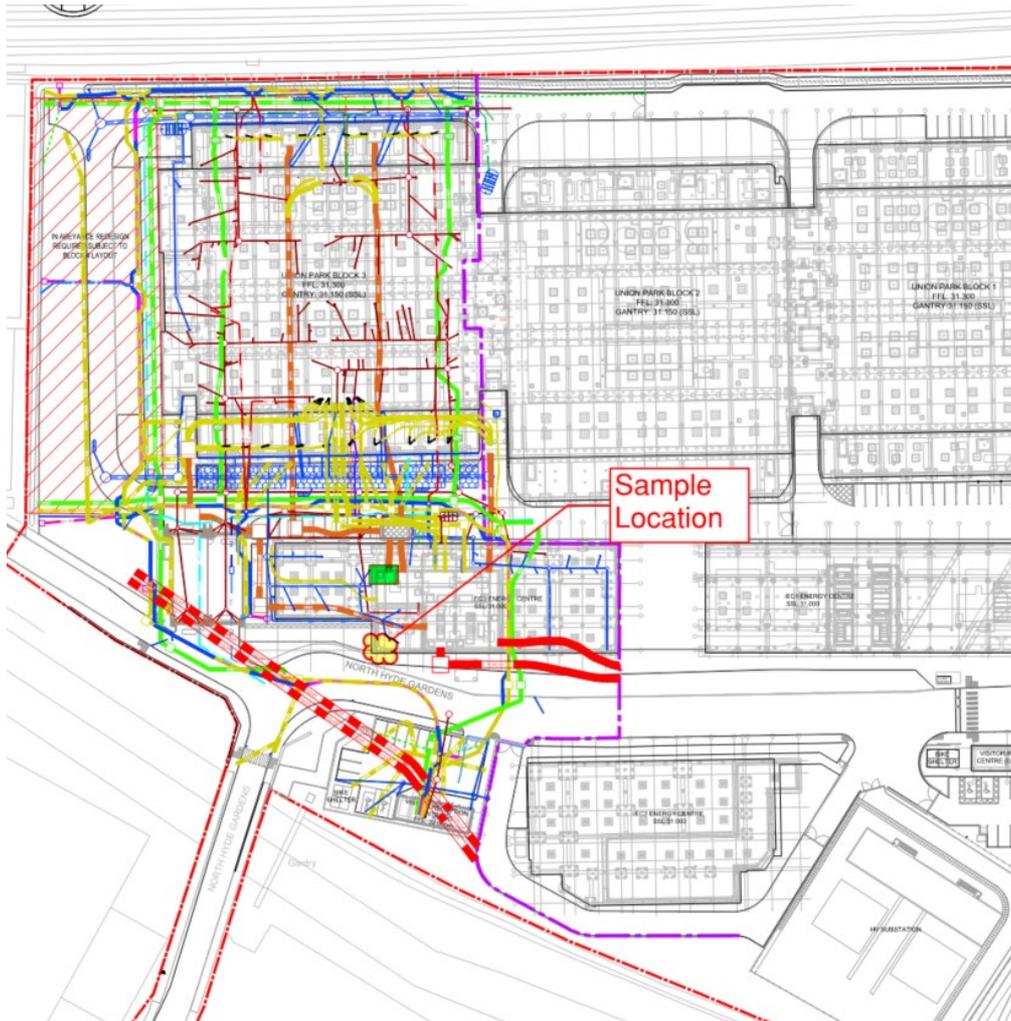


Figure 5: Toureen Sampling Location Plan





Appendix 2:
Borehole Logs



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3C

Site Address: North Hyde Gardens, Hayes, Middlesex, UB3 4QR

Project No: P1470J1364

Client: Legal & General UK Property Fund

Ground Level:

Logged By: RT

Date Commenced: 24/05/2018

Checked By: TE

Date Completed: 24/05/2018

Type and diameter of equipment: DANDO 3000

Sheet No: 1 Of 4

Water levels recorded during boring, m

Date: 24/05/2018

Hole depth: 15.45

Casing depth:

Level water on strike: 1.50

Water Level after 20mins: 1.00

Remarks

1:

2:

3:

4:

Type	Depth (mbgl)	Sample or Tests							Legend	Strata		Strata Description	Installation
		Result								Depth (mbgl)	Water Strikes (mbgl)		
		75	75	75	75	75	75	N					
P + J + V D	0.10											Asphalt. (MADE GROUND).	
P + J + V D	0.25									0.20		Loose to medium dense black slightly sandy gravel. Gravel consists of brick fragments. (MADE GROUND).	
P + J + V D B	0.50												
P + J + V D SPT B	1.20	1	2	3	4	4	5	16					
P + J + V D SPT	2.00	1	1	0	2	2	0	4					
P + J + V D SPT	3.00	1	2	2	3	4	5	14					
P + J + V D SPT	4.00	3	3	7	2	2	5	16					
P + J + V D SPT	5.00	2	2	4	5	5	9	23		4.99		Medium dense GRAVEL. Gravel consists of flint.	



Exploratory Hole No:

BH3C

Site Address: North Hyde Gardens, Hayes, Middlesex, UB3 4QR

Project No: P1470J1364

Client: Legal & General UK Property Fund

Ground Level:

Logged By: RT

Date Commenced: 24/05/2018

Checked By: TE

Date Completed: 24/05/2018

Type and diameter of equipment: DANDO 3000

Sheet No: 2 Of 4

Water levels recorded during boring, m

Date: 24/05/2018

Hole depth: 15.45

Casing depth:

Level water on strike: 1.50

Water Level after 20mins: 1.00

Remarks

1:

2:

3:

4:

Sample or Tests									Strata			Strata Description	Installation	
Type	Depth (mbgl)	Result							Legend	Depth (mbgl)	Water Strikes (mbgl)			
		75	75	75	75	75	75	N						
D SPT	5.00	2	2	4	5	5	9	23	5.00			Medium dense GRAVEL. Gravel consists of flint.		
									5.50					
D U	6.00								6.00			Grey to dark brown high to very high strength CLAY.		
	70 blows for 0.40m recovery													
									6.50					
D SPT	7.00	4	4	6	6	7	8	27	7.00					
									7.50					
D SPT	8.00	4	5	5	5	7	9	26	8.00					
									8.50					
D U	9.00								9.00					
	85 blows for 0.45m recovery													
									9.50					
D SPT	10.00	4	5	6	6	6	9	27	10.00					



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3C

Site Address: North Hyde Gardens, Hayes, Middlesex, UB3 4QR

Project No: P1470J1364

Client: Legal & General UK Property Fund

Ground Level:

Logged By: RT

Date Commenced: 24/05/2018

Checked By: TE

Date Completed: 24/05/2018

Type and diameter of equipment: DANDO 3000

Sheet No: 3 Of 4

Water levels recorded during boring, m

Date: 24/05/2018

Hole depth: 15.45

Casing depth:

Level water on strike: 1.50

Water Level after 20mins: 1.00

Remarks

1:

2:

3:

4:

Type	Depth (mbgl)	Sample or Tests							Legend	Strata		Strata Description	Installation
		Result								Depth (mbgl)	Water Strikes (mbgl)		
		75	75	75	75	75	75	N					
D SPT	10.00	4	5	6	6	6	9	27	10.00			Grey to dark brown high to very high strength CLAY.	
									10.50				
D SPT	11.00	5	5	7	8	9	10	34	11.00				
									11.50				
D U	12.00								12.00				
90 blows for 0.40m recovery													
D SPT	13.00	5	6	7	9	9	10	35	13.00				
									13.50				
D SPT	14.00	5	7	8	10	10	13	41	14.00				
									14.50				
D U	15.00								15.00				
95 blows for 0.40m recovery													

Sampling Code: U - Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

Jomas Associates Ltd - Lakeside House, 1 Furzeground Way, Stockley Park, UB11 1BD

T: 0843 289 2187 E: info@jomasassociates.com W: www.jomasassociates.com



CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:

BH3C

Site Address: North Hyde Gardens, Hayes, Middlesex, UB3 4QR

Project No: P1470J1364

Client: Legal & General UK Property Fund

Ground Level:

Logged By: RT

Date Commenced: 24/05/2018

Checked By: TE

Date Completed: 24/05/2018

Type and diameter of equipment: DANDO 3000

Sheet No: 4 Of 4

Water levels recorded during boring, m

Date:	24/05/2018				
Hole depth:	15.45				
Casing depth:					
Level water on strike:	1.50				
Water Level after 20mins:	1.00				

Remarks

1:

2:

3:

4:

Type	Depth (mbgl)	Sample or Tests							Strata	Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		Result												
		75	75	75	75	75	75	N						
D U	15.00								15.00			Grey to dark brown high to very high strength CLAY.		
	95 blows for 0.40m recovery								15.45					
									15.50					
									16.00					
									16.50					
									17.00					
									17.50					
									18.00					
									18.50					
									19.00					
									19.50					
									20.00					

Borehole Log

Borehole No.

TP02

Sheet 1 of 1

Project Name: Hayes

Project No.
YE7331

Co-ords:

Hole Type
TP

Location: North Hyde Gardens, UB3 4QT.

Level:

Scale
1:25

Client: Paragon.

Dates: 25/06/2019

Logged By
NH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15		BITUMINOUS MATERIAL: Asphalt.	
		0.60	ES		0.75		MADE GROUND: Loose light brown sandy GRAVEL. Sand is fine. Gravel is fine to coarse, angular to sub-angular of brick and mixed lithology.	
					1.15		Loose orange SAND. Sand is medium.	1
					2.75		Loose grey/black sandy GRAVEL. Sand is medium. Gravel is medium angular to sub-rounded of mixed lithology.	2
	▼	2.75	ES		2.75		End of Borehole at 2.75m	3
								4
								5

Remarks

Groundwater encountered at 2.40m.



Borehole Log

Project Name: Hayes	Project No. YE7331	Co-ords:	Hole Type WLS
Location: North Hyde Gardens, UB3 4QT.		Level:	Scale 1:50
Client: Paragon.		Dates: 27/06/2019	Logged By RG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15	ES		0.25		TOPSOIL: Brown clayey slightly gravelly SAND. Sand is fine to medium. Gravel is fine to medium, angular to sub-angular of flint, brick and clinker.		
		0.80	ES		0.75		MADE GROUND: Sandy GRAVEL. Sand is fine. Gravel is coarse, angular to sub-rounded of concrete. <u>PID Reading = 0.0</u>		
		1.20	C	N=13 (4,4/4,3,2,4)	1.60		MADE GROUND: Dark brown slightly clayey, sandy GRAVEL. Sand is fine. Gravel is fine to coarse, angular to sub-rounded of flint, brick, clinker and concrete. <u>PID Reading = 0.0</u>		
		2.00	C	N=2 (1,1/1,0,0,1)			MADE GROUND: Brown clayey, sandy GRAVEL. Sand is fine. Gravel is fine to medium, angular to sub-rounded of brick, flint, clinker, glass and mixed lithology. Becoming less clayey at depth. Becoming black at 4.00m. <u>PID Reading = 0.0</u>		
		2.50 - 3.00	B						
		3.00	C	N=1 (2,1/1,0,0,0)			<u>PID Reading = 0.0</u>		
		4.00 4.00	ES C	N=3 (1,2/0,0,1,2)	4.00		End of Borehole at 4.00m		

Remarks
 Installation to 2.50m due to borehole collapse.
 No groundwater encountered.
 UXO clearance at 1.00m intervals.



Borehole Log

Borehole No.

WS04A

Sheet 1 of 1

Project Name: Hayes

Project No.
YE7331

Co-ords:

Hole Type
WLS

Location: North Hyde Gardens, UB3 4QT.

Level:

Scale
1:50

Client: Paragon.

Dates: 25/06/2019

Logged By
RG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.70		MADE GROUND: Concrete. Refusal due to maximum depth of concrete corer.		
							End of Borehole at 0.70m	1	
								2	
								3	
								4	
								5	
								6	
								7	
								8	
								9	
								10	

Remarks

No groundwater encountered.
UXO clearance at 1.00m intervals.
Cored to 0.70m.





Appendix 3:
Historical
Chemical
Analysis



Emma Hucker

Jomas Associates Ltd
Lakeside House
1 Furzeground Way
Stockley Park
UB11 1BD

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

t: 01923 225404
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e: reception@i2analytical.com

e: Jomas Associates -

Analytical Report Number : 18-83574

Replaces Analytical Report Number : 18-83574, issue no. 1

Project / Site name:	North Hyde Gardens, Hayes, Middlesex	Samples received on:	25/04/2018
Your job number:	JJ1364	Samples instructed on:	26/04/2018
Your order number:	P1470JJ1364.7	Analysis completed by:	25/05/2018
Report Issue Number:	2	Report issued on:	25/05/2018
Samples Analysed:	23 soil 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

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

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	951018			951019			951020			951021			951022		
Sample Reference	WS1			WS2			WS2			WS3			WS4		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.50			4.00			0.60			2.00			1.50		
Date Sampled	23/04/2018			23/04/2018			23/04/2018			23/04/2018			23/04/2018		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Stone Content	%	0.1	NONE	29	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	7.4	13	9.0	8.9	17							
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.1	1.3	1.3							

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.7	-	10.4	-	-
Total Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2600	-	3000	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.48	-	0.53	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	482	-	531	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.7	-	4.3	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	11	1.1	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.94	0.40	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	22	3.1	< 0.05	0.21
Fluorene	mg/kg	0.05	MCERTS	< 0.05	28	3.6	< 0.05	0.14
Phenanthrene	mg/kg	0.05	MCERTS	1.0	67	19	< 0.05	1.8
Anthracene	mg/kg	0.05	MCERTS	0.31	18	5.7	< 0.05	0.44
Fluoranthene	mg/kg	0.05	MCERTS	1.7	49	22	< 0.05	3.4
Pyrene	mg/kg	0.05	MCERTS	1.5	34	17	< 0.05	3.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.76	8.9	8.2	< 0.05	1.5
Chrysene	mg/kg	0.05	MCERTS	0.67	7.6	7.2	< 0.05	1.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.83	5.8	9.5	< 0.05	1.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.49	1.5	3.4	< 0.05	0.61
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.68	3.5	7.9	< 0.05	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.42	1.0	3.5	< 0.05	0.70
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.27	0.88	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.48	1.0	3.8	< 0.05	0.82

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	8.89	260	116	< 0.80	17.2
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Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	951018	951019	951020	951021	951022
Sample Reference	WS1	WS2	WS2	WS3	WS4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50	4.00	0.60	2.00	1.50
Date Sampled	23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Parameter	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	-	12	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	3.2	-	3.3	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	-	39	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	46	-	48	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	86	-	39	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	-	< 0.3	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	-	19	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	80	-	75	-	-

Monoaromatics

Parameter	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
Benzene	ug/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-

Parameter	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	3.8	-	< 1.0	6.5
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	42	-	< 2.0	17
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	68	-	< 8.0	35
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	87	-	< 8.0	180
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	200	-	< 10	240

Parameter	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	20	-	< 1.0	1.4
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	450	-	< 2.0	9.7
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	790	-	< 10	26
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	340	-	< 10	180
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	1600	-	< 10	210

Parameter	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
TPH (C10 - C12)	mg/kg	2	MCERTS	3.2	-	3.4	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	21	-	76	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	69	-	270	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	310	-	4100	-	-

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	951018	951019	951020	951021	951022
Sample Reference	WS1	WS2	WS2	WS3	WS4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50	4.00	0.60	2.00	1.50
Date Sampled	23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

VOCs

Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	< 1.0



Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

Your Order No: P1470JJ1364.7

Lab Sample Number	951018	951019	951020	951021	951022			
Sample Reference	WS1	WS2	WS2	WS3	WS4			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.50	4.00	0.60	2.00	1.50			
Date Sampled	23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

PCBs by GC-MS

PCB Congener	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
PCB Congener 28	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-

Total PCBs by GC-MS

Total PCBs	Units	Limit of detection	Accreditation Status	951018	951019	951020	951021	951022
Total PCBs	mg/kg	0.007	MCERTS	-	< 0.007	-	-	-

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	951023		951024		951025		951026		951027	
Sample Reference	WS5		WS5		WS7		WS7		WS7	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	1.00		0.50		3.00		0.50		1.00	
Date Sampled	23/04/2018		23/04/2018		23/04/2018		23/04/2018		23/04/2018	
Time Taken	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status							
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	16	14	19	-	16	16	
Total mass of sample received	kg	0.001	NONE	1.2	1.1	1.2	-	1.1	1.1	

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.8	8.8	-	-	9.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	-	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1100	980	-	-	1700
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.071	0.083	-	-	0.34
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	71.4	83.3	-	-	343
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.3	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.76	0.69	0.78	-	2.3
Acenaphthylene	mg/kg	0.05	MCERTS	0.12	< 0.05	< 0.05	-	0.29
Acenaphthene	mg/kg	0.05	MCERTS	0.13	< 0.05	0.76	-	2.6
Fluorene	mg/kg	0.05	MCERTS	0.16	0.19	0.87	-	3.2
Phenanthrene	mg/kg	0.05	MCERTS	2.2	1.8	3.4	-	15
Anthracene	mg/kg	0.05	MCERTS	0.53	0.47	2.5	-	14
Fluoranthene	mg/kg	0.05	MCERTS	3.1	2.4	5.2	-	17
Pyrene	mg/kg	0.05	MCERTS	2.7	2.0	4.9	-	14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.8	1.4	1.7	-	4.8
Chrysene	mg/kg	0.05	MCERTS	1.7	1.4	1.6	-	4.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.7	2.2	2.0	-	4.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.80	0.57	0.53	-	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.6	1.4	1.1	-	2.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.85	0.85	0.48	-	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.23	< 0.05	-	0.30
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.0	0.86	0.52	-	1.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	20.3	16.4	26.4	-	89.7
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Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				951023	951024	951025	951026	951027
Sample Reference				WS5	WS5	WS7	WS7	WS7
Sample Number				None Supplied				
Depth (m)				1.00	0.50	3.00	0.50	1.00
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	29	20	-	-	18
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.0	-	-	4.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.0	1.4	-	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	99	70	-	-	43
Copper (aqua regia extractable)	mg/kg	1	MCERTS	240	250	-	-	120
Lead (aqua regia extractable)	mg/kg	1	MCERTS	270	800	-	-	150
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	0.6	-	-	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	210	72	-	-	40
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.6	1.2	-	-	1.2
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	430	480	-	-	190

Monoaromatics

Compound	Units	Limit of detection	Accreditation Status	951023	951024	951025	951026	951027
Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Toluene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
p & m-xylene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
o-xylene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	-

Petroleum Hydrocarbons

Compound	Units	Limit of detection	Accreditation Status	951023	951024	951025	951026	951027
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	-	-	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6								
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	6.8	-	1.6	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	16	-	7.9	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	35	-	17	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	210	-	67	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	270	-	94	-	-
TPH-CWG - Aromatic >EC5 - EC7								
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	2.6	-	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	11	-	7.8	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	34	-	24	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	130	-	64	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	180	-	96	-	-
TPH (C10 - C12)	mg/kg	2	MCERTS	-	9.3	-	-	7.2
TPH (C12 - C16)	mg/kg	4	MCERTS	-	25	-	-	40
TPH (C16 - C21)	mg/kg	1	MCERTS	-	64	-	-	120
TPH (C21 - C40)	mg/kg	10	MCERTS	-	320	-	-	260

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				951023	951024	951025	951026	951027
Sample Reference				WS5	WS5	WS7	WS7	WS7
Sample Number				None Supplied				
Depth (m)				1.00	0.50	3.00	0.50	1.00
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-



Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
 Your Order No: P1470JJ1364.7

Lab Sample Number				951023	951024	951025	951026	951027
Sample Reference				WS5	WS5	WS7	WS7	WS7
Sample Number				None Supplied				
Depth (m)				1.00	0.50	3.00	0.50	1.00
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	951028			951029			951030			951031			951032		
Sample Reference	WS9			WS9			BH1			BH1			BH2		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	0.25			1.00			0.50			2.00			0.50		
Date Sampled	23/04/2018			23/04/2018			23/04/2018			23/04/2018			23/04/2018		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	14	14	10	12	11							
Total mass of sample received	kg	0.001	NONE	1.3	1.5	1.6	1.0	1.1							

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	-	10.5	-	11.2
Total Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	-	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	590	-	2500	-	3200
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	-	0.30	-	0.24
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.1	-	302	-	239
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.2	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.20	0.37	0.30	0.20
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.40	0.16	0.17
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.35	< 0.05	0.23
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.40	0.13	0.24
Phenanthrene	mg/kg	0.05	MCERTS	0.97	0.57	4.5	1.2	2.5
Anthracene	mg/kg	0.05	MCERTS	0.30	0.27	1.2	0.88	0.71
Fluoranthene	mg/kg	0.05	MCERTS	2.7	1.2	8.9	2.6	5.0
Pyrene	mg/kg	0.05	MCERTS	2.4	1.1	7.9	2.5	4.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5	0.62	4.2	1.3	2.3
Chrysene	mg/kg	0.05	MCERTS	1.4	0.61	3.7	1.3	1.9
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.0	0.87	6.3	2.2	3.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.1	0.51	1.7	0.59	0.87
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8	0.52	4.6	1.4	2.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.94	0.33	2.3	0.80	1.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	< 0.05	0.58	0.20	0.30
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1	0.40	2.7	0.96	1.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	16.3	7.15	50.1	16.5	26.7
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Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				951028	951029	951030	951031	951032
Sample Reference				WS9	WS9	BH1	BH1	BH2
Sample Number				None Supplied				
Depth (m)				0.25	1.00	0.50	2.00	0.50
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	-	13	-	17
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	-	1.8	-	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	-	25	-	34
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	-	46	-	52
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	-	120	-	180
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.8	-	0.5	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	-	20	-	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	-	130	-	140

Monoaromatics

Parameter	Units	Limit of detection	Accreditation Status	951028	951029	951030	951031	951032
Benzene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	951028	951029	951030	951031	951032
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC6)								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	3.4	2.9	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	17	12	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	50	53	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	19	190	120	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	20	260	190	< 10
TPH-CWG - Aromatic (EC5 - EC35)								
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	3.8	1.9	2.3
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	5.3	15	12	7.1
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	11	69	46	18
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	46	290	160	60
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	62	380	220	87
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	-	-	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0	-	-	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	7.7	-	-	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	58	-	-	-	-



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Environmental Science

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

Your Order No: P1470JJ1364.7

Lab Sample Number				951028	951029	951030	951031	951032
Sample Reference				WS9	WS9	BH1	BH1	BH2
Sample Number				None Supplied				
Depth (m)				0.25	1.00	0.50	2.00	0.50
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0



Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

Your Order No: P1470JJ1364.7

Lab Sample Number	951028	951029	951030	951031	951032			
Sample Reference	WS9	WS9	BH1	BH1	BH2			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.25	1.00	0.50	2.00	0.50			
Date Sampled	23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	< 0.007	-	< 0.007	-

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	951033			951034			951035			952205			952206		
Sample Reference	BH2			BH3c			BH3c			BH3C			BH3C		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	1.00			0.50			1.00			7.00			14.00		
Date Sampled	23/04/2018			23/04/2018			23/04/2018			23/04/2018			23/04/2018		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status												
Stone Content	%	0.1	NONE	< 0.1	24	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	15	17	20	21	20	21	20	21	20	21	20	
Total mass of sample received	kg	0.001	NONE	0.98	1.2	1.2	1.1	1.0	1.1	1.0	1.1	1.0	1.1	1.0	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Detected	-	-	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	11.3	-	8.4	8.7
Total Cyanide	mg/kg	1	MCERTS	-	< 1	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	2200	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.34	-	0.20	0.16
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	336	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	1.9	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.99	0.30	0.55	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	1.2	< 0.05	0.36	-	-
Acenaphthene	mg/kg	0.05	MCERTS	2.2	< 0.05	0.18	-	-
Fluorene	mg/kg	0.05	MCERTS	1.7	0.16	0.30	-	-
Phenanthrene	mg/kg	0.05	MCERTS	13	1.8	5.4	-	-
Anthracene	mg/kg	0.05	MCERTS	3.8	0.48	1.6	-	-
Fluoranthene	mg/kg	0.05	MCERTS	19	2.5	17	-	-
Pyrene	mg/kg	0.05	MCERTS	15	2.0	15	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.9	1.3	6.7	-	-
Chrysene	mg/kg	0.05	MCERTS	5.0	1.2	5.0	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	8.7	2.1	8.3	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.4	0.56	2.2	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.8	1.2	4.8	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.0	0.61	3.0	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.57	< 0.05	0.63	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	0.71	3.3	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	88.8	14.9	73.9	-	-
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Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				951033	951034	951035	952205	952206
Sample Reference				BH2	BH3c	BH3c	BH3C	BH3C
Sample Number				None Supplied				
Depth (m)				1.00	0.50	1.00	7.00	14.00
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	34	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	1.0	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	4.3	-	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	130	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	320	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	580	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	64	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	1.4	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	820	-	-	-

Monoaromatics

Parameter	Units	Limit of detection	Accreditation Status	951033	951034	951035	952205	952206
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	951033	951034	951035	952205	952206
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	3.3	2.8	2.5	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	25	14	13	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	57	30	37	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	83	110	140	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	170	150	190	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	5.5	3.0	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	25	11	5.1	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	120	30	45	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	260	95	120	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	410	140	170	-	-
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	-	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	-	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				951033	951034	951035	952205	952206
Sample Reference				BH2	BH3c	BH3c	BH3C	BH3C
Sample Number				None Supplied				
Depth (m)				1.00	0.50	1.00	7.00	14.00
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-



Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

Your Order No: P1470JJ1364.7

Lab Sample Number				951033	951034	951035	952205	952206
Sample Reference				BH2	BH3c	BH3c	BH3C	BH3C
Sample Number				None Supplied				
Depth (m)				1.00	0.50	1.00	7.00	14.00
Date Sampled				23/04/2018	23/04/2018	23/04/2018	23/04/2018	23/04/2018
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	< 0.001	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	< 0.007	-	-

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number	952207			952208			952209		
Sample Reference	BH2			BH2			BH1		
Sample Number	None Supplied			None Supplied			None Supplied		
Depth (m)	10.00			12.00			8.00		
Date Sampled	23/04/2018			23/04/2018			23/04/2018		
Time Taken	None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	19	20	19			
Total mass of sample received	kg	0.001	NONE	1.2	1.1	1.3			

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-		
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.6	8.7		
Total Cyanide	mg/kg	1	MCERTS	-	-	-		
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-		
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.16	0.086	0.13		
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-		
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-	-		

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-		

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-		
Fluorene	mg/kg	0.05	MCERTS	-	-	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-		
Anthracene	mg/kg	0.05	MCERTS	-	-	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Pyrene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Chrysene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-		

Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				952207	952208	952209		
Sample Reference				BH2	BH2	BH1		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				10.00	12.00	8.00		
Date Sampled				23/04/2018	23/04/2018	23/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-		
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-	-		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-		

Monoaromatics

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

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-		
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	-		
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	-		
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	-		
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-	-		



Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Lab Sample Number				952207	952208	952209		
Sample Reference				BH2	BH2	BH1		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				10.00	12.00	8.00		
Date Sampled				23/04/2018	23/04/2018	23/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-		
Chloroethane	µg/kg	1	NONE	-	-	-		
Bromomethane	µg/kg	1	ISO 17025	-	-	-		
Vinyl Chloride	µg/kg	1	NONE	-	-	-		
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-		
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-		
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloromethane	µg/kg	1	MCERTS	-	-	-		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-		
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-		
Benzene	µg/kg	1	MCERTS	-	-	-		
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-		
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloroethene	µg/kg	1	MCERTS	-	-	-		
Dibromomethane	µg/kg	1	MCERTS	-	-	-		
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Toluene	µg/kg	1	MCERTS	-	-	-		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-		
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-		
Tetrachloroethene	µg/kg	1	NONE	-	-	-		
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-		
Chlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Ethylbenzene	µg/kg	1	MCERTS	-	-	-		
p & m-Xylene	µg/kg	1	MCERTS	-	-	-		
Styrene	µg/kg	1	MCERTS	-	-	-		
Tribromomethane	µg/kg	1	NONE	-	-	-		
o-Xylene	µg/kg	1	MCERTS	-	-	-		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-		
Bromobenzene	µg/kg	1	MCERTS	-	-	-		
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-		
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-		
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-		



Analytical Report Number: 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

Your Order No: P1470JJ1364.7

Lab Sample Number				952207	952208	952209		
Sample Reference				BH2	BH2	BH1		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				10.00	12.00	8.00		
Date Sampled				23/04/2018	23/04/2018	23/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-		
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-		
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-		
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-		
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-		
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-		
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-		
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	-		



Analytical Report Number: 18-83574
Project / Site name: North Hyde Gardens, Hayes, Middlesex
Your Order No: P1470JJ1364.7

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

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

Quantitative Analysis

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

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

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

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
951024	WS5	0.50	147	Loose Fibres	Amosite	< 0.001	< 0.001
951027	WS7	1.00	145	Loose Fibres	Amosite	< 0.001	< 0.001
951034	BH3c	0.50	120	Loose Fibres	Chrysotile	< 0.001	< 0.001

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



Analytical Report Number : 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

* 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 *
951018	WS1	None Supplied	0.50	Brown clay with stones.
951019	WS2	None Supplied	4.00	Brown sand with gravel and oil / petroleum.
951020	WS2	None Supplied	0.60	Brown clay and sand with gravel.
951021	WS3	None Supplied	2.00	Light brown sand with gravel.
951022	WS4	None Supplied	1.50	Grey clay and sand with rubble.
951023	WS5	None Supplied	1.00	Brown clay and sand with gravel.
951024	WS5	None Supplied	0.50	Brown clay and sand with gravel and rubble.
951025	WS7	None Supplied	3.00	Brown clay and sand.
951026	WS7	None Supplied	0.50	-
951027	WS7	None Supplied	1.00	Brown clay with gravel.
951028	WS9	None Supplied	0.25	Brown loam and clay with vegetation and gravel
951029	WS9	None Supplied	1.00	Brown gravelly sand with rubble and clinker
951030	BH1	None Supplied	0.50	Brown clay and sand with rubble.
951031	BH1	None Supplied	2.00	Brown clay and sand.
951032	BH2	None Supplied	0.50	Brown loam and clay with gravel.
951033	BH2	None Supplied	1.00	Brown loam and gravel.
951034	BH3c	None Supplied	0.50	Brown gravelly clay with stones.
951035	BH3c	None Supplied	1.00	Brown gravelly sand.
952205	BH3C	None Supplied	7.00	Brown clay.
952206	BH3C	None Supplied	14.00	Brown clay.
952207	BH2	None Supplied	10.00	Brown clay.
952208	BH2	None Supplied	12.00	Brown clay.
952209	BH1	None Supplied	8.00	Brown clay.

Analytical Report Number : 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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 cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L009-PL	D	MCERTS
Total sulphate (as SO4 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

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Report Number : 18-83574

Project / Site name: North Hyde Gardens, Hayes, Middlesex

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
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-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	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.



Made Ground Soil Analysis Bulls Bridge, Hayes

TP / BH No	WS3	WS4	WS5	WS5	WS6A	WS7	WS8	TP4	TP6	TP201	TP205	TP208	BH02	BH07	BH08				
Depth (m)	0.75	0.8	0.5	3.5	0.8	2.5	0.3	0.8	1	0.3	0.5	0.4	1.5	2.55-3.00	2.50-3.00				
Date Sampled	25/06/2019	27/06/2019	25/06/2019	25/06/2019	25/06/2019	26/06/2019	27/06/2019	25/06/2019	25/06/2019	24/07/2019	24/07/2019	24/07/2019	29/01/2020	24/01/2020	24/01/2020				
Report No:	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-51434	19-51434	19-51434	20-83728	20-82909	20-82909				
Sample No	418783	418784	418785	418786	418787	418788	418789	418792	418793	1275331	1275332	1275333	1425657	1421299	1421301				
Determinand	Unit	LOD	GAC																
Asbestos Screen (S)	N/A	N/A	Detection	Detected	Not Detected	Not Detected	Not Detected	Detected	Not Detected	Detected	Not Detected	Detected	Detected		Detected				
Sample Matrix (S)	Material Type	N/A	Detection	Bundle of Chrysotile fibres				Bundle of Chrysotile fibres		Bundle of Chrysotile fibres		Bundle of Chrysotile fibres	Chrysotile-Loose Fibres		Chrysotile Loose Fibrous Debris				
Asbestos Type (S)	PLM Result	N/A	Detection	Chrysotile				Chrysotile		Chrysotile		Chrysotile	Chrysotile		Chrysotile				
Quantification	%	<0.001	Detection	0.004				0.004		0.002		0.005			0.019				
pH	pH Units	N/A	N/A	8	8.4	9.9	7.1	9.1	7.5	10.4	7.8	8.1	11.4	10.4	10.8	7.3	7.7	8.8	
Total Cyanide	mg/kg	<2	LOD	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	
W/S Sulphate as SO4 (2-1)	mg/l	<10	N/A	148	200	585	198	224	605	601	191	55	1440	734	326	698	195	955	
W/S Sulphate as SO4 (2-1)	g/l	<0.01	N/A	0.15	0.2	0.58	0.2	0.22	0.6	0.6	0.19	0.05	1.4	0.73	0.33	0.7	0.19	0.96	
Organic Matter	%	<0.1	N/A	3.6	3.3	2.7	1.5	1.7	3.1	2.2	4.4	1.2	4.4	1.5	0.8	5.8	3.4	2.1	
Arsenic (As)	mg/kg	<2	640	19	34	12	7	15	22	14	317	13	9.4	14	12	18	18	15	
Cadmium (Cd)	mg/kg	<0.2	410	0.2	0.2	<0.2	<0.2	<0.2	0.4	<0.2	5.8	0.3	<0.2	<0.2	0.9	0.4	0.3	0.9	
Chromium (Cr)	mg/kg	<2	8600	23	89	24	17	26	32	22	18	11	23	21	24	42	42	47	
Chromium (hexavalent)	mg/kg	<2	49	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	
Copper (Cu)	mg/kg	<4	68000	76	113	24	12	35	62	46	75	31	31	37	43	360	200	100	
Lead (Pb)	mg/kg	<3	2330	381	67	58	25	102	307	843	52	60	47	74	120	230	350	180	
Mercury (Hg)	mg/kg	<1	1100	1.1	<1	<1	<1	<1	1.7	<1	<1	<1	<0.3	<0.3	<0.3	2.2	<0.3	<0.3	
Nickel (Ni)	mg/kg	<3	980	22	56	13	8	25	22	16	32	11	14	23	15	41	37	34	
Selenium (Se)	mg/kg	<3	12000	<3	<3	<3	<3	<3	<3	<3	<3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Zinc (Zn)	mg/kg	<3	730000	211	116	146	34	114	285	124	48	73	58	86	110	270	72	70	
Total Phenols (monohydric)	mg/kg	<2	N/A	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1.0	230	390		
Naphthalene	mg/kg	<0.1	460	0.85	<0.1	<0.1	0.13	4.65	0.81	0.35	0.12	1.82	<0.05	<0.05	<0.05	1.6	0.92	1.3	
Acenaphthylene	mg/kg	<0.1	97000	<0.1	<0.1	<0.1	<0.1	0.2	0.15	<0.1	<0.1	0.18	0.8	<0.05	<0.05	1.1	<0.05	<0.05	
Acenaphthene	mg/kg	<0.1	97000	0.13	<0.1	<0.1	0.17	9.79	1.73	0.16	<0.1	0.57	1.6	<0.05	<0.05	79	1.5	0.5	
Fluorene	mg/kg	<0.1	68000	0.18	<0.1	<0.1	<0.1	8.6	2.1	0.16	<0.1	0.41	1.4	<0.05	<0.05	62	1.1	0.45	
Phenanthrene	mg/kg	<0.1	22000	1.22	0.39	0.74	0.33	33.7	11.3	1.56	0.33	3.77	13	14	0.64	70	3.8	1.8	
Anthracene	mg/kg	<0.1	540000	0.31	<0.1	0.2	<0.1	2.27	6.42	0.32	<0.1	2.23	3.3	0.56	0.4	83	1.4	0.47	
Fluoranthene	mg/kg	<0.1	23000	1.96	0.32	0.73	0.46	20.6	22.1	2.84	0.2	8.03	23	4	1.8	95	7.2	2.4	
Pyrene	mg/kg	<0.1	23000	1.7	0.28	0.54	0.35	15	15.4	2.54	0.16	6.05	19	4.9	1.6	64	6.1	2	
Benzo(a)anthracene	mg/kg	<0.1	N/A	0.76	0.41	0.22	0.18	3.05	7.68	1.34	<0.1	2.53	12	2.7	1.1	14	3	1.4	
Chrysene	mg/kg	<0.1	N/A	1.04	0.56	0.29	0.29	2.94	6.35	1.42	0.17	2.98	8.1	1.9	0.89	9.9	2.1	0.98	
Benzo(b)fluoranthene	mg/kg	<0.1	N/A	1.13	0.27	0.3	0.33	2.45	6.17	1.71	0.12	2.95	11	2.1	1	8.4	2	1	
Benzo(k)fluoranthene	mg/kg	<0.1	N/A	0.32	0.31	<0.1	<0.1	0.74	2.08	0.53	<0.1	0.89	5.2	1.5	0.6	2.1	1.3	0.79	
Benzo(a)pyrene	mg/kg	<0.1	76	0.63	0.33	0.16	0.17	1.55	4.42	1.23	<0.1	1.49	11	2.1	0.98	4.1	1.9	1	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.1	N/A	0.43	0.37	0.11	0.13	0.73	1.79	0.8	<0.1	0.94	5.3	1.1	0.57	1.5	0.65	0.42	
Dibenz(a,h)anthracene	mg/kg	<0.1	N/A	<0.1	<0.1	<0.1	<0.1	0.15	0.44	0.14	<0.1	0.2	1.6	0.33	0.21	0.43	0.26	<0.05	
Benzo(ghi)perylene	mg/kg	<0.1	N/A	0.35	0.3	0.12	<0.1	0.6	1.29	0.67	<0.1	0.72	7	1.5	0.86	1.7	0.91	0.55	
Total EPA-16 PAHs	mg/kg	<1.6	N/A	31	8.5	3.4	2.5	112	90.3	15.8	<1.6	35.8	123	23.9	10.6	499	34.1	15.1	
Aliphatic <C5 - C6	mg/kg	<0.01	3200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	
Aliphatic <C5 - C8	mg/kg	<0.05	7800	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	<0.001	
Aliphatic >C8 - C10	mg/kg	<2	2800	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.001	<0.001	<0.001	
Aliphatic >C10 - C12	mg/kg	<2	9700	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	13	7.6		
Aliphatic >C12 - C16	mg/kg	<3	59000	<3	<3	4	<3	10	<3	5	<3	<3	<3	<3	<3	250	120		
Aliphatic >C16 - C21	mg/kg	<3	1600000	<3	<3	23	<3	8	<3	8	<3	3				340	1500		
Aliphatic >C21 - C34	mg/kg	<10	1600000	<10	<10	285	<10	<10	<10	23	<10	21				260	520		
Aliphatic (C5 - C34)	mg/kg	<21	N/A	<21	<21	312	<21	<21	<21	36	<21	25							
Aromatic >C5 - C7	mg/kg	<0.01	26000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.001	<0.001	<0.001	
Aromatic >C7 - C8	mg/kg	<0.05	56000	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.001	<0.001	<0.001	
Aromatic >C8 - C10	mg/kg	<2	3500	<2	<2	<2	<2	<2	<2	<2	<2	<2				<0.001	<0.001	<0.001	
Aromatic >C10 - C12	mg/kg	<2	16000	<2	<2	<2	<2	11	3	<2	<2	3				10	1.7		
Aromatic >C12 - C16	mg/kg	<2	36000	4	<2	<2	<2	96	22	6	<2	11				200	78		
Aromatic >C16 - C21	mg/kg	<3	28000	14	<3	9	<3	193	125	20	<3	47				490	560		
Aromatic >C21 - C35	mg/kg	<10	28000	22	<10	79	<10	164	240	75	<10	112				210	370		
Aromatic (C5 - C35)	mg/kg	<21	N/A	40	<21	88	<21	470	391	102	<21	174				900			
Total <C5 - C35	mg/kg	<42	N/A	<42	<42	400	<42	488	391	138	<42	198	950	110		1770	3100	<0.1	
Petroleum Range Organics (C6 - C10)	mg/kg	0.1																2800	98
TPH C10 - C40	mg/kg	10																2800	98
TPH2 (C6 - C10)	mg/kg	0.1																2600	82
TPH C6 - C40	mg/kg	10																2600	82
TPH (C10 - C25)	mg/kg	10																2600	82
TPH (C25 - C40)	mg/kg	10																550	<10
Benzene	ug/kg	<2	98	<2	<2	<2	<2	<2	<2	<2	<2	<2				<1.0	<1.0	<1.0	
Toluene	ug/kg	<5	110000	<5	<5	<5	<5	<5	<5	<5	<5	<5				<1.0	<1.0	<1.0	
Ethylbenzene	ug/kg	<2	13000	<2	<2	<2	<2	<2	<2	<2	<2	<2				<1.0	<1.0	<1.0	



TP / BH No	W53	W54	W55	W55	W56A	W57	W58	TP4	TP6	TP201	TP205	TP208	BH02	BH07	BH08
Depth (m)	0.75	0.8	0.5	3.5	0.8	2.5	0.3	0.8	1	0.3	0.5	0.4	1.5	2.55-3.00	2.55-3.00
Date Sampled	25/06/2019	27/06/2019	25/06/2019	25/06/2019	25/06/2019	26/06/2019	27/06/2019	25/06/2019	25/06/2019	24/07/2019	24/07/2019	24/07/2019	29/01/2020	24/01/2020	24/01/2020
Report No:	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-09356	19-51434	19-51435	19-51436	20-83728	20-82509	20-82509
Sample No	418783	418784	418785	418786	418787	418788	418789	418792	418793	1275531	1275532	1275533	1425657	1421299	1421301
Determinand	Unit	LOD	GAC												
Dichlorodifluoromethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Vinyl Chloride	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Chloromethane	ug/kg	< 10	LOD	< 10	< 10			< 10	< 10						
Chloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Bromomethane	ug/kg	< 10	LOD	< 10	< 10			< 10	< 10						
Trichlorofluoromethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1-Dichloroethene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
MTBE	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
trans-1,2-Dichloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1-Dichloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
cis-1,2-Dichloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
2,2-Dichloropropane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Chloroform	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Bromochloromethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1,1-Trichloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1-Dichloropropene	ug/kg	< 10	LOD	< 10	< 10			< 10	< 10						
Carbon Tetrachloride	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,2-Dichloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Benzene	ug/kg	< 2	LOD	< 2	< 2			< 2	< 2						
1,2-Dichloropropane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Trichloroethene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Bromodichloromethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Dibromomethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
TAME	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
cis-1,3-Dichloropropene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Toluene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
trans-1,3-Dichloropropene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1,2-Trichloroethane	ug/kg	< 10	LOD	< 10	< 10			< 10	< 10						
1,3-Dichloropropane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Tetrachloroethene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Dibromochloromethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,2-Dibromoethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Chlorobenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1,1,2-Tetrachloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Ethyl Benzene	ug/kg	< 2	LOD	< 2	< 2			< 2	< 2						
m,p-Xylene	ug/kg	< 2	LOD	< 2	< 2			< 2	< 2						
o-Xylene	ug/kg	< 2	LOD	< 2	< 2			< 2	< 2						
Styrene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Bromoform	ug/kg	< 10	LOD	< 10	< 10			< 10	< 10						
Isopropylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,1,2,2-Tetrachloroethane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,2,3-Trichloropropane	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
n-Propylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
Bromobenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
2-Chlorotoluene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,3,5-Trimethylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
4-Chlorotoluene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
tert-Butylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,2,4-Trimethylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
sec-Butylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
p-Isopropyltoluene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,3-Dichlorobenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,4-Dichlorobenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
n-Butylbenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,2-Dichlorobenzene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						
1,2-Dibromo-3-chloropropane	ug/kg	< 10	LOD	< 10	< 10			< 10	< 10						
Hexachlorobutadiene	ug/kg	< 5	LOD	< 5	< 5			< 5	< 5						



Natural Soil Analysis Bulls Bridge, Hayes

TP / BH No	BH03	BH07	BH08
Depth (m)	3.8	5.80-6.00	5.50-6.00
Date Sampled	29/01/2020	24/01/2020	24/01/2020
Report No:	20-83728	20-82909	20-82909
Sample No	1425656	1421300	1421302

Determinand	Unit	LOD	GAC (Commercial Use)			
Asbestos Screen (S)	N/a	N/a	Detection	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/A	Detection			
Asbestos Type (S)	PLM Result	N/A	Detection			
Quantification	%	<0.001	Detection			
pH	pH Units	N/A	N/A	7.2	8.1	7.9
Total Cyanide	mg/kg	< 2	LOD	< 1	< 1	< 1
W/S Sulphate as SO4 (2:1)	mg/l	< 10	N/A	509	27.5	29
W/S Sulphate as SO4 (2:1)	g/l	< 0.01	N/A	0.51	0.028	0.029
Organic Matter	%	< 0.1	N/A	2.5	0.5	0.4
Arsenic (As)	mg/kg	< 2	640	22	13	8.4
Cadmium (Cd)	mg/kg	< 0.2	410	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	8600	30	27	23
Chromium (hexavalent)	mg/kg	< 2	49	< 1.2	< 1.2	< 1.2
Copper (Cu)	mg/kg	< 4	68000	14	12	8.7
Lead (Pb)	mg/kg	< 3	2330	11	14	4.7
Mercury (Hg)	mg/kg	< 1	1100	< 0.3	< 0.3	< 0.3
Nickel (Ni)	mg/kg	< 3	980	33	26	21
Selenium (Se)	mg/kg	< 3	12000	< 1.0	< 1.0	< 1.0
Zinc (Zn)	mg/kg	< 3	730000	40	43	26
Total Phenols (monohydric)	mg/kg	< 2	N/A	< 1.0	38	58
Naphthalene	mg/kg	< 0.1	460	3.9	65	79
Acenaphthylene	mg/kg	< 0.1	97000	3.4	3	< 0.05
Acenaphthene	mg/kg	< 0.1	97000	100	72	42
Fluorene	mg/kg	< 0.1	68000	270	73	37
Phenanthrene	mg/kg	< 0.1	22000	32	200	100
Anthracene	mg/kg	< 0.1	540000	76	25	18
Fluoranthene	mg/kg	< 0.1	23000	380	93	37
Pyrene	mg/kg	< 0.1	22000	230	63	24
Benzo(a)anthracene	mg/kg	< 0.1	N/A	61	19	5.9
Chrysene	mg/kg	< 0.1	N/A	44	11	3.4
Benzo(b)fluoranthene	mg/kg	< 0.1	N/A	20	4.5	1.6
Benzo(k)fluoranthene	mg/kg	< 0.1	N/A	8.1	3.6	1.1
Benzo(a)pyrene	mg/kg	< 0.1	76	11	3	1.2
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	N/A	2.2	0.85	< 0.05
Dibenz(a,h)anthracene	mg/kg	< 0.1	N/A	0.95	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	< 0.1	N/A	2.1	0.54	< 0.05
Total EPA-16 PAHs	mg/kg	< 1.6	N/A	1250	641	354
Aliphatic >C5 - C6	mg/kg	< 0.01	5900	< 0.001	< 0.001	< 0.001
Aliphatic >C6 - C8	mg/kg	< 0.05	17000	< 0.001	< 0.001	< 0.001
Aliphatic >C8 - C10	mg/kg	< 2	4800	< 0.001	< 0.001	< 0.001
Aliphatic >C10 - C12	mg/kg	< 2	23000	8.7	9.5	9.2
Aliphatic >C12 - C16	mg/kg	< 3	82000 (24)	41	39	30
Aliphatic >C16 - C21	mg/kg	< 3	1700000	27	27	32
Aliphatic >C21 - C34	mg/kg	< 10	1700000	< 8.0	17	23
Aliphatic (C5 - C34)	mg/kg	< 21	N/A		94	95
Aromatic >C5 - C7	mg/kg	< 0.01	46000	< 0.001	< 0.001	< 0.001
Aromatic >C7 - C8	mg/kg	< 0.05	110000	< 0.001	< 0.001	< 0.001
Aromatic >C8 - C10	mg/kg	< 2	8100	< 0.001	< 0.001	< 0.001
Aromatic >C10 - C12	mg/kg	< 2	28000	22	70	110
Aromatic >C12 - C16	mg/kg	< 2	37000 (169)	930	300	380
Aromatic >C16 - C21	mg/kg	< 3	28000	1900	390	410
Aromatic >C21 - C35	mg/kg	< 10	28000	480	140	44
Aromatic (C5 - C35)	mg/kg	< 21	N/A	3300	900	940
Total >C5 - C35	mg/kg	< 42	N/A	3377	994	1035
Benzene	ug/kg	< 2	98	< 1.0	< 1.0	< 1.0
Toluene	ug/kg	< 5	110000	< 1.0	< 1.0	< 1.0
Ethylbenzene	ug/kg	< 2	13000	< 1.0	< 1.0	< 1.0
p & m-xylene	ug/kg	< 2	14000	< 1.0	< 1.0	< 1.0
o-xylene	ug/kg	< 2	15000	< 1.0	< 1.0	< 1.0
MTBE	ug/kg	< 5	N/A	< 1.0	< 1.0	< 1.0



TP / BH No	BH03	BH07	BH08
Depth (m)	3.8	5.80-6.00	5.50-6.00
Date Sampled	29/01/2020	24/01/2020	24/01/2020
Report No:	20-83728	20-82909	20-82909
Sample No	1425656	1421300	1421302

Determinand	Unit	LOD	GAC (Commercial Use)			
Chloromethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Chloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Bromomethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Vinyl Chloride	µg/kg	1	LOD	<1.0	<1.0	<1.0
Trichlorofluoromethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1-Dichloroethene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Cis-1,2-dichloroethene	µg/kg	1	LOD	<1.0	<1.0	<1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1-Dichloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
2,2-Dichloropropane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Trichloromethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2-Dichloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1-Dichloropropene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Trans-1,2-dichloroethene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Benzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Tetrachloromethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2-Dichloropropane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Trichloroethene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Dibromomethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Bromodichloromethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Cis-1,3-dichloropropene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Trans-1,3-dichloropropene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Toluene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,3-Dichloropropane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Dibromochloromethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Tetrachloroethene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2-Dibromoethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Chlorobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Ethylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
p & m-Xylene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Styrene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Tribromomethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
o-Xylene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	LOD	<1.0	<1.0	<1.0
Isopropylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Bromobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
n-Propylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
2-Chlorotoluene	µg/kg	1	LOD	<1.0	<1.0	<1.0
4-Chlorotoluene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
tert-Butylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
sec-Butylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
p-Isopropyltoluene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Butylbenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0
Hexachlorobutadiene	µg/kg	1	LOD	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	µg/kg	1	LOD	<1.0	<1.0	<1.0



Leachate Analysis
Bulls Bridge, Hayes

TP / BH No	TP204	TP208	BH07	BH08
Depth (m)	0.6	2	5.80-6.00	5.50-6.00
Date Sampled	24/07/2019	24/07/2019	24/01/2020	24/01/2020
Report No:	19-51430	19-51431	20-83394	20-83394
Sample No	1275534	1275535	1424098	1424099

Determinand	Unit	LOD	Freshwater EQS				
pH	pH Units	N/A	6.0-9.0	10.1	7.8	7.7	7.3
Electrical Conductivity	µS/cm	10		400	290	99	39
Free Cyanide	µg/l	10	1	< 10	< 10	< 10	< 10
Sulphate as SO ₄	mg/l	0.1		147	114	12.3	3.8
Nitrate as N	mg/l	0.01		1.55	0.84	0.02	0.08
Hardness - Total	mgCaCO ₃ /l	1		219	137	38.4	14.3
Calcium (dissolved)	mg/l	0.012		87	48	11	3.8
Magnesium (dissolved)	mg/l	0.005		0.32	3.9	2.8	1.2
Arsenic (dissolved)	µg/l	1.1	50	6.5	3.7	< 1.1	< 1.1
Barium (dissolved)	µg/l	0.05		22	49	17	8.6
Beryllium (dissolved)	µg/l	0.2	15	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	mg/l	10		27	130	45	20
Cadmium (dissolved)	µg/l	0.08	0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	4.7	18	2.5	0.8	2.1
Copper (dissolved)	µg/l	0.7	1	14	8.7	3.3	2.8
Lead (dissolved)	µg/l	1	4	3.8	14	< 1.0	< 1.0
Mercury (dissolved)	µg/l	0.5	0.07	< 0.5	1	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	4	0.5	1.8	< 0.3	1
Selenium (dissolved)	µg/l	4		< 4.0	< 4.0	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7		40	10	2.4	7.1
Zinc (dissolved)	µg/l	0.4	10.9	3.4	10	7.3	9.4
Naphthalene	µg/l	0.01	2	< 0.01	0.61	250	4700
Acenaphthylene	µg/l	0.01		0.02	0.66	4.7	9
Acenaphthene	µg/l	0.01		< 0.01	7.5	81	170
Fluorene	µg/l	0.01		< 0.01	1.6	52	64
Phenanthrene	µg/l	0.01		< 0.01	< 0.01	41	41
Anthracene	µg/l	0.01	0.1	0.01	< 0.01	3	5.8
Fluoranthene	µg/l	0.01	0.1	0.03	0.75	2.1	4.8
Pyrene	µg/l	0.01		0.02	0.5	1.3	4.1
Benzo(a)anthracene	µg/l	0.01		0.02	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01		0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01		0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01		0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	0.02	0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01		0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01		< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01		0.01	< 0.01	< 0.01	< 0.01
Total EPA-16 PAHs	µg/l	0.2	LOD	< 0.2	12	430	5000
Benzene	µg/l	1	10	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	74	< 1.0	< 1.0	< 1.0	1.7
Ethylbenzene	µg/l	1		< 1.0	< 1.0	< 1.0	16
p & m-xylene	µg/l	1		< 1.0	< 1.0	< 1.0	29
o-xylene	µg/l	1		< 1.0	< 1.0	< 1.0	18
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10		< 10	< 10	< 10	< 10
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	< 10
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 - Aliphatic >C35 - C44	µg/l	10		< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10		< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10		< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1		< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1		< 1.0	< 1.0	< 1.0	1.7
TPH-CWG - Aromatic >C8 - C10	µg/l	1		< 1.0	< 1.0	< 1.0	88
TPH-CWG - Aromatic >C10 - C12	µg/l	10		< 10	< 10	370	5600
TPH-CWG - Aromatic >C12 - C16	µg/l	10		< 10	< 10	600	2000
TPH-CWG - Aromatic >C16 - C21	µg/l	10		< 10	120	100	1000
TPH-CWG - Aromatic >C21 - C35	µg/l	10		< 10	58	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10		< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10		< 10	180	1100	8700
TPH-CWG - Aromatic (C5 - C44)	µg/l	10		< 10	180	1100	8700
Total TPH (C5-C35)	µg/l	10	10	< 10	180	1100	8700



Water Analysis
Bulls Bridge, Hayes

TP / BH No	WS5	WS6	WS7	BH02	BH07	BH08
Depth (m)	2.88	3.86	3.25	2.8	4.85	4.8
Date Sampled	03/07/2019	03/07/2019	03/07/2019	29/01/2020	29/01/2020	29/01/2020
Lab Report No:	19-09550	19-09550	19-09550	20-83728	20-83728	20-83728
Lab Sample No	419616	419617	419618	1425653	1425654	1425655

Determinand	Unit	LOD	GAC Freshwater EQS (ug/l)	WS5	WS6	WS7	BH02	BH07	BH08
pH	pH Units	N/a	6.0-9.0	7.1	7.4	6.6	7.5	7.5	7.3
Electrical Conductivity	uS/cm	< 5		1850	4840	2350	1600	1500	1300
Total Cyanide	ug/l	< 5		< 5	7	7			
Free Cyanide	ug/l	<10	1				< 10	< 10	< 10
Sulphate as SO4	mg/l	< 1		114	270	10	157	169	33.4
Total Organic Carbon (TOC)	mg/l	< 0.1		8.5	16.9	1.5			
Hardness - Total	mgCaCO3/l	< 1		1010	880	1330	626	618	813
Nitrate as N	mg/l	0.01					1.14	0.67	1.57
Chemical Oxygen Demand (Total)	mg/l	2					100	55	91
BOD (Biochemical Oxygen Demand)	mg/l	1					18	6.1	31
Redox Potential	mV	-800					65.7	71.2	84.7
Arsenic (dissolved)	ug/l	< 5	50	21	< 5	12	1.95	1.39	2.96
Barium (dissolved)	ug/l	< 5		140	120	268	110	130	97
Beryllium (dissolved)	ug/l	< 3	15	< 3	< 3	< 3	< 0.1	< 0.1	< 0.1
Boron (dissolved)	ug/l	< 5		510	575	1300	420	370	220
Cadmium (dissolved)	ug/l	< 0.4	0.08	< 0.4	< 0.4	< 0.4	0.03	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012					170	160	210
Chromium (dissolved)	ug/l	< 5	4.7	< 5	< 5	< 5	0.5	0.3	0.3
Copper (dissolved)	ug/l	< 5	1	< 5	< 5	< 5	1.6	2	0.6
Lead (dissolved)	ug/l	< 5	4	< 5	< 5	< 5	0.4	0.7	0.3
Magnesium (dissolved)	mg/l	0.005					48	55	68
Mercury (dissolved)	ug/l	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	ug/l	< 5	4	< 5	< 5	5	4.7	3.3	7.3
Selenium (dissolved)	ug/l	< 5		< 5	< 5	< 5	33	2.1	4.2
Vanadium (dissolved)	ug/l	< 5		< 5	< 5	< 5	0.5	0.3	< 0.2
Zinc (dissolved)	ug/l	< 2	10.9	7	4	7	2.4	9.3	8.8
Total Phenols (monohydric)	ug/l	< 10	7.7	< 10	< 10	< 10	280	< 10	190
Naphthalene	ug/l	< 0.01	2	< 0.01	< 0.01	0.06	0.27	0.1	585
Acenaphthylene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	0.29	0.29	0.87
Acenaphthene	ug/l	< 0.01		0.03	< 0.01	0.11	6.01	11.2	13.7
Fluorene	ug/l	< 0.01		< 0.01	< 0.01	0.03	2.59	2.76	5.13
Phenanthrene	ug/l	< 0.01		< 0.01	< 0.01	0.04	2.22	< 0.01	5.04
Anthracene	ug/l	< 0.01	0.1	< 0.01	0.03	0.02	0.55	0.4	0.79
Fluoranthene	ug/l	< 0.01	0.1	< 0.01	0.03	0.03	0.5	0.9	0.75
Pyrene	ug/l	< 0.01		< 0.01	0.02	0.03	0.3	0.51	0.57
Benzo(a)anthracene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008		< 0.008	< 0.008	< 0.008	< 0.01	< 0.01	< 0.01
Total EPA-16 PAHs	ug/l	< 0.01	LOD	0.03	0.08	0.32	12.7	16.1	612
Aliphatic >C5 - C6	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic >C6 - C8	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic >C8 - C10	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic >C10 - C12	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic >C12 - C16	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic >C16 - C21	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic >C21 - C34	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0
Aliphatic (C5 - C34)	ug/l	< 70		< 70	< 70	< 70	< 70	< 10	< 10
Aromatic >C5 - C7	ug/l	< 10		< 10	< 10	< 10	3.5	< 1.0	2.9
Aromatic >C7 - C8	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	6.9
Aromatic >C8 - C10	ug/l	< 10		< 10	< 10	< 10	6.8	< 1.0	390
Aromatic >C10 - C12	ug/l	< 10		< 10	< 10	< 10	< 10	70	1500
Aromatic >C12 - C16	ug/l	< 10		< 10	< 10	< 10	820	150	1000
Aromatic >C16 - C21	ug/l	< 10		< 10	< 10	< 10	400	70	500
Aromatic >C21 - C35	ug/l	< 10		< 10	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70		< 70	< 70	< 70	1200	290	3400
Total >C5 - C35	ug/l	< 140	10	< 140	< 140	< 140	1200	290	3400
Benzene	ug/l	< 1	10	< 1	< 1	< 1	3.5	< 1.0	2.9
Toluene	ug/l	< 5	74	< 5	< 5	< 5	< 1.0	< 1.0	6.9
Ethylbenzene	ug/l	< 5		< 5	< 5	< 5	2	< 1.0	81.1
p & m-xylene	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	170
o-xylene	ug/l	< 5		< 5	< 5	< 5	3	< 1.0	76.7
MTBE	ug/l	< 10		< 10	< 10	< 10	< 1.0	< 1.0	< 1.0



TP / BH No	W55	W56	W57	BH02	BH07	BH08
Depth (m)	2.88	3.86	3.25	2.8	4.85	4.8
Date Sampled	03/07/2019	03/07/2019	03/07/2019	29/01/2020	29/01/2020	29/01/2020
Lab Report No:	19-09550	19-09550	19-09550	20-83728	20-83728	20-83728
Lab Sample No	419616	419617	419618	1425653	1425654	1425655

Determinand	Unit	LOD	GAC (LOD)			
Chloromethane	HR/l	1	LOD		<1.0	<1.0
Chloroethane	HR/l	1	LOD		<1.0	<1.0
Bromomethane	HR/l	1	LOD		<1.0	<1.0
Vinyl Chloride	HR/l	1	LOD		<1.0	<1.0
Trichlorofluoromethane	HR/l	1	LOD		<1.0	<1.0
1,1-Dichloroethene	HR/l	1	LOD		<1.0	<1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	HR/l	1	LOD		<1.0	<1.0
Cis-1,2-dichloroethene	HR/l	1	LOD		<1.0	<1.0
MTBE (Methyl Tertiary Butyl Ether)	HR/l	1	LOD		<1.0	<1.0
1,1-Dichloroethane	HR/l	1	LOD		<1.0	<1.0
2,2-Dichloropropane	HR/l	1	LOD		<1.0	<1.0
Trichloromethane	HR/l	1	LOD		<1.0	<1.0
1,1,1-Trichloroethane	HR/l	1	LOD		<1.0	<1.0
1,2-Dichloroethane	HR/l	1	LOD		<1.0	<1.0
1,1-Dichloropropene	HR/l	1	LOD		<1.0	<1.0
Trans-1,2-dichloroethene	HR/l	1	LOD		<1.0	<1.0
Benzene	HR/l	1	LOD		3.5	<1.0
Tetrachloromethane	HR/l	1	LOD		<1.0	<1.0
1,2-Dichloropropane	HR/l	1	LOD		<1.0	<1.0
Trichloroethene	HR/l	1	LOD		<1.0	<1.0
Dibromomethane	HR/l	1	LOD		<1.0	<1.0
Bromodichloromethane	HR/l	1	LOD		<1.0	<1.0
Cis-1,3-dichloropropene	HR/l	1	LOD		<1.0	<1.0
Trans-1,3-dichloropropene	HR/l	1	LOD		<1.0	<1.0
Toluene	HR/l	1	LOD		<1.0	<1.0
1,1,2-Trichloroethane	HR/l	1	LOD		<1.0	<1.0
1,3-Dichloropropane	HR/l	1	LOD		<1.0	<1.0
Dibromochloromethane	HR/l	1	LOD		<1.0	<1.0
Tetrachloroethane	HR/l	1	LOD		<1.0	<1.0
1,2-Dibromoethane	HR/l	1	LOD		<1.0	<1.0
Chlorobenzene	HR/l	1	LOD		<1.0	<1.0
1,1,1,2-Tetrachloroethane	HR/l	1	LOD		<1.0	<1.0
Ethylbenzene	HR/l	1	LOD		2	<1.0
p & m-Xylene	HR/l	1	LOD		<1.0	170
Styrene	HR/l	1	LOD		<1.0	<1.0
Tribromomethane	HR/l	1	LOD		<1.0	<1.0
o-Xylene	HR/l	1	LOD		3	<1.0
1,1,2,2-Tetrachloroethane	HR/l	1	LOD		<1.0	<1.0
Isopropylbenzene	HR/l	1	LOD		<1.0	<1.0
Bromobenzene	HR/l	1	LOD		<1.0	<1.0
n-Propylbenzene	HR/l	1	LOD		<1.0	<1.0
2-Chlorotoluene	HR/l	1	LOD		<1.0	<1.0
4-Chlorotoluene	HR/l	1	LOD		<1.0	<1.0
1,3,5-Trimethylbenzene	HR/l	1	LOD		<1.0	19.1
tert-Butylbenzene	HR/l	1	LOD		<1.0	<1.0
1,2,4-Trimethylbenzene	HR/l	1	LOD		1.8	<1.0
sec-Butylbenzene	HR/l	1	LOD		<1.0	<1.0
1,3-Dichlorobenzene	HR/l	1	LOD		<1.0	<1.0
p-Isopropyltoluene	HR/l	1	LOD		<1.0	<1.0
1,2-Dichlorobenzene	HR/l	1	LOD		<1.0	<1.0
1,4-Dichlorobenzene	HR/l	1	LOD		<1.0	<1.0
Butylbenzene	HR/l	1	LOD		<1.0	<1.0
1,2-Dibromo-3-chloropropane	HR/l	1	LOD		<1.0	<1.0
1,2,4-Trichlorobenzene	HR/l	1	LOD		<1.0	<1.0
Hexachlorobutadiene	HR/l	1	LOD		<1.0	<1.0
1,2,3-Trichlorobenzene	HR/l	1	LOD		<1.0	<1.0



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Analytical Report Number : 20-83728

Project / Site name:	Hayes	Samples received on:	29/01/2020
Your job number:	3249	Samples instructed on:	29/01/2020
Your order number:		Analysis completed by:	06/02/2020
Report Issue Number:	1	Report issued on:	06/02/2020
Samples Analysed:	2 soil samples - 3 water samples		

Signed: 

Rachel Bradley

Deputy Quality 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

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

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

Iss No 20-83728-1 Hayes 3249

Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number	1425656	1425657			
Sample Reference	BH03	BH02			
Sample Number	None Supplied	None Supplied			
Depth (m)	3.00	1.50			
Date Sampled	29/01/2020	29/01/2020			
Time Taken	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	19
Total mass of sample received	kg	0.001	NONE	2.0	1.1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.019
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.019

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	7.3
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1000	1400
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.51	0.70
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	509	698
Organic Matter	%	0.1	MCERTS	2.5	5.8
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	3.7	4.9
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.9	1.6
Acenaphthylene	mg/kg	0.05	MCERTS	3.4	1.1
Acenaphthene	mg/kg	0.05	MCERTS	100	79
Fluorene	mg/kg	0.05	MCERTS	270	62
Phenanthrene	mg/kg	0.05	MCERTS	32	70
Anthracene	mg/kg	0.05	MCERTS	76	83
Fluoranthene	mg/kg	0.05	MCERTS	380	95
Pyrene	mg/kg	0.05	MCERTS	230	64
Benzo(a)anthracene	mg/kg	0.05	MCERTS	61	14
Chrysene	mg/kg	0.05	MCERTS	44	9.9
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	20	8.4
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	8.1	2.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	11	4.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.2	1.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.95	0.43
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	1.7

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1250	499
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Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425656	1425657			
Sample Reference				BH03	BH02			
Sample Number				None Supplied	None Supplied			
Depth (m)				3.00	1.50			
Date Sampled				29/01/2020	29/01/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	18			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	50	380			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	1.7			
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	5.7			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	42			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	360			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	11	230			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33	41			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	67			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40	270			

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	8.7	13			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	41	250			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	27	340			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	260			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	77	870			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	77	870			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	22	10			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	930	200			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	1900	490			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	480	210			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	3300	900			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	3300	900			

Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425656	1425657			
Sample Reference				BH03	BH02			
Sample Number				None Supplied	None Supplied			
Depth (m)				3.00	1.50			
Date Sampled				29/01/2020	29/01/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0			
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0			
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0			
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0			
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0			
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0			
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			



Analytical Report Number: 20-83728
Project / Site name: Hayes
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

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

Quantitative Analysis

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

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

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

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1425657	BH02	1.50	144	Loose Fibrous Debris	Chrysotile	0.019	0.019

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



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number	1425653	1425654	1425655		
Sample Reference	BH02	BH07	BH08		
Sample Number	None Supplied	None Supplied	None Supplied		
Depth (m)	2.80	4.85	4.80		
Date Sampled	29/01/2020	29/01/2020	29/01/2020		
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	7.5	7.5	7.3		
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1600	1500	1300		
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Sulphate as SO ₄	µg/l	45	ISO 17025	157000	169000	33400		
Sulphate as SO ₄	mg/l	0.045	ISO 17025	157	169	33.4		
Nitrate as N	mg/l	0.01	ISO 17025	1.14	0.67	1.57		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	100	55	91		
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	18	6.1	31		
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	626	618	813		
Redox Potential	mV	-800	NONE	65.70	71.20	84.70		

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	280	< 10	190		
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.27	0.10	585		
Acenaphthylene	µg/l	0.01	ISO 17025	0.29	0.29	0.87		
Acenaphthene	µg/l	0.01	ISO 17025	6.01	11.2	13.7		
Fluorene	µg/l	0.01	ISO 17025	2.59	2.76	5.13		
Phenanthrene	µg/l	0.01	ISO 17025	2.22	< 0.01	5.04		
Anthracene	µg/l	0.01	ISO 17025	0.55	0.40	0.79		
Fluoranthene	µg/l	0.01	ISO 17025	0.50	0.90	0.75		
Pyrene	µg/l	0.01	ISO 17025	0.30	0.51	0.57		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	12.7	16.1	612		
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.95	1.39	2.96		
Barium (dissolved)	µg/l	0.06	ISO 17025	110	130	97		
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1		
Boron (dissolved)	µg/l	10	ISO 17025	420	370	220		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02	< 0.02		
Calcium (dissolved)	mg/l	0.012	ISO 17025	170	160	210		
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5	0.3	0.3		
Copper (dissolved)	µg/l	0.5	ISO 17025	1.6	2.0	0.6		
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	0.7	0.3		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	48	55	68		
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05		
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.7	3.3	7.3		
Selenium (dissolved)	µg/l	0.6	ISO 17025	33	2.1	4.2		
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.5	0.3	< 0.2		
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.4	9.3	8.8		



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number	1425653	1425654	1425655		
Sample Reference	BH02	BH07	BH08		
Sample Number	None Supplied	None Supplied	None Supplied		
Depth (m)	2.80	4.85	4.80		
Date Sampled	29/01/2020	29/01/2020	29/01/2020		
Time Taken	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	3.5	< 1.0	2.9		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	6.9		
Ethylbenzene	µg/l	1	ISO 17025	2.0	< 1.0	81.1		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	170		
o-xylene	µg/l	1	ISO 17025	3.0	< 1.0	76.7		
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 >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	3.5	< 1.0	2.9		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	6.9		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6.8	< 1.0	390		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	70	1500		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	820	150	1000		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	400	70	500		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	1200	290	3400		
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	1200	290	3400		



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number	1425653	1425654	1425655		
Sample Reference	BH02	BH07	BH08		
Sample Number	None Supplied	None Supplied	None Supplied		
Depth (m)	2.80	4.85	4.80		
Date Sampled	29/01/2020	29/01/2020	29/01/2020		
Time Taken	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

VOCs

Compound	Units	Limit of detection	Accreditation Status	1425653	1425654	1425655
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	3.5	< 1.0	2.9
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	6.9
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	2.0	< 1.0	81.1
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	170
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	3.0	< 1.0	76.7
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	4.4
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	19.1
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	1.8	< 1.0	41.9
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0

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



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Environmental Science

Analytical Report Number : 20-83728

Project / Site name: Hayes

* 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 *
1425656	BH03	None Supplied	3.00	Brown clay and sand with gravel and tar.
1425657	BH02	None Supplied	1.50	Brown clay and sand with gravel.

Analytical Report Number : 20-83728

Project / Site name: Hayes

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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
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.	L086-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, 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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE

Analytical Report Number : 20-83728

Project / Site name: Hayes

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
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In house method.	L084-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
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
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 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
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE



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Environmental Science

Analytical Report Number : 20-83728

Project / Site name: Hayes

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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
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 soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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

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

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

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



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425656	1425657		
Sample Reference				BH03	BH02		
Sample Number				None Supplied	None Supplied		
Depth (m)				3.00	1.50		
Date Sampled				29/01/2020	29/01/2020		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	10	19		
Total mass of sample received	kg	0.001	NONE	2.0	1.1		

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.019		
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.019		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	7.3		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1		
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1		
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1000	1400		
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.51	0.70		
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	509	698		
Organic Matter	%	0.1	MCERTS	2.5	5.8		
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	3.7	4.9		
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0		

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0		
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	To follow	To follow		
Acenaphthylene	mg/kg	0.05	MCERTS	To follow	To follow		
Acenaphthene	mg/kg	0.05	MCERTS	To follow	To follow		
Fluorene	mg/kg	0.05	MCERTS	To follow	To follow		
Phenanthrene	mg/kg	0.05	MCERTS	To follow	To follow		
Anthracene	mg/kg	0.05	MCERTS	To follow	To follow		
Fluoranthene	mg/kg	0.05	MCERTS	To follow	To follow		
Pyrene	mg/kg	0.05	MCERTS	To follow	To follow		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	To follow	To follow		
Chrysene	mg/kg	0.05	MCERTS	To follow	To follow		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	To follow	To follow		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	To follow	To follow		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	To follow	To follow		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	To follow	To follow		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	To follow	To follow		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	To follow	To follow		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	To follow	To follow		
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Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425656	1425657			
Sample Reference				BH03	BH02			
Sample Number				None Supplied	None Supplied			
Depth (m)				3.00	1.50			
Date Sampled				29/01/2020	29/01/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	18			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	50	380			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	1.7			
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	5.7			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	42			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	360			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	11	230			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33	41			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	67			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40	270			

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	To follow	To follow			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	To follow	To follow			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	To follow	To follow			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	To follow	To follow			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	To follow	To follow			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	To follow	To follow			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	To follow	To follow			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	To follow	To follow			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	To follow	To follow			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	To follow	To follow			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	To follow	To follow			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	To follow	To follow			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	To follow	To follow			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	To follow	To follow			



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Environmental Science

Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number		1425656	1425657				
Sample Reference		BH03	BH02				
Sample Number		None Supplied	None Supplied				
Depth (m)		3.00	1.50				
Date Sampled		29/01/2020	29/01/2020				
Time Taken		None Supplied	None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

VOCs

Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	1425656	1425657		
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0		
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0		
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0		
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0		
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0		
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0		
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0		
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0		
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0		
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0		
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0		
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0		



Analytical Report Number: 20-83728

Project / Site name: Hayes

Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

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

Quantitative Analysis

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

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

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

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1425657	BH02	1.50	144	Loose Fibrous Debris	Chrysotile	0.019	0.019

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



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425653	1425654	1425655		
Sample Reference				BH02	BH07	BH08		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.80	4.85	4.80		
Date Sampled				29/01/2020	29/01/2020	29/01/2020		
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	7.5	7.5	7.3		
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1600	1500	1300		
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Sulphate as SO ₄	mg/l	0.045	ISO 17025	157	169	33.4		
Nitrate as N	mg/l	0.01	ISO 17025	1.14	0.67	1.57		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	100	55	91		
BOD (Biochemical Oxygen Demand) (Total) - PL	mg/l	1	ISO 17025	18	6.1	31		
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	626	618	813		
Redox Potential	mV	-800	NONE	65.70	71.20	84.70		

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	280	< 10	190		
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	0.27	0.10	585		
Acenaphthylene	µg/l	0.01	ISO 17025	0.29	0.29	0.87		
Acenaphthene	µg/l	0.01	ISO 17025	6.01	11.2	13.7		
Fluorene	µg/l	0.01	ISO 17025	2.59	2.76	5.13		
Phenanthrene	µg/l	0.01	ISO 17025	2.22	< 0.01	5.04		
Anthracene	µg/l	0.01	ISO 17025	0.55	0.40	0.79		
Fluoranthene	µg/l	0.01	ISO 17025	0.50	0.90	0.75		
Pyrene	µg/l	0.01	ISO 17025	0.30	0.51	0.57		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	12.7	16.1	612		
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.95	1.39	2.96		
Barium (dissolved)	µg/l	0.06	ISO 17025	110	130	97		
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1		
Boron (dissolved)	µg/l	10	ISO 17025	420	370	220		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02	< 0.02		
Calcium (dissolved)	mg/l	0.012	ISO 17025	170	160	210		
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5	0.3	0.3		
Copper (dissolved)	µg/l	0.5	ISO 17025	1.6	2.0	0.6		
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	0.7	0.3		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	48	55	68		
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05		
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.7	3.3	7.3		
Selenium (dissolved)	µg/l	0.6	ISO 17025	33	2.1	4.2		
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.5	0.3	< 0.2		
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.4	9.3	8.8		



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425653	1425654	1425655		
Sample Reference				BH02	BH07	BH08		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.80	4.85	4.80		
Date Sampled				29/01/2020	29/01/2020	29/01/2020		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	3.5	< 1.0	2.9		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	6.9		
Ethylbenzene	µg/l	1	ISO 17025	2.0	< 1.0	81.1		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	170		
o-xylene	µg/l	1	ISO 17025	3.0	< 1.0	76.7		
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 >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	3.5	< 1.0	2.9		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	6.9		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	6.8	< 1.0	390		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	70	1500		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	820	150	1000		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	400	70	500		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	1200	290	3400		
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	1200	290	3400		



Analytical Report Number: 20-83728

Project / Site name: Hayes

Lab Sample Number				1425653	1425654	1425655		
Sample Reference				BH02	BH07	BH08		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.80	4.85	4.80		
Date Sampled				29/01/2020	29/01/2020	29/01/2020		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCS

Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Benzene	µg/l	1	ISO 17025	3.5	< 1.0	2.9		
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	6.9		
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	2.0	< 1.0	81.1		
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	170		
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-Xylene	µg/l	1	ISO 17025	3.0	< 1.0	76.7		
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	4.4		
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	19.1		
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	1.8	< 1.0	41.9		
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

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



Preliminary Report Number : 20-83728

Project / Site name: Hayes

* 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 *
1425656	BH03	None Supplied	3.00	Brown clay and sand with gravel and tar.
1425657	BH02	None Supplied	1.50	Brown clay and sand with gravel.

Preliminary Report Number : 20-83728

Project / Site name: Hayes

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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
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.	L086-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE

Iss No 20-83728-0 Hayes 3249

Preliminary Report Number : 20-83728

Project / Site name: Hayes

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
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Redox Potential of waters	Determination of conductivity of water by conductivity meter	In house method.	L084-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
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
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 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
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE

Iss No 20-83728-0 Hayes 3249



Preliminary Report Number : 20-83728

Project / Site name: Hayes

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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
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 soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
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

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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Analytical Report Number : 20-83394

Project / Site name:	Hayes	Samples received on:	24/01/2020
Your job number:	3249	Samples instructed on:	28/01/2020
Your order number:		Analysis completed by:	03/02/2020
Report Issue Number:	1	Report issued on:	03/02/2020
Samples Analysed:	2 leachate samples		


Signed: _____

Rachel Bradley

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

Iss No 20-83394-1 Hayes 3249



Analytical Report Number: 20-83394
Project / Site name: Hayes

Lab Sample Number				1424098	1424099			
Sample Reference				BH07	BH08			
Sample Number				None Supplied	None Supplied			
Depth (m)				5.80-6.00	5.50-6.00			
Date Sampled				24/01/2020	24/01/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.7	7.3			
Electrical Conductivity	µS/cm	10	ISO 17025	99	39			
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Sulphate as SO ₄	mg/l	0.1	ISO 17025	12.3	3.8			
Nitrate as N	mg/l	0.01	NONE	0.02	0.08			
Hardness - Total	mgCaCO ₃ /l	1	NONE	38.4	14.3			

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	250	4700			
Acenaphthylene	µg/l	0.01	ISO 17025	4.7	9.0			
Acenaphthene	µg/l	0.01	ISO 17025	81	170			
Fluorene	µg/l	0.01	ISO 17025	52	64			
Phenanthrene	µg/l	0.01	ISO 17025	41	41			
Anthracene	µg/l	0.01	ISO 17025	3.0	5.8			
Fluoranthene	µg/l	0.01	ISO 17025	2.1	4.8			
Pyrene	µg/l	0.01	ISO 17025	1.3	4.1			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01			

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	430	5000			
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	< 1.1			
Barium (dissolved)	µg/l	0.05	ISO 17025	17	8.6			
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2			
Boron (dissolved)	µg/l	10	ISO 17025	45	20			
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08			
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.8	2.1			
Copper (dissolved)	µg/l	0.7	ISO 17025	3.3	2.8			
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5			
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3	1.0			
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0			
Vanadium (dissolved)	µg/l	1.7	ISO 17025	2.4	7.1			
Zinc (dissolved)	µg/l	0.4	ISO 17025	7.3	9.4			

Calcium (dissolved)	mg/l	0.012	ISO 17025	11	3.8			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	2.8	1.2			



Analytical Report Number: 20-83394

Project / Site name: Hayes

Lab Sample Number				1424098	1424099			
Sample Reference				BH07	BH08			
Sample Number				None Supplied	None Supplied			
Depth (m)				5.80-6.00	5.50-6.00			
Date Sampled				24/01/2020	24/01/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	1.7			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	16			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	29			
o-xylene	µg/l	1	ISO 17025	< 1.0	18			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10			

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 >C35 - C44	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10			

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	1.7			
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	88			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	370	5600			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	600	2000			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	100	1000			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	1100	8700			
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	1100	8700			



Analytical Report Number : 20-83394

Project / Site name: Hayes

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
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Electrical conductivity at 20oC of leachate	Determination of electrical conductivity in leachate by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Nitrate as N in leachate	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08.	L078-PL	W	NONE
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total Hardness of leachates	Determination of hardness in leachates by calculation from calcium and magnesium.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	NONE
TPH in (Leachate)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPH7 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-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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Analytical Report Number : 20-82909

Replaces Analytical Report Number : 20-82909, issue no. 1

Project / Site name:	Hayes	Samples received on:	24/01/2020
Your job number:	3249	Samples instructed on:	24/01/2020
Your order number:		Analysis completed by:	10/02/2020
Report Issue Number:	2	Report issued on:	10/02/2020
Samples Analysed:	4 soil samples		

Signed: _____

Rachel Bradley

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

Iss No 20-82909-2 Hayes 3249

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The results included within the report are representative of the samples submitted for analysis.

Page 1 of 8

Analytical Report Number: 20-82909

Project / Site name: Hayes

Lab Sample Number				1421299	1421300	1421301	1421302
Sample Reference				BH07	BH07	BH08	BH08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00
Date Sampled				24/01/2020	24/01/2020	24/01/2020	24/01/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	8.3	15	12
Total mass of sample received	kg	0.001	NONE	2.0	1.9	1.6	2.0

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7	8.1	8.8	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	390	55	1900	58
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.19	0.028	0.96	0.029
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	195	27.5	955	29.0
Organic Matter	%	0.1	MCERTS	3.4	0.5	2.1	0.4
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	3.2	< 2.0	2.6	< 2.0
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	1.3	-	2.2
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.92	65	1.3	79
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	3.0	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.5	72	0.50	42
Fluorene	mg/kg	0.05	MCERTS	1.1	73	0.45	37
Phenanthrene	mg/kg	0.05	MCERTS	3.8	200	1.8	100
Anthracene	mg/kg	0.05	MCERTS	1.4	25	0.47	18
Fluoranthene	mg/kg	0.05	MCERTS	7.2	93	2.4	37
Pyrene	mg/kg	0.05	MCERTS	6.1	63	2.0	24
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.0	19	1.4	5.9
Chrysene	mg/kg	0.05	MCERTS	2.1	11	0.98	3.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.0	4.5	1.0	1.6
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	3.6	0.79	1.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.9	3.0	1.0	1.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.65	0.85	0.42	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.91	0.54	0.55	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	34.1	641	15.1	354
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	13	15	8.4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	210	35	170	15
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	0.74	1.4	0.46
Boron (water soluble)	mg/kg	0.2	MCERTS	4.3	1.2	4.0	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.9	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	27	47	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	200	12	100	8.7
Lead (aqua regia extractable)	mg/kg	1	MCERTS	350	14	180	4.7
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.2	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	37	26	34	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	72	43	70	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	230	38	390	58



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Project / Site name: Hayes

Lab Sample Number				1421299	1421300	1421301	1421302
Sample Reference				BH07	BH07	BH08	BH08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00
Date Sampled				24/01/2020	24/01/2020	24/01/2020	24/01/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				

Analytical Report Number: 20-82909

Project / Site name: Hayes

Lab Sample Number	1421299	1421300	1421301	1421302	
Sample Reference	BH07	BH07	BH08	BH08	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00	
Date Sampled	24/01/2020	24/01/2020	24/01/2020	24/01/2020	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Compound	Units	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-

TPH C10 - C40	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
TPH C10 - C40	mg/kg	10	MCERTS	2800	-	98	-

TPH2 (C6 - C10)	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-

TPH C6 - C40	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
TPH C6 - C40	mg/kg	10	NONE	2800	-	98	-

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	7.6	9.5	-	9.2
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	120	39	-	30
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	1500	27	-	32
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	520	17	-	23
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	2100	94	-	95
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	94	-	95

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.7	70	-	110
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	78	300	-	380
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	560	390	-	410
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	370	140	-	44
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	1000	900	-	940
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	900	-	940

TPH (C10 - C25)	mg/kg	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
TPH (C10 - C25)	mg/kg	10	MCERTS	2600	-	82	-
TPH (C25 - C40)	mg/kg	10	MCERTS	550	-	< 10	-

Analytical Report Number: 20-82909

Project / Site name: Hayes

Lab Sample Number	1421299			1421300			1421301			1421302		
Sample Reference	BH07			BH07			BH08			BH08		
Sample Number	None Supplied			None Supplied			None Supplied			None Supplied		
Depth (m)	2.55-3.00			5.80-6.00			2.50-3.00			5.50-6.00		
Date Sampled	24/01/2020			24/01/2020			24/01/2020			24/01/2020		
Time Taken	None Supplied			None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status									
VOCs												
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-	< 1.0	-	< 1.0	



Analytical Report Number : 20-82909

Project / Site name: Hayes

* 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 *
1421299	BH07	None Supplied	2.55-3.00	Grey clay with gravel.
1421300	BH07	None Supplied	5.80-6.00	Brown clay with gravel.
1421301	BH08	None Supplied	2.50-3.00	Grey clay with gravel.
1421302	BH08	None Supplied	5.50-6.00	Grey sandy gravel.**

**Non MCERTS matrix.

Analytical Report Number : 20-82909

Project / Site name: Hayes

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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Iss No 20-82909-2 Hayes 3249



Analytical Report Number : 20-82909

Project / Site name: Hayes

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
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method.	L076-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/cleanup.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/cleanup.	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	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.



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Analytical Report Number : 20-82909

Project / Site name: Hayes

Samples received on:

Your job number: 3249

Samples instructed on: 24/01/2020

Your order number:

Analysis completed by: 03/02/2020

Report Issue Number: 1

Report issued on: 03/02/2020

Samples Analysed: 4 soil samples

Signed: *A. Czerwińska*

Agnieszka Czerwińska

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

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

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

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

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

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

Analytical Report Number: 20-82909

Project / Site name: Hayes

Lab Sample Number	1421299	1421300	1421301	1421302	
Sample Reference	BH07	BH07	BH08	BH08	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00	
Date Sampled	24/01/2020	24/01/2020	24/01/2020	24/01/2020	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	8.3
Total mass of sample received	kg	0.001	NONE	2.0	1.9

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

pH - Automated	pH Units	N/A	MCERTS	7.7	8.1	8.8	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	390	55	1900	58
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.19	0.028	0.96	0.029
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	195	27.5	955	29.0
Organic Matter	%	0.1	MCERTS	3.4	0.5	2.1	0.4
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	3.2	< 2.0	2.6	< 2.0
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	1.3	-	2.2
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.92	65	1.3	79
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	3.0	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.5	72	0.50	42
Fluorene	mg/kg	0.05	MCERTS	1.1	73	0.45	37
Phenanthrene	mg/kg	0.05	MCERTS	3.8	200	1.8	100
Anthracene	mg/kg	0.05	MCERTS	1.4	25	0.47	18
Fluoranthene	mg/kg	0.05	MCERTS	7.2	93	2.4	37
Pyrene	mg/kg	0.05	MCERTS	6.1	63	2.0	24
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.0	19	1.4	5.9
Chrysene	mg/kg	0.05	MCERTS	2.1	11	0.98	3.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.0	4.5	1.0	1.6
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	3.6	0.79	1.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.9	3.0	1.0	1.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.65	0.85	0.42	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.91	0.54	0.55	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	34.1	641	15.1	354
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Environmental Science

Analytical Report Number: 20-82909

Project / Site name: Hayes

Lab Sample Number	1421299	1421300	1421301	1421302	
Sample Reference	BH07	BH07	BH08	BH08	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00	
Date Sampled	24/01/2020	24/01/2020	24/01/2020	24/01/2020	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Element	Units	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	13	15	8.4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	210	35	170	15
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	0.74	1.4	0.46
Boron (water soluble)	mg/kg	0.2	MCERTS	4.3	1.2	4.0	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.9	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	27	47	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	200	12	100	8.7
Lead (aqua regia extractable)	mg/kg	1	MCERTS	350	14	180	4.7
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.2	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	37	26	34	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	72	43	70	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	230	38	390	58

Monoaromatics & Oxygenates

Compound	Units	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	1421299	1421300	1421301	1421302
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-

TPH C10 - C40	mg/kg	10	MCERTS	2800	-	98	-
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TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-
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TPH C6 - C40	mg/kg	10	NONE	2800	-	98	-
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TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	9.5	-	9.2
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	39	-	30
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	27	-	32
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	17	-	23
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	94	-	95
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	94	-	95

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	70	-	110
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	300	-	380
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	390	-	410
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	140	-	44
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	900	-	940
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	900	-	940

TPH (C10 - C25)	mg/kg	10	MCERTS	2600	-	82	-
TPH (C25 - C40)	mg/kg	10	MCERTS	550	-	< 10	-

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Analytical Report Number: 20-82909
Project / Site name: Hayes

Lab Sample Number				1421299	1421300	1421301	1421302	
Sample Reference				BH07	BH07	BH08	BH08	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00	
Date Sampled				24/01/2020	24/01/2020	24/01/2020	24/01/2020	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					



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Environmental Science

Analytical Report Number: 20-82909

Project / Site name: Hayes

Lab Sample Number	1421299	1421300	1421301	1421302	
Sample Reference	BH07	BH07	BH08	BH08	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	2.55-3.00	5.80-6.00	2.50-3.00	5.50-6.00	
Date Sampled	24/01/2020	24/01/2020	24/01/2020	24/01/2020	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

VOCs

Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	< 1.0



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Environmental Science

Analytical Report Number : 20-82909

Project / Site name: Hayes

* 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 *
1421299	BH07	None Supplied	2.55-3.00	Grey clay with gravel.
1421300	BH07	None Supplied	5.80-6.00	Brown clay with gravel.
1421301	BH08	None Supplied	2.50-3.00	Grey clay with gravel.
1421302	BH08	None Supplied	5.50-6.00	Grey sandy gravel.**

** Non MCERTS Matrix

Analytical Report Number : 20-82909

Project / Site name: Hayes

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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0738-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS



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Environmental Science

Analytical Report Number : 20-82909

Project / Site name: Hayes

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
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method.	L076-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/cleanup.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/cleanup.	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	MCERTS

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

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

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



Rachael Giles
Your Environment
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t: 01622 850410

DETS Report No: 19-09356

Site Reference: Bulls Bridge Industrial Estate, Hayes

Project / Job Ref: YE7331

Order No: None Supplied

Sample Receipt Date: 02/07/2019

Sample Scheduled Date: 02/07/2019

Report Issue Number: 1

Reporting Date: 08/07/2019

Authorised by:

Dave Ashworth
Deputy Quality Manager

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



DETS Ltd
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Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 19-09356	Date Sampled	27/06/19	27/06/19	25/06/19	27/06/19	25/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS1	WS2	WS3	WS4	WS5
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	0.75	0.50	0.75	0.80	0.50
Reporting Date: 08/07/2019	DETS Sample No	418781	418782	418783	418784	418785

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Detected	Not Detected	Not Detected
Sample Matrix ^(S)	Material Type	N/a	NONE			bundle of Chrysotile fibres		
Asbestos Type ^(S)	PLM Result	N/a	ISO17025			Chrysotile		
pH	pH Units	N/a	MCERTS	7.5	7.5	8.0	8.4	9.9
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	153	152	148	200	585
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.15	0.15	0.15	0.20	0.58
Organic Matter	%	< 0.1	MCERTS	5.7	3.2	3.6	3.3	2.7
Arsenic (As)	mg/kg	< 2	MCERTS	32	20	19	34	12
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	0.4	0.2	0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	16	26	23	89	24
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	105	87	76	113	24
Lead (Pb)	mg/kg	< 3	MCERTS	28	146	381	67	58
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	1.1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	41	24	22	56	13
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	54	210	211	116	146
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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

Subcontracted analysis (S)

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



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Soil Analysis Certificate						
DETS Report No: 19-09356	Date Sampled	25/06/19	25/06/19	26/06/19	27/06/19	26/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS5	WS6A	WS7	WS8	WS9
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	3.50	0.80	2.50	0.30	2.00
Reporting Date: 08/07/2019	DETS Sample No	418786	418787	418788	418789	418790

Determinand	Unit	RL	Accreditation	25/06/19	25/06/19	26/06/19	27/06/19	26/06/19
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Detected	Not Detected	Detected	Not Detected
Sample Matrix ^(S)	Material Type	N/a	NONE		bundles of Chrysotile fibres		bundles of Chrysotile fibres	
Asbestos Type ^(S)	PLM Result	N/a	ISO17025		Chrysotile		Chrysotile	
pH	pH Units	N/a	MCERTS	7.1	9.1	7.5	10.4	9.2
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	198	224	605	601	246
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.20	0.22	0.60	0.60	0.25
Organic Matter	%	< 0.1	MCERTS	1.5	1.7	3.1	2.2	2.4
Arsenic (As)	mg/kg	< 2	MCERTS	7	15	22	14	12
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	0.4	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	17	26	32	22	143
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	12	35	62	46	76
Lead (Pb)	mg/kg	< 3	MCERTS	25	102	307	843	77
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	1.7	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	8	25	22	16	19
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	34	114	285	124	86
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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



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Soil Analysis Certificate						
DETS Report No: 19-09356	Date Sampled	26/06/19	25/06/19	25/06/19		
Your Environment	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS10	TP4	TP6		
Project / Job Ref: YE7331	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	0.50	0.80	1.00		
Reporting Date: 08/07/2019	DETS Sample No	418791	418792	418793		

Determinand	Unit	RL	Accreditation			
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Detected
Sample Matrix ^(S)	Material Type	N/a	NONE			bundles of Chrysotile fibres
Asbestos Type ^(S)	PLM Result	N/a	ISO17025			Chrysotile
pH	pH Units	N/a	MCERTS	8.3	7.8	8.1
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	55	191	55
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.05	0.19	0.05
Organic Matter	%	< 0.1	MCERTS	6.7	4.4	1.2
Arsenic (As)	mg/kg	< 2	MCERTS	6	317	13
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	5.8	0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	13	18	11
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	13	75	31
Lead (Pb)	mg/kg	< 3	MCERTS	27	52	60
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	11	32	11
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	32	48	73
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2

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



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-09356	Date Sampled	27/06/19	27/06/19	25/06/19	27/06/19	25/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS1	WS2	WS3	WS4	WS5
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	0.75	0.50	0.75	0.80	0.50
Reporting Date: 08/07/2019	DETS Sample No	418781	418782	418783	418784	418785

Determinand	Unit	RL	Accreditation	(n)				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	0.41	0.85	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	0.25	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.13	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	0.14	0.18	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.23	0.85	1.22	0.33	0.74
Anthracene	mg/kg	< 0.1	MCERTS	0.15	0.48	0.31	< 0.1	0.20
Fluoranthene	mg/kg	< 0.1	MCERTS	0.25	2.35	1.96	0.32	0.73
Pyrene	mg/kg	< 0.1	MCERTS	0.24	2.22	1.70	0.28	0.54
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	1.66	0.76	0.41	0.22
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	1.47	1.04	0.56	0.29
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.37	1.94	1.13	1.27	0.30
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.58	0.32	0.31	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	1.28	0.63	0.33	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	1.09	0.43	0.37	0.11
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.11	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.81	0.35	0.30	0.12
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	15.6	11	4.5	3.4

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

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



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-09356	Date Sampled	25/06/19	25/06/19	26/06/19	27/06/19	26/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS5	WS6A	WS7	WS8	WS9
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	3.50	0.80	2.50	0.30	2.00
Reporting Date: 08/07/2019	DETS Sample No	418786	418787	418788	418789	418790

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	0.13	4.65	0.81	0.35	0.57
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	0.20	0.15	< 0.1	0.33
Acenaphthene	mg/kg	< 0.1	MCERTS	0.17	9.79	1.73	0.16	0.12
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	8.60	2.10	0.16	1.22
Phenanthrene	mg/kg	< 0.1	MCERTS	0.33	33.70	11.30	1.56	14.20
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	7.27	6.42	0.32	4.22
Fluoranthene	mg/kg	< 0.1	MCERTS	0.46	20.60	22.10	2.84	23.80
Pyrene	mg/kg	< 0.1	MCERTS	0.35	15	15.40	2.54	17.50
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.18	3.05	7.68	1.34	7.92
Chrysene	mg/kg	< 0.1	MCERTS	0.29	2.94	6.35	1.42	7.78
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.32	2.45	6.17	1.71	7.83
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.74	2.08	0.53	2.54
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.17	1.55	4.42	1.23	4.81
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.13	0.73	1.79	0.80	2.31
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.15	0.44	0.14	0.69
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.60	1.29	0.67	1.85
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.5	112	90.3	15.8	97.6

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



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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 19-09356	Date Sampled	26/06/19	25/06/19	25/06/19	
Your Environment	Time Sampled	None Supplied	None Supplied	None Supplied	
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS10	TP4	TP6	
Project / Job Ref: YE7331	Additional Refs	None Supplied	None Supplied	None Supplied	
Order No: None Supplied	Depth (m)	0.50	0.80	1.00	
Reporting Date: 08/07/2019	DETS Sample No	418791	418792	418793	

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	1.82	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.18	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.57	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.41	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.33	3.77	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.23	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.20	8.03	
Pyrene	mg/kg	< 0.1	MCERTS	0.13	0.16	6.05	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.53	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	2.98	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	2.95	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.89	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.49	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.94	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.20	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.72	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	35.8	

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



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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 19-09356	Date Sampled	27/06/19	27/06/19	25/06/19	27/06/19	25/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS1	WS2	WS3	WS4	WS5
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	0.75	0.50	0.75	0.80	0.50
Reporting Date: 08/07/2019	DETS Sample No	418781	418782	418783	418784	418785

Determinand	Unit	RL	Accreditation	(n)				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	4
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	23
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	285
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	312
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	3	4	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	4	10	14	< 3	9
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	25	36	22	< 10	79
Aromatic (C5 - C35)	mg/kg	< 21	NONE	29	49	40	< 21	88
Total >C5 - C35	mg/kg	< 42	NONE	< 42	49	< 42	< 42	400

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 19-09356	Date Sampled	25/06/19	25/06/19	26/06/19	27/06/19	26/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS5	WS6A	WS7	WS8	WS9
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	3.50	0.80	2.50	0.30	2.00
Reporting Date: 08/07/2019	DETS Sample No	418786	418787	418788	418789	418790

Determinand	Unit	RL	Accreditation	25/06/19	25/06/19	26/06/19	27/06/19	26/06/19
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	10	< 3	5	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	8	< 3	8	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	23	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	36	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	6	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	11	3	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	96	22	6	14
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	193	125	20	116
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	164	240	75	270
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	470	391	102	400
Total >C5 - C35	mg/kg	< 42	NONE	< 42	488	391	138	400

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



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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 19-09356	Date Sampled	26/06/19	25/06/19	25/06/19		
Your Environment	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS10	TP4	TP6		
Project / Job Ref: YE7331	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	0.50	0.80	1.00		
Reporting Date: 08/07/2019	DETS Sample No	418791	418792	418793		

Determinand	Unit	RL	Accreditation	26/06/19	25/06/19	25/06/19	
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	25	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	126	< 3	3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	754	< 10	21	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	905	< 21	25	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	3	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	6	< 2	11	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	151	< 3	47	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	1584	< 10	112	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	1741	< 21	174	
Total >C5 - C35	mg/kg	< 42	NONE	2646	< 42	198	

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



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-09356	Date Sampled	27/06/19	27/06/19	25/06/19	27/06/19	25/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS1	WS2	WS3	WS4	WS5
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	0.75	0.50	0.75	0.80	0.50
Reporting Date: 08/07/2019	DETS Sample No	418781	418782	418783	418784	418785

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

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-09356	Date Sampled	25/06/19	25/06/19	26/06/19	27/06/19	26/06/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS5	WS6A	WS7	WS8	WS9
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	3.50	0.80	2.50	0.30	2.00
Reporting Date: 08/07/2019	DETS Sample No	418786	418787	418788	418789	418790

Determinand	Unit	RL	Accreditation						
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	12
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	13
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5

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



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-09356	Date Sampled	26/06/19	25/06/19	25/06/19		
Your Environment	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS10	TP4	TP6		
Project / Job Ref: YE7331	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	Depth (m)	0.50	0.80	1.00		
Reporting Date: 08/07/2019	DETS Sample No	418791	418792	418793		

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

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



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Soil Analysis Certificate - Volatile Organic Compounds (VOC)					
DETS Report No: 19-09356	Date Sampled	27/06/19	25/06/19	25/06/19	25/06/19
Your Environment	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS4	WS5	TP4	TP6
Project / Job Ref: YE7331	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.80	0.50	0.80	1.00
Reporting Date: 08/07/2019	DETS Sample No	418784	418785	418792	418793

Determinand	Unit	RL	Accreditation				
Dichlorodifluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Vinyl Chloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Chloromethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10
Chloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Bromomethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10
Trichlorofluoromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
cis-1,2-Dichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
2,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Chloroform	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Bromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1-Dichloropropene	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10
Carbon Tetrachloride	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,2-Dichloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
1,2-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Trichloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Bromodichloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Dibromomethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
TAME	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10
1,3-Dichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Tetrachloroethene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Dibromochloromethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,2-Dibromoethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Chlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1,1,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Ethyl Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
m,p-Xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
o-Xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Styrene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Bromoform	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10
Isopropylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
n-Propylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Bromobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
2-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
4-Chlorotoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
tert-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
sec-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
p-Isopropyltoluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
n-Butylbenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
2,2-Dibromo-3-chloropropane	ug/kg	< 10	MCERTS	< 10	< 10	< 10	< 10
Hexachlorobutadiene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5

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



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 19-09356	
Your Environment	
Site Reference: Bulls Bridge Industrial Estate, Hayes	
Project / Job Ref: YE7331	
Order No: None Supplied	
Reporting Date: 08/07/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
418781	WS1	None Supplied	0.75	16	Black silt with stones
418782	WS2	None Supplied	0.50	10.3	Brown loamy sand with brick and concrete
418783	WS3	None Supplied	0.75	12.3	Brown loamy sand with brick and concrete
418784	WS4	None Supplied	0.80	10.1	Black loamy sand with ash and stones
418785	WS5	None Supplied	0.50	10.9	Brown sandy gravel with stones and concrete
418786	WS5	None Supplied	3.50	16	Black loamy clay
418787	WS6A	None Supplied	0.80	10.7	Brown loamy sand with stones and brick
418788	WS7	None Supplied	2.50	18.6	Brown loamy sand
418789	WS8	None Supplied	0.30	13.3	Brown loamy sand with stones and concrete
418790	WS9	None Supplied	2.00	11.8	Black loamy sand with stones and concrete
418791	WS10	None Supplied	0.50	4.9	Black loamy sand with stones and concrete
418792	TP4	None Supplied	0.80	19	Black loamy sand with stones and concrete
418793	TP6	None Supplied	1.00	9.9	Brown sandy gravel with stones and brick

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/S}

Unsuitable Sample ^{U/S}



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Soil Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 19-09356	
Your Environment	
Site Reference: Bulls Bridge Industrial Estate, Hayes	
Project / Job Ref: YE7331	
Order No: None Supplied	
Reporting Date: 08/07/2019	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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DETS Report No: 19-09883

Site Reference: Bulls Bridge, Industrial Estate, Hayes

Project / Job Ref: YE7331

Order No: None Supplied

Sample Receipt Date: 02/07/2019

Sample Scheduled Date: 11/07/2019

Report Issue Number: 1

Reporting Date: 17/07/2019

Authorised by:

A handwritten signature in black ink, appearing to read "Dave Ashworth".

Dave Ashworth
Deputy Quality Manager

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Soil Analysis Certificate						
DETS Report No: 19-09883	Date Sampled	25/06/19	25/06/19	27/06/19	25/06/19	
Your Environment	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Bulls Bridge, Industrial Estate, Hayes	TP / BH No	WS3	WS6A	WS8	TP6	
Project / Job Ref: YE7331	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: None Supplied	Depth (m)	0.75	0.80	0.30	1.00	
Reporting Date: 17/07/2019	DETS Sample No	420731	420732	420733	420734	

Determinand	Unit	RL	Accreditation				
Asbestos Quantification ^(S)	%	< 0.001	ISO17025	0.004	0.004	0.002	0.005

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



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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-09883
Your Environment
Site Reference: Bulls Bridge, Industrial Estate, Hayes
Project / Job Ref: YE7331
Order No: None Supplied
Reporting Date: 17/07/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphénylcarbazine followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
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DETS Report No: 19-09550

Site Reference: Bulls Bridge Industrial Estate, Hayes

Project / Job Ref: YE7331

Order No: None Supplied

Sample Receipt Date: 05/07/2019

Sample Scheduled Date: 05/07/2019

Report Issue Number: 1

Reporting Date: 09/07/2019

Authorised by:

A handwritten signature in grey ink, appearing to read "Dave Ashworth".

Dave Ashworth
Deputy Quality Manager

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Water Analysis Certificate						
DETS Report No: 19-09550	Date Sampled	03/07/19	03/07/19	03/07/19	03/07/19	03/07/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS2	WS5	WS6	WS7	WS10
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	1.97	2.88	3.86	3.25	3.15
Reporting Date: 09/07/2019	DETS Sample No	419615	419616	419617	419618	419619

Determinand	Unit	RL	Accreditation		(hs)	(hs)	(hs)	
pH	pH Units	N/a	ISO17025	7.5	7.1	7.4	6.6	6.6
Electrical Conductivity	uS/cm	< 5	NONE	947	1850	4840	2350	2020
Total Cyanide	ug/l	< 5	NONE	17	< 5	7	7	< 5
Sulphate as SO ₄	mg/l	< 1	ISO17025	116	114	270	10	73
Total Organic Carbon (TOC)	mg/l	< 0.1	NONE	0.5	8.5	16.9	1.5	8.2
Hardness - Total	mgCaCO ₃ /l	< 1	NONE	393	1010	880	1330	1130
Arsenic (dissolved)	ug/l	< 5	ISO17025	< 5	21	< 5	12	< 5
Barium (dissolved)	ug/l	< 5	ISO17025	127	140	120	268	183
Beryllium (dissolved)	ug/l	< 3	ISO17025	< 3	< 3	< 3	< 3	< 3
Boron (dissolved)	ug/l	< 5	ISO17025	141	510	575	1300	370
Cadmium (dissolved)	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Copper (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	ISO17025	0.24	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	5	7
Selenium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Vanadium (dissolved)	ug/l	< 5	ISO17025	8	< 5	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	ISO17025	8	7	4	7	57
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	146

Subcontracted analysis ^(S)

Insufficient sample ^{1/S}

Unsuitable Sample ^{U/S}

(hs) Please note deviating sample due to head space in container



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Water Analysis Certificate - Speciated PAH						
DETS Report No: 19-09550	Date Sampled	03/07/19	03/07/19	03/07/19	03/07/19	03/07/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS2	WS5	WS6	WS7	WS10
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	1.97	2.88	3.86	3.25	3.15
Reporting Date: 09/07/2019	DETS Sample No	419615	419616	419617	419618	419619

Determinand	Unit	RL	Accreditation	(hs)	(hs)	(hs)
Naphthalene	ug/l	< 0.01	NONE	0.03	< 0.01	< 0.01
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	0.27	0.03	< 0.01
Fluorene	ug/l	< 0.01	NONE	0.02	< 0.01	< 0.01
Phenanthrene	ug/l	< 0.01	NONE	0.05	< 0.01	< 0.01
Anthracene	ug/l	< 0.01	NONE	0.01	< 0.01	0.03
Fluoranthene	ug/l	< 0.01	NONE	0.11	< 0.01	0.03
Pyrene	ug/l	< 0.01	NONE	0.10	< 0.01	0.02
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.01	NONE	0.59	0.03	0.08



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Water Analysis Certificate - TPH CWG Banded						
DETS Report No: 19-09550	Date Sampled	03/07/19	03/07/19	03/07/19	03/07/19	03/07/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS2	WS5	WS6	WS7	WS10
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	1.97	2.88	3.86	3.25	3.15
Reporting Date: 09/07/2019	DETS Sample No	419615	419616	419617	419618	419619

Determinand	Unit	RL	Accreditation	(hs)	(hs)	(hs)
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140

(hs) Please note deviating sample due to head space in container



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Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-09550	Date Sampled	03/07/19	03/07/19	03/07/19	03/07/19	03/07/19
Your Environment	Time Sampled	None Supplied				
Site Reference: Bulls Bridge Industrial Estate, Hayes	TP / BH No	WS2	WS5	WS6	WS7	WS10
Project / Job Ref: YE7331	Additional Refs	None Supplied				
Order No: None Supplied	Depth (m)	1.97	2.88	3.86	3.25	3.15
Reporting Date: 09/07/2019	DETS Sample No	419615	419616	419617	419618	419619

Determinand	Unit	RL	Accreditation	(hs)	(hs)	(hs)	(hs)	(hs)
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	6
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
p & m-xylene	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
o-xylene	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10

(hs) Please note deviating sample due to head space in container

Water Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-09550
Your Environment
Site Reference: Bulls Bridge Industrial Estate, Hayes
Project / Job Ref: YE7331
Order No: None Supplied
Reporting Date: 09/07/2019

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

Key

F Filtered
UF Unfiltered



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Analytical Report Number : 19-51430

Project / Site name:	Hayes	Samples received on:	24/07/2019
Your job number:	3249	Samples instructed on:	24/07/2019
Your order number:		Analysis completed by:	29/07/2019
Report Issue Number:	1	Report issued on:	29/07/2019
Samples Analysed:	2 leachate samples - 7 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Iss No 19-51430-1 Hayes 3249

Analytical Report Number: 19-51430

Project / Site name: Hayes

Lab Sample Number	1275527	1275528	1275529	1275530	1275531			
Sample Reference	WS202	WS202	WS203	WS203	TP201			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.60-0.90	2.10-2.40	0.40-0.70	3.00	0.30			
Date Sampled	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019			
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	6.7	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	5.8	17	6.8	23	4.1
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.9	1.8	2.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile- Loose Fibres	-	Chrysotile- Loose Fibres
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	-	Detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.7	8.3	9.3	9.0	11.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	890	410	730	590	2900
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.45	0.20	0.37	0.29	1.4
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	446	204	367	294	1440
Organic Matter	%	0.1	MCERTS	2.7	0.6	4.3	1.5	4.4
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	29	3.7	4.6	2.5	5.6
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	15	< 5.0	< 5.0	< 5.0	< 5.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.33	< 0.05	0.80
Acenaphthene	mg/kg	0.05	MCERTS	0.24	< 0.05	1.0	< 0.05	1.6
Fluorene	mg/kg	0.05	MCERTS	0.23	< 0.05	1.1	< 0.05	1.4
Phenanthrene	mg/kg	0.05	MCERTS	2.2	< 0.05	3.6	0.73	13
Anthracene	mg/kg	0.05	MCERTS	0.77	< 0.05	2.2	0.25	3.3
Fluoranthene	mg/kg	0.05	MCERTS	5.7	< 0.05	5.2	1.5	23
Pyrene	mg/kg	0.05	MCERTS	5.1	< 0.05	4.8	1.3	19
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.4	< 0.05	2.6	0.67	12
Chrysene	mg/kg	0.05	MCERTS	2.5	< 0.05	1.9	0.54	8.1
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.9	< 0.05	2.5	0.61	11
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.8	< 0.05	1.4	0.32	5.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.1	< 0.05	2.1	0.48	11
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.8	< 0.05	1.1	0.31	5.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.47	< 0.05	0.39	< 0.05	1.6
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.4	< 0.05	1.5	0.35	7.0

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	32.5	< 0.80	31.5	7.06	123
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Analytical Report Number: 19-51430

Project / Site name: Hayes

Lab Sample Number				1275527	1275528	1275529	1275530	1275531
Sample Reference				WS202	WS202	WS203	WS203	TP201
Sample Number				None Supplied				
Depth (m)				0.60-0.90	2.10-2.40	0.40-0.70	3.00	0.30
Date Sampled				24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.1	12	14	26	9.4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	250	76	310	150	69
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.98	0.93	1.4	1.1	0.63
Boron (water soluble)	mg/kg	0.2	MCERTS	1.9	1.8	4.0	10	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.7	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	30	52	40	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	71	18	160	68	31
Lead (aqua regia extractable)	mg/kg	1	MCERTS	63	23	190	210	47
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	23	34	44	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	36	38	88	68	58
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170	46	190	120	58

Analytical Report Number: 19-51430

Project / Site name: Hayes

Lab Sample Number	1275527	1275528	1275529	1275530	1275531				
Sample Reference	WS202	WS202	WS203	WS203	TP201				
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied				
Depth (m)	0.60-0.90	2.10-2.40	0.40-0.70	3.00	0.30				
Date Sampled	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019				
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						
Monoaromatics & Oxygenates									
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-	-
Petroleum Hydrocarbons									
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	49	1100	160	
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH C6 - C40	mg/kg	10	NONE	-	< 10	49	1100	160	
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	43	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	60	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	43	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	100	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	17	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	150	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	150	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	160	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	310	-	-	-	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	-	< 10	21	1100	78	
TPH (C25 - C40)	mg/kg	10	MCERTS	-	< 10	130	1700	400	

Analytical Report Number: 19-51430

Project / Site name: Hayes

Lab Sample Number				1275532	1275533			
Sample Reference				TP205	TP208			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.40			
Date Sampled				24/07/2019	24/07/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	13	14			
Moisture Content	%	N/A	NONE	8.6	1.4			
Total mass of sample received	kg	0.001	NONE	2.0	2.0			

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected			

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.4	10.8			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1500	650			
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.73	0.33			
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	734	326			
Organic Matter	%	0.1	MCERTS	1.5	0.8			
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	13	22			
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	6.6	11			

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	1.4	0.64			
Anthracene	mg/kg	0.05	MCERTS	0.56	0.40			
Fluoranthene	mg/kg	0.05	MCERTS	4.0	1.8			
Pyrene	mg/kg	0.05	MCERTS	4.9	1.6			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.7	1.1			
Chrysene	mg/kg	0.05	MCERTS	1.9	0.89			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.1	1.0			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.5	0.60			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	0.98			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.1	0.57			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.33	0.21			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.5	0.86			

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	23.9	10.6			
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Analytical Report Number: 19-51430

Project / Site name: Hayes

Lab Sample Number				1275532	1275533			
Sample Reference				TP205	TP208			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.40			
Date Sampled				24/07/2019	24/07/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	12			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	94			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.73	0.66			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.8	3.9			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.9			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	24			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	43			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	74	120			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	15			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	47	35			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86	110			

Analytical Report Number: 19-51430

Project / Site name: Hayes

Lab Sample Number				1275532	1275533			
Sample Reference				TP205	TP208			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.40			
Date Sampled				24/07/2019	24/07/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-xylene	µg/kg	1	MCERTS	-	-			
o-xylene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH C10 - C40	mg/kg	10	MCERTS	950	110			
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH C6 - C40	mg/kg	10	NONE	950	110			
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-			
TPH (C10 - C25)	mg/kg	10	MCERTS	950	110			
TPH (C25 - C40)	mg/kg	10	MCERTS	2400	220			



Analytical Report Number: 19-51430
Project / Site name: Hayes

Lab Sample Number				1275534	1275535			
Sample Reference				TP204	TP208			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.60	2.00			
Date Sampled				24/07/2019	24/07/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)								
	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	10.1	7.8			
Electrical Conductivity	µS/cm	10	ISO 17025	400	290			
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Sulphate as SO ₄	mg/l	0.1	ISO 17025	147	114			
Nitrate as N	mg/l	0.01	NONE	1.55	0.84			
Hardness - Total	mgCaCO ₃ /l	1	NONE	219	137			

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	0.61			
Acenaphthylene	µg/l	0.01	ISO 17025	0.02	0.66			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	7.5			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	1.6			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	0.01	< 0.01			
Fluoranthene	µg/l	0.01	ISO 17025	0.03	0.75			
Pyrene	µg/l	0.01	ISO 17025	0.02	0.50			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	0.02	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	NONE	0.01	< 0.01			

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	12			
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1.1	ISO 17025	6.5	3.7			
Barium (dissolved)	µg/l	0.05	ISO 17025	22	49			
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2			
Boron (dissolved)	µg/l	10	ISO 17025	27	130			
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08			
Chromium (dissolved)	µg/l	0.4	ISO 17025	18	2.5			
Copper (dissolved)	µg/l	0.7	ISO 17025	14	8.7			
Lead (dissolved)	µg/l	1	ISO 17025	3.8	14			
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	1.0			
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.5	1.8			
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0			
Vanadium (dissolved)	µg/l	1.7	ISO 17025	40	10			
Zinc (dissolved)	µg/l	0.4	ISO 17025	3.4	10			

Calcium (dissolved)	mg/l	0.012	ISO 17025	87	48			
Magnesium (dissolved)	mg/l	0.005	ISO 17025	0.32	3.9			



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 Project / Site name: Hayes

Lab Sample Number				1275534	1275535			
Sample Reference				TP204	TP208			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.60	2.00			
Date Sampled				24/07/2019	24/07/2019			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10			

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 >C35 - C44	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C44)	ug/l	10	NONE	< 10	< 10			

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	120			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	58			
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	180			
TPH-CWG - Aromatic (C5 - C44)	ug/l	10	NONE	< 10	180			

Analytical Report Number : 19-51430

Project / Site name: Hayes

* 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 *
1275527	WS202	None Supplied	0.60-0.90	Brown loam and sand with stones.
1275528	WS202	None Supplied	2.10-2.40	Brown clay.
1275529	WS203	None Supplied	0.40-0.70	Brown loam and clay with gravel.
1275530	WS203	None Supplied	3.00	Brown clay.
1275531	TP201	None Supplied	0.30	Brown loam and sand.
1275532	TP205	None Supplied	0.50	Brown loam and clay with stones.
1275533	TP208	None Supplied	0.40	Brown loam and sand with stones.



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Environmental Science

Analytical Report Number : 19-51430

Project / Site name: Hayes

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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L0738-PL	W	ISO 17025
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0738-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Electrical conductivity at 20oC of leachate	Determination of electrical conductivity in leachate by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrate as N in leachate	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS

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The results included within the report are representative of the samples submitted for analysis.

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Project / Site name: Hayes

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 leachate	Determination of pH in leachate by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-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 in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
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 cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Hardness of leachates	Determination of hardness in leachates by calculation from calcium and magnesium.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	NONE
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method.	L076-PL	W	NONE
TPH in (Leachate)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
TPH7 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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Analytical Report Number : 19-51430

Project / Site name: Hayes

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.



Appendix 4:
Sweet Projects
Chemical
Analysis



Final Report

Report No.: 24-09646-1

Initial Date of Issue: 05-Apr-2024

Re-Issue Details:

Client SOCOTEC

Client Address: Unit 11
Cowley Mill Trading Estate
Longbridge Way
Uxbridge
UB8 2YG

Contact(s): Cameo Searle

Project Sweet Projects SOU24-01615 Union
Park, Hayes, UB3 4DG

Quotation No.: Q24-34104 **Date Received:** 27-Mar-2024

Order No.: 212870UXB **Date Instructed:** 27-Mar-2024

No. of Samples: 3

Turnaround (Wkdays): 4 **Results Due:** 03-Apr-2024

Date Approved: 05-Apr-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: Sweet Projects SOU24-01615 Union Park, Hayes, UB3 4DG

Client: SOCOTEC		Chemtest Job No.:		24-09646	24-09646	24-09646
Quotation No.: Q24-34104		Chemtest Sample ID.:		1786158	1786159	1786160
		Sample Location:		S001 - Location 1	S002 - Location 2	S003 - Location 3
		Sample Type:		SOIL	SOIL	SOIL
		Date Sampled:		25-Mar-2024	25-Mar-2024	25-Mar-2024
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Arsenic		M	2455	mg/kg	0.5	19
Cadmium		M	2455	mg/kg	0.10	0.50
Chromium		M	2455	mg/kg	0.5	27
Copper		M	2455	mg/kg	0.50	160
Mercury		M	2455	mg/kg	0.05	0.49
Nickel		M	2455	mg/kg	0.50	46
Lead		M	2455	mg/kg	0.50	220
Selenium		M	2455	mg/kg	0.25	1.3
Zinc		M	2455	mg/kg	0.50	250

Results - Single Stage WAC

Project: Sweet Projects SOU24-01615 Union Park, Hayes, UB3 4DG

Chemtest Job No: 24-09646						Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1786158						Inert Waste Landfill	Limits	
Sample Ref:							Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill
Sample ID:								
Sample Location: S001 - Location 1								
Top Depth(m):								
Bottom Depth(m):								
Sampling Date: 25-Mar-2024								
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	23	3	5	6
Loss On Ignition	2610		M	%	8.8	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	180	500	--	--
Total (Of 17) PAH's	2700		N	mg/kg	19	100	--	--
pH at 20C	2010		M		8.7	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	< 0.0005	< 0.0050	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	4.2	42	800	15000	25000
Fluoride	1220		U	0.65	6.5	10	150	500
Sulphate	1220		U	22	220	1000	20000	50000
Total Dissolved Solids	1020		N	90	900	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	10	100	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Sweet Projects SOU24-01615 Union Park, Hayes, UB3 4DG

Chemtest Job No: 24-09646 Chemtest Sample ID: 1786159 Sample Ref: Sample ID: Sample Location: S002 - Location 2 Top Depth(m): Bottom Depth(m): Sampling Date: 25-Mar-2024					Landfill Waste Acceptance Criteria Limits			
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	17	3	5	6
Loss On Ignition	2610		M	%	5.3	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	76	500	--	--
Total (Of 17) PAH's	2700		N	mg/kg	16	100	--	--
pH at 20C	2010		M		8.5	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	< 0.0002	< 0.0020	0.5	2	25
Barium	1455		U	< 0.005	< 0.050	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455		U	< 0.0005	< 0.0050	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455		U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455		U	0.0005	0.0052	0.1	0.5	7
Zinc	1455		U	< 0.003	< 0.025	4	50	200
Chloride	1220		U	3.8	38	800	15000	25000
Fluoride	1220		U	0.56	5.6	10	150	500
Sulphate	1220		U	29	290	1000	20000	50000
Total Dissolved Solids	1020		N	100	1000	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Sweet Projects SOU24-01615 Union Park, Hayes, UB3 4DG

Chemtest Job No: 24-09646						Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1786160						Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill
Sample Ref:								
Sample ID:					Limits			
Sample Location: S003 - Location 3								
Top Depth(m):								
Bottom Depth(m):								
Sampling Date: 25-Mar-2024								
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	13	3	5	6
Loss On Ignition	2610		M	%	12	--	--	10
Total BTEX	2760		M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	61	500	--	--
Total (Of 17) PAH's	2700		N	mg/kg	33	100	--	--
pH at 20C	2010		M		8.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	0.0076	0.076	0.5	2	25
Barium	1455		U	0.013	0.13	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0015	0.015	0.5	10	70
Copper	1455		U	0.0046	0.046	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.013	0.13	0.5	10	30
Nickel	1455		U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455		U	0.0011	0.011	0.5	10	50
Antimony	1455		U	0.0026	0.026	0.06	0.7	5
Selenium	1455		U	0.0024	0.024	0.1	0.5	7
Zinc	1455		U	0.012	0.12	4	50	200
Chloride	1220		U	2.0	20	800	15000	25000
Fluoride	1220		U	0.43	4.3	10	150	500
Sulphate	1220		U	75	750	1000	20000	50000
Total Dissolved Solids	1020		N	170	1700	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

Water Sample Category Key for Accreditation

DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

PL - Prepared Leachate

PW - Processed Water

Report Information

RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Appendix 5:
Toureen's
Chemical
Analysis



Toureen Contractors Limited
25 Cecil Road
Harrow
Middlesex
HA3 5QY

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

t: 0208 424 7999

t: 01923 225404

e: rick.willemse@toureen.co.uk

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 24-004232

Project / Site name:	Project Union	Samples received on:	20/02/2024
Your job number:	TCL1182	Samples instructed on/ Analysis started on:	20/02/2024
Your order number:	ACCOUNT TCL 1192	Analysis completed by:	27/02/2024
Report Issue Number:	1	Report issued on:	27/02/2024
Samples Analysed:	1 soil sample		

Izabela Wójcik
Signed: _____

Izabela Wójcik
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 24-004232

Project / Site name: Project Union

Your Order No: ACCOUNT TCL 1192

Lab Sample Number	122575			
Sample Reference	EC3 B4			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	19/02/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	17
Total mass of sample received	kg	0.1	NONE	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9.4
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1500
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	748

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.77
Acenaphthylene	mg/kg	0.05	MCERTS	0.2
Acenaphthene	mg/kg	0.05	MCERTS	0.56
Fluorene	mg/kg	0.05	MCERTS	0.54
Phenanthrene	mg/kg	0.05	MCERTS	6.4
Anthracene	mg/kg	0.05	MCERTS	1.8
Fluoranthene	mg/kg	0.05	MCERTS	12
Pyrene	mg/kg	0.05	MCERTS	10
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.4
Chrysene	mg/kg	0.05	MCERTS	5.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	6.6
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	0.68
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	61.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.9
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	52
Copper (aqua regia extractable)	mg/kg	1	MCERTS	300
Lead (aqua regia extractable)	mg/kg	1	MCERTS	280
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	53
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	750

Analytical Report Number: 24-004232

Project / Site name: Project Union

Your Order No: ACCOUNT TCL 1192

Lab Sample Number	122575			
Sample Reference	EC3 B4			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	19/02/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL_#1_#2	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL_#1_#2	mg/kg	2	MCERTS	3.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	16
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	86
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	110

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR_#1_#2	mg/kg	1	MCERTS	1.4
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR_#1_#2	mg/kg	2	MCERTS	3.6
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	30
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	67
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	100

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-004232
Project / Site name: Project Union

* 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 *
122575	EC3 B4	None Supplied	None Supplied	Brown loam and gravel

Analytical Report Number : 24-004232

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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



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Analytical Report Number : 24-004234

Project / Site name:	Project Union	Samples received on:	20/02/2024
Your job number:	TCL1182	Samples instructed on/ Analysis started on:	20/02/2024
Your order number:	ACCOUNT TCL 1192	Analysis completed by:	27/02/2024
Report Issue Number:	1	Report issued on:	27/02/2024
Samples Analysed:	1 soil sample		

Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 24-004234

Project / Site name: Project Union

Your Order No: ACCOUNT TCL 1192

Lab Sample Number	122585			
Sample Reference	EC3 B5			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	19/02/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.1	NONE	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	10.1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2100
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1060

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.13
Acenaphthene	mg/kg	0.05	MCERTS	0.32
Fluorene	mg/kg	0.05	MCERTS	0.34
Phenanthrene	mg/kg	0.05	MCERTS	2.2
Anthracene	mg/kg	0.05	MCERTS	1.2
Fluoranthene	mg/kg	0.05	MCERTS	3.8
Pyrene	mg/kg	0.05	MCERTS	3.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5
Chrysene	mg/kg	0.05	MCERTS	1.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.71
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.86
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.91

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	20.3
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.9
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	94
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	270

Analytical Report Number: 24-004234

Project / Site name: Project Union

Your Order No: ACCOUNT TCL 1192

Lab Sample Number	122585			
Sample Reference	EC3 B5			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	19/02/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL_#1_#2	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL_#1_#2	mg/kg	2	MCERTS	7.9
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	37
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	100
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	150

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR_#1_#2	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR_#1_#2	mg/kg	2	MCERTS	2.6
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	17
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	55
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	74

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-004234
Project / Site name: Project Union

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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 *
122585	EC3 B5	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-004234

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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



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Analytical Report Number : 24-004235

Project / Site name:	Project Union	Samples received on:	20/02/2024
Your job number:	TCL1182	Samples instructed on/ Analysis started on:	20/02/2024
Your order number:	ACCOUNT TCL 1192	Analysis completed by:	27/02/2024
Report Issue Number:	1	Report issued on:	27/02/2024
Samples Analysed:	1 soil sample		

Signed: *A. Czerwińska*

Agnieszka Czerwińska
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 24-004235

Project / Site name: Project Union

Your Order No: ACCOUNT TCL 1192

Lab Sample Number	122586			
Sample Reference	EC3 C4			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	19/02/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	15
Total mass of sample received	kg	0.1	NONE	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9.9
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2200
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1100

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.34
Acenaphthylene	mg/kg	0.05	MCERTS	0.15
Acenaphthene	mg/kg	0.05	MCERTS	0.36
Fluorene	mg/kg	0.05	MCERTS	0.33
Phenanthrene	mg/kg	0.05	MCERTS	2.2
Anthracene	mg/kg	0.05	MCERTS	0.93
Fluoranthene	mg/kg	0.05	MCERTS	4.3
Pyrene	mg/kg	0.05	MCERTS	4.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.1
Chrysene	mg/kg	0.05	MCERTS	1.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.93
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.95
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	0.29
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	25.1
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Analytical Report Number: 24-004235

Project / Site name: Project Union

Your Order No: ACCOUNT TCL 1192

Lab Sample Number	122586			
Sample Reference	EC3 C4			
Sample Number	None Supplied			
Depth (m)	None Supplied			
Date Sampled	19/02/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	75
Lead (aqua regia extractable)	mg/kg	1	MCERTS	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	190

Petroleum Hydrocarbons

TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL_#1_#2	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL_#1_#2	mg/kg	2	MCERTS	7.2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	26
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	120
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	150

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR_#1_#2	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR_#1_#2	mg/kg	2	MCERTS	3.4
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	22
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	68
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	94

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-004235

Project / Site name: Project Union

* 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 *
122586	EC3 C4	None Supplied	None Supplied	Brown loam and gravel

Analytical Report Number : 24-004235

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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



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Analytical Report Number : 24-004245

Project / Site name:	Project Union	Samples received on:	20/02/2024
Your job number:	TCL1182	Samples instructed on/ Analysis started on:	20/02/2024
Your order number:	ACCOUNT TCL 1192	Analysis completed by:	27/02/2024
Report Issue Number:	1	Report issued on:	27/02/2024
Samples Analysed:	1 10:1 WAC sample		

Signed: *A. Czerwińska*

Agnieszka Czerwińska
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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



4041



Environmental Science

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Report No:	24-004245					
	Client: TOURENMANG					
Location	Project Union					
Lab Reference (Sample Number)	122644			Landfill Waste Acceptance Criteria		
Sampling Date	19/02/2024			Limits		
Sample ID	EC3 B4			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Depth (m)						
Solid Waste Analysis						
TOC (%)**	2.5			3%	5%	6%
Loss on Ignition (%) **	10			--	--	10%
BTEX (µg/kg) **	< 5.0			6000	--	--
Sum of PCBs (mg/kg) **	< 0.007			1	--	--
Mineral Oil (mg/kg) <small>EH, LD, CU, AL</small>	120			500	--	--
Total PAH (WAC-17) (mg/kg)	63.3			100	--	--
pH (units)**	9.9			--	>6	--
Acid Neutralisation Capacity (mmol / kg)	47			--	To be evaluated	To be evaluated
Eluate Analysis						
	10:1			10:1	Limit values for compliance leaching test	
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)	
Arsenic *	0.0106			0.106	0.5	2
Barium *	0.0139			0.139	20	100
Cadmium *	< 0.000100			< 0.00100	0.04	1
Chromium *	0.0068			0.068	0.5	10
Copper *	0.015			0.15	2	50
Mercury *	< 0.000500			< 0.00500	0.01	0.2
Molybdenum *	0.0102			0.102	0.5	10
Nickel *	0.0016			0.016	0.4	10
Lead *	0.0017			0.017	0.5	10
Antimony *	0.0096			0.096	0.06	0.7
Selenium *	< 0.0040			< 0.040	0.1	0.5
Zinc *	0.018			0.18	4	50
Chloride *	8.5			85	800	15000
Fluoride*	0.34			3.4	10	150
Sulphate *	54			540	1000	20000
TDS*	120			1200	4000	60000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-
DOC	6.32			63.2	500	800
Leach Test Information						
Stone Content (%)	< 0.1					
Sample Mass (kg)	0.8					
Dry Matter (%)	83					
Moisture (%)	17					
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)						
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited						

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 24-004245
Project / Site name: Project Union

* 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 *
122644	EC3 B4	None Supplied	None Supplied	Brown loam and gravel

Analytical Report Number : 24-004245

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1 ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025

Analytical Report Number : 24-004245

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
WAC Leachate 10:1		In-house method	L043B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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



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Analytical Report Number : 24-004246

Project / Site name:	Project Union	Samples received on:	20/02/2024
Your job number:	TCL1182	Samples instructed on/ Analysis started on:	20/02/2024
Your order number:	ACCOUNT TCL 1192	Analysis completed by:	27/02/2024
Report Issue Number:	1	Report issued on:	27/02/2024
Samples Analysed:	1 10:1 WAC sample		

Signed: *A. Czerwińska*

Agnieszka Czerwińska
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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



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Environmental Science

i2 Analytical7 Woodshots Meadow
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Watford, WD18 8YSTelephone: 01923 225404
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email:reception@i2analytical.com**Waste Acceptance Criteria Analytical Results**

Report No:	24-004246					
	Client: TOUREENMANG					
Location	Project Union					
Lab Reference (Sample Number)	122645			Landfill Waste Acceptance Criteria		
Sampling Date	19/02/2024			Limits		
Sample ID	EC3 B5			Inert Waste Landfill	Stable Non- reactive HAZARDOUS waste in non- hazardous Landfill	Hazardous Waste Landfill
Depth (m)						
Solid Waste Analysis						
TOC (%)**	1.1			3%	5%	6%
Loss on Ignition (%) **	4.0			--	--	10%
BTEX (µg/kg) **	< 5.0			6000	--	--
Sum of PCBs (mg/kg) **	< 0.007			1	--	--
Mineral Oil (mg/kg) <small>EH, LD, CU, AL</small>	190			500	--	--
Total PAH (WAC-17) (mg/kg)	20.5			100	--	--
pH (units)**	9.9			--	>6	--
Acid Neutralisation Capacity (mmol / kg)	100			--	To be evaluated	To be evaluated
Eluate Analysis						
	10:1			10:1	Limit values for compliance leaching test	
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg		
				using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00484			0.0484	0.5	2
Barium *	0.0154			0.154	20	100
Cadmium *	< 0.000100			< 0.00100	0.04	1
Chromium *	0.0059			0.059	0.5	10
Copper *	0.023			0.23	2	50
Mercury *	< 0.000500			< 0.00500	0.01	0.2
Molybdenum *	0.00674			0.0674	0.5	10
Nickel *	0.0023			0.023	0.4	10
Lead *	< 0.0010			< 0.010	0.5	10
Antimony *	0.0074			0.074	0.06	0.7
Selenium *	< 0.0040			< 0.040	0.1	0.5
Zinc *	0.022			0.22	4	50
Chloride *	20			200	800	15000
Fluoride*	0.22			2.2	10	150
Sulphate *	83			830	1000	20000
TDS*	210			2100	4000	60000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-
DOC	6.98			69.8	500	800
Leach Test Information						
Stone Content (%)	< 0.1					
Sample Mass (kg)	0.8					
Dry Matter (%)	86					
Moisture (%)	14					
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)						
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited						

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 24-004246
Project / Site name: Project Union

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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 *
122645	EC3 B5	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-004246

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1 ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025

Analytical Report Number : 24-004246

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
WAC Leachate 10:1		In-house method	L043B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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



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Analytical Report Number : 24-004249

Project / Site name:	Project Union	Samples received on:	20/02/2024
Your job number:	TCL1182	Samples instructed on/ Analysis started on:	20/02/2024
Your order number:	ACCOUNT TCL 1192	Analysis completed by:	27/02/2024
Report Issue Number:	1	Report issued on:	27/02/2024
Samples Analysed:	1 10:1 WAC sample		

Signed: *A. Czerwińska*

Agnieszka Czerwińska
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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



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Report No:	24-004249					
	Client: TOURENMANG					
Location	Project Union					
Lab Reference (Sample Number)	122652			Landfill Waste Acceptance Criteria		
Sampling Date	19/02/2024			Limits		
Sample ID	EC3 C4			Inert Waste Landfill	Stable Non- reactive HAZARDOUS waste in non- hazardous Landfill	Hazardous Waste Landfill
Depth (m)						
Solid Waste Analysis						
TOC (%)**	1.6			3%	5%	6%
Loss on Ignition (%) **	5.1			--	--	10%
BTEX (µg/kg) **	< 5.0			6000	--	--
Sum of PCBs (mg/kg) **	< 0.007			1	--	--
Mineral Oil (mg/kg) <small>EH, LD, CU, AL</small>	160			500	--	--
Total PAH (WAC-17) (mg/kg)	25.2			100	--	--
pH (units)**	10.3			--	>6	--
Acid Neutralisation Capacity (mmol / kg)	44			--	To be evaluated	To be evaluated
Eluate Analysis						
	10:1			10:1	Limit values for compliance leaching test	
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg		
				using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00483			0.0483	0.5	2
Barium *	0.0191			0.191	20	100
Cadmium *	< 0.000100			< 0.00100	0.04	1
Chromium *	0.0068			0.068	0.5	10
Copper *	0.023			0.23	2	50
Mercury *	< 0.000500			< 0.00500	0.01	0.2
Molybdenum *	0.00451			0.0451	0.5	10
Nickel *	0.0025			0.025	0.4	10
Lead *	< 0.0010			< 0.010	0.5	10
Antimony *	0.0068			0.068	0.06	0.7
Selenium *	< 0.0040			< 0.040	0.1	0.5
Zinc *	0.0050			0.050	4	50
Chloride *	4.8			48	800	15000
Fluoride*	0.12			1.2	10	150
Sulphate *	52			520	1000	20000
TDS*	200			2000	4000	60000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-
DOC	6.52			65.1	500	800
Leach Test Information						
Stone Content (%)	< 0.1					
Sample Mass (kg)	0.9					
Dry Matter (%)	85					
Moisture (%)	15					
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)						
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited						

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 24-004249
Project / Site name: Project Union

* 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 *
122652	EC3 C4	None Supplied	None Supplied	Brown loam and gravel

Analytical Report Number : 24-004249

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1 ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025

Analytical Report Number : 24-004249

Project / Site name: Project Union

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
WAC Leachate 10:1		In-house method	L043B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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



Appendix 6:
Extent of
Survey and
Limitations

Extent of Survey and Limitations

Section 1 shall apply to all our appointments. The relevant sections 2 to 8 will only apply where the terms of our appointment state we are providing the corresponding service. For example, where we are appointed to provide a pre-acquisition survey, sections 1 and 2 below will apply to that appointment.

1. Standard Limitations

Inspection and Concealed Parts: Our report will cover all parts of the site made available to us during our visual inspection of the property, which is normally and safely accessible without the use of ladders, and therefore exclude all ceiling, wall and floor voids unless stated within the report. Where inspection of roof areas by use of access hoists or a drone is required this will be agreed with you prior to inspection. The structure and fabric will not be opened up for further investigation. Those parts of the building and engineering services that are concealed, inaccessible or covered will not be inspected and confirmation that such parts are free from defects cannot be provided. Where we feel further investigation is merited, reference will be made in our report. Our services survey is based on a visual inspection and comment on the condition and the quality of the installation relating to normal good standards. We will specifically exclude tests relating to the performance of any heating, air conditioning or ventilation systems, pipe pressure tests, electrical or drainage tests. The omission of such tests might give risks to the fact that certain problems could exist which are not reflected in our report. No inspection or comment is made on the below ground drainage installations or service conduits unless instructed otherwise.

Occupied Buildings: Where buildings are occupied at the time of our inspection access to some areas may be restricted or denied although these areas will be noted in our report. Regardless of occupation, we will not lift fitted carpets, nor disturb any part of the fabric or fittings which are fixed or may cause damage.

Budget Costs: Where budget costs are included in our report, these costs are for guidance purposes only and will not be calculated from measured quantities but will be based on knowledge and experience of similar repair or replacement situations. Costs are inclusive of contractor's preliminaries but exclusive of all contingencies, professional fees and VAT. They will be based on current prices and no allowances will be made for inflation. Access costs for high level works will be included. There will be no allowances for loss or damage as a result of force majeure, terrorism, discovery or removal of any deleterious materials or out of hours working. Estimates are not to be thought of as a substitute for obtaining competitive quotations from reputable contractors. We will not investigate whether the cost of carrying out all necessary works immediately will be

different in cost to carrying them out individually, as and when required.

Specialist Sub-Consultants / Sub-Contractors: Where specialist consultants or contractors are engaged on your behalf. We may make reference to their findings in our report, but this should not be considered as a substitute for reading their report in its entirety, nor can we take responsibility for their conclusion.

Compliance with Legislation: In respect of planning permissions and building regulations consents we will review relevant documentation made available to us and liaise with your lawyers in this regard. If documentation is missing we will record this as a risk in our report, as should your lawyer. Our inspection will involve a review of the state of compliance with Statutory Requirements such as Workplace Regulations, Fire Regulations, Equality Act and other relevant matters. We will provide general comments on these matters in our report. Please note that compliance with these Regulations often requires a more detailed specialist study and / or the preparation of a risk assessment. Such studies and risk assessments are beyond the scope of our report. Where appropriate we will make recommendations for further specialist surveys.

Weather conditions: Our inspection may be restricted by the prevailing weather conditions at the time of our inspection.

Communicable Disease – we shall not be liable in respect of any Claim, circumstance, loss or Defence Cost that arise as a result of, or is connected in any way, directly or indirectly with;

- a) A *Communicable Disease* or the fear or threat (whether actual or perceived) of a *Communicable Disease* regardless of any other cause or event contributing concurrently or in any other sequence thereto;
- b) any action taken to control, prevent, isolate, quarantine, suppress, mitigate or in any way relating to any actual or suspected outbreak of any *Communicable Disease* or the fear or threat (whether actual or perceived) of a *Communicable Disease*;
- c) instructions, orders, requests, restrictions or limitations given by any national or local government, regulatory or statutory body, health authority or organisation relating to any *Communicable Disease*.

A *Communicable Disease* means any disease which can be transmitted by means of any substance, medium or agent from any organism to another organism where:

- i. the substance, medium or agent includes, but is not limited to, a virus, bacterium, parasite or other organism or any variation thereof, whether deemed living or not, and
- ii. the method of transmission, whether direct or indirect, includes but is not limited to, airborne transmission, bodily fluid transmission, transmission from or to any surface or object, solid, liquid or gas or between organisms, and
- iii. the disease, substance or agent can cause or threaten damage to human health or human welfare or can cause or threaten damage to, deterioration of, loss of value of, marketability of or loss of use of property.

Reliance and disclosure: The issued findings or reports following our inspection are for the addressee's use only and no liability will be accepted to any third party. Neither the whole or any part of the report may be published or disclosed to a third party without our prior written approval.

Deleterious and Hazardous Materials

Generally: Our report and survey excludes any investigation into the unsuitable use of deleterious or hazardous materials except in so far as such matters may come to our knowledge in the normal course of inspecting the property and state of repair. We will advise you if we consider there is a significant possibility that deleterious or hazardous materials exist at the property, although we will not undertake or commission specific inspections, laboratory testing or reports unless this possibility has been raised by us as a concern and further instructions received which in any event will be confined to the following: admixtures / aggregates in concrete, asbestos, brick slips, calcium silicate brickwork, high alumina cement, lead, urea formaldehyde foam, woodwool cement slab (used as permanent shuttering), aluminium composite panels, thin stone panels.

Many factors including location, use, design and quantity determine whether a material is deleterious or not and, therefore, the inclusion in the material in the above list does not, of itself, imply that it is deleterious.

As a result of the Grenfell tower fire in 2017, external cladding systems including the materials used in them remain under intense scrutiny. There continues to be wide-ranging discussions in the Construction Industry over the use of combustible cladding materials, particularly (but not limited to) to buildings in excess of 18m in height or over 6 storeys. In our report, we will report on the suspected use of any combustible materials where this can be ascertained from a review of as-built information, or if it is suspected from our inspection. However, it may not be possible to ascertain purely from a visual inspection the presence or not

of combustible materials and we cannot be held liable for not identifying their presence in such circumstances.

Where composite cladding panels may be identified in our report we confirm that no intrusive testing will be undertaken to determine the type of insulation, classification of the insulating core or whether this is approved by the Loss Prevention Certification Board (LPCB) unless instructed otherwise.

Concrete: Where instructed to undertake a concrete investigation, our specialist report will be based on a visual examination of the concrete structure in sample test locations only. Whilst such test locations are chosen to be representative of the structure as a whole, we are not able to confirm that the structure is free from structural defects other than deleterious effect of HAC, chlorides and reinforcement corrosion durability.

Asbestos: Where instructed to undertake a specialist asbestos survey, we cannot guarantee that all asbestos containing materials will be identified, despite the best endeavours of our asbestos sub-consultant. Where instructed, every effort will be made to remove representative samples however it is possible that indiscriminate uses of asbestos may be present between sample locations of otherwise visually similar materials. An asbestos management survey is non-destructive and includes an inspection within accessible ceiling voids, above loose laid removable tiles, inside openable risers and cupboards, within accessible risers and behind removable casings.

Similarly access within lift shafts, live electrical equipment and mechanical plant may be restricted. A Refurbishment and Demolition asbestos survey is destructive and includes an inspection within accessible ceiling voids, above loose laid removable tiles, inside openable risers and cupboards, within accessible risers and behind removable casings. Representative areas of each element of building fabric will be intrusively opened up to inspect for the presence of ACM's behind built-in ducts, voids or similar enclosed or concealed areas within the building fabric. No intrusive work will be undertaken within the structural framework, concrete floors and masonry walls.

Environmental issues: Save where we are commissioned to provide environmental services (in which case the relevant section of this document shall apply), the following applies. We will not carry out nor commission formal enquiries or tests relating to potential soil or ground contamination, or the ground bearing conditions of the site or neighbouring land. We will not carry out any searches with statutory bodies to establish any mining or landfill issues, and associated potential subsidence risk as a result of historic site operations. Whilst we will comment on any potential contamination issues apparent from our survey, our report will not constitute an environmental report. You are advised to procure your own environmental reporting, but we will be happy to arrange audits, reports or tests on your behalf, by specialist consultants, who are to be directly appointed by you, if required. You should ensure that your

solicitors obtain as much information as possible about the prior use of the land. Such information should be revealed to us as soon as possible as it may materially affect our/ or the consultant's advice to you. Such advice may include recommendations for testing or obtaining a warranty.

We have no liability in relation to the presence of low frequency electronic fields, radiation, toxic mould, and the presence of Japanese Knotweed or other invasive plant species as defined in the Wildlife and Countryside Act 1981 or the Environmental Protection Act 1990. We may however note their apparent presence for investigation by others as appropriate.

Mechanical and Electrical Surveys

Generally: Our survey and report is compiled under the brief to visually inspect and comment on the condition and the quality of the installation relating to normal good standards in the building services industry as dictated by CIBSE and IEE's current recommendations and standards without testing or dismantling of the plant. Where appropriate, we have provided an overview of the lift installations, which was carried out by the attending building services consultant.

Budget Costs: Any costs indicated within this report are based on our best assessment of the situation and the work involved at current prices and should not be taken as firm costs for the items of work detailed. To provide more accurate costs an investigation will be required in greater detail for individual items of the plant and systems, and may involve the employment of specialists where appropriate.

This overview provides a description of the lift services and general condition other than inspection of the lift shafts and associated equipment.

There are occasions when the building services will be inspected by a building surveyor rather than a mechanical and electrical consultant and we will advise within the fee quotation. In this case, if you require a survey by a mechanical and electrical consultant, you should confirm this prior to our inspection.

Concealed Parts: We have not inspected parts of the Engineering Services which are encased, covered up, or otherwise made inaccessible in a normal course of construction, alteration, or fitting out. We will not carry out any internal inspection of the plant/systems.

Design Analysis: No definitive calculations have been undertaken to determine the capacity or performance of the plant items, nor have performance tests been carried out on any of the systems or plant items. Design analysis of the systems has been undertaken using generally accepted design criteria both past and present, primarily to establish the principles of design. We have specifically excluded tests relating to the performance or efficiency of any heating, air conditioning, or ventilation systems, pipe pressure tests,

electrical or drainage tests. The omission of such tests might give rise to the fact that certain problems could exist which are not reflected in this report. We would point out that during the course of our building services survey we did not carry out an inspection of the below ground services.

Deleterious & Hazardous Materials: Our report and survey excludes any investigation into structural engineering design, compliance with legislation relating to buildings, or the unsuitable use of high alumina cement or calcium chloride, calcium silicate brickwork, alkali-silicate reaction in concrete, cavity wall tie failure, radon gas seepage, woodwool slab permanent shuttering, asbestos or PCB's or other materials considered as deleterious in construction, except insofar as such matters may come to knowledge in the normal course of inspecting the materials and state of repair.

White Goods & Data: This report does not include an inspection of the white goods, catering and vending equipment, telecommunication, data or wireless systems installed within the property. We are unable to comment, advise or identify items that are reliant on day/date dependent embedded chips.

Rights of Way / Support / Light

Where necessary we will comment on apparent rights of way / support or light which may be visible or suspected albeit our comments will be outline in nature and without any detailed investigations.

2. Pre Acquisition Survey

Compliance with Legislation: Our inspection will involve a general review of the state of compliance with Statutory Requirements such as the Building Regulations, Workplace Regulations, Fire Regulations, Equality Act and other relevant matters applicable within the relevant country. Please note that compliance with these Regulations often requires a more detailed specialist study and/ or the preparation of a risk assessment. Such studies and risk assessments are beyond the scope of our report.

3. Environmental

Desk Based Risk Assessment: The risk assessment is dictated by the finite data on which it is based and is relevant only for the purpose of which the report is commissioned. If additional information or data becomes available which may affect the opinions expressed in our report, we reserve the right to review such information and, if warranted, to modify the risk assessment accordingly. We reserve the right to charge an additional fee for un-anticipated second opinion reviewing of previous reports.

The survey excludes intrusive opening up of the building fabric. Accordingly, an inspection is not undertaken behind built-in ducts, voids or similar enclosed or concealed areas within the structure and fabric.

Compliance with Legislation: The environmental risk assessment will be undertaken with due regard to Contaminated Land Guidance documents (available and relevant at the time of issuing our report) issued by (but not limited to) the Environmental Protection Act Part IIA 1990, Department for Environment, Food and Rural Affairs (DEFRA) and its predecessors, the Environment Agency (and its devolved equivalents), British Standards Institute (BSI), the Royal Institution of Chartered Surveyors (RICS) and the American Society for Testing and Materials (ASTM) Standard E 1527-00. No liability can be accepted for the effects of any future changes to such guidelines and legislation. In the event that guidance / legislation changes it may be necessary for us to update or modify reports.

Content of Report: Our Phase I Environmental Audit will be based on a visual inspection of the site, a review of available historical and environmental setting records, consultations with site representatives, pertinent information provided from the client and regulatory consultations. No samples will be taken as part of this study.

Generic Risk Assessment: The risk assessment is dictated by the finite data on which it is based and is relevant only for the purpose of which the report is commissioned. If additional information or data becomes available which may affect the opinions expressed in our report, we reserve the right to review such information and, if warranted, to modify the risk assessment accordingly. We reserve the right to charge an additional fee for un-anticipated second opinion reviewing of previous reports.

The survey excludes intrusive opening up of the building fabric. Accordingly, an inspection is not undertaken behind built-in ducts, voids or similar enclosed or concealed areas within the structure and fabric. Where necessary we will comment on apparent rights of way / support or light which may be visible or suspected albeit our comments will be outline in nature and without any detailed investigations.

Phase 2 Site Investigation

Content of report: The content and findings of the report will be based on data obtained by employing site assessment methods and techniques, considered appropriate to the site as far as can be interpreted from desk based materials and a visual walkover of the site. Such techniques and methods are subject to limitations and constraints set out in the report. The findings and opinions are relevant at the time of writing, and should not be relied upon at a substantially later date as site conditions can change. For example, seasonal groundwater levels, natural degradation of contaminants etc. No liability is accepted for areas not covered by the investigation.

Risk Assessment: The opinions and findings conveyed via the report will be based on information obtained from a variety of sources as detailed by the report. The information should not be treated as exhaustive but is, in good faith, considered as representative as possible of the site conditions when considering constraints set out by the

report. The risk assessment will be completed in line with current industry practices but is not a guarantee that the site is free of hazardous conditions. The risk assessment is completed in line with the relevant land use agreed for the site and the time of completing the works. Changes to site conditions or land use may require a reassessment.

Unforeseen Contamination: Where Colliers is responsible for directing the number and location of exploratory holes, it shall exercise all the reasonable skill, care and diligence to be expected of a properly qualified and competent member of the Consultant's profession experienced in performing such services, taking into account site conditions, and available knowledge, as well as access, budgetary and scheduling constraints. Subject to having complied with the foregoing: (1) no liability can be accepted for the conditions that have not been revealed by the exploratory hole locations, or those which occur between each location and (2) whilst every effort will be made to interpolate the conditions between exploratory locations, such information is only indicative and liability cannot be accepted for its accuracy. By their nature, it is generally the case that exploratory holes provide a relatively small and localised snapshot of the ground conditions relative to the size of the site.

Buried Services: Whilst reasonable efforts will be taken to avoid buried services, we accept no liability for damage to services which have not been accurately identified in advance of site works.

Flooding: Our commentary is only based on the publicly available mapping available via the EA, NRW or SEPA at the time of writing and we cannot accept any liability where the information is updated following the issue of our report.

4. Dilapidations

Generally: We will assume unless otherwise requested that we are engaged as an advisor to prepare or comment on a schedule or claim which is distinct from an instruction to act as an expert witness. However, in discharging the advisory role it is always necessary for us to take account of considerations relating to expert witnesses as set out in the current Practice Statement and Guidance Note for Surveyors Acting as Expert Witnesses by the Royal Institute of Chartered Surveyors, a copy of which can be provided on request. This states that the primary function, and duty, of an expert witness is to assist the court on matters within their expertise.

Ongoing Advice: Our dilapidations advice aims to provide you with an informed opinion as to the anticipated level of liability/claim. Changes in case law, statute and the passage of time may affect the accuracy of our advice; it is therefore important that our advice is reviewed at regular intervals and, in particular, prior to the expiry of the lease.

Documentation Provided: Our assessments can only be as accurate as the information provided to us; it is therefore

important that the most complete set of documentation possible is provided in order for the best advice to be given. We cannot take any responsibility for distorted findings resulting from deficient, incorrect or incomplete information.

Estimated Settlement: When an estimate of settlement is provided at any time prior to concluding the claim, this is for guidance only and should never be taken as a definitive evaluation of the likely damages which may fall due.

Final Settlement: Settlements can be limited by S.18(1) of the Landlord & Tenant Act 1927 and the common law principles to the diminution in the value of the Landlord's reversion, regardless of the cost of works and other heads of claim. We will advise you if we consider that a formal valuation (commonly known as a Section 18 valuation) is necessary.

A claim based on the cost of the works may also be capped or even extinguished if it can be shown that the premises are to be altered or demolished after the expiry of the lease. Landlords should advise us if this is the case. Again, we will advise you if we consider that a Section 18 valuation is necessary. Where no formal release is provided by a Landlord we reserve the right to charge on a time expended basis.

Solicitors: In some cases it may be necessary to liaise with a solicitor on matters of strict legal interpretation. In the event of litigation, our communications with surveyors and other experts, including solicitors, may not be privileged.

Your legal advisors need to advise you on compliance with break notices as we only look at dilapidation liabilities under a lease and there may be other liabilities which impact on the break such as vacant possession, payment of rent, etc. Your legal advisors will be responsible for service of any schedules / notices. If you do not use a lawyer then we cannot accept any liability for incorrect service of schedules / notices.

Your legal advisors will be responsible for agreeing the wording of any forms of release used to record agreement on a financial settlement. If you do not use a lawyer then we cannot accept any liability for incorrect wording in helping to conclude matters between parties.

Heads of Claim

Loss of Rent, Rates, Service Charge, etc.: For the purposes of the calculation of a loss of rent (and where applicable, service charge) claim we will provide an assessment of the period that it is likely to take to procure and complete works identified in the Schedule of Dilapidations. However, the applicability of such a claim will depend on market conditions prevailing at the end of the term and require initial input from your appointed letting agents shortly before lease expiry. Unless specifically agreed or stated within the lease, we will not include finance charges, loss of rates and other similar items in our assessments/claims.

Fees: We will include an allowance for legal fees only for the service of Schedules of Dilapidations in our assessments and claims. Surveyors' fees for the preparation and service of schedules will be included but other professionals' fees (such as building services or structural engineers) will not be included unless otherwise stated. All professional fees included will be estimates.

VAT: VAT may form part of a claim and is subject to the VAT status of the property and parties to the lease. The total claim (of which VAT may form part) is a damages payment that Customs and Excise do not deem a taxable supply. Invoices are not usually issued by landlords to tenants for this reason.

Contamination: We will include in our assessment any obvious contamination issues but we will not undertake any tests or investigation of current or previous uses of the site or adjoining land. We will advise you where we consider a need for specialist advice.

5. Energy Performance Certificates

Generally: This work is usually undertaken in three stages being:

1. Site inspection and research;
2. Data inputting and Calculating the Certificate; and
3. Lodging the certificate and reporting to the client.

We will initially determine the level of complexity of the building from the information provided by the client. Should it be determined during the site inspection that the complexity of the building and/or its services makes the standard assessment methodology inappropriate, this will be drawn to the attention of the client and a revised proposal will be submitted for sub-consulting the assessment to enable Dynamic Simulation Modelling (DSM) to be carried out.

Fees: Our fee quote is based on the assumption that the building can be inspected in one visit with unrestricted access to all areas. If we find that access is restricted to some parts of the building and that a return visit is required we will invoice all additional time on a time charge basis.

Where keys are held remotely from the property we will charge an additional fee on a time charge basis to cover our time in collecting and returning the keys. Where an instruction is made on the basis that plans are available the following applies:

- Plans must be to scale.
- Plans must accurately show the current layout of the premises.
- Plans must be provided at the time of appointment or before inspection.

Where plans are not immediately available and we are expected to recover them from other parties an additional charge may be made to cover our time in this regard.

Site Inspection: The nature of a building's construction will not always be obvious from a visual inspection alone. Where sectional details are not available we will use the inference values provided in iSBEM. Where these are poor and possibly have an effect on the banding/rating of the property we may advise the client to consider opening up elements of the property so that more accurate construction details can be obtained. Opening up works will fall outside the initial fee agreement and we reserve the right to invoice our time for this separately.

Lifespan/Carbon Checker: We will generate the EPCs using Lifespan. This system is a software application tool that provides an interface to enable the user to enter data into DCLG's SBEM (Simplified Building Energy Model). SBEM is at the heart of all government approved interface tools and whilst it has been passed for use, and Lifespan is an accredited software tool, there are inherent built in faults with the software that may affect the final rating. Although some tests have been undertaken to establish the accuracy of this software. We accept no responsibility for the software's accuracy.

Reporting and Advice: The EPC generates a Recommendations Report within which advice is given for the building owner to upgrade the building's efficiency performance. The advice is generic and in some cases is not considered to be relevant. Where we consider the advice to be poor, we will tailor the report to more accurately reflect the requirements of the building. The recommendations given in the report are not mandatory, so where a building owner implements improvement works based on the recommendations we would expect them to discuss the proposals in more detail before any expense is incurred.

Documentation Provided: We cannot take responsibility for the accuracy of any information provided by others for the purpose of carrying out the assessments. Similarly we cannot take responsibility where information to be provided is missing or its provision is delayed and that information conflicts with our assessment. Where such documents become available we recommend that copies are forwarded to us immediately in order that any advice provided can be refined.

6. Bank or Fund Monitoring

Our report is based upon discussions with the borrower (being the person to whom our client, a funder, is lending money), as well as reports, records and data provided by the borrower or on their behalf ("Information"). We will use our professional judgement and experience to evaluate and interrogate the Information, however we are not auditing the Information and we cannot guarantee that it is accurate and complete in all respects. It is the borrower's duty to ensure that the Information is accurate and complete, and

we shall not be liable for any errors or omissions in the Information, or for losses arising as a result of such errors or omissions.

7. Rights of Light and Daylight

Where necessary we will comment on apparent rights of way / support or light which may be visible or suspected albeit our comments will be outline in nature and without any detailed investigations.

Generally

This work is usually undertaken in three stages being:

1. Site inspection and research;
2. Modelling and testing; and
3. Reporting and provision of advice.

Analyses are often reliant on third party advice and particularly in relation to initial RoL and DSO studies based on a number of assumptions relating to the surrounding buildings. The RoL work also involves legal and valuation matters on which we may offer opinions but should be verified by reference to appropriate specialist consultants.

Site Inspection

Whilst we will endeavour to undertake a thorough review of the buildings surrounding the site, where certain parts are not readily visible from vantage points available to us, we cannot guarantee that all relevant receptors will be included. Assumptions may be made as to the presence and position of windows situated on elevations of existing buildings, which cannot be readily seen. To prevent alarm and respect privacy of neighbouring occupiers, close inspection of windows in neighbouring buildings may not be possible and this may affect the quality and accuracy of information taken on site. Assumptions will be made as to room size, use and layout where necessary. No topographical survey of site levels or elevation detailing will be undertaken. Should precise dimensions and window locations be required, we would recommend that separate topographical land, building and elevation surveys are instructed and provided in AutoCAD format.

Research

Limited research will be undertaken where necessary to determine:

1. Age of buildings;
2. Historic site development;
3. Legal constraints; and
4. Planning policies.

Where necessary to assist research, historic maps, aerial photographs and Land Registry title documents may be purchased and charged as disbursements.

Modelling & Testing

3D Modelling is usually undertaken using AutoCAD software. Unless provided with accurate topographical survey information relating to levels and elevation detailing, approximate dimensions will be used from limited measurements taken on site, available OS data and 'brick counting' from photographs. Where necessary we may buy third party photogrammetry models as a starting point for creating our models. The cost of same will be

charged as a disbursement. Tests are usually undertaken using software licensed to us by Waterslade/MBS Survey Software. Although some tests have been undertaken to establish the accuracy of this software we take no responsibility for the software's accuracy.

Reporting and Advice

Reports and advice will usually be based on a number of assumptions and with reliance on third party information. Where assumptions have been made, these will usually be stated and recommendations will be given for further work required. Where specialist legal, planning and/or valuation advice is required, recommendations for same will be highlighted within our report or separately.

Third Party Advice and Products

Our processes include the use of third party advice and products such as:

1. Ordinance Survey data;
2. Title documents;
3. Baseline models;
4. Topographic surveys;
5. Aerial photography;
6. Architects' drawings; and
7. Local authority archive information.

Whilst we will review this information for accuracy insofar as required for our assessments, we do not accept any liability for inaccuracies in third party information or loss or damage arising from some.

Valuation of Damages

Where appropriate we will provide book value damages estimates for right to light infringements.

Valuations Will Be

- Based on assumed rents and yields;
- Formulated in accordance with standard industry practice;
- Given at current prices; no adjustments will be made for future inflation;
- Quoted as budget estimates only and are not to be thought of as a substitute for obtaining specialist valuation advice;
- Exclusive of both parties' professional fees;
- Exclusive of any taxes that may be applicable i.e. VAT/SDLT.

We Will Not

- Provide valuations based on development gain or profit share method.

8. Party Wall Terms – Building Owner and Adjoining Owner

Surveyors Appointment

References to 'Appointing Owner' and 'Building Owner' are references to you. References to 'Adjoining Owner' relate to the owner/s of the neighbouring property adjacent to your work that is or may be subject to the Act.

To administer the requirements of the Act surveyors need a

written appointment. The appointment must be an individual and cannot be a company. Liability for work undertaken remains solely with us and not the appointed individual under the Act. We will provide a draft letter of appointment which must be completed and returned to confirm the appointment at or before the point at which there is either a deemed or actual dispute.

The letter of appointment must be signed by the Appointing Owner, or an agent with specific authorisation to sign on your behalf.

Once the appointment is confirmed it cannot be retracted or determined except if the surveyor appointed declares themselves incapable of acting in certain circumstances as prescribed by the Act. You should be aware that appointments follow a statutory procedure which requires the appointed surveyor(s) to work within the jurisdiction of the Act by administering its provisions fairly and impartially.

Fees

You are contractually responsible for payment of your surveyor's fee and those of the Adjoining Owner where we advise it is reasonable to do so.

An Award will generally determine that the Building Owner is responsible to pay the fee of both appointed surveyors. However, specific circumstances may mean this is not always the case. For example, fees may be apportioned between Owners if they both benefit from the works.

We reserve the right to charge additional fees in relation to changes in the design or scope of the works that requires addendum Award(s) or new Notice(s).

We reserve the right to charge additional fees in relation to assessing claims for damage and awarding any necessary compensation or making good.

Fees – Specialist Consultants

In some circumstances appointed Surveyors may suggest that specialists such as engineers or solicitors are appointed to assist in matters directly related to the administration of the Act or determination of the dispute.

The contract and responsibility for fees in relation to this appointment will be between the specialist and you. You are also likely to be responsible for the reasonable fees of the Adjoining Owner's Specialist Consultants' fees.

Boundary Determination

Whether a wall is built up to, or astride the boundary is not always easy to determine. Sometimes this can only be established by reviewing title deeds and with the assistance of a solicitor. Our advice without the benefit of title information is very much outline and will be based on certain assumptions.

Timescales

Whilst we will liaise with the design team and contractor to procure information required for Notices and Awards, it is outside our control if information from the design team and/or contractor is either incorrect in terms of design or

level of detail, or is not provided to us in good time.

Information for the Award

The design team and appointed contractor are responsible to provide the information requested to be included within the Award. Where possible we will give an indication of the likely information that will be required. We are not responsible for any delay to action requests for information that may impact the development programme.

Right of Access

In certain circumstances the Act allows the Building Owner to access the Adjoining Owner's land for the purpose of executing work in pursuance of the Act. Our fee does not include for discussing access to works that are not in pursuance of the Act and if that is required, a separate agreement and fee will be given.

Security for Expenses

We will not hold monies for Security for Expenses. It is usual practice that any sum agreed will be held in a solicitor's client account sometimes managed as an escrow account and only released on signature of two of the three surveyors.

Where relevant, the terms and conditions in relation to Security for Expenses will be set out in the Award.

Third Surveyor Referrals

The appointed surveyors are required to appoint a Third Surveyor to determine any disputed matters. If referral of a disputed matter to the third surveyor is necessary, the procedure will be set out to you, along with any cost implications.

We may charge an additional fee for time relating to matters incidental to third surveyor referrals.

General

We will make all reasonable efforts to identify the Adjoining Owner(s) of a property by making checks with the Land Registry (with the cost charged as a disbursement). We cannot accept any liability it after making reasonable enquiries, we do not manage to ascertain all Adjoining Owners with an interest in the property.

The ability to agree an Award is very much linked to the quality and level of detail that is provided from the design team and/or contractor. We cannot accept responsibility if the Information provided is insufficient to enable completion of an Award.

We do not accept any liability arising from the loss or delay in delivery of Notices by the Royal Mail or other carriers.

Where the depth of foundations is unknown and in the absence of any information such as trial pit Information, we will make a reasonable estimate on the foundation depth.

Our schedules of condition in relation to the Act only extend to the area of the property in close proximity to the notifiable work and will not unless considered necessary, extend to a full record of the condition of the entire Adjoining Owner's property.

APPENDIX 4: COVER SYSTEM RECORDS

From: [Ryan Bower](#)
To: [Thomas Mealey](#)
Subject: Top soil - Project Union - Phase 1
Date: 08 November 2023 17:37:05
Attachments: [image001.png](#)
[image002.jpg](#)
[image003.png](#)
[image004.png](#)
[Topsoil testing result - Project Union, TCL1182 - Phase 1.pdf](#)

Thomas,

Toureen intend to import topsoil that has been tested and passed against the top soil requirements set out by Sweet Projects. This top soil will be tested every 100m3 by the supplier and additional testing will be completed by TCL once delivered to ensure the product still meets the requirements.

Regards,

Ryan Bower | Assistant Project Manager | Toureen Contractors

T | **M** 07741385286

30th Footer 2-resized.png



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KEY:

SOFT LANDSCAPING
150mm TOPSOIL
450mm SUBSOIL
(600mm CLEAN CAPPING)

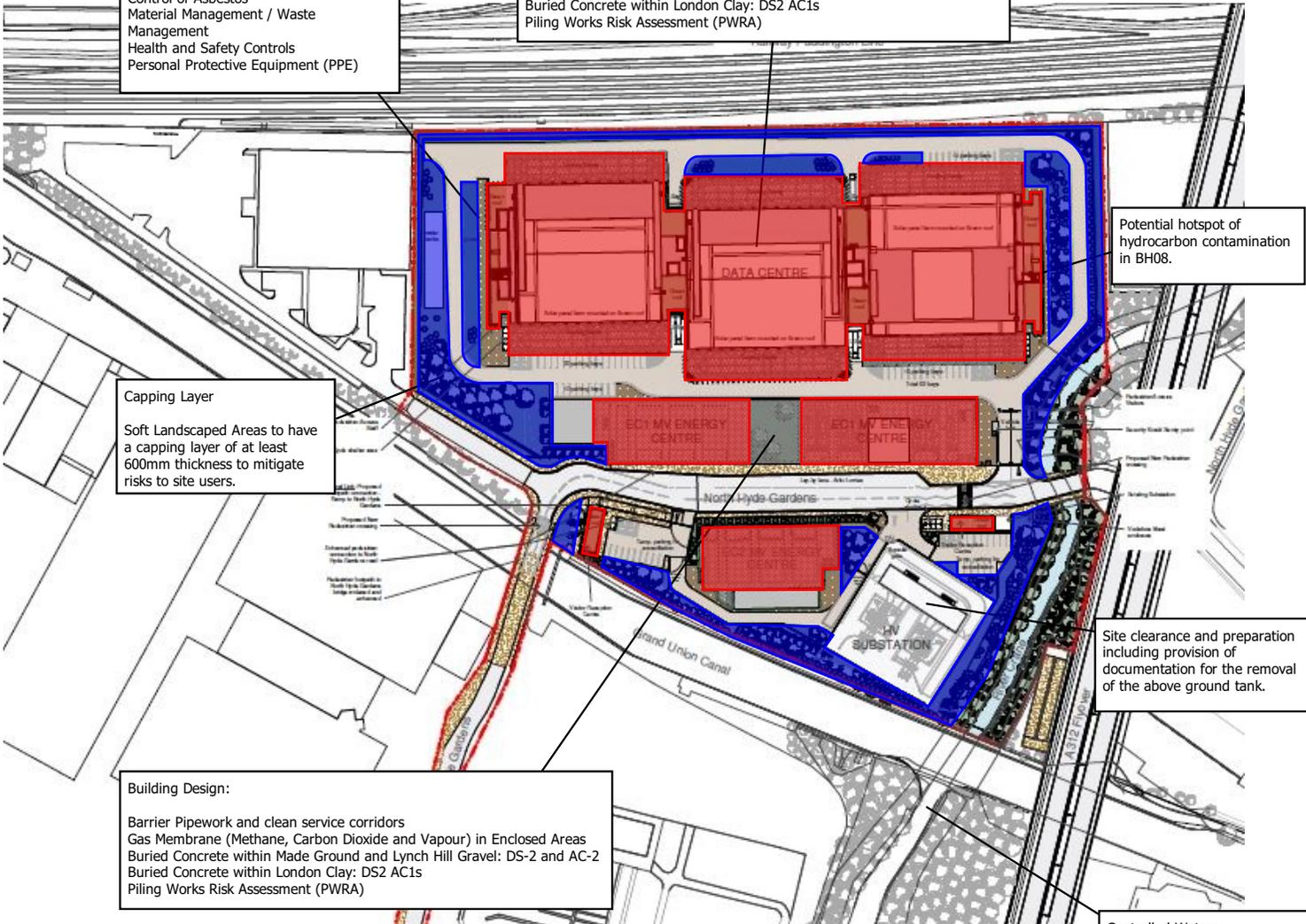
SOLCO GAS MEMBRANE TO ALL
BUILDINGS SITE WIDE

During Demolition and Construction:

- Control of Asbestos
- Material Management / Waste Management
- Health and Safety Controls
- Personal Protective Equipment (PPE)

Building Design:

- Barrier Pipework and clean service corridors
- Gas Membrane (Methane, Carbon Dioxide and Vapour)
- Buried Concrete within Made Ground and Lynch Hill Gravel: DS-2 and AC-2
- Buried Concrete within London Clay: DS2 AC1s
- Piling Works Risk Assessment (PWRA)



Potential hotspot of hydrocarbon contamination in BH08.

Capping Layer

Soft Landscaped Areas to have a capping layer of at least 600mm thickness to mitigate risks to site users.

Site clearance and preparation including provision of documentation for the removal of the above ground tank.

Building Design:

- Barrier Pipework and clean service corridors
- Gas Membrane (Methane, Carbon Dioxide and Vapour) in Enclosed Areas
- Buried Concrete within Made Ground and Lynch Hill Gravel: DS-2 and AC-2
- Buried Concrete within London Clay: DS2 AC1s
- Piling Works Risk Assessment (PWRA)

Controlled Waters:

The DQRA determined that there are no remediation requirements but long term monitoring will be completed to check the quality of the river.

SWEET PROJECTS LIMITED
SOILING PLAN AND GAS MEMBRANE EXTENTS
09/11/2023



Amended Report

Report No.:	23-27248-2	Date of Re-Issue:	24-Aug-2023
Initial Date of Issue:	24-Aug-2023		
Client	Springbridge Direct Ltd		
Client Address:	Oxford Road Denham Middlesex UB9 4DF		
Contact(s):	Ellissa Dunn Tom Hawkins		
Project	Springbridge Yard		
Quotation No.:	Q23-32160	Date Received:	14-Aug-2023
Order No.:	136510	Date Instructed:	14-Aug-2023
No. of Samples:	2		
Turnaround (Wkdays):	5	Results Due:	18-Aug-2023
Date Approved:	24-Aug-2023	Subcon Results Due:	05-Sep-2023

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd		Chemtest Job No.:		23-27248	
Quotation No.: Q23-32160		Chemtest Sample ID.:		1688174	
Order No.: 136510		Client Sample Ref.:		Topsoil Top	
		Sample Type:		SOIL	
		Date Sampled:		10-Aug-2023	
		Time Sampled:		10:30	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	17
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.3
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	6.9
Cadmium	M	2455	mg/kg	0.10	< 0.10
Chromium	M	2455	mg/kg	0.5	8.9
Copper	M	2455	mg/kg	0.50	8.3
Mercury	M	2455	mg/kg	0.05	0.05
Nickel	M	2455	mg/kg	0.50	11
Lead	M	2455	mg/kg	0.50	9.6
Selenium	M	2455	mg/kg	0.25	< 0.25
Zinc	M	2455	mg/kg	0.50	31
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	2.3
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	1.5
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	7.3
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	5.4
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	16
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	16
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	3.3

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd		Chemtest Job No.:		23-27248	
Quotation No.: Q23-32160		Chemtest Sample ID.:		1688174	
Order No.: 136510		Client Sample Ref.:		Topsoil Top	
		Sample Type:		SOIL	
		Date Sampled:		10-Aug-2023	
		Time Sampled:		10:30	
		Asbestos Lab:		COVENTRY	
Determinand	Accred.	SOP	Units	LOD	
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	79
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	4.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	83
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	87
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	100
Total EPH >C10-C40	N	2690	mg/kg	10.00	100
Naphthalene	N	2700	mg/kg	0.010	< 0.010
Acenaphthylene	N	2700	mg/kg	0.010	< 0.010
Acenaphthene	N	2700	mg/kg	0.010	< 0.010
Fluorene	N	2700	mg/kg	0.010	< 0.010
Phenanthrene	N	2700	mg/kg	0.010	< 0.010
Anthracene	N	2700	mg/kg	0.010	< 0.010
Fluoranthene	N	2700	mg/kg	0.010	< 0.010
Pyrene	N	2700	mg/kg	0.010	< 0.010
Benzo[a]anthracene	N	2700	mg/kg	0.010	< 0.010
Chrysene	N	2700	mg/kg	0.010	< 0.010
Benzo[b]fluoranthene	N	2700	mg/kg	0.010	< 0.010
Benzo[k]fluoranthene	N	2700	mg/kg	0.010	< 0.010
Benzo[a]pyrene	N	2700	mg/kg	0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2700	mg/kg	0.010	< 0.010
Dibenz(a,h)Anthracene	N	2700	mg/kg	0.010	< 0.010
Benzo[g,h,i]perylene	N	2700	mg/kg	0.010	< 0.010
Total Of 16 PAH's	N	2700	mg/kg	0.20	< 0.20
Benzene	M	2760	µg/kg	1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10

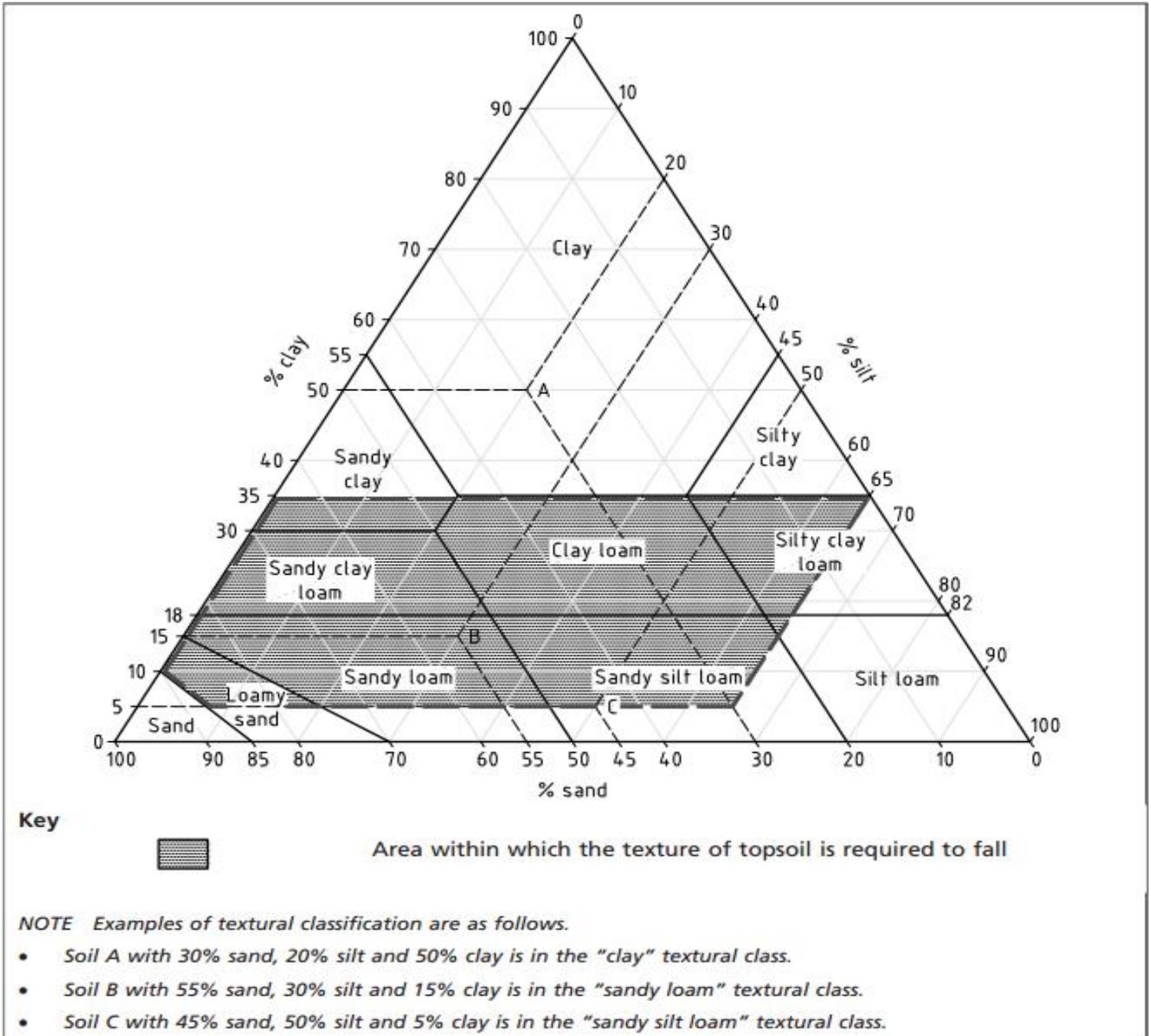
Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 23-27248
Chemtest Sample ID.: 1688174
 Client Sample Ref.: Topsoil Top
 Sample Location:
Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 10-Aug-2023
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
					Acid	Low F	Calc.
Texture							
Clay content (Sub Contracted)	%		10	YES			
Silt content (Sub Contracted)	%		11	YES			
Sand content (Sub Contracted)	%		79	YES			
Soil texture class		See Attached Chart		Sandy Loam			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	7.1	YES	YES	YES	YES
Clay 20-35%		5.0-20					
Stone Content							
	% m/m						
>2mm (Sub Contracted)		0-30	13	YES			
>20mm (Sub Contracted)		0-10	< 0.10	YES			
>50mm (Sub Contracted)		0	< 0.10	YES			
Soil pH value		5.5-8.5	8.3	YES	NO	YES	YES
Carbonate (Calcareous only)	%		< 0.10				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	2100	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.16	YES	YES		YES
Extractable phosphorus	mg/l	16-140	65	YES	YES	NO	YES
Extractable potassium	mg/l	121-1500	1450	YES	YES		YES
Extractable magnesium	mg/l	51-600	310	YES	YES		YES
Carbon : Nitrogen Ratio		<20:1	19/1	YES	N/A	N/A	N/A
Exchangeable sodium	%	<15	5.9				
Available Calcium	mg/l		540				
Available Sodium	mg/l		310				
Phytotoxic Contaminants (by soil pH)							
		< 6.0	6.0-7.0	> 7.0			
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	25	YES	
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	8.1	YES	
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	10	YES	
Visible Contaminants							
	% mm						
>2mm		<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

**Topsoil:
Texture Classification Chart**



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Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2260	Carbonate	Carbonate	Titration
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2690	EPH A/A Split	Aliphatics: >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C40 Aromatics: >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C40	Acetone/Heptane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5-C6, >C6-C7,>C7-C8,>C8-C10 Aromatics: >C5-C7,>C7-C8,>C8-C10	Water extraction / Headspace GCxGC FID detection
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

APPENDIX 5: GAS MITIGATION MEASURES

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.001-EC2	Date: 8th June 2023
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Capping Beam
--

Inspection & Validation details:

Installation of Solco Solco Liquid Gas Barrier.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

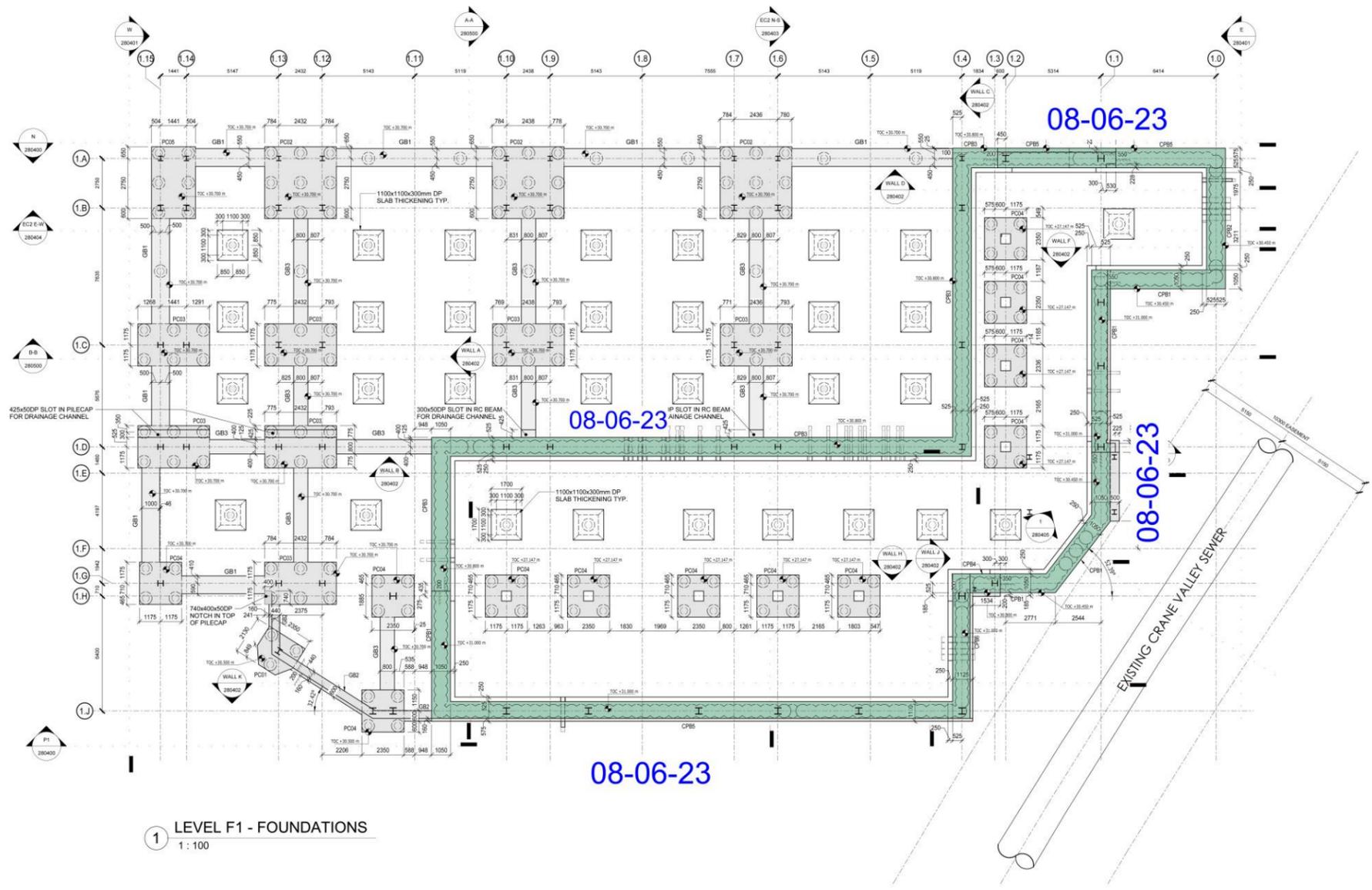
Signed for on behalf of CPL: Name:... 

Date:.....08-06-2023

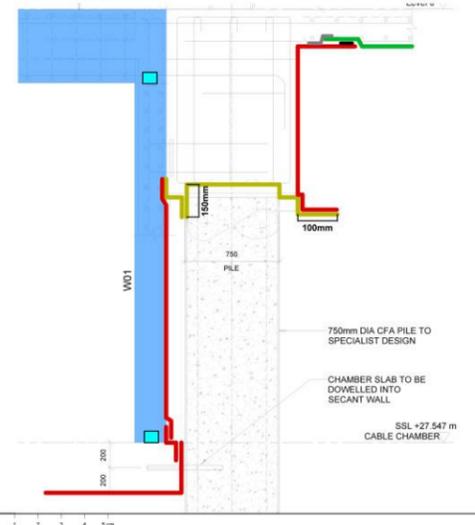
Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....08-06-2023

Gas Membrane Installation
Capping Beam
08-06-23 - LGB



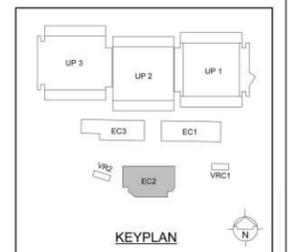
1 LEVEL F1 - FOUNDATIONS
1:100



- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others

C P L
CARTER PARTNERSHIP LIMITED
Independent Gas Verification
& Validation Services

- Validation Status**
- █ Installation needs to be rectified
 - █ Awaiting additional Installation
 - █ Installation in accordance with design
- & Date Validated**



Information Taken From

Client:	SWEET PROJECTS
Architect:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
HDR Project Number:	10274713
Model Name:	HDR-0472-EC2-ZI-M3-S-000001
Drawn:	EC AS/DC
Date:	31/03/23
Scale:	A3 1:100
Drawn Number:	HDR-0472-EC2-F1-DR-S-160201
Plot:	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.002-EC2	Date: 6th July 2023
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Capping Beam
--

Inspection & Validation details:

Installation of Solco GR SAM.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

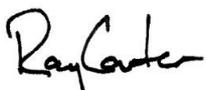
Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

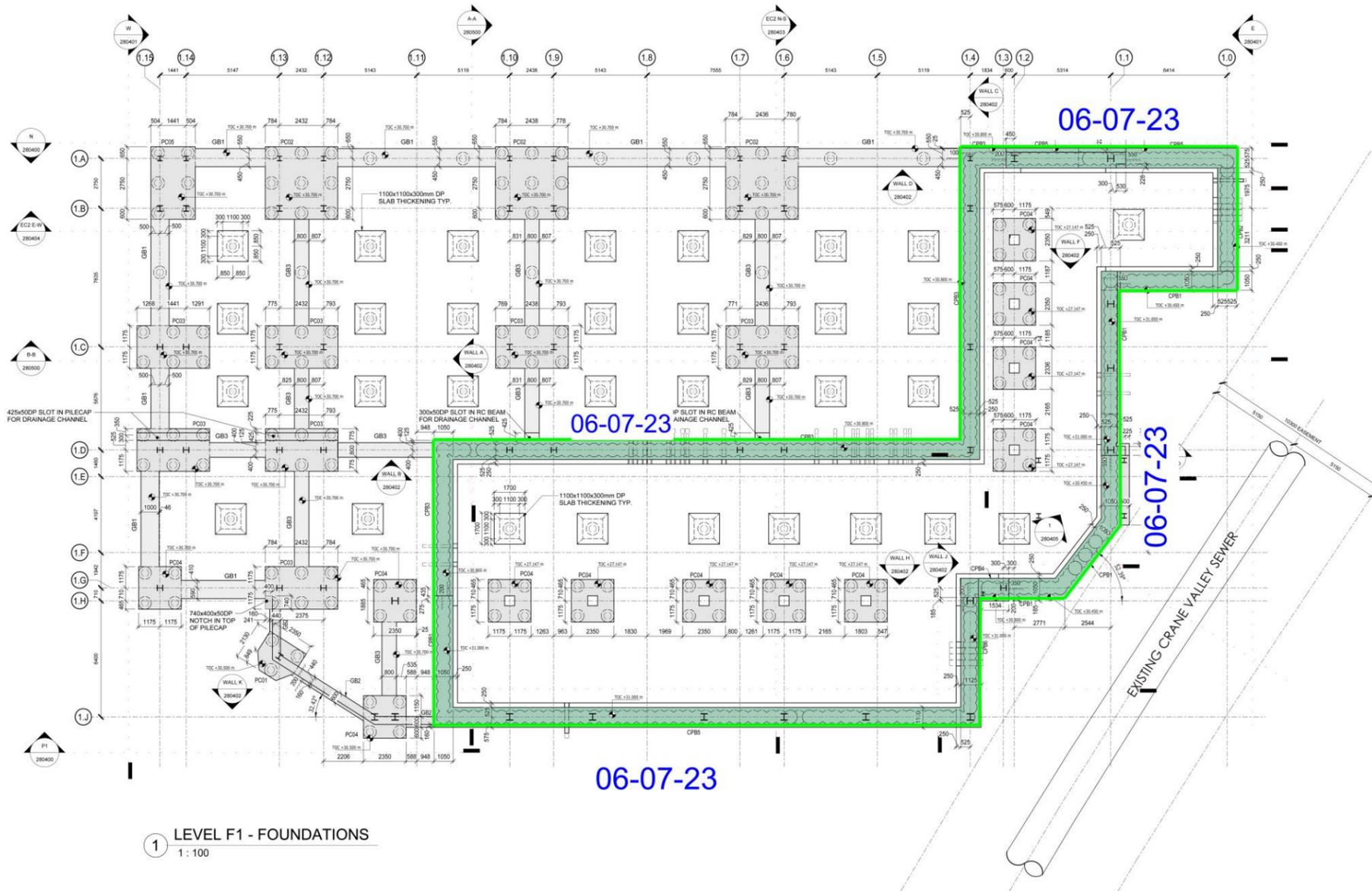
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....06-07-2023

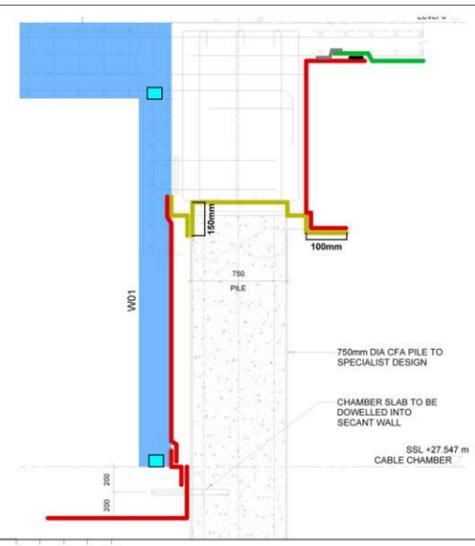
Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....06-07-2023

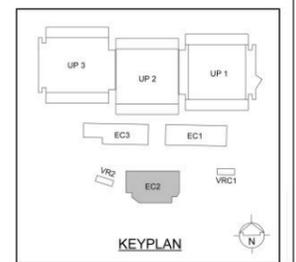


Gas Membrane Installation
 Capping Beam
 08-06-23 - LGB
 06-07-23 - GR SAM

1 LEVEL F1 - FOUNDATIONS
 1 : 100



- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others



C P L

CARTER PARTNERSHIP LIMITED

Independent Gas Verification
& Validation Services

Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design

& Date Validated

Information Taken From

Client:	SWEET PROJECTS
Address:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
DCR Project Number:	10274713
Model Name:	HDR-0472-EC2-ZZ-M3-S-000001
Drawn:	EC
Checked:	AS/DC
Date:	31/03/23
Scale:	1:100
Drawing Number:	HDR-0472-EC2-F1-DR-S-160201
Revision:	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.003-EC2	Date: 16th August 2023
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Basement Slab G/Ref: 1.1to1.4/1.Ato1.C
--

Inspection & Validation details:

Installation of Solco GR SAM & LGB.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

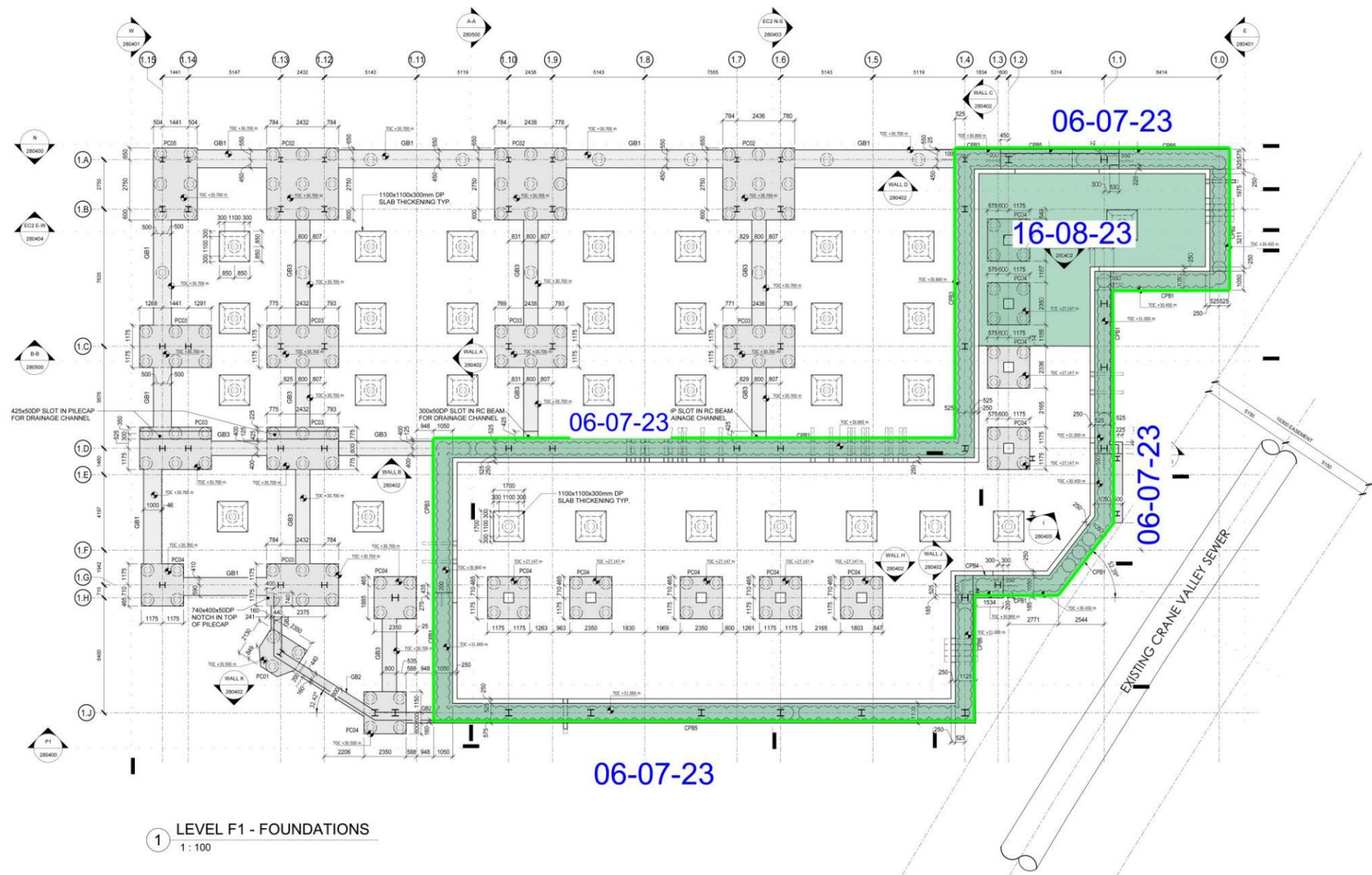
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name: ... 

Date: 16-08-2023

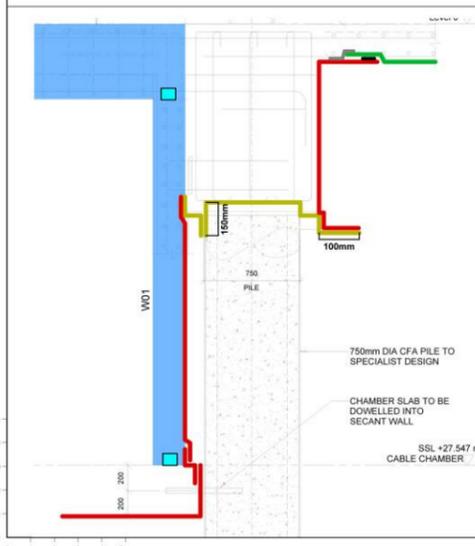
Signed for on behalf of The Client:
Name: Ian McKeown.

Date: 16-08-2023



Gas Membrane Installation
 Capping Beam
 08-06-23 - LGB
 06-07-23 - GR SAM
 Slab Membrane
 16-08-23 - GR SAM

1 LEVEL F1 - FOUNDATIONS
 1 : 100



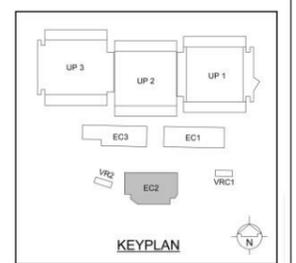
- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others

C P L
 CARTER PARTNERSHIP LIMITED
 Independent Gas Verification
 & Validation Services

Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design

& Date Validated



Information Taken From

Client	SWEET PROJECTS
Architect	NWA
Project	UNION PARK
Title	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
HDR Project Number	10274713
Model Name	HDR-0472-EC2-I2-M3-5-000001
Drawn	EC
Checked	AS/DC
Date	31/03/23
Scale	1:100
Drawn Number	HDR-0472-EC2-F1-DR-S-160201
Sheet	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.004-EC2	Date: 5th September 2023
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Basement Slab G/Ref: 1.4to1.7/1.Dto1.J
--

Inspection & Validation details:

Installation of Solco GR SAM & LGB.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

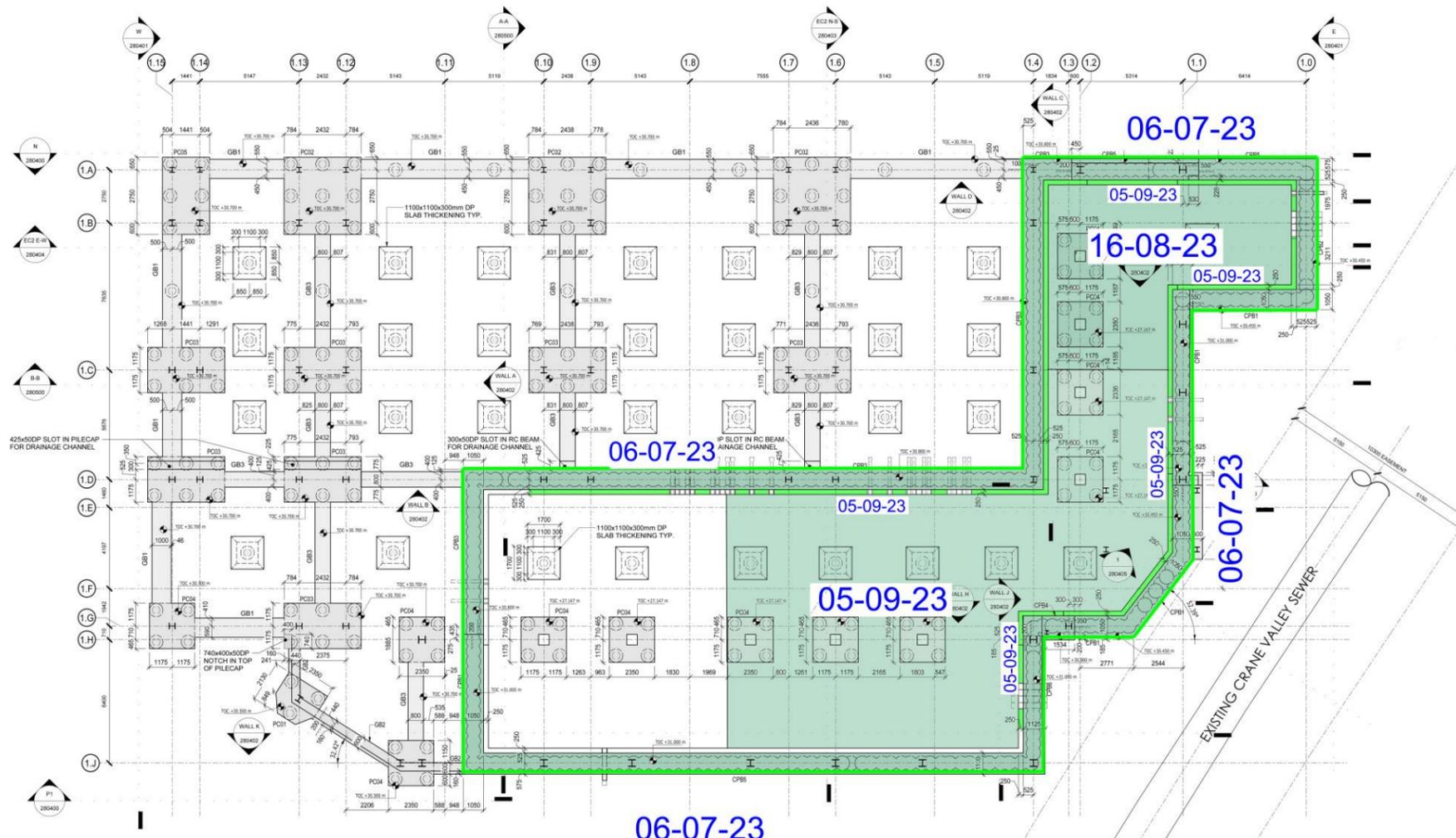
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name: ... 

Date:05-09-2023

Signed for on behalf of The Client:
Name:Ian McKeown.

Date:05-09-2023

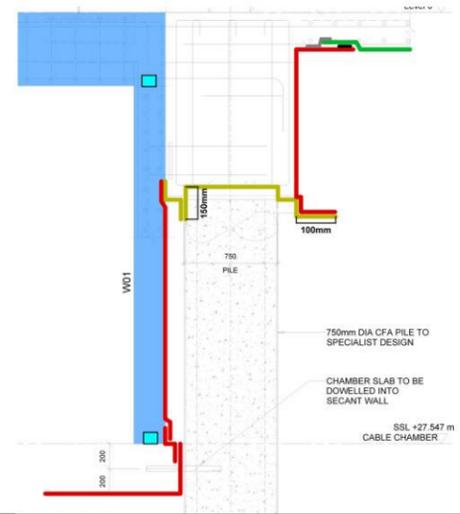


Gas Membrane Installation
 Capping Beam
 08-06-23 - LGB
 06-07-23 - GR SAM

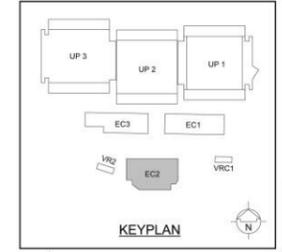
Slab Membrane
 16-08-23 - GR SAM
 05-09-23 - GR SAM

RC Liner Wall
 05-09-23 - GR SAM

1 LEVEL F1 - FOUNDATIONS
 1 : 100



- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others



Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design

& Date Validated

Information Taken From

Client:	SWEET PROJECTS
Architect:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
Model Name:	HDR-0472-EC2-DR-S-160201
Drawn:	AS/DC
Checked:	AS/DC
Date:	31/03/23
Scale:	1:100
Sheet:	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.005-EC2	Date: 8th September 2023
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Basement Slab G/Ref: 1.7to1.11/1.Dto1.J Liner Wall G/Ref:1.4/1.Jto1.10/1.D
--

Inspection & Validation details:

Installation of Solco GR SAM & LGB.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

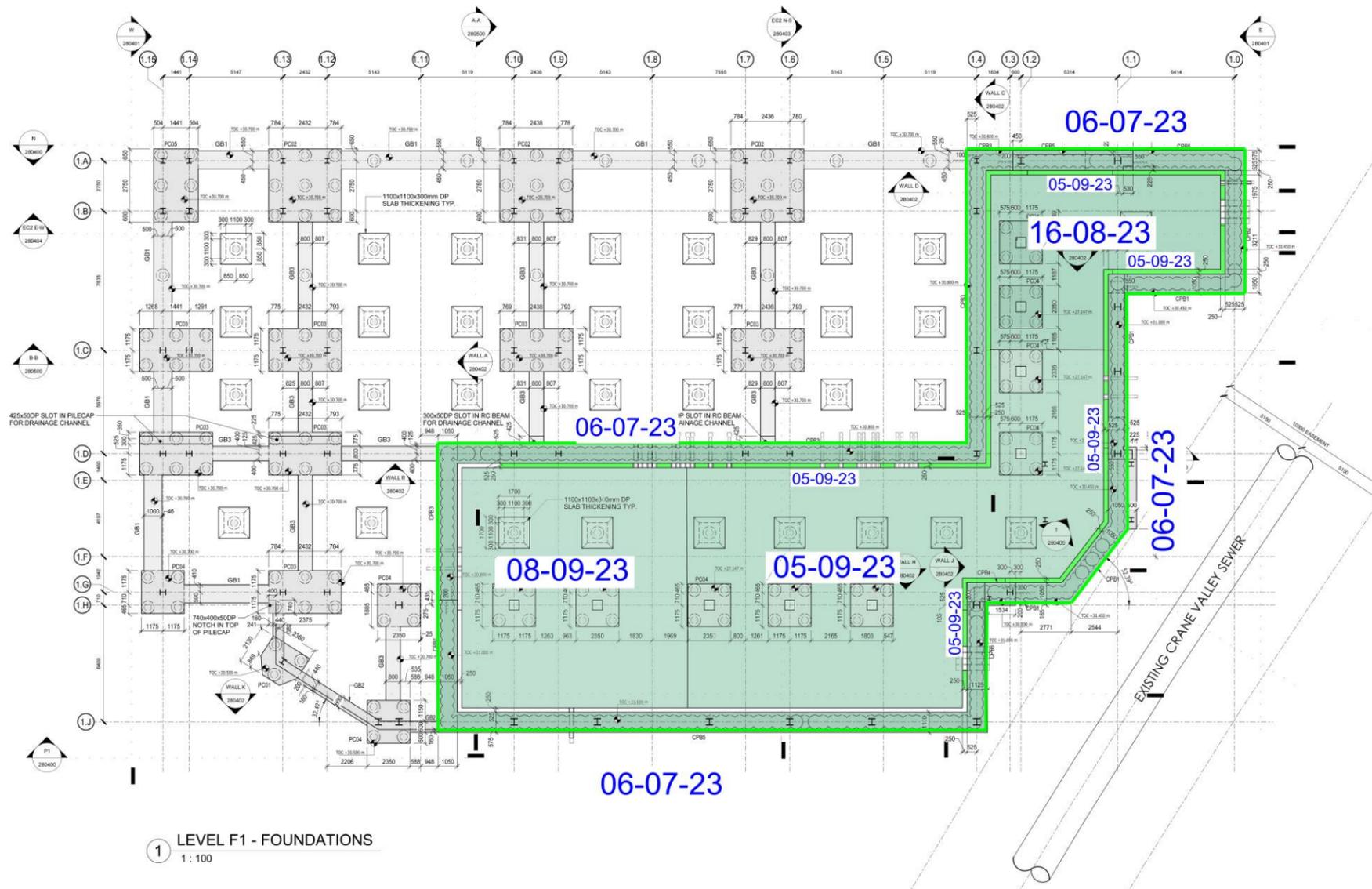
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....08-09-2023

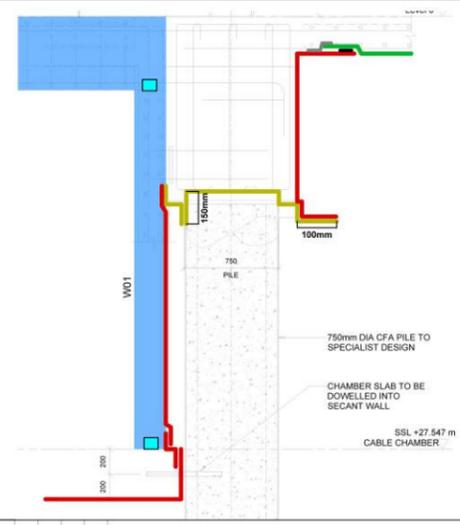
Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....08-09-2023

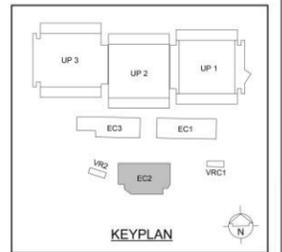


1 LEVEL F1 - FOUNDATIONS
1 : 100

- Gas Membrane Installation
- Capping Beam
- 08-06-23 - LGB
- 06-07-23 - GR SAM
- Slab Membrane
- 16-08-23 - GR SAM
- 05-09-23 - GR SAM
- 08-09-23 - GR SAM
- RC Liner Wall
- 05-09-23 - GR SAM



- General Notes**
- Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - Solshield Ultra
 - Solco 50mm Double Sided Butyl Tape
 - Solco Foil Tape
 - Solseal Liquid Gas Barrier
 - Waterproof Concrete By Others
 - WaterStop By Others



- Validation Status**
- Installation needs to be rectified
 - Awaiting additional Installation
 - Installation in accordance with design
- & Date Validated**

Information Taken From

Client	SWEET PROJECTS
Architect	NWA
Project	UNION PARK
Title	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
Project Number	10274713
Model Name	HDR-0472-EC2-22-443-5-000001
Drawn	EC
Checked	AS/DC
Date	31/03/23
Scale	AS
Drawing Number	HDR-0472-EC2-F1-DR-S-160201
Revision	PO2

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.006-EC2	Date: 11th September 2023
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Liner Wall G/Ref:1.4to1.11/1.J
--

Inspection & Validation details:

Installation of Solco GR SAM & LGB.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

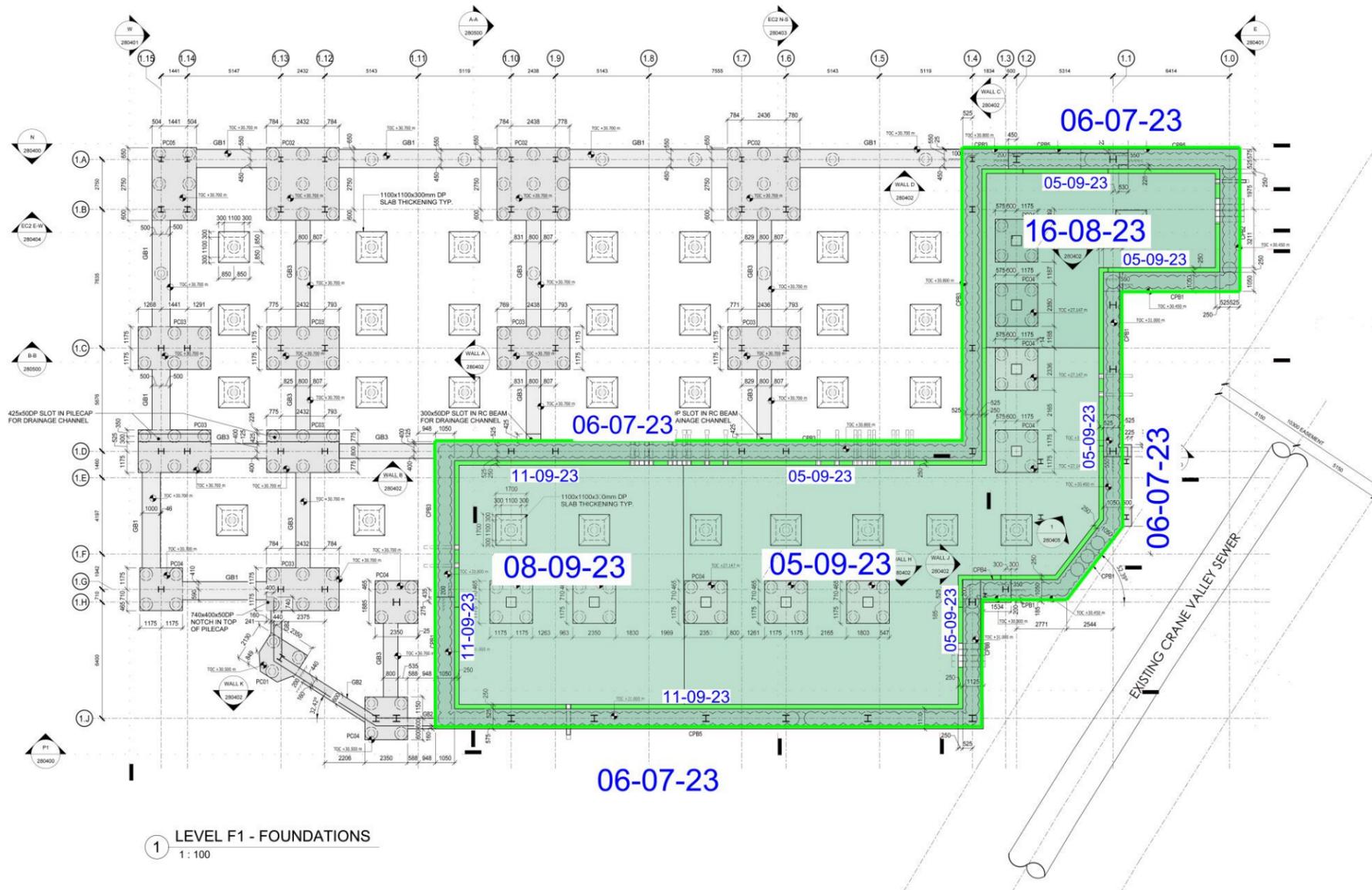
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....11-09-2023

Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....11-09-2023



Gas Membrane Installation

- Capping Beam
- 08-06-23 - LGB
- 06-07-23 - GR SAM

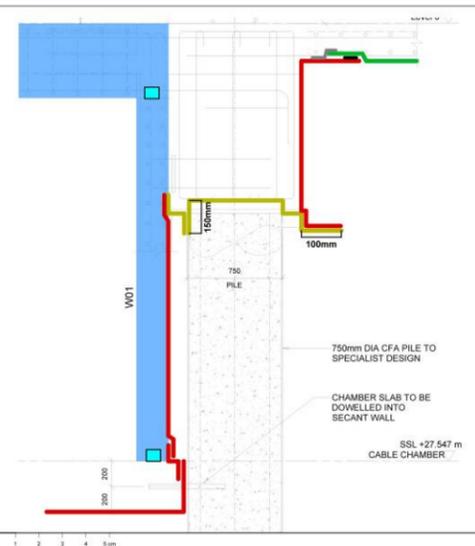
Slab Membrane

- 16-08-23 - GR SAM
- 05-09-23 - GR SAM
- 08-09-23 - GR SAM

RC Liner Wall

- 05-09-23 - GR SAM
- 11-09-23 - GR SAM

1 LEVEL F1 - FOUNDATIONS
1:100



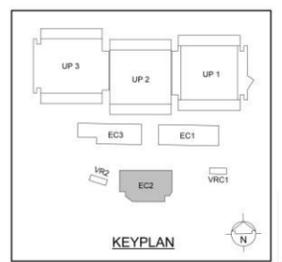
- General Notes**
- Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - Solshield Ultra
 - Solco 50mm Double Sided Butyl Tape
 - Solco Foil Tape
 - Selseal Liquid Gas Barrier
 - Waterproof Concrete By Others
 - WaterStop By Others

C P L
CARTER PARTNERSHIP LIMITED
Independent Gas Verification & Validation Services

Validation Status

- Installation needs to be rectified
- Awaiting additional Installation
- Installation in accordance with design

& Date Validated



Information Taken From

Client:	SWEET PROJECTS
Architect:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
IGV Project Number:	10274713
Model Name:	HDR-0472-EC2-ZZ-M3-S-000001
Drawn:	AS/DC
Checked:	AS/DC
Date:	31/03/23
Scale:	1:100
Revision:	HDR-0472-EC2-F1-DR-S-160201 P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.007-EC2	Date: 31st January 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Incoming Ducts G/Ref:1.4to1.6/1.Dto1.E
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Inspection & Validation details:

Installation of Solco GR SAM & Stopaq.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

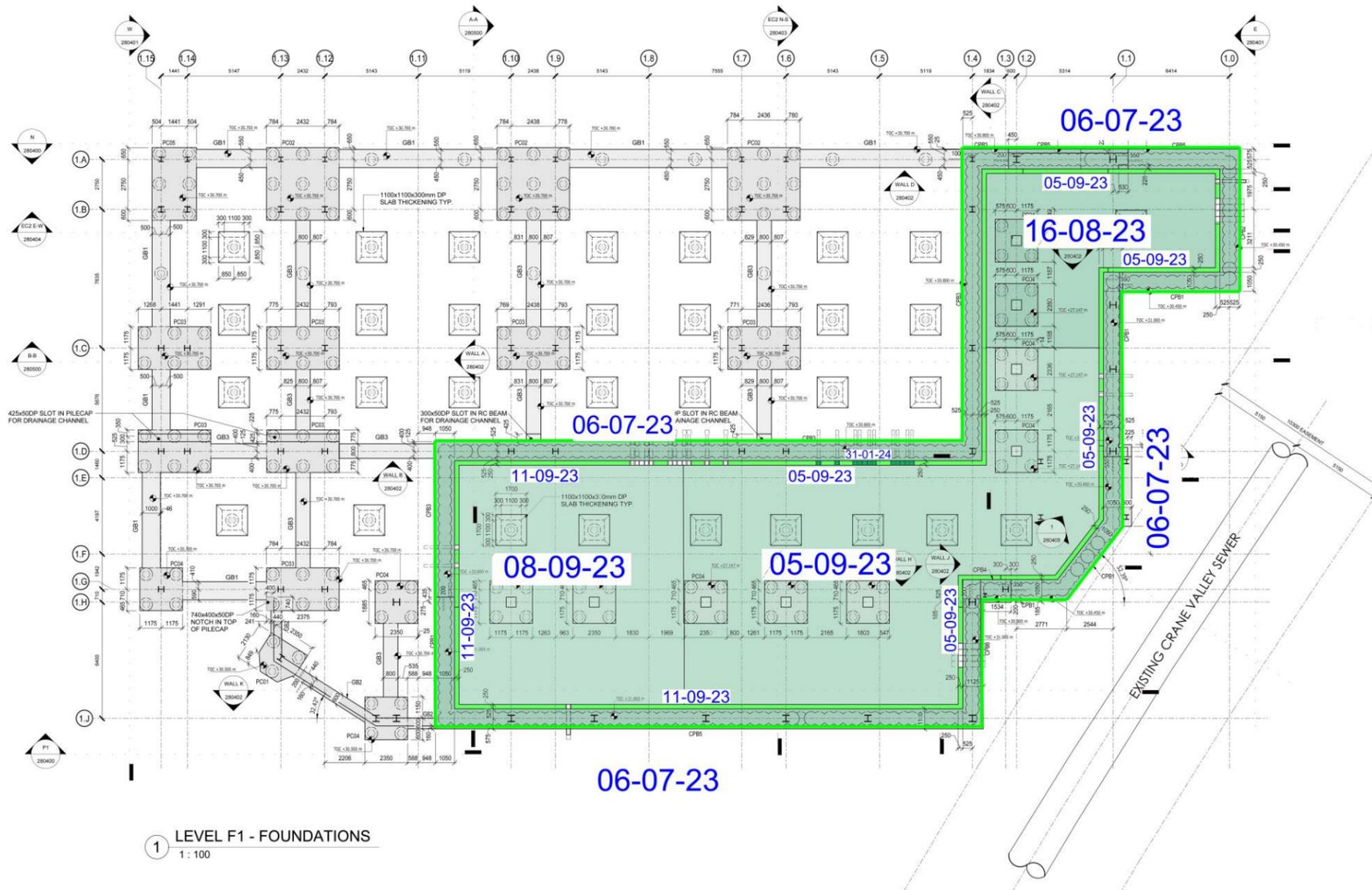
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....31-01-2024

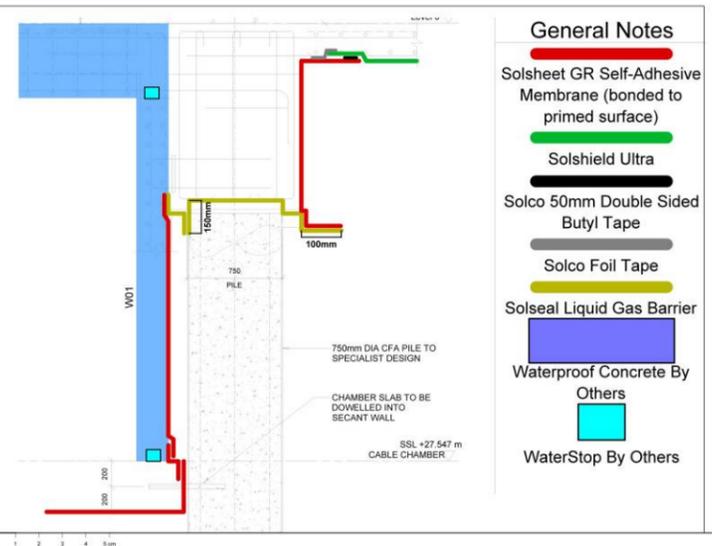
Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....31-01-2024



- Gas Membrane Installation
- Capping Beam
- 08-06-23 - LGB
- 06-07-23 - GR SAM
- Slab Membrane
- 16-08-23 - GR SAM
- 05-09-23 - GR SAM
- 08-09-23 - GR SAM
- RC Liner Wall
- 05-09-23 - GR SAM
- 11-09-23 - GR SAM
- Incoming Ducts
- 31-01-24 - 1.4to1.6/1.Dto1.E

1 LEVEL F1 - FOUNDATIONS
1:100



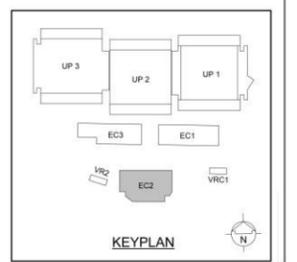
- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Selseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others

C P L
CARTER PARTNERSHIP LIMITED
Independent Gas Verification & Validation Services

Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design

& Date Validated



Information Taken From

Client:	SWEET PROJECTS
Architect:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
DRW Project Number:	10274713
Model Name:	HDR-0472-EC2-ZZ-M3-S-000001
Drawn:	EC
Checked:	AS/DC
Date:	31/03/23
Scale:	1:100
Revision:	HDR-0472-EC2-F1-DR-S-160201 P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.008-EC2	Date: 9th February 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – Incoming Ducts G/Ref:1.7to1.8/1.Dto1.E
--

Inspection & Validation details:

Installation of Solco GR SAM & Stopaq.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

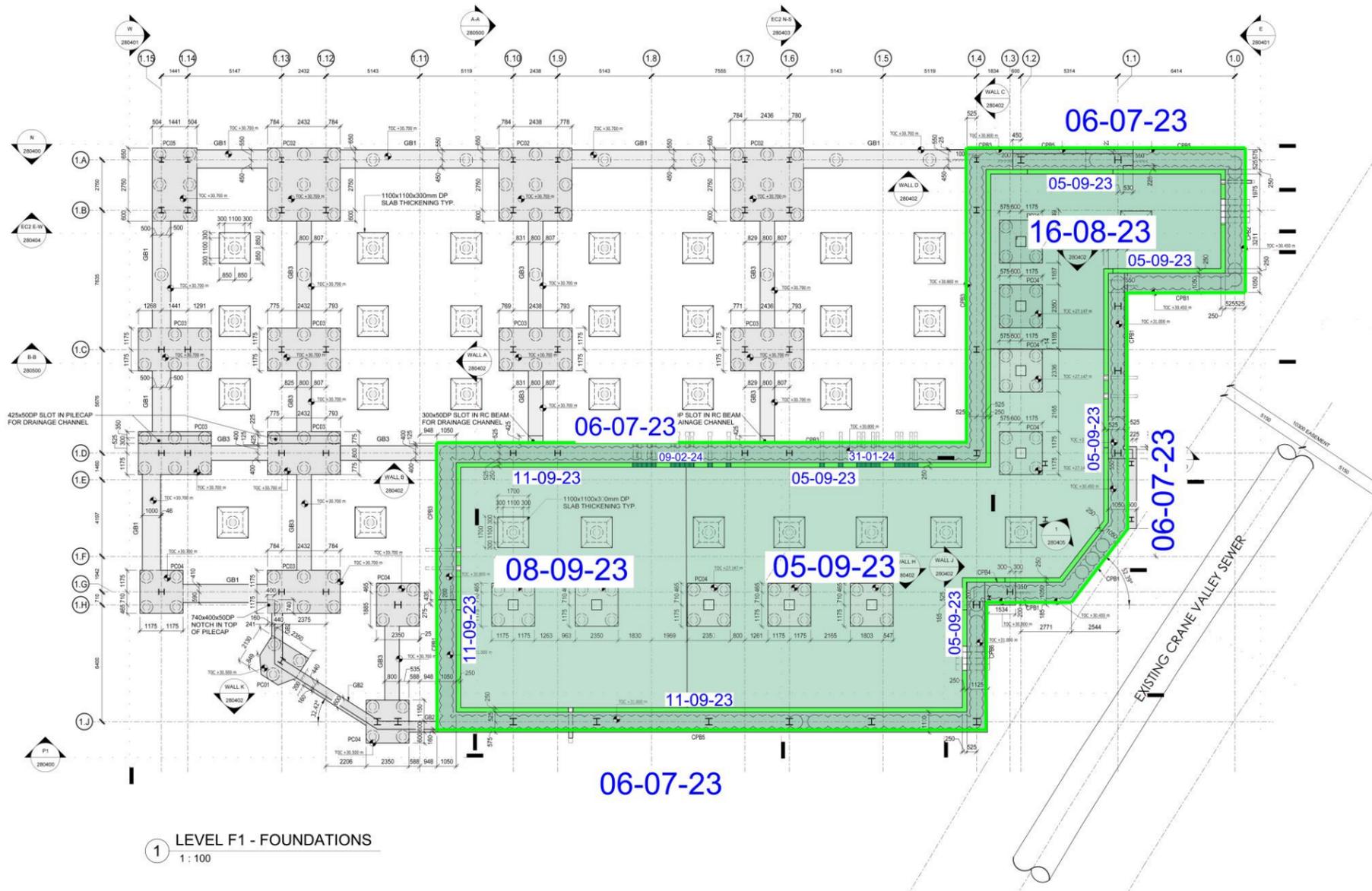
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....09-02-2024

Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....09-02-2024



Gas Membrane Installation

- Capping Beam
- 08-06-23 - LGB
- 06-07-23 - GR SAM

Slab Membrane

- 16-08-23 - GR SAM
- 05-09-23 - GR SAM
- 08-09-23 - GR SAM

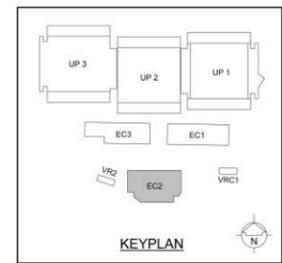
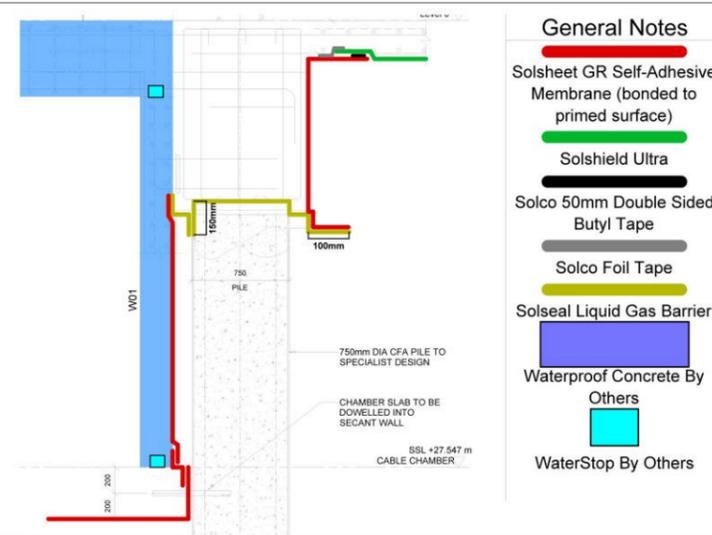
RC Liner Wall

- 05-09-23 - GR SAM
- 11-09-23 - GR SAM

Incoming Ducts

- 31-01-24 - 1.4to1.6/1.Dto1.E
- 09-02-24 - 1.7to1.8/1.Dto1.E

1 LEVEL F1 - FOUNDATIONS
1:100



Validation Status

- Installation needs to be rectified
- Awaiting additional Installation
- Installation in accordance with design

& Date Validated

Information Taken From	
Client	SWEET PROJECTS
Architect	NWA
Project	UNION PARK
Title	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
HDR Project Number	10274713
Model Name	HDR-0472-EC2-ZZ-M3-S-000001
Drawn	EC AS/OC
Date	31/03/23
Scale	1:100
Drawing Number	HDR-0472-EC2-F1-DR-S-160201
Revision	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.009-EC2	Date: 05th March 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	
Area / Installation Inspected: EC2 – Incoming Ducts G/Ref:1.10to1.11/1.Eto1.G	

Inspection & Validation details:

Installation of Solco GR SAM & Stopaq.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

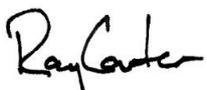
Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

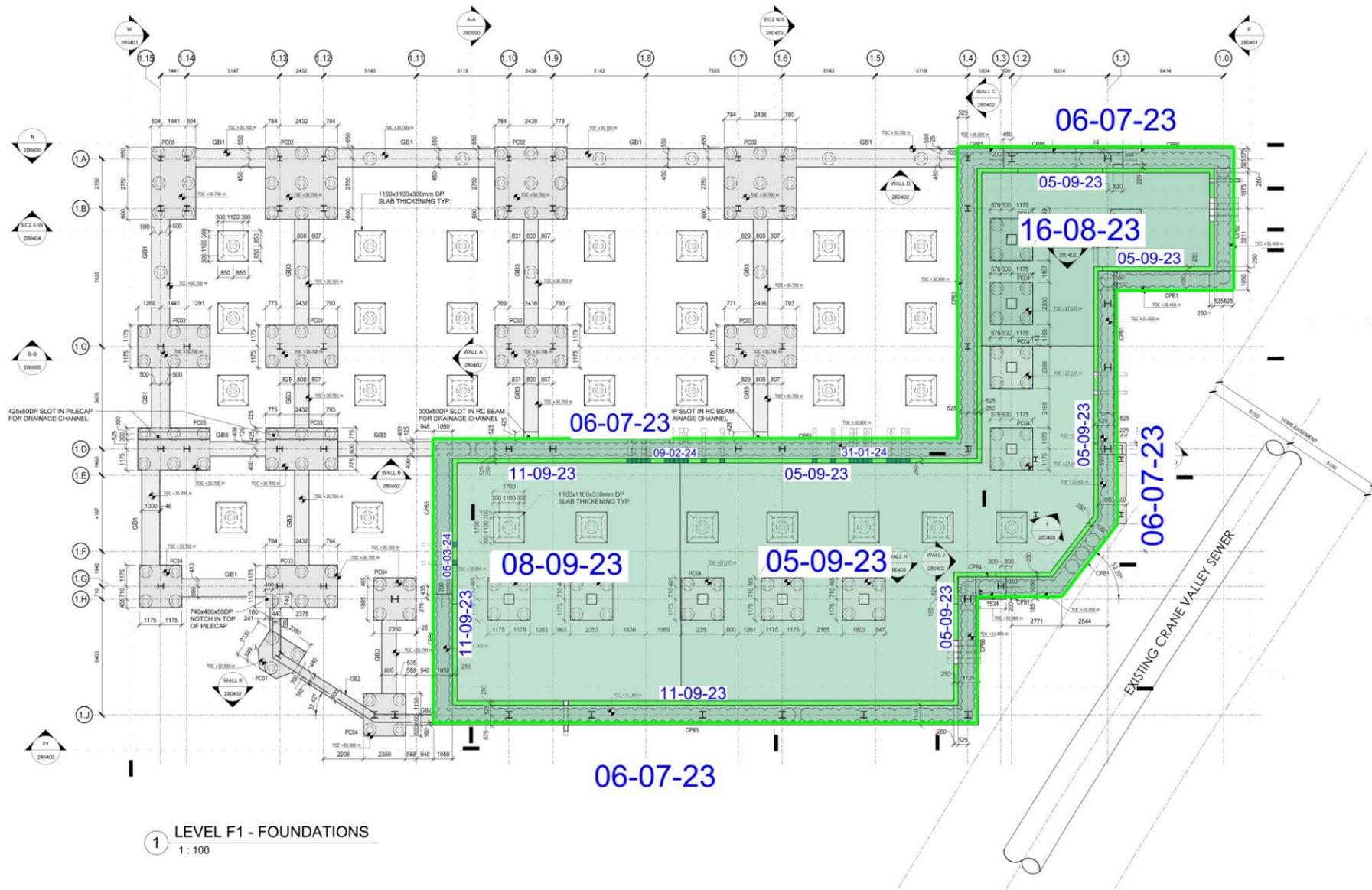
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....05-03-2024

Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....05-03-2024



**Gas Membrane Installation
Capping Beam**

- 08-06-23 - LGB
- 06-07-23 - GR SAM

Slab Membrane

- 16-08-23 - GR SAM
- 05-09-23 - GR SAM
- 08-09-23 - GR SAM

RC Liner Wall

- 05-09-23 - GR SAM
- 11-09-23 - GR SAM

Incoming Ducts

- 31-01-24 - 1.4to1.6/1.Dto1.E
- 09-02-24 - 1.7to1.8/1.Dto1.E
- 05-03-24 - 1.10to1.11/1.Eto1.G

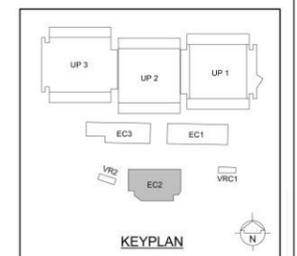
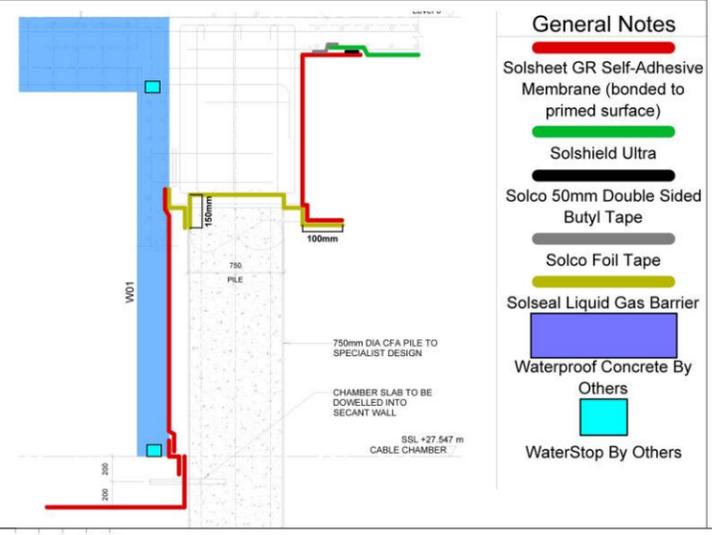
1 LEVEL F1 - FOUNDATIONS
1:100



Validation Status

- Installation needs to be rectified
- Awaiting additional Installation
- Installation in accordance with design

& Date Validated



Information Taken From

Client	SWEET PROJECTS
Address	NWA
Project	UNION PARK
Title	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
Project Number	10274713
Model Name	HDR-0472-EC2-12-M3-S-000001
Drawn	AS/DC
Date	31/03/23
Scale	1:100
Drawing Number	HDR-0472-EC2-F1-DR-S-160201
Revision	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.010-EC2	Date: 19th March 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – G/Slab G/Ref: 1.4to1.65/1Ato1D
--

Inspection & Validation details:

Installation of Solco Ultra, LGB & GR SAM.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

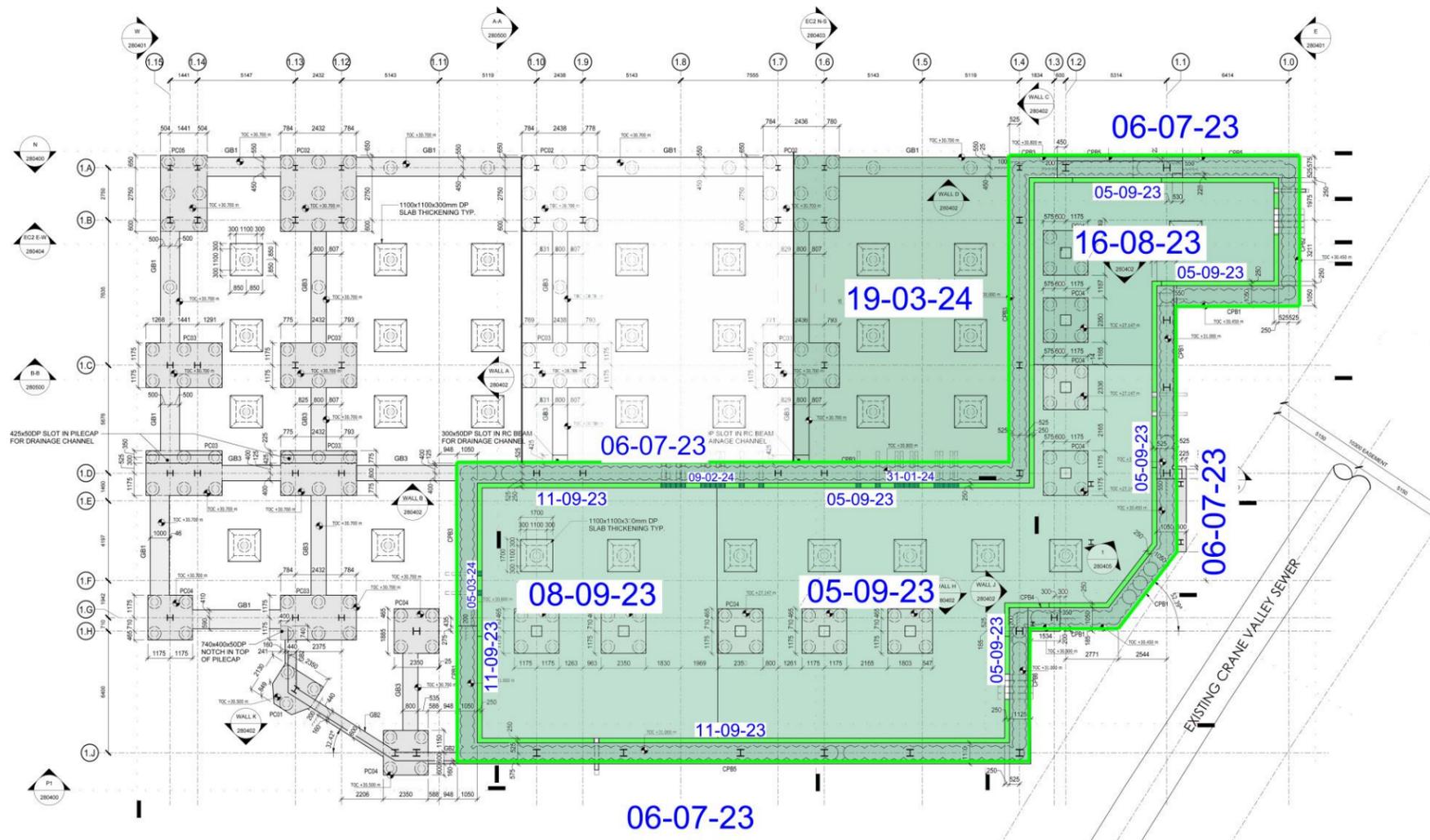
Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....19-03-2024

Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....19-03-2024



1 LEVEL F1 - FOUNDATIONS
1 : 100

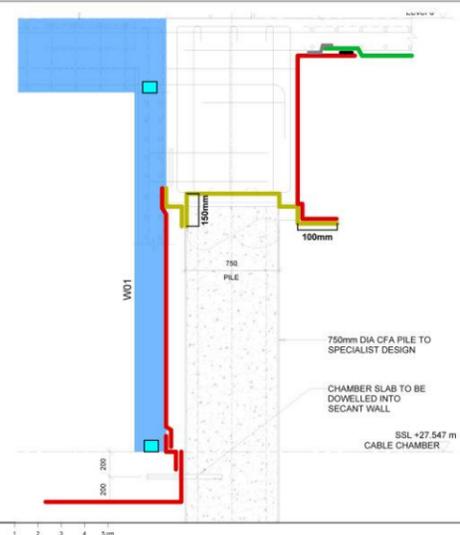
Gas Membrane Installation
Capping Beam
08-06-23 - LGB
06-07-23 - GR SAM

Slab Membrane
16-08-23 - GR SAM
05-09-23 - GR SAM
08-09-23 - GR SAM

RC Liner Wall
05-09-23 - GR SAM
11-09-23 - GR SAM

Incoming Ducts
31-01-24 - 1.4to1.6/1.Dto1.E
09-02-24 - 1.7to1.8/1.Dto1.E
05-03-24 - 1.10to1.11/1.Eto1.G

Ground Floor Slab
19-03-24 - 1.4to1.10/1Ato1D



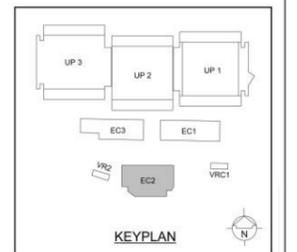
- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others

C P L
CARTER PARTNERSHIP LIMITED
Independent Gas Verification & Validation Services

Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design

& Date Validated



Information Taken From

Client	SWEET PROJECTS
Architect	NWA
Project	UNION PARK
Title	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
HDR Project Number	10274713
Model Name	HDR-0472-EC2-ZZ-H3-S-000001
Drawn	EC AS/DC 31/03/23 1:100
Drawn Number	HDR-0472-EC2-F1-DR-S-160201 P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.011-EC2	Date: 22nd April 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – G/Slab G/Ref: 1.65to1.10/1Ato1D

Inspection & Validation details:

Installation of Solco Ultra, LGB & GR SAM.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....22-04-2024

Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....22-04-2024

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.012-EC2	Date: 2nd May 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	
Area / Installation Inspected: EC2 – G/Slab G/Ref: 1.10to1.15/1Ato1D	

Inspection & Validation details:

Installation of Solco Ultra, LGB & GR SAM.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

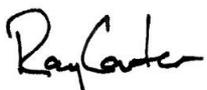
Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name: ... 

Date:02-05-2024

Signed for on behalf of The Client:
Name:Ian McKeown.

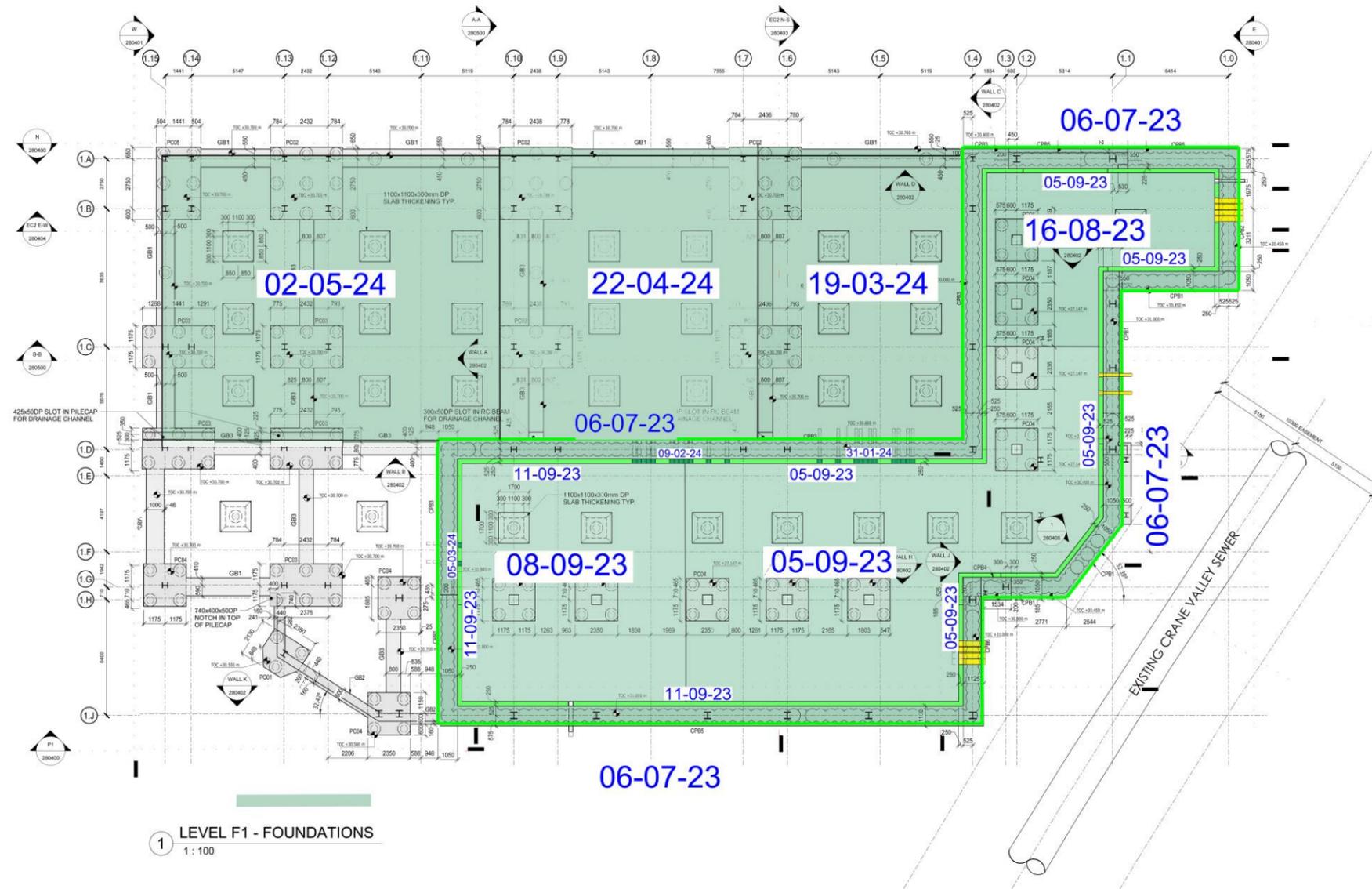
Date:02-05-2024

Gas Membrane Installation
 Capping Beam
 08-06-23 - LGB
 06-07-23 - GR SAM

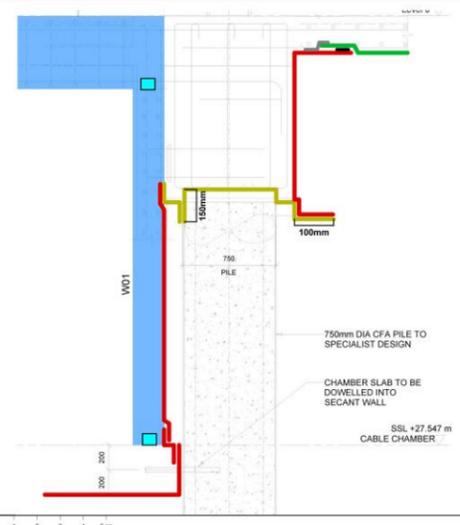
Slab Membrane
 16-08-23 - GR SAM
 05-09-23 - GR SAM
 08-09-23 - GR SAM

RC Liner Wall
 05-09-23 - GR SAM
 11-09-23 - GR SAM

Incoming Ducts
 31-01-24 - 1.4to1.6/1.Dto1.E
 09-02-24 - 1.7to1.8/1.Dto1.E
 05-03-24 - 1.10to1.11/1.Eto1.G



1 LEVEL F1 - FOUNDATIONS
 1 : 100



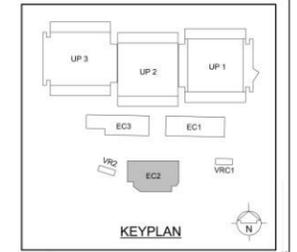
- General Notes**
- Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - Solshield Ultra
 - Solco 50mm Double Sided Butyl Tape
 - Solco Foil Tape
 - Solseal Liquid Gas Barrier
 - Waterproof Concrete By Others
 - WaterStop By Others

C P L
 CARTER PARTNERSHIP LIMITED
 Independent Gas Verification & Validation Services

Validation Status

- Installation needs to be rectified
- Awaiting additional Installation
- Installation in accordance with design

& Date Validated



Information Taken From

Client:	SWEET PROJECTS
Address:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
HDR Project Number:	10274713
Model Name:	HDR-0472-EC2-32-M3-5-000001
Drawn:	EC AS/DC
Checked:	AS/DC
Date:	31/03/23
Scale:	1:100
Drawing Number:	HDR-0472-EC2-F1-DR-S-160201
Revision:	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.013-EC2	Date: 4th June 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC2 – G/Slab G/Ref: 1.15to1.15/1Dto1J

Inspection & Validation details:

Installation of Solco Ultra, LGB & GR SAM.

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS .

Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:... 

Date:.....04-06-2024

Signed for on behalf of The Client:
Name:.....Ian McKeown.

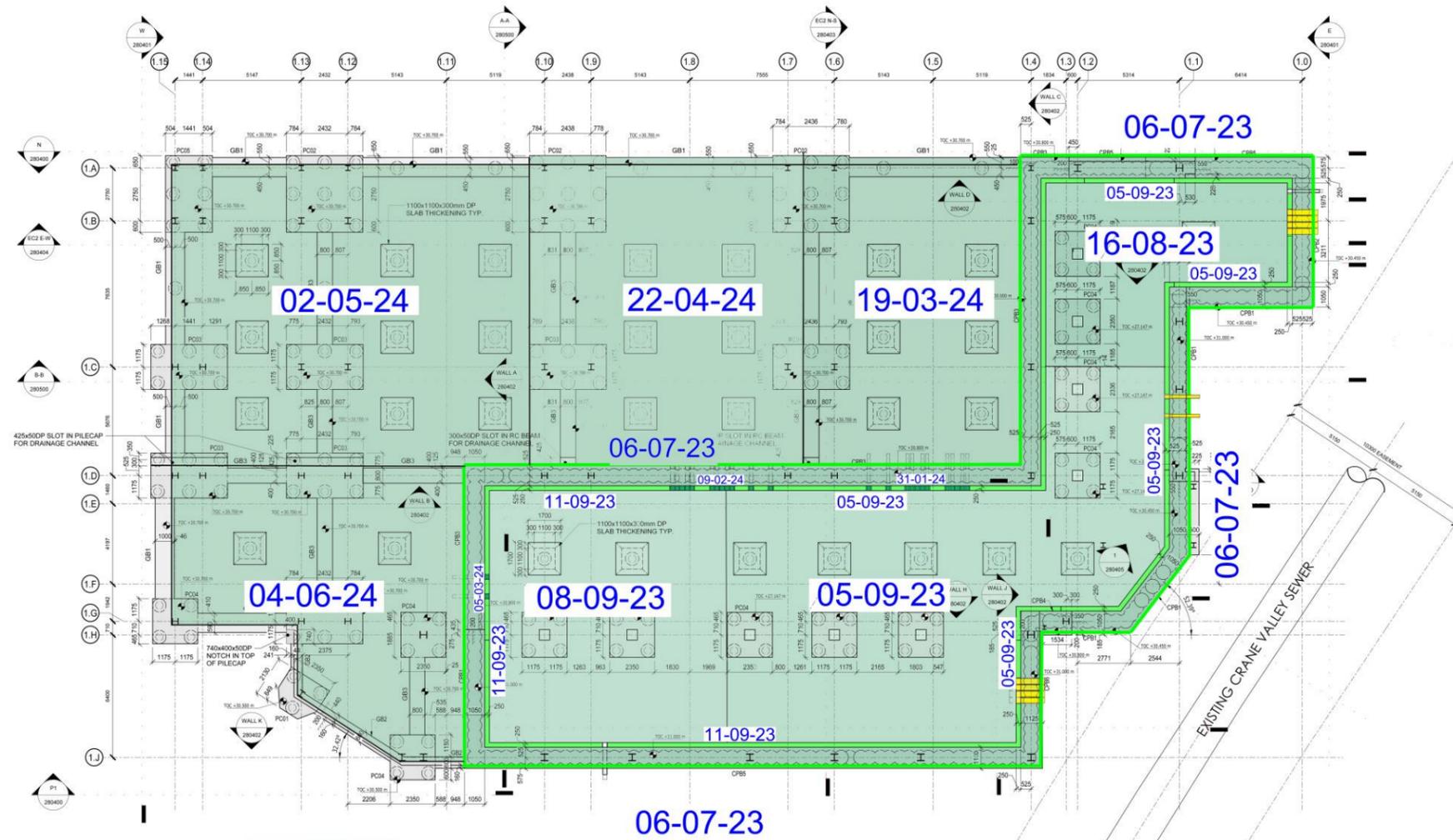
Date:.....04-06-2024

Gas Membrane Installation
 Capping Beam
 08-06-23 - LGB
 06-07-23 - GR SAM

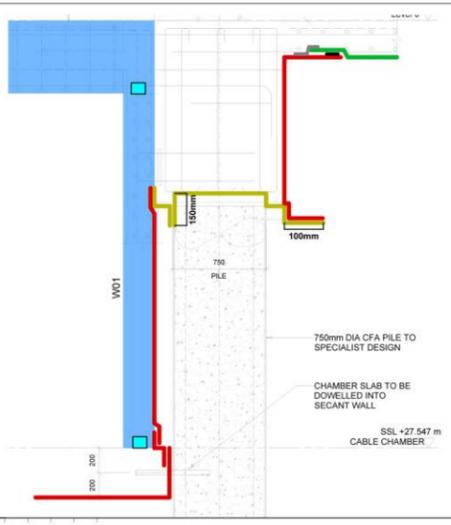
Slab Membrane
 16-08-23 - GR SAM
 05-09-23 - GR SAM
 08-09-23 - GR SAM

RC Liner Wall
 05-09-23 - GR SAM
 11-09-23 - GR SAM

Incoming Ducts
 31-01-24 - 1.4to1.6/1.Dto1.E
 09-02-24 - 1.7to1.8/1.Dto1.E
 05-03-24 - 1.10to1.11/1.Eto1.G



1 LEVEL F1 - FOUNDATIONS
 1: 100



- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others

C P L

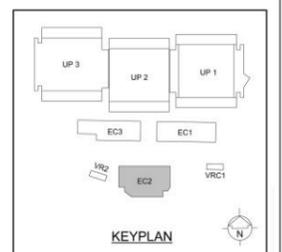
CARTER PARTNERSHIP LIMITED

Independent Gas Verification
& Validation Services

Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design

& Date Validated



Information Taken From	
Client:	SWEET PROJECTS
Address:	NWA
Project:	UNION PARK
Title:	EC2 LEVEL F1 FOUNDATIONS GENERAL ARRANGEMENT
DCR Project Number:	10274713
Model Name:	HDR-0472-EC2-IZ-M3-S-000001
Drawn:	EC
Checked:	AS/DC
Date:	31/03/23
Scale:	A4
Sheet:	1:100
Drawing Number:	HDR-0472-EC2-F1-DR-S-160201
Revision:	P02

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.013-EC3	Date: 30th October 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected: EC3 – Steel Column Pockets
--

Inspection & Validation details:

Installation of Solco LGB & GR SAM
Pipe penetrations

Installation was inspected via CPL site visit with Toureen & additionally,
The installation was managed by Toureen to confirm as per design.

Installation was of good consistent standard

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass- In accordance with Design & product TDS.

Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

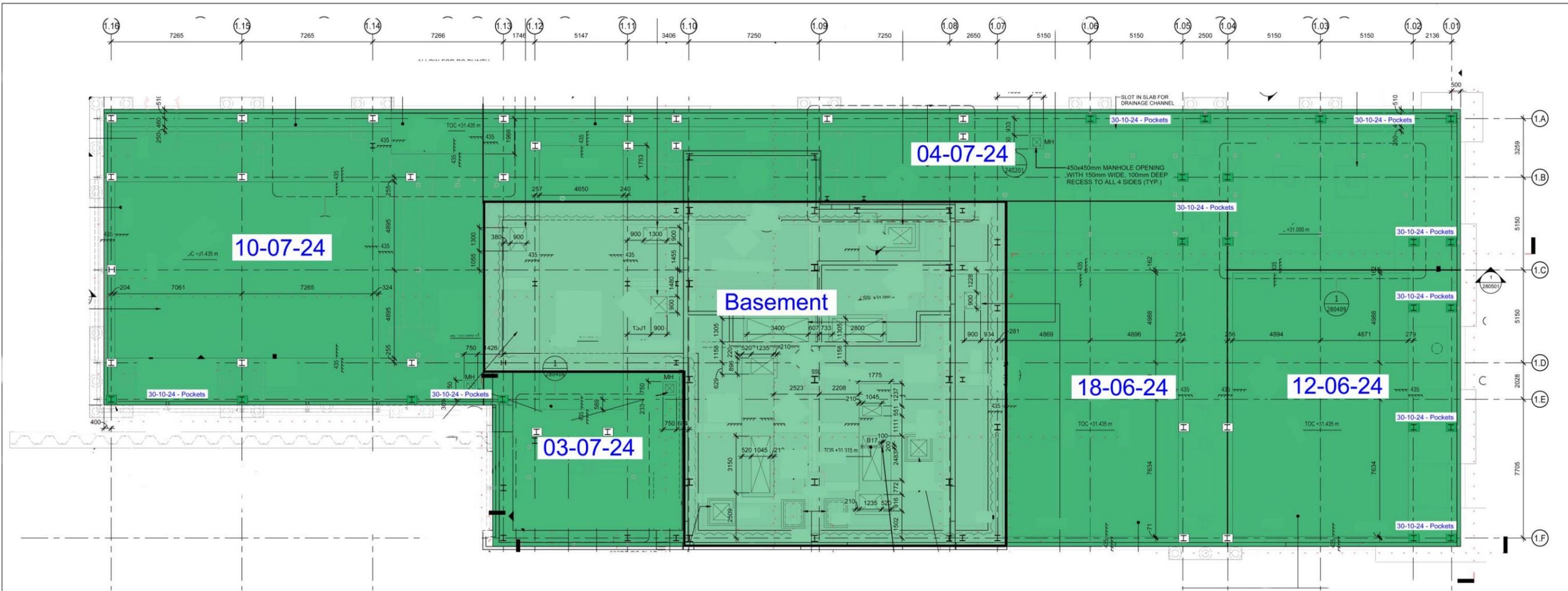
Signed for on behalf of CPL: Name:... 

Date:... 30-10-2024

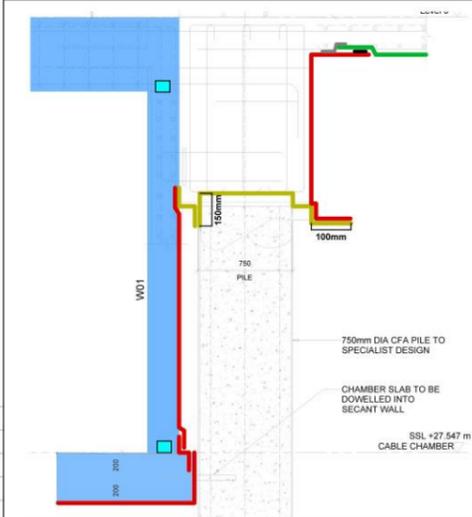
Signed for on behalf of The Client:

Name:... Ian McKeown.

Date:... 30-10-2024



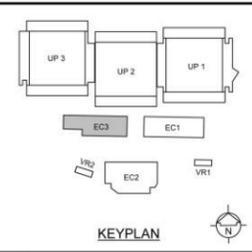
1 LEVEL 00 - GROUND FLOOR
1:100



- General Notes**
- █ Solsheet GR Self-Adhesive Membrane (bonded to primed surface)
 - █ Solshield Ultra
 - █ Solco 50mm Double Sided Butyl Tape
 - █ Solco Foil Tape
 - █ Solseal Liquid Gas Barrier
 - █ Waterproof Concrete By Others
 - █ WaterStop By Others

Validation Status

- █ Installation needs to be rectified
- █ Awaiting additional Installation
- █ Installation in accordance with design & Date Validated



Information Taken From

Client	SWEET PROJECTS
Architect	NWA
Project	UNION PARK
Title	EC3 LEVEL 00 - GROUND FLOOR STRUCTURAL SLAB GENERAL ARRANGEMENT
Client Project Number	10274713
Model Name	HDR-0473-EC3-ZZ-M3-S-000001
Drawn	ZP
Checked	RSU/DC
Date	15/05/24
Scale	A0
Drawing Number	HDR-0473-EC3-00-DR-S-230201
Revision	P05

Independent Inspection & Validation Certificate of Conformance

Project Ref: G201001.020UP2	Date: 14th November 2024
Name / Location: Union Park, North Hyde Gardens, Hayes, UB3 4DG	
Customer: Toureen Contractors, HA3 5QY	

Area / Installation Inspected:
Steel Column Pockets

Inspection & Validation detail

Installation of Solco Ultra, Solco LGB, Solco GR SAM

Installation was inspected via Site Inspection additionally,
The installation was managed by Toureen to confirm as per design.

Therefore, based on the installation & evidence of repair CPL can offer sign off on this installation.
Photographic evidence included in final sign off report.

CPL do hereby confirm that the elements of the project detailed above have been inspected & validated by a suitably qualified independent consultant in accordance with industry requirements, with the test result noted below:

CONCLUSION: Pass (In accordance with design)

Where the conclusion above indicates as a Pass, the construction activities may proceed subject to suitable protection measures of the membrane being applied in accordance with the manufacturer's recommendations. For Fail see further comments/actions attached:

Signed for on behalf of CPL: Name:.... 

Date:.....14-11-2024

Signed for on behalf of The Client:
Name:.....Ian McKeown.

Date:.....14-11-2024

APPENDIX 6: IMPORT AND EXPORT CERTIFICATES

APPENDIX 7: POTABLE WATER SUPPLY

PURITON[®] BARRIER PIPE AND FITTINGS SYSTEM



Protecting drinking water
through contaminated land



NOV 2021





PROTECTING OUR DRINKING WATER WITH PURITON®

BUILDING NEW HOMES ON BROWNFIELD SITES

The push for the regeneration of land or premises - previously used for farming, industrial or commercial purposes - into housing, has been encouraged since 1998. These new developments, built on derelict or contaminated land, were promoted to protect the green belt, minimise urban sprawl and make better use of those disused areas.

With governments promoting the regeneration of brownfield sites for new homes, there is a need for a new polyethylene pipeline solution, that will ensure the protection of our drinking water against soil contaminants commonly found in brownfield sites.

Designed for new or replacement potable water supply, Puriton® is an engineered barrier pipe and fittings system.

Puriton® provides a cutting-edge solution for the distribution of drinking water which safeguards potable water against soil contaminants by incorporating permeation resistance with flexibility.

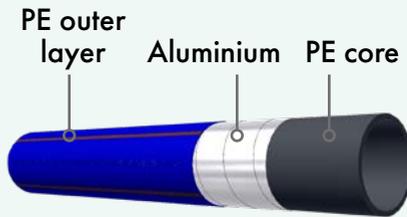
PURITON® BARRIER PIPE

The 21st century pipe system for contaminated land.

With its multi-layer composite structure, Radius Systems Puriton® pipe brings together the unique flexibility of polyethylene (PE) with the exceptional barrier properties of aluminium (Al), giving you the assurance of a durable pipe solution for the safe distribution of drinking water through contaminated land.

Lightweight, flexible, corrosion resistant and easy to install our Puriton® pipe is joined using our range of approved mechanical, Redman™ or electrofusion fittings as well as the butt-fusion technique for Puriton® pipe 90mm and above, without the need to post-wrap the finished joint.

Puriton® pipe structure



Puriton® is joined using the following methods as specified in BS8588 certificate KM672956

- Puriton® plastic mechanical fittings
- Redman™ fittings
- Puriton® electrofusion fittings
- Puriton® gunmetal tapping tees
- Butt-fusion in accordance with WIS 4-32-08 (see Radius Systems installation guidance page 52)

Features and Benefits

- Multi-layer pipe construction PE-Al-PE
- Full barrier pipe system
- Combines the flexibility of polyethylene with the barrier properties of aluminium
- Safeguards drinking water quality
- Easy to handle, flexible and lightweight
- End load resistant system
- Installation cost savings - no requirement for thrust blocks
- No requirement to post-wrap the joints
- Suitable for new and replacement drinking water supply systems
- Brown stripes denote a multi-layer pipe construction

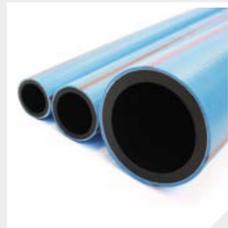
Approvals

- Approved under regulation 31 of the Water Supply (Water Quality) Regulations 2000 for pipe diameters 90 to 180mm (Approval number DWI 56.4.1112)
- WRAS approved material PE80 for pipe diameters 25 to 63mm (Approval number 1610528)
- BS 8588:2017 approval for pipe diameters 25 to 180mm (Approval number KM 672956)



Nominal diameter mm	Materials	SDR	Pressure rating bar	Core pipe external diameter mm	Core pipe wall thickness mm	Internal diameter mm	Overall external diameter mm	Pipe weight Kg/m	Pipe length m	Product code
25	PE80/Al	11	12.5	25.0 - 25.3	2.3 - 2.7	19.6 - 20.7	27.0 - 27.6	0.3	50	XQ2528
32	PE80/Al	11	12.5	32.0 - 32.3	3.0 - 3.4	25.2 - 26.3	34.0 - 34.6	0.5	50	XQ2535
63	PE80/Al	11	12.5	63.0 - 63.4	5.8 - 6.5	50.0 - 51.8	64.8 - 65.8	1.5	6 25 50 100	XQ2568 XQ2570 XQ2571 XQ2572

**Puriton®
service pipe**



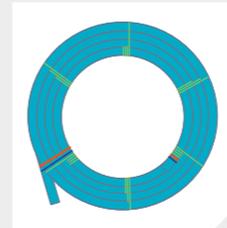
Available in diameters 25 to 63 mm, our Puriton® service pipe is manufactured from a black PE80 core, an aluminium barrier layer and a light blue PE80 outer layer with brown stripes.

Our Puriton® service pipes are available in coils and also in straight lengths for the 63 mm pipe.

To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.

Nominal diameter mm	SDR	Pressure rating bar	Coil inner diameter mm	Coil outer diameter mm	Coil width mm	Coil banding sequence	Coil length m	Coil weight Kg
25	11	12.5	800	930	175	-	50	14.5
32	11	12.5	800	930	175	-	50	22.0
63	11	12.5	1275 1275 1275	1510 1815 1815	221 208 310	●	25 50 100	36.3 72.5 145.0

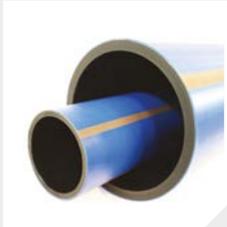
**Puriton®
service
pipe coil
dimensions**



Pipe weights are for lifting and handling purposes. They are calculated on a per metre length and are based on a maximum diameter and pipe wall thickness.

Pipe weights are for lifting and handling purposes. They are calculated on a per metre length and are based on a maximum diameter and pipe wall thickness.

Puriton® mains pipe

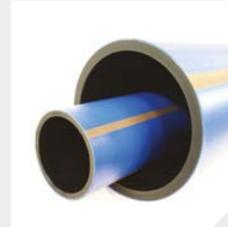


Available in diameters 90 to 180 mm in SDR 11 and 17, our Puriton® mains pipe is manufactured with a black PE100 core, an aluminium barrier layer and a dark blue PE100 outer layer with brown stripes. A wide range pipes of pipe diameters are manufactured in lengths to suit the design requirements of your project.

Nominal diameter mm	Materials	SDR	Pressure rating bar	Core pipe external diameter mm	Core pipe wall thickness mm	Internal diameter mm	Overall external diameter mm	Pipe weight Kg/m	Pipe length m	Product code
90	PE100/Al	11	16	90.0 - 90.6	8.2 - 9.2	71.6 - 74.2	92.2 - 93.8	2.8	6	XQ0125
									12	XQ0126
									50	XQ0128
									100	XQ0129
90	PE100/Al	17	10	90.0 - 90.6	5.4 - 6.1	77.8 - 79.8	92.2 - 93.8	2.1	6	XQ0143
									12	XQ0145
									50	XQ0146
									100	XQ0147
110	PE100/Al	11	16	110.0 - 110.7	10.0 - 11.1	87.8 - 90.7	112.2 - 113.9	3.9	6	XQ0233
									12	XQ0235
									50	XQ0236
									100	XQ0237
110	PE100/Al	17	10	110.0 - 110.7	6.6 - 7.4	95.2 - 97.5	112.2 - 113.9	2.9	6	XQ0251
									12	XQ0253
									50	XQ0254
									100	XQ0255
125	PE100/Al	11	16	125.0 - 125.8	11.4 - 12.7	99.6 - 103.0	127.2 - 129.0	5.0	6	XQ0287
									12	XQ0289
									50	XQ0290
									100	XQ0291

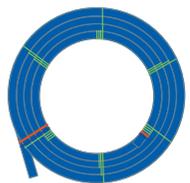
Nominal diameter mm	Materials	SDR	Pressure rating bar	Core pipe external diameter mm	Core pipe wall thickness mm	Internal diameter mm	Overall external diameter mm	Pipe weight Kg/m	Pipe length m	Product code
125	PE100/Al	17	10	125.0 - 125.8	7.4 - 8.3	108.4 - 111.0	127.2 - 129.0	3.6	6	XQ0305
									12	XQ0307
									50	XQ0308
									100	XQ0309
160	PE100/Al	11	16	160.0 - 161.0	14.6 - 16.2	127.6 - 131.8	162.2 - 164.2	8.0	6	XQ0458
									12	XQ0460
									50	XQ0461
									100	XQ0462
160	PE100/Al	17	10	160.0 - 161.0	9.5 - 10.6	138.8 - 142.0	162.2 - 164.2	5.7	6	XQ0476
									12	XQ0478
									50	XQ0479
									100	XQ0480
180	PE100/Al	11	16	180.0 - 181.1	16.4 - 18.2	143.6 - 148.3	182.2 - 184.3	9.9	6	XQ0530
									12	XQ0532
									50	XQ0534
									100	XQ0535
180	PE100/Al	17	10	180.0 - 181.1	10.7 - 11.9	156.2 - 159.7	182.2 - 184.3	7.1	6	XQ0550
									12	XQ0552
									50	XQ0554
									100	XQ0555

Puriton® mains pipe



To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.

Puriton®
mains
pipe coil
dimensions



Coiled pipes are supplied safely secured with pipe banding for ease of transportation and loading into suitable coil trailers, ready for safe dispensing on the site of works. Please release the pipe from the coils using industry best practice safety procedures

Pipe weights are for lifting and handling purposes. They are calculated on a per metre length and are based on a maximum diameter and pipe wall thickness.

Nominal diameter mm	SDR	Pressure rating bar	Coil length m	Coil inner diameter mm	Coil outer diameter mm	Coil width mm	Coil banding sequence	Coil weight Kg
90	11	16	50	1800	2220	320	●	137.9
	11	16	100	1800	2440	410	●	275.7
90	17	10	50	2500	2930	320	●	102.7
	17	10	100	2500	3000	410	●	205.4
110	11	16	50	2500	3000	400	●	197.1
	11	16	100	2500	3200	500	●	394.1
110	17	10	50	2500	3000	400	●	145.7
	17	10	100	2500	3200	500	●	291.4
125	11	16	50	2500	3000	450	●	251.0
	11	16	100	2500	3200	600	●	502.0
125	17	10	50	2500	3000	450	●	181.6
	17	10	100	2500	3200	600	●	363.1
160	11	16	50	3000	3590	530	●	397.6
	11	16	100	3000	3850	700	●	795.2
160	17	10	50	3000	3590	530	●	284.4
	17	10	100	3000	3850	700	●	568.8
180	11	16	50	3000	3800	630	●	496.3
	11	16	100	3000	4000	800	●	992.6
180	17	10	50	3000	3800	630	●	353.0
	17	10	100	3000	4000	800	●	706.0

**PERFECT
FOR NO-DIG
INSTALLATION**



MECHANICAL FITTINGS FOR PURITON® SERVICE PIPE

Fast and effective pipeline connection.

Quick and easy to install, our range of Puriton® mechanical fittings for service pipes are manufactured from polypropylene and supplied with integral inserts, grip rings and O-ring seals for maximum contamination protection.

The joint is easy to make with no requirement for pipe surface preparation and no need to post-wrap the joint after installation.

To validate the permeation resistance of the Puriton® system components, tests have been undertaken on a representative range of fittings, in accordance with the requirements of BS 8588, giving you confidence of a full barrier pipe and fitting system.



Features and Benefits

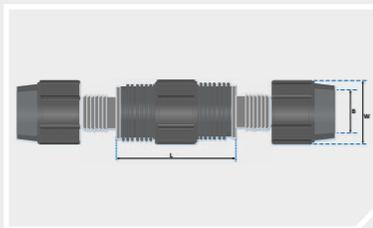
- Specially designed fittings for Puriton® service pipe
- Manufactured from tough and durable polypropylene
- Simple installation process
- Captive O-rings for leak free joints
- No pipe preparation required
- No requirement for wrapping completed joints
- Extensive product range
- Adapters for transition to standard BSP thread sizes

Approvals

- WRAS approved product (Approval number 1702333)
- Our Puriton® plastic mechanical fittings are a jointing method specified in BS8588 certificate KM672956

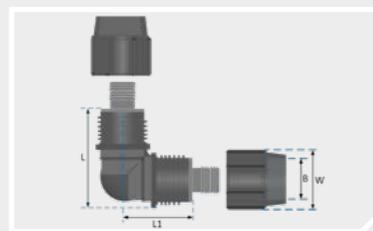


Couplers



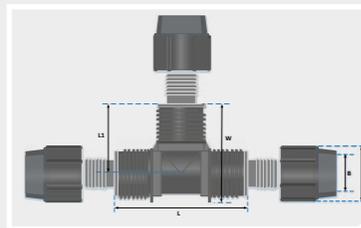
Diameter mm	B mm	W mm	L mm	Weight Kg	Product code
25	28.0	53.0	85.0	0.12	XR5244
32	36	63.0	96.0	0.20	XR5245
63	67.0	112.0	140.0	1.00	XR5251

90° elbows



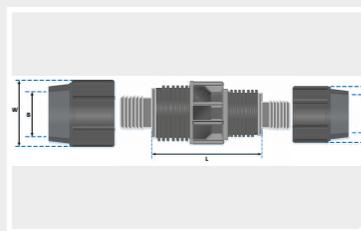
Diameter mm	B mm	W mm	L mm	L1 mm	Weight Kg	Product code
25	28.0	53.0	84.0	59.0	0.13	XR5249
32	36	63.0	96.0	69.0	0.21	XR5250
63	67.0	112.0	162.0	106.0	1.10	XR5252

Equal tees



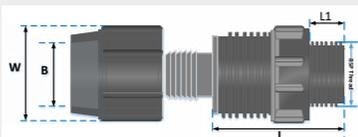
Diameter mm	B mm	W mm	L mm	L1 mm	H mm	Weight Kg	Product code
25	28.0	84.0	116.0	57.0	53.0	0.17	XR5247
32	36	100.0	137.0	69.0	63.0	0.27	XR5248
63	67.0	158.0	204.0	102.0	112.0	1.40	XR5253

Reducers



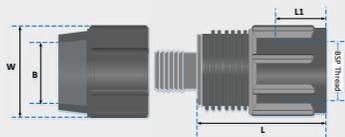
Diameter mm	B mm	W mm	L mm	Weight Kg	Product code
32 x 25	36 x 28.0	63.0 x 53.0	89.0	0.12	XR5246
63 x 25	67.0 x 28.0	112.0 x 53.0	125.0	0.19	XR5257
63 x 32	67.0 x 35.8	112.0 x 63.0	128.0	0.90	XR5254

Male adaptors



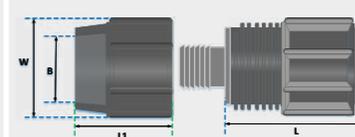
Diameter mm	B mm	W mm	L mm	L1 mm	Weight Kg	Product code
25 x ¾"	28.0	53.0	75.0	18.0	0.8	XR5235
32 x ¾"	36	63.0	81.0	18.0	0.14	XR5236
32 x 1"	36	63.0	83.0	20.0	0.14	XR5237
63 x 1½"	67.0	112.0	109.0	21.0	0.50	XR5258
63 x 2"	67.0	112.0	122.0	27.0	0.50	XR5259

Female adaptors



Diameter mm	B mm	W mm	L mm	L1 mm	Weight Kg	Product code
25 x ¾"	28.0	53.0	67.5	12.0	0.07	XR5240
32 x ¾"	35.8	63.0	70.0	19.0	0.13	XR5241
32 x 1"	35.8	63.0	65.0	14.0	0.13	XR5242
63 x 2"	67.0	112.0	103.0	30.0	0.45	XR5260

Diameter mm	B mm	W mm	L mm	L1 mm	Weight Kg	Product code
25	28.0	53.0	87.0	46.0	0.08	XR5261
32	35.0	63.0	98.0	51.0	0.12	XR5262



End caps

Diameter mm	Product code
25-32	XR4998
63	XR4999



C ring wrenches

To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.

REDMAN™ FITTINGS FOR PURITON® MAINS PIPE

The innovative jointing solution for Puriton® barrier pipe

Radius Systems' Redman™ fittings are a unique jointing solution to quickly and easily connect our Puriton® barrier pipe to deliver complete protection to drinking water when installed in brownfield sites. Simple to install with little pipe preparation, the Redman™ joint can be made in all weather conditions, even with water in the pipeline.

Available in diameters 63 to 180mm, our Redman™ fittings offer a robust, leak-free jointing solution. The joint is made by simply pressurising the outer shell of the fitting using a dedicated hydraulic pump; and once made, the Redman™ fitting provides a 'fit and forget', end-load-bearing and corrosion resistant joining solution.



Features and Benefits

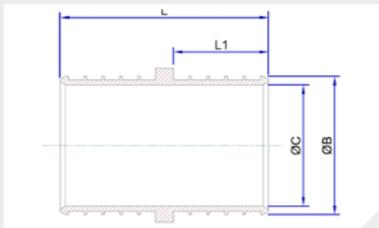
- Quick and easy to install
- Simple site-tolerant manual hydraulic pump for pressurisation
- No nuts, bolts or rubber seals
- A fit-and-forget jointing system
- Minimal pipe preparation required for jointing
- Ideal for pipe repair - can be installed in wet and submerged conditions
- End-load bearing jointing system
- Excellent chemical resistance
- Coated for increased corrosion protection
- Protects drinking / potable water in brownfield sites
- Biodegradable hydraulic oil used for joint pressurisation
- Rilsan® coated insert for the safe conveyance of potable water
- In house quality control pressure test carried out on all outer shells

Approvals

- WRAS approved product (Approval Number 1811317)
- KIWA UK approved product in compliance with UK Water Supply Regulations (certificate number 1811712)
- WRAS approved materials in contact with drinking water (Approval Number 1910523)
- Our Redman™ fittings are a jointing method specified in BS8588 certificate KM672956

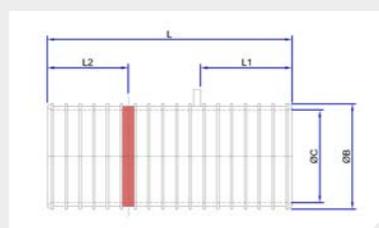


Couplers



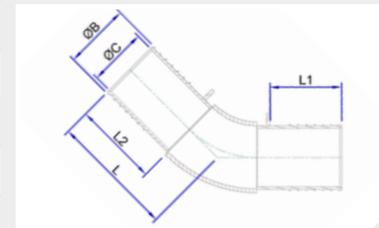
Nominal diameter mm	SDR	Insert dimensions mm				Weight kg	Product code
		L	ØB	ØC	L1		
63	11	82	50	43	36	1.9	RE0001
90	11	116	70	61	53	3.9	RE0002
110	11	141	86	74	60	6.6	RE0003
125	11	160	98	86	70	8.1	RE0004
180	11	210	142	125	95	17.4	RE0008
90	17	116	76	67	53	3.9	RE0009
110	17	141	94	81	60	6.6	RE0010
125	17	160	107	95	70	8.2	RE0005
160	17	180	137	122	80	12.4	RE0007
180	17	210	155	137	95	17.6	RE0047

Repair couplers



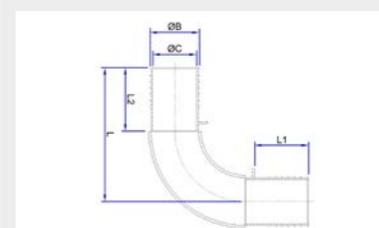
Nominal diameter mm	SDR	Insert dimensions mm					Weight kg	Product code
		L	ØB	ØC	L1	L2		
63	11	126	50	43	37	40	2.6	RE0065
90	11	178	70	61	56	59	4.1	RE0064
110	11	203	86	74	65	67	6.6	RE0066
90	17	178	76	67	56	59	4.2	RE0067
110	17	203	94	81	65	67	6.7	RE0069
125	17	236	107	95	75	78	8.3	RE0071
160	17	269	137	122	82	85	13.6	RE0078
180	17	319	155	137	107	110	18.2	RE0080

Nominal diameter mm	SDR	Insert dimensions mm					Weight kg	Product code
		L	ØB	ØC	L1	L2		
63	11	143	50	43	94	115	3.9	RE0032
90	11	169	70	61	103	124	6.6	RE0033
110	11	189	86	74	117	138	11.3	RE0035
90	17	169	76	67	103	124	6.7	RE0034
110	17	189	94	81	117	138	11.4	RE0036
125	17	202	107	95	117	138	12.7	RE0038
160	17	247	137	122	142	167	21.5	RE0040
180	17	272	155	137	164	192	27.8	RE0045



45° elbows

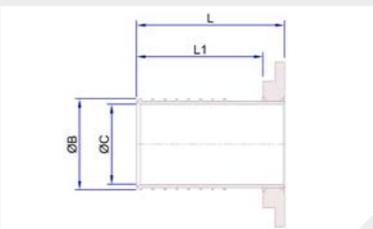
Nominal diameter mm	SDR	Insert dimensions mm					Weight kg	Product code
		L	ØB	ØC	L1	L2		
63	11	172	50	43	94	115	4.2	RE0011
90	11	219	70	61	103	124	7.3	RE0012
110	11	252	86	74	117	138	12.3	RE0014
90	17	219	76	67	103	124	7.4	RE0013
110	17	252	94	81	117	138	12.4	RE0015
125	17	290	107	95	117	138	15.1	RE0017
160	17	357	137	122	142	167	23.6	RE0019
180	17	382	155	137	164	192	30.8	RE0021



90° elbows

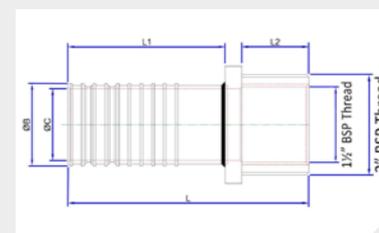
Nominal diameter mm	SDR	Insert dimensions mm				Number of bolt holes	Backing ring OD mm	Flange PCD mm	Weight kg	Product code
		L	ØB	ØC	L1					
63 x DN50	11	115	50	43	97	4	165	125	3.9	RE0073
63 x DN80	11	115	50	43	97	8	200	160	5.1	RE0083
90 x DN80	11	124	70	61	106	8	200	160	6.2	RE0074
110 x DN100	11	138	86	74	120	8	220	180	8.5	RE0076
125 x DN100	11	138	98	86	120	8	220	180	9.1	RE0084
180 x DN150	11	192	142	125	170	8	285	240	18.4	RE0087
90 x DN80	17	124	76	67	106	8	200	160	6.3	RE0075
110 x DN100	17	138	94	81	120	8	220	180	8.5	RE0077
125 x DN100	17	138	107	95	120	8	220	180	9.1	RE0079
160 x DN150	17	167	137	122	145	8	285	240	15.4	RE0081
180 x DN150	17	192	155	137	170	8	285	240	18.4	RE0089

Flange adaptors



- Flange drilling BS EN1092 - NP16. Supplied with galvanised iron backing ring
- Nuts, bolts, washers and gaskets not supplied

Nominal diameter mm	SDR	Insert dimensions mm					Weight kg	Product code
		L	ØB	ØC	L1	L2		
63 x 1 1/2" BSPF / 2" BSPM	11	144	49	43	94	40	2.4	RE0123

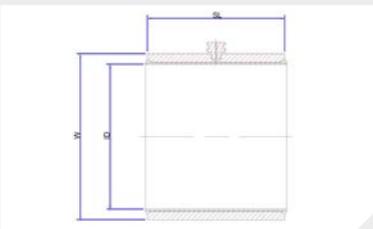


Adaptors

To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.

Fitting type	Outer shell nominal diameter	63 mm	90 mm	110 mm	125 mm	160 mm	180 mm
Elbows Flanges	SL. Overall length	102	111	125	125	150	172
	W. Outside diameter	86	114	135	150	188	209
	ID. Internal diameter	67	95	115	131	166	188
Couplers	SL. Overall length	102	136	161	180	200	230
	W. Outside diameter	86	114	135	150	188	209
	ID. Internal diameter	67	95	115	131	166	188
Repair couplers	SL. Overall length	147	66	75	85	92	117
	W. Outside diameter	86	114	135	150	188	209
	ID. Internal diameter	67	95	115	131	166	188

Outer shell dimensions



- Oil material safety data sheet available on request
- 2 No MSDS data sheets for the oil available on the website
- Outer shells are not sold separately

Product description	Product code
Redman™ hydraulic pump*	XR0211
Biodegradable hydraulic oil for the Redman™ pump - 5 litre container**	XR0212

Redman™ hydraulic pump & oil



*Pump may differ from the one pictured

** Safety data sheets for the pressurisation biodegradable hydraulic oil and the quality control oil are available on our website at www.radius-systems.com.

Quality control oil is used during our in-house integrity pressure test carried out on all Redman™ shells. A residual amount of oil may still remain in the shells when the fittings are packaged and may seep out during installation.

ELECTROFUSION FITTINGS FOR PURITON® MAINS PIPE

High quality fitting solution

Manufactured from high strength PE100 material, our electrofusion fittings have been specifically designed for ease of assembly, maximum heat transfer and optimum efficiency during the construction of a pipeline network.

Ideal for joining our Puriton® pipe, our range of electrofusion fittings requires a 2-pass pipe surface preparation process. This ensures a high quality, leak-free fully welded system, without the need to post-wrap the joint.

To validate the permeation resistance of the Puriton® system components, tests have been undertaken on a representative range of fittings, in accordance with the requirements of BS 8588, giving you confidence of a full barrier pipe and fitting system.



Features and Benefits

- Manufactured from high strength polyethylene (PE100)
- Exposed wire technology for maximum heat transfer during the fusion process
- Simultaneous socket fusion for all fittings
- Barcode technology - for automatic temperature compensating fusion times and fitting traceability
- Manual fusion times on the body of the fitting
- Corrosion resistant
- End-load bearing jointing system
- No additional wrapping required
- Fully welded barrier pipe system
- 2-pass pipe surface preparation for high quality jointing
- 40V electrofusion fitting

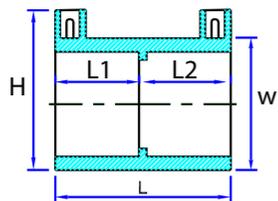
Approvals

- BS EN12201-3 KM597648
- Manufactured from WRAS approved materials
- DVGW GW 335-B2
- MPA Darmstadt K1597 / 12.2014
- IIP Certification of Conformity to EN12201-3
- Our Puriton® electrofusion fittings are a jointing method specified in BS8588 certificate KM672956



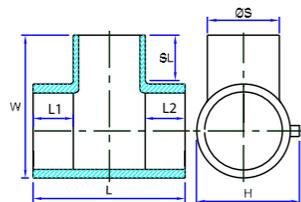
Pipe preparation is mandatory when joining our Puriton® pipe with electrofusion fittings. Please refer to the guidance within this brochure to ensure that the correct equipment is used to carry out the 2-pass pipe surface preparation process.

Couplers



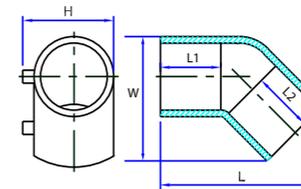
Nominal diameter mm	Dimensions mm					Fitting weight kg	Fuse time sec	Cool time min	Product code
	H	L	L1	L2	W				
90	131	125	62	62	109	0.39	90	10	WA0210
110	152	161	79	79	132	0.72	130	13	WA0211
125	168	157	77	77	151	0.88	120	15	WA0212
160	209	186	92	92	195	1.81	300	22	WA0214
180	229	207	102	102	215	2.25	220	12	WA0215

Equal tees - spigot off-take



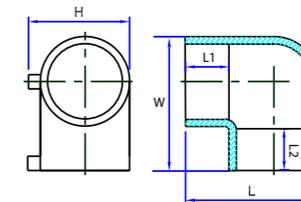
Nom dia mm	Dimensions mm							Fitting weight kg	Fuse time sec	Cool time min	Product code
	H	L	L1	L2	ØS	SL	W				
90	131	200	63	63	90	85	206	0.83	90	9	WA2210
110	155	251	80	80	110	135	282	1.85	180	13	WA2211
125	169	247	73	73	125	95	256	1.89	120	10	WA2212
160	217	342	101	101	160	110	350	4.39	300	21	WA2214
180	240	362	106	106	180	130	371	6.21	280	19	WA2215

Nominal diameter mm	Dimensions mm					Fitting weight kg	Fuse time sec	Cool time min	Product code
	H	L	L1	L2	W				
90	132	222	77	77	176	0.82	80	9	WA3318
110	152	243	80	80	201	1.17	180	14	WA3319
125	175	269	82	82	228	1.84	90	7	WA3320
160	216	326	100	100	280	3.31	300	21	WA3322
180	240	350	101	101	308	4.11	260	16	WA3323



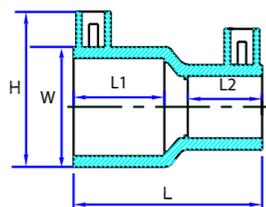
45° elbows

Nominal diameter mm	Dimensions mm					Fitting weight kg	Fuse time sec	Cool time min	Product code
	H	L	L1	L2	W				
90	133	195	77	77	195	0.98	80	9	WA3347
110	154	218	80	80	218	1.39	180	14	WA3348
125	178	246	82	82	246	2.14	90	7	WA3349
160	217	307	100	100	307	3.86	300	21	WA3351
180	240	329	101	101	329	5.16	260	16	WA3352



90° elbows

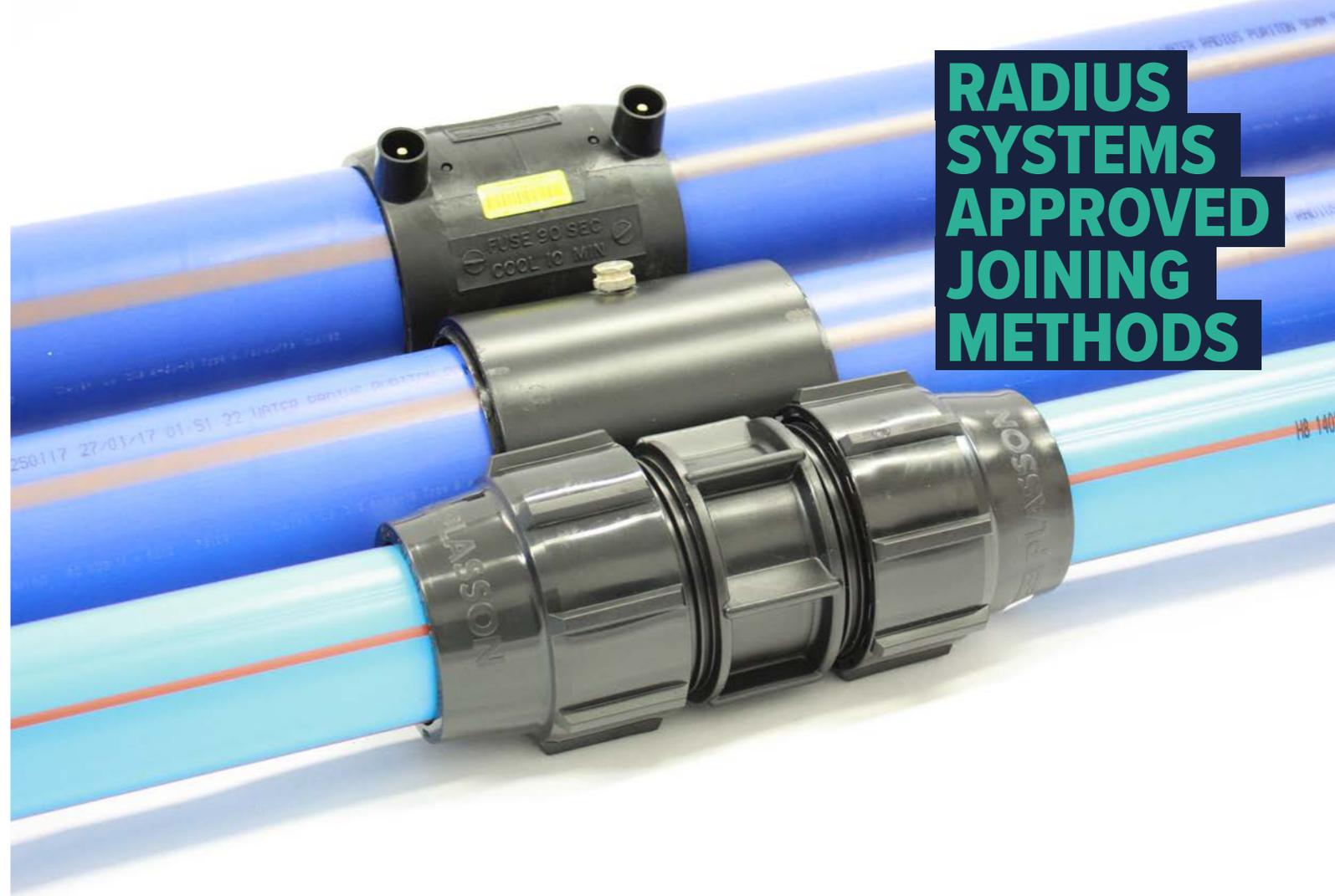
Reducers



Nominal diameter mm	Dimensions mm					Fitting weight kg	Fuse time sec	Cool time min	Product code
	H	L	L1	L2	W				
110 x 90	154	188	86	79	136	0.84	120	10	WA4286
125 x 90	170	180	89	75	155	1.04	120	18	WA4289
125 x 110	177	169	85	76	158	1.38	140	12	WA4291
160 x 110	218	231	96	85	197	1.84	180	18	WA4294
180 x 125	231	200	93	79	216	1.90	280	24	WA4297

To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.

**RADIUS
SYSTEMS
APPROVED
JOINING
METHODS**



FLANGE ADAPTORS FOR PURITON® SERVICE AND MAINS PIPE

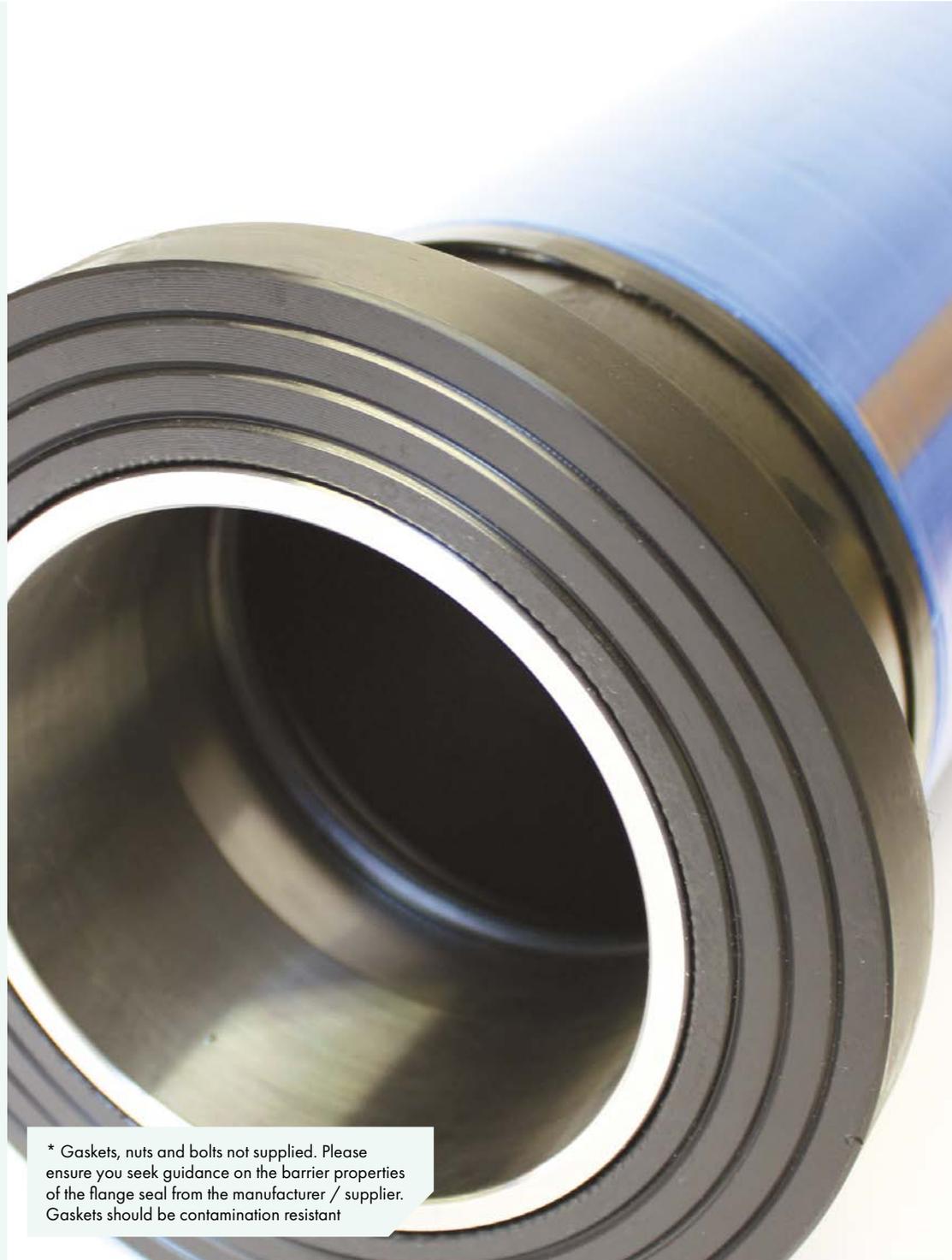
Metallic flange or valve connection for Puriton® barrier pipe

Specifically developed to maintain continuous protection to drinking water within our Puriton® pipeline system, our flange adaptors are designed to connect our Puriton® system to metallic flanged components.

Manufactured from a PE flange, factory-welded to a length of Puriton® barrier pipe, our flange adaptors are supplied with backing rings designed with mating dimensions, in accordance with BS EN1092-NP16, to ensure a trouble-free, direct connection to common flanges. In addition, our backing rings are supplied with Rilsan® coating for maximum corrosion protection*.

Our range of Redman™ flange adaptors offer an alternative solution to our PE flange connections, available in diameters from 63 to 180 mm. Please refer to page 14 for our full range.

* Gaskets, nuts and bolts not supplied. Please ensure you seek guidance on the barrier properties of the flange seal from the manufacturer / supplier. Gaskets should be contamination resistant



Features and Benefits

- Quick and easy connection using electrofusion or butt-fusion jointing
- Unique stainless steel insert to provide barrier properties when connected to metallic components
- Manufactured from Puriton® barrier pipe and stub flange assembly
- Specific Puriton® flange to maintain barrier properties when connecting metallic flange components
- Can be joined using electrofusion, butt fusion or Redman™ jointing
- Flanges sized for suitability of connecting to our range of Puriton pipes: Ensures a continuous PE pipeline to the point of pipeline termination:

Approvals

- Factory pupped in accordance with WIS 4-32-08
- Puriton® pipe component approved to BS8588
- PE flange approved to BS EN-12201/3
- Backing ring mating dimensions to BS EN1092-NP16

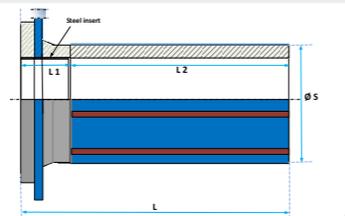
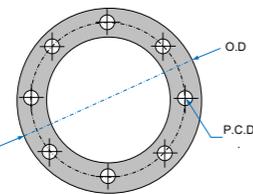


Diameter mm ODxDN	SDR	Flange x backing ring thickness mm	Total length mm	Flange part length mm	Pipe stub length mm	Backing Ring mm		No. of Holes	Bolt torque (Nm)	Weight Kg	Product code
		W	L	L1	L2	PCD	OD				
63 x 80	11	22	410	60	350	160	200	8	30	2.4	XR0290
90 x 80	11	23	395	45	350	160	200	8	30	3.7	XR0291
110 x 100	11	30	425	75	350	180	220	8	40	4.6	XR0310
125 x 100	11	37	425	75	350	180	220	8	40	5.0	XR0311
160 x 150	11	37	440	90	350	240	285	8	70	7.7	XR0312
180 x 150	11	42	530	80	350	240	285	8	70	9.0	XR0313
90 x 80	17	23	395	45	350	160	200	8	30	3.2	XR0300
110 x 100	17	30	425	75	350	180	220	8	40	4.0	XR0303
125 x 100	17	37	425	75	350	180	220	8	40	4.3	XR0301
160 x 150	17	37	440	90	350	240	285	8	70	6.7	XR0304
180 x 150	17	42	530	80	350	240	285	8	70	7.4	XR0302

Flange adaptors



To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.



A FULLY PROTECTIVE BARRIER PIPE SYSTEM

WATER RADIUS PURITON PE100

Type A WATER 160 SDR 11

CONNECTIONS FOR PURITON® SERVICE AND MAINS PIPE

Simple, time-saving connections for Puriton® barrier pipe

Radius Systems offer a dedicated range of ferrule adaptors and gun metal tapping tees, specifically designed to carry out connections to Puriton® barrier pipe.

For a safe mains to service pipe connection, our tapping tees incorporate a unique sleeve, which, as part of the tapping operation, is 'swaged' into the pipe wall, sealing the aluminium barrier layer from contact with the water supply.

To validate the permeation resistance of the Puriton® system components, tests have been undertaken on a representative range of fittings, in accordance with the requirements of BS 8588, giving you confidence of a full barrier pipe and fitting system.



Features and Benefits

- Corrosion resistant gunmetal tapping tees for robust connection to Puriton® barrier pipe
- Suitable for both SDR11 & SDR17 pipes
- Quick and easy bolted installation with O-ring seal at stack base
- Mechanical compression outlet to facilitate service pipe connection
- Easy commissioning process
- Cutter with sleeve technology to maintain protection to drinking water

Approvals

- KIWA UK approved product in compliance with UK Water Supply Regulations (Certificate Number 1707717)
- Our Puriton® gunmetal tapping tees are a jointing method specified in BS8588 certificate KM672956

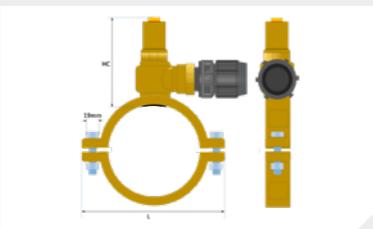


Diameter mm	L mm	W mm	HC mm	SL mm	Weight kg	Product code
63 x 25	126	54	96	33	1.40	XR5111
90 x 25	153	54	96	33	1.41	XR5112
110 x 25	173	54	96	33	1.41	XR5113
125 x 25	188	54	96	33	1.42	XR5114
160 x 25	223	54	96	33	1.42	XR5115
180 x 25	243	54	96	33	1.43	XR5116
63 x 32	126	64	98	33	1.41	XR5117
90 x 32	153	64	98	33	1.42	XR5118
110 x 32	173	64	98	33	1.42	XR5119
125 x 32	188	64	98	33	1.43	XR5120
160 x 32	223	64	98	33	1.43	XR5121
180 x 32	243	64	98	33	1.44	XR5122

Tapping tees



Maximum operating pressure 12.5 bar



To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system. For more information see page 49.

Diameter mm	Product code		
25 x 3/4"	XR5055	<p>Ferrule adaptors</p> <p>For Puriton® service pipe connection to ductile or cast iron water pipelines</p>	
Description	Product code		
3/8" T key for SDR 11	XR0220	<p>Tapping tee T key</p> <p>*T Key product supplied may differ from the one pictured</p>	
3/8" T Key for SDR 17	XR0215		

PRODUCT GUIDANCE



Coil banding for safe handling & dispensing



Minimum recommended personal protection equipment (PPE)

- Always wear the minimum PPE or the recommended PPE as identified by the risk assessment.
- Restrict the work area to essential personnel only.
- Always dispense coils from a coil dispenser.
- Take care when cutting the straps to release the pipe.
- Always ensure the tail ends of the coil are released in a restrained and controlled manner.
- Only use a suitable round-nosed cutting tool to cut the strap to prevent the pipe from being damaged.
- Never cut all of the restraining straps at once. Only cut the number of straps to allow the required pipe length to be dispensed.
- Ensure the tail ends of a part used coil are secured before transporting it from the site.
- Do not transport coiled pipes containing water.

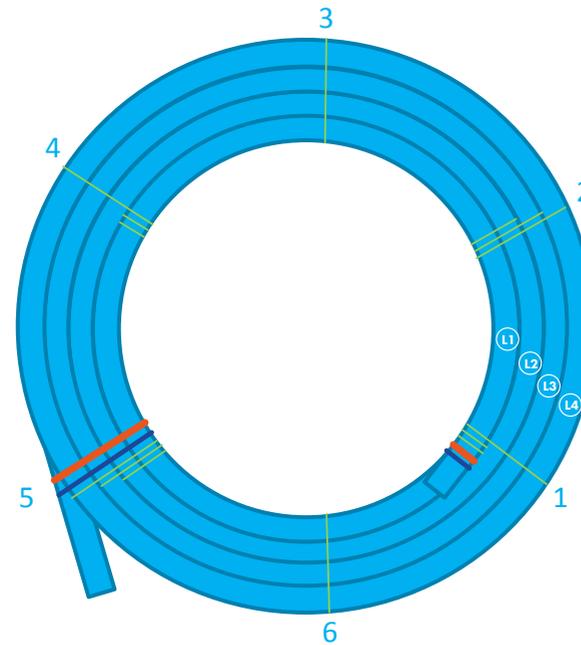
When pipes are packaged into coils, Radius Systems use specialist straps, fitted at different positions around the turns and layers of pipe that form the coils. Coils in diameters 63 to 180 mm contain a considerable amount of stored energy, which could potentially cause injury to personnel, if the coils are not handled and dispensed correctly.

When the coil is ready to be dispensed, the straps are removed in sequence, ensuring that the energy contained in the coil is released in a controlled and safe manner, allowing the safe handling and dispensing of coils (See diagrams opposite).

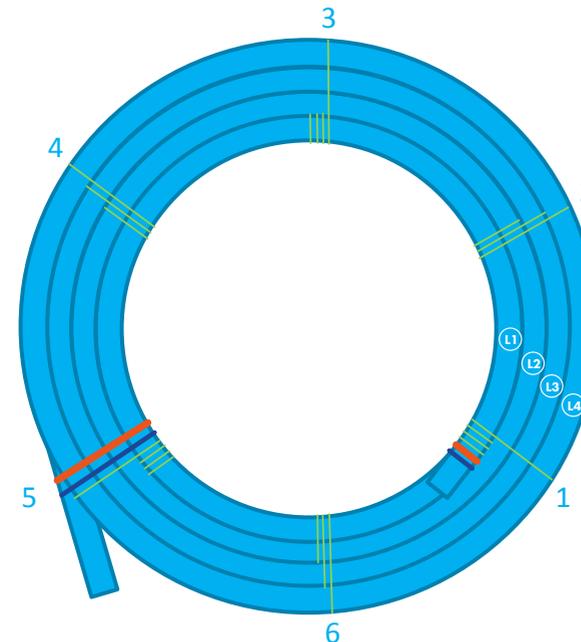
To ensure a safe working environment during the installation of pipe coils, these should only be dispensed from specially designed coil dispensers, supplied by a reputable manufacturer.

Radius Systems recommend that personnel involved in the handling and dispensing of pipe coils are adequately trained for this operation. Courses in the safe and correct handling and dispensing of pipe coils are available from industry bodies.

● For coils with inner diameter ≤ 1.8 m



● For coils with inner diameter ≥ 2.5 m



Welded polyester strap

Steel security band

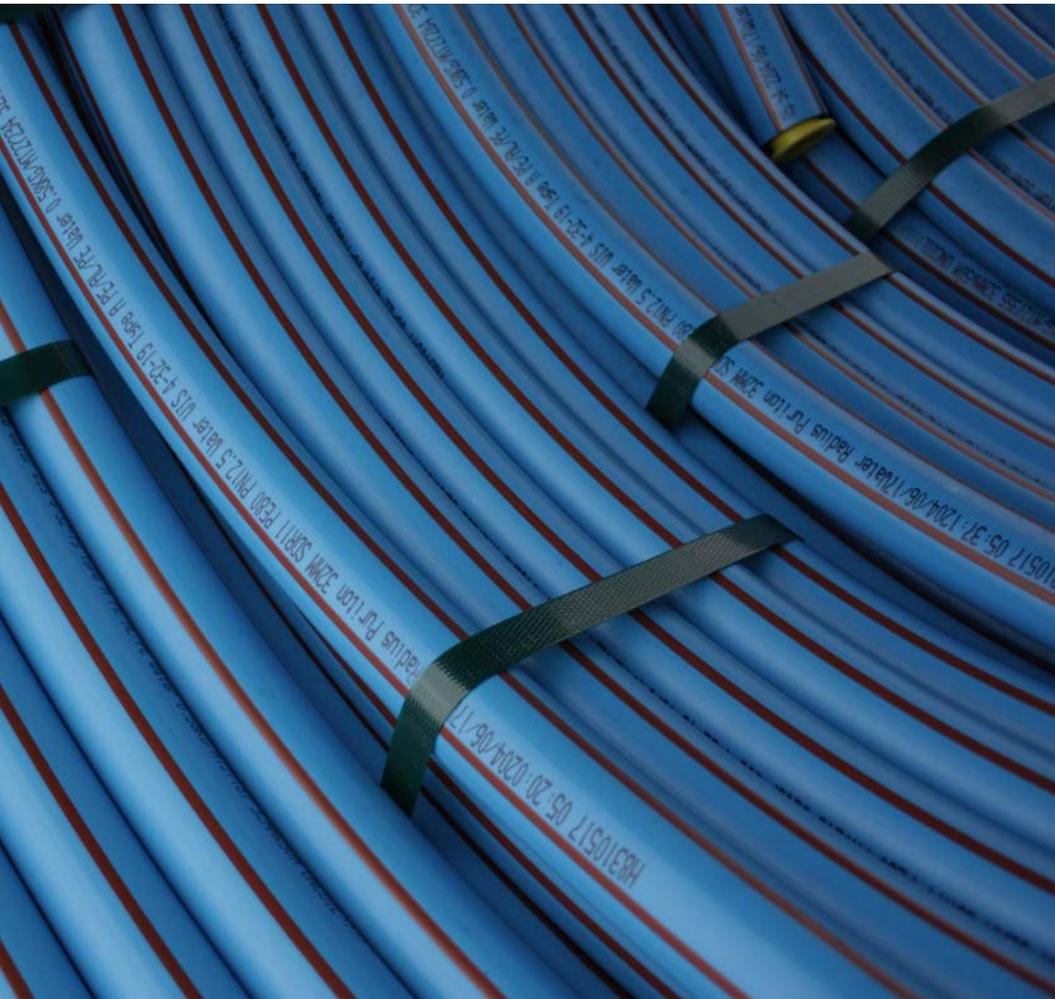
Coil length & caution tape

Illustrations showing the banding positions on a 4 layer coil

Coil banding

Banding position for coils 63 to 180 mm

Coils will consist of a minimum of 2 layers and the number of layers and turns in a coil will depend on its length and may exceed the ones shown below. If the coil consists of only 2 layers, the banding sequence for the 'Final layer' applies to the coil.



• Coil internal diameter ≤ 1.8 m

• Coil internal diameter ≥ 2.5 m

Layer 1 (L1)



Steel security band* and length & caution tape are applied around turns T1 & T2 of layer 1 (L1)
Position 1

Steel security band* and length & caution tape are applied around turns T1 & T2 of layer 1 (L1)
Position 1



Not applicable

Polyester strap around turns T1 & T2 of L1
Positions 1, 3 & 5



Polyester strap around turns T1, T2 & T3 of L1
Positions 1 & 4

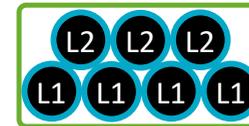
Polyester strap around turns T1, T2 & T3 of L1
Positions 1, 3 & 5



Additional turns on L1 follow the same banding sequence as above

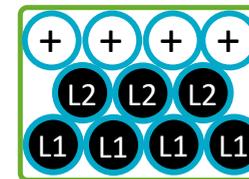
Additional turns on L1 follow the same banding sequence as above

Additional layers



Once layer 2 (L2) is completed Polyester straps are applied around L1 and L2
Positions 2 & 5

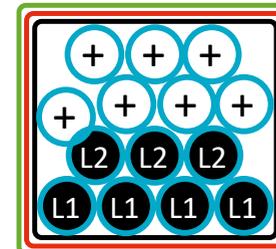
Once layer 2 (L2) is completed Polyester straps are applied around L1 and L2
Positions 2, 4 & 6



Additional layers follow the same banding sequence as above

Additional layers follow the same banding sequence as above

Final layer



Steel security band* and coil length & caution tape are applied to the coil end.
Polyester straps are applied at all positions.

Steel security band* and coil length & caution tape are applied to the coil end.
Polyester straps are applied at all positions.

* Steel security bands are applied to coils 75 mm and above.
Coil length + caution tape applied to 75mm+

Joining safety and best practice



Minimum recommended personal protection equipment (PPE)



Recommended best practice for all joining methods

- PPE MUST be worn during the whole joining process
- Make sure the pipe surface to be joined is clean from dirt or debris and protect the joint from contaminants where possible
- Re-round the pipe to correct the ovality where required
- Use the correct tools as specified
- Remove and dispose of all pipe shavings or scrapings responsibly – as part of good housekeeping

Electrofusion

Before carrying out an electrofusion joint

- The inside and outside of the pipe must be completely dry
- Visually check all electrical components including the generator, electrofusion control box and all cables to ensure that they are in good working order and fit for use. Follow the supplier's recommendations
- Do not use the electrofusion fitting if the electrical terminal connections are damaged

After carrying out an electrofusion joint

- The fitting will remain hot to the touch beyond the prescribed cool time



Butt-fusion

- Only use approved fully automatic butt-fusion equipment and follow Radius Systems Puriton® and Industry Best Guidance when joining pipes
- Ensure that the print-line on the two pipes are in line to minimise pipe misalignment
- To minimise contamination of the joint, the butt-fusion operation should be carried out in a suitable welding shelter

Redman™ Fittings

- A calibrated Redman™ hydraulic pump must be used for pressurisation of the joint
- The pump must be filled with the recommended Biodegradable hydraulic oil for pressurisation
- Operate the pump at a safe distance away from the joint, using the full length of the hose
- Do not touch the fitting or the pipe during the pressurisation and de-pressurisation processes
- Material safety data sheets are available on the Radius Systems website



Shaping a sustainable future

Please keep the environment clean,
by removing all pipe shavings and offcuts
and dispose of them responsibly.

Joining methods guidance

The Puriton® pipe system has been developed for ease of joining with a range of fittings specifically designed to suit the pipe type. Minimal pipe surface preparation is required when using our mechanical or Redman™ fittings. However, pipe surface preparation is mandatory when joining Puriton® pipe using the electrofusion or butt-fusion techniques.

Pipe joining methods and pipe surface preparation requirements

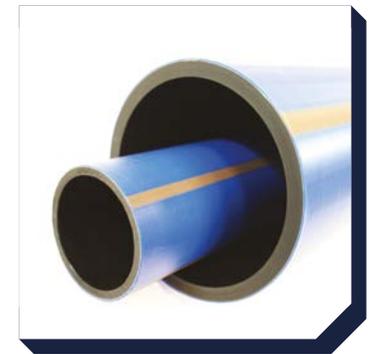
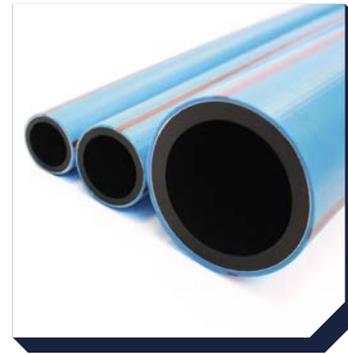
Pipe diameter (mm)		25	32	63	90	110	125	160	180
Mechanical compression fittings	SDR11	●	●	●					
	SDR17								
Redman™ hydraulic fittings	SDR11			●	●	●	●	●	●
	SDR17			●	●	●	●	●	●
Electrofusion	SDR11				●	●	●	●	●
	SDR17				●	●	●	●	●
Butt-fusion	SDR11				●	●	●	●	●
	SDR17				●	●	●	●	●
Gunmetal tapping tee	SDR11			●	●	●	●	●	●
	SDR17			●	●	●	●	●	●

- No pipe surface preparation required. Ensure the pipe outer surface is clean and free from damage
- Pipe surface preparation mandatory

Connecting Puriton® to an existing pipeline or an alternative pipeline components

To ensure that the barrier properties of the system are maintained, only Puriton® fittings should be used to connect Puriton® pipe. The use of non Puriton® fittings may compromise the barrier properties of the Puriton® system.

When connecting Puriton® to an existing pipeline or an alternative pipeline component, it is important to ensure that the barrier properties of the system are maintained*. Radius Systems recommend that connections and terminations to and from the Puriton® system are made using approved Puriton® fittings:



For Puriton® pipes in diameters 25, 32 and 63mm

- Radius Systems recommend the use of their range of BSP threaded adaptors from the Puriton® mechanical fittings range

For Puriton® pipes in diameters 63mm and above

- Radius Systems recommend the use of their range of Puriton® flange adaptors, with the option of either Redman™ flange adaptors or polyethylene stub flange assemblies.

* Please seek guidance on the barrier properties of the existing pipeline or alternative pipeline components.

Jointing overview - pipe surface preparation tools

Rotary pipe surface preparation tools for electrofusion and butt-fusion jointing

Pipe surface preparation is mandatory when joining Puriton® pipe in diameters 90 to 180 mm using the electrofusion or butt-fusion jointing techniques. Dedicated equipment has been designed to locally remove the outer polyethylene and aluminium barrier layers.



Puriton® first pass scraping blade with distinctive profiled head and 'domino' spot for identification. A standard blade is used for the second pass

- In partnership with tooling suppliers, Radius Systems have developed their 2-pass rotary pipe preparation process.
- The 2-pass process fully removes the aluminium and outer PE Layers
- When completed correctly the PE core pipe surface is free from contamination and provides a pristine surface for electrofusion or butt-fusion jointing
- Pipe preparation is minimised to the depth of the electrofusion socket to maximise the barrier properties of the pipe

This equipment is available for sale or hire from the suppliers below:

Caldervale Technology
www.caldertech.co.uk

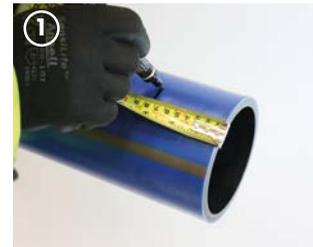
Sunbelt Rentals
www.sunbeltrentals.co.uk

Hy-Ram
www.hyram.com

MCA-Fusion Hire
www.mcafusionhire.co.uk

Jointing overview - electrofusion

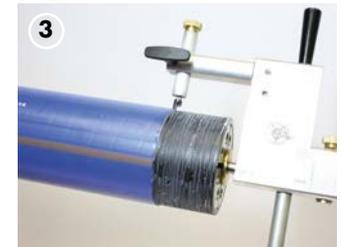
Pipe preparation is mandatory before carrying out an electrofusion joint. A 2-pass pipe surface preparation process is required for jointing Puriton® pipes.



Ensure the pipe surface is clean and free from damage. Re-round if necessary. **Measure and mark the fitting insertion depth on the pipe.**



First pass
Select the correct size tooling and 'domino' spot cutting blade and carry out the first pass of the pipe surface preparation.



Rotate the tool anti-clockwise to remove the outer PE and aluminium layers up to the fitting insertion depth mark.



Second pass
Select the standard pipe preparation blade to carry out the second pass of the pipe surface preparation.



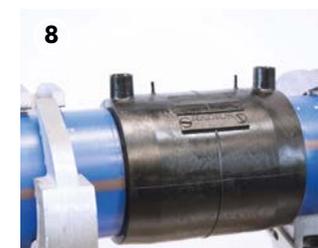
Rotate the tool continuously in an anti-clockwise direction. This will remove a continuous layer of polyethylene swarf. Please keep the environment clean, by removing all pipe shavings and offcuts and dispose of them responsibly.



Place the fitting on the pipe end as shown. To avoid contamination, keep the fitting in its packaging until you are ready to insert the second pipe



Repeat the pipe surface preparation for the second pipe to be joined and fully insert into the fitting.



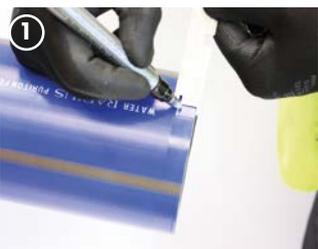
Fit alignment clamps and follow industry best practice to fuse the fitting. There is no requirement to wrap the finished joint.

Important note
The pipe's prepared surface should be equal to the socket insertion depth.

DO NOT scrape beyond the fitting's socket insertion depth.

Jointing overview - butt-fusion

Pipe preparation is mandatory before carrying out a butt-fusion joint. A 2-pass pipe surface preparation process is required for jointing Puriton® pipes.



Ensure the pipe surface is clean and free from damage. Re-round if necessary. Mark the minimum pipe preparation distance using the Puriton® butt-fusion gauge*.



First pass
Select the correct size tooling and 'domino' spot cutting blade and carry out the first pass of the pipe surface preparation.



Rotate the tool anti-clockwise, to remove the outer PE and aluminium layers up to depth mark.



Second pass
Select the standard pipe preparation blade to carry out the second pass of the pipe surface preparation.



Rotate the tool continuously in an anti-clockwise direction. This will remove a continuous layer of polyethylene swarf. Please keep the environment clean, by removing all pipe shavings and offcuts and dispose of them responsibly.



Check the correct pipe surface distance using the Puriton® butt-fusion gauge. Prepare the second pipe following steps 1 to 5.



Follow the water industry standard butt-fusion procedure. Program the butt-fusion unit with the correct pipe parameters.



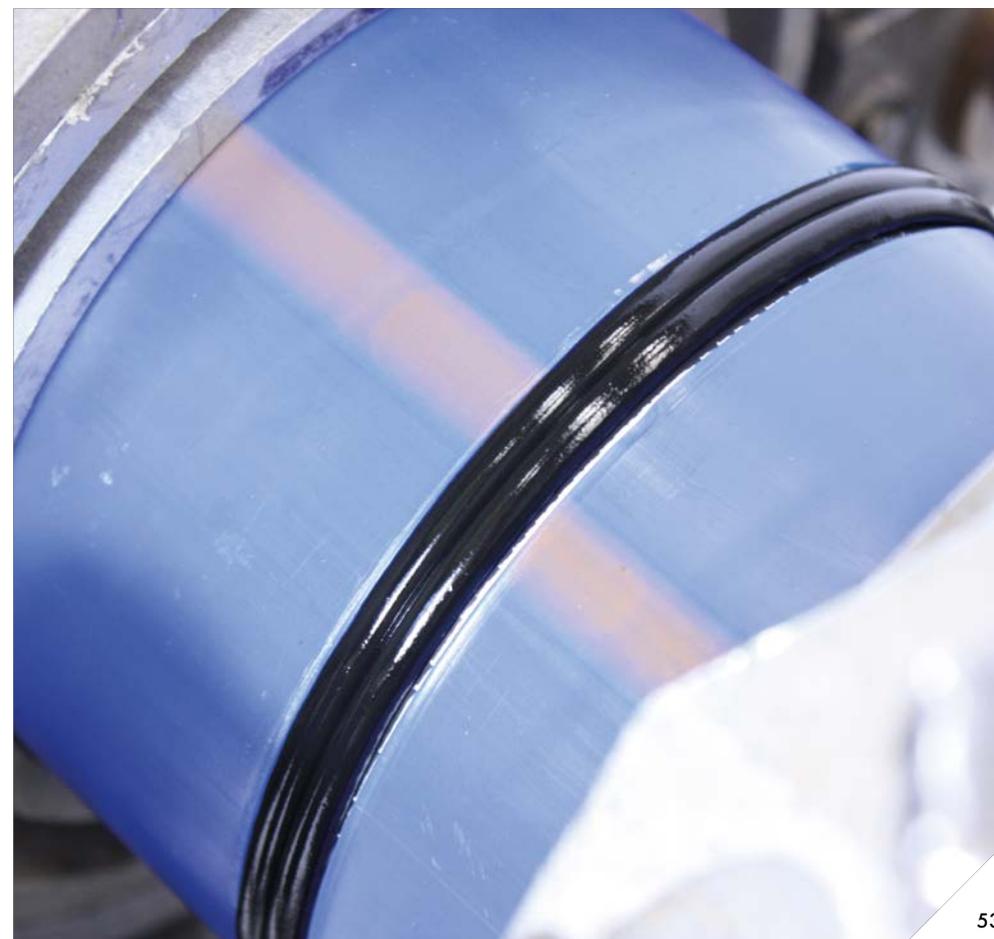
Finished joint. Remove the external bead and perform a bend back test to assess the joint quality. There is no requirement to wrap the finished joint.

*Please contact Radius Systems for more information

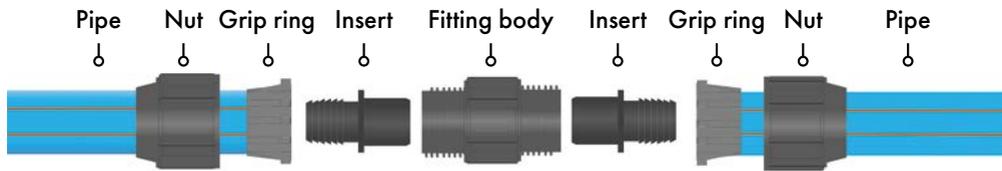
Minimum pipe preparation distance

Butt fusion guidance without Radius Systems pipe preparation gauges, the table below provides measurements to enable correct pipe preparation prior to butt fusion welding.

Nominal pipe O.D. mm	Skin removal tolerance ± 1 mm	Exposed core pipe length after trim ± 1 mm	Final bead width tolerance min - max
90	11	7	8 - 18
110	11	7	9 - 16
125	13	8	9 - 16
160	14	9	9 - 16
180	15	10	10 - 17



Jointing overview - mechanical fittings



1

Ensure the pipe is cut square and is damage free. Re-round if necessary. Slide the nut and grip ring on the pipe.

2

Using a rubber mallet, gently tap the insert fully into the pipe end.

3

Push the pipe with the insert fully into the body of the fitting.

4

Slide the grip ring so it is flush with the pipe insert.

5

Hand tighten the nut onto the body of the fitting.

6

Repeat steps 1 to 5 for the second pipe to be joined.

7

Using C ring wrenches fully tighten the nuts onto the body of the fitting.

8

The joint is complete. Carry out a water industry approved joint pressure test to check for leak-tightness. There is no requirement to wrap the finished joint.

Jointing overview - Redman™ coupler

1

Mark half the insert length on both pipe ends. Slide the outer shell over the pipe and fit the insert inside the pipe up to the centre stop

2

Push the second pipe fully over the insert up to the centre stop

3

Slide the shell across the pipes so it is positioned between the marks. The joint is ready to be pressurised. Follow the joint pressurisation procedure on page 58*.

Jointing overview - Redman™ elbow

1

Mark the shell length on both pipe ends. Slide the shells over the pipe ends

2

Push the pipes up to the stops on the insert

3

Slide the shells up to the insert stops. The joints are ready to be pressurised. Follow the joint pressurisation procedure on page 58*.

*Only use the recommended Redman hydraulic pump when pressurising the Redman fitting. Ensure the pump is calibrated and in good condition. Ensure the pump unit is full with the recommended biodegradable oil before starting the jointing process

Jointing overview - Redman™ stub flange

1

2

Important: when constructing a Redman™ flange adaptor joint, ensure the bolts (with washers) are assembled through the backing ring, as shown in 1, before making the joint. The final position of the Redman™ shell must allow clearance for bolt tightening, as seen in 2.

Joining overview - Redman™ Repair coupler jointing overview for tie-ins and pipe repair



1. Cut out the damaged pipe section and cut a repair section as per the table of dimensions below (Table 1).
2. Lay out the fittings and mark the shell length on all pipe ends

For 63 mm pipeline repair
Only 1 long shell per joint is used. Follow step 1 above and mark a distance of 50 mm on all pipe ends



1. Position the shells over the pipe.
2. Push the long section of the inserts inside the repair section up to the pipe stops.
3. Ensure the shells are positioned up to the pipe ends

For 63 mm pipeline repair
Position the shells on the existing pipes, then follow step 2 above



1. Position the repair section centrally between the 2 existing pipe ends.
2. Slide the 2 inserts across and centralise between the pipes on each side.
3. Ensure the exposed insert section is between the peg and the brown tape.
4. The joints are ready to be pressurised. Follow the joint pressurisation procedure on page 58*.

For 63 mm pipeline repair
Follow steps 1 and 2 above. The profiled inserts must be positioned into the pipe ends. Slide the shell in position centrally between the marks (see coupler jointing instructions).

*Only use the recommended Redman hydraulic pump when pressurising the Redman fitting. Ensure the pump is calibrated and in good condition. Ensure the pump unit is full with the recommended biodegradable oil before starting the jointing process

Table 1 [Pipe repair length] = [Pipe cut-out length] - [X value]

Pipe Diameter	Minimum cut-out length	'X' value
63 mm	300 mm	94 mm
90 mm	420 mm	126 mm
110 mm	460 mm	144 mm
125 mm	540 mm	166 mm
160 mm	620 mm	204 mm
180 mm	740 mm	228 mm

Example - 90 mm pipe

Cut-out length = 500 mm
'X' value = 126 mm
Repair length
= [Cut-out length] - [X value]
= (500 mm - 126 mm)
= 374 mm



One of the benefits of the Puriton repair fittings is their suitability for tie-in joints. Tie-in joints are used when two pipes installed at opposing ends need to be joined at the position where they meet or overlap to form one pipeline.

The Redman™ repair shells should first be positioned over the two pipes to be joined. The insert can then be inserted into one pipe spigot, while the second pipe is cut to length, with some allowance (refer to the insert dimension, L2 in the Redman repair fitting's dimension table) to allow installer to slide the insert into the spigot of the second pipe. Slide and position the repair shells on the pipe ends before carrying out the joint pressurisation.

Jointing overview - Redman™ Joint pressurisation - procedure for all Redman™ fittings

Only use the Redman™ pump when pressurising the Redman™ fitting. To ensure the pump is calibrated and regularly maintained



Pump may differ from the one pictured

Please be aware that Redman™ fittings will contain a residual volume of oil from the manufacturing quality control pressurisation test*.

1. Loosen the thumb wheel on the connector and slide the connector onto the fitting nipple. Re-tighten the thumb wheel. Caution: do not attempt to remove the fitting's pressurisation nipple whilst the fitting is pressurised
2. Operate the pump until the pressure reaches 260 bar. The relief valve will engage to prevent over-pressurisation
3. Allow the pressure to settle for 20 seconds and re-pressurise to 260 bar
4. Repeat the pressurisation for a third time
5. The joint is now complete

6. After 1 minute, de-pressurise the pump by pressing and holding the red button beside the pump handle
7. Ensure that the pressure gauge stabilises at zero before attempting to remove the pump connection from the fitting. Depress the red button to remove the connector removal process
8. Loosen the thumb wheel on the connector and slide it off the fitting's nipple. Be cautious of any oil leakage

* Safety data sheet for quality control oil available on the website

Safety data sheet Biodegradable hydraulic oil for pressurisation available on request

Redman™ fitting pressurisation oil use

Fitting diameter	Number of fittings pressurised per 1 litre of Redman™ oil*
63 mm	15 - 20
90 mm	8 - 10
110 mm	5 - 7
125 mm	3 - 5
160 mm	1 - 2
180 mm	1

* Figures are for guidance only.

Hydraulic pumps and recommended hydraulic oil are available direct from Radius Systems.

For further guidance on jointing our Redman™ fittings range, please contact Radius Systems t: +44 (0) 1773 811112



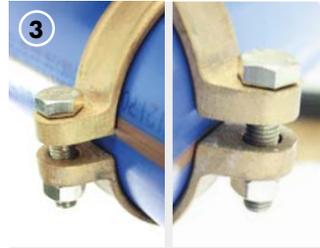
Joining overview - tapping tees



1 Ensure the pipe surface is clean and free from damage and re-round the pipe where required. Place the O-ring seal into the recess of the tapping tee base and place the fitting onto the main.



2 Equally tighten the nuts on both sides of the tapping tee.



3 Ensure the distances between the 'lugs' are identical and parallel on both sides.



4 Carry out the service pipe connection to the tapping tee outlet, following the jointing overview in this brochure.



5 Using C ring wrenches fully tighten the nuts onto the tapping tee outlet.

6 Carry out a water industry approved joint pressure test to check for leak-tightness.



6 Using a 3/8" T key, remove the tapping tee dust cap and seal.



7
1. Tapping the main
Use a hexagonal 3/8" T key and turn in a clockwise direction. The cutter must come to a definite stop.

2. Retracting the cutter
Turn the T key in an anti-clockwise direction. The cutter will come to a definite stop at the top of the tapping tee stack



8
Replace the dust cap and tighten. The connection is complete. Visually check for leak-tightness. There is no requirement to wrap the finished joint.



FAQS

Why are there 2 different polyethylene pipe materials used within the range of Puriton® pipes?

To maintain the current industry convention that PE80 materials are used for small diameter service pipes and PE100 materials are used for mains pipes:

- Puriton® pipes in diameters 25, 32 and 63 mm are manufactured from a PE80 black core and a PE80 light blue outer
- Puriton® pipes in diameters 90 to 180 mm are manufactured from a PE100 black core and a PE100 dark blue outer.

When referring to barrier pipe systems, what does the term 'Type A' refer to?

Radius Systems' Puriton® pipe is a multi-layer composite structure 'Type A' pipe, as defined in British Standard BS 8588 ('Polyethylene pressure pipe with an aluminium layer and associated fittings for potable water supply in contaminated land').

'Type A' Puriton® pipes are multi-layer pipes, where the black PE core is designed to accommodate the internal pressure and where the aluminium layer and the outer PE layer are respectively, the barrier and protection layers. Both outer layers do not contribute to the pipe's overall pressure rating.

The introduction of BS 8588 outlines the material and mechanical performance requirements for barrier pipe systems. Importantly, it also specifies their capability to protect the water quality when installed

as part of a potable water supply system in contaminated ground. One of the key performance tests required by BS 8588 is the pipe system's resistance to the permeation of soil contaminants. Radius Systems' products evaluated in accordance with the permeation requirements, have been successfully tested without the need for external protective wrapping of the joint.

Are the dimensions of Puriton® pipes the same as those of conventional SDR11 and SDR17 pipes?

The dimensions of the Puriton black core pipe meet the requirements of BS EN 12201 (SDR11 & SDR17), both the aluminium and protective outer polyethylene layer are additional protective layers which increase the overall wall thickness and pipe outer diameter

What are the pressure ratings of Puriton® pipes?

Puriton® pipe maximum operating pressures:

- PE80 SDR11 service pipe 25 to 63 mm: 12.5 bar
- PE100 SDR11 mains pipe 90 to 180 mm: 16 bar
- PE100 SDR17 mains pipe 90 to 180 mm: 10 bar

Where can I find detailed jointing instructions for the system?

Jointing instructions in PDF format and videos are available to download from the Radius Systems' website: www.radius-systems.com.

The jointing instructions for the mechanical

fittings, Redman™ fittings and the tapping tees are also included in the fittings' packaging.

How do I connect 90 mm Puriton® pipe to 63 mm Puriton® pipe?

63 mm and 90 mm Puriton® pipes are joined together using 63 x DN80 and 90 x DN80 Redman™ flange adaptors.

When I have made a joint or connection onto Puriton® pipe using Puriton® fittings and following Radius Systems' Puriton® jointing guidance, do I need to wrap the joint with an additional aluminium or protective barrier tape?

Once the joint is made, there is no requirement to wrap the Puriton® joint with additional aluminium or protective barrier tape.

Radius Systems have evaluated their Puriton® jointing system without the use of additional aluminium or protective barrier tape.

Can I use fittings from other manufacturers with Puriton® pipe?

Radius Systems only recommend the use of Puriton® fittings with Puriton® pipe, to ensure that the barrier properties of the Puriton® system are maintained. The use of non Puriton® fittings may compromise the barrier properties of the system.

Follow guidance on page 29 within this brochure

What are the recommended installation techniques for Puriton® pipe?

Puriton® pipe is typically installed using the open-cut technique. However, alternative techniques like 'slip lining' and 'horizontal directional drilling' can be used. Particular care must be taken to ensure that the outer polyethylene layer is not damaged to an extent that the aluminium barrier is exposed. This will compromise the barrier properties of the pipe.

When installing a Puriton® pipe, what should I do if the outer polyethylene layer becomes damaged and the aluminium layer is exposed?

To maintain the integrity of the aluminium layer and the barrier properties of the system, we recommend that the damaged section of the pipe is removed and replaced with undamaged pipe.

Do I need to use a PTFE thread tape for the male threaded connection when using mechanical fittings and the Redman™ 63 x 1½" BSPF/2" BSPM fitting?

To ensure that the system is leak-tight, only WRAS approved PTFE thread tape should be used.

Is the pressure applied to make a Redman™ fitting joint dependent on the fitting size?

No, all Redman™ shells irrespective of size, should be pressurised to 260 bar to make the joint.

How do I know if the correct pressure has been applied to the Redman™ fitting?

All Redman™ pumps are set to 260 bar pressure. The Redman™ pump should be operated in a continuous process until it reaches the required pressure indicated on the gauge. When 260 bar is reached, there is a pressure relief valve that will activate to prevent over pressurisation of the joint. The instructions contained in this brochure detail that the pump process should be carried out 3 times, to ensure the correct pressure has been applied.

When making a Redman™ joint, is there a problem if oil leaks from the connector?

There should be no leakage from the connector during pressurisation. A small oil leak is not problematic as long as the correct joint pressure is achieved.

It is recommended that if the connector is leaking, cease pumping and take the following actions: de-pressurise the outer shell by pressing the pressure release button (red); examine the connector for any problem, report if a problem is found. Re-make the connection if no fault is found.

If the connector continues to leak during pressurisation, report the problem.

What advantages does Redman™ jointing have over other jointing methods?

Redman™ fittings are a robust mechanical alternative to other fittings. There is no

requirement for pipe surface preparation and they are not reliant on a clean and dry environment. Joints can be made if the pipes are submerged in water, which makes the Redman™ fitting suitable for difficult repair situations.

Why is there a requirement to use an insert with Redman™ fittings?

The Redman™ jointing process uses a compression technique to lock the PE pipe in place. The outer shell contracts radially reducing the internal diameter of the shell which compresses the pipe onto the Redman™ fittings insert. The ribs formed on the pipe provide an increased grip which gives the joint its end load resistant strength.

Is it possible to join SDR17 to SDR11 pipe with a Redman™ fitting?

No, Redman™ fittings come with a single insert for a single pipe thickness. They can only be used if the SDR of the pipes to be joined are identical.

When making a Redman™ joint where should I stand relative to the fitting?

The Redman™ jointing process is a high pressure process. Radius Systems recommend that during the fitting pressurisation process, the operator stands at a safe distance away from the pump, using the full length of the hose. Do not hold the fitting or the pressurisation connection during the pressurisation process. Do not remove the pump hose connector from the fitting before the full jointing process is complete and the pump pressure relief valve is depressed. Ensure that the pump pressure

gauge registers zero pressure before the connector is removed from the fitting.

Can I use an alternative fluid to pressurise the Redman™ fitting?

No. Only use Redman™ Biodegradable Hydraulic Oil with Redman™ fittings. MSDS data sheets available on the website

Can I mix and match shell and insert types?

No the outer shell and insert are designed to be used together. Shells from one fitting should not be used with another fitting type.

After the fitting has been pressurised and the joint made, oil weeps from the fitting, causing loss of pressure in the fitting. Is this classed as a failure? – Do I need to top up the fitting's pressure?

No. Once the joint is correctly made, the pressure within the Redman™ fitting will naturally subside, this is normal. There is no requirement to repeatedly pressurise the fitting once the full jointing procedure is complete and the joint is made.

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Radius Systems are a market leader in the innovation and manufacture of plastic pipe systems for the utilities and construction industries. With extensive research and development at the heart of our products and systems, we take care of the entire pipe life cycle - from design and manufacture through to installation, repair and rehabilitation. We strive to improve industry practices, with good health and safety policies at the forefront of our philosophy of 'getting it right first time'. Our continuous customer inspired research and development, combined with successful customer partnerships represent our total dedication to the plastic piping industry.

- **Manufacturing facilities**

With 2 production sites in the UK, we have complete control over quality and the ability to meet our customers' expectations.

- **Innovative approach**

We are leaders in our field with a history of research and new product development. Practicality, durability and adaptability are all high on our agenda to meet our clients' needs.

- **Flexible product and service provision**

Our comprehensive range of services is designed to fit the variable demands of our clients' developments in pipes, fittings, training and support services.

- **Reliability and safety**

With 50 years experience in pipe design and manufacture, our clients know that they can count on us to meet not just their product and service needs, but also their delivery and safety requirements.

- **Great customer service**

We have a dedicated Customer Services team to answer queries from our customers in the UK and overseas. Our service is not just about the delivery of products - contact our team if you have a product or installation enquiry or a post-delivery query.



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Phase 2,3 water material confirmation



Anojan Thangarajah <Anojan.Thangarajah@toureen.co.uk>

To Alhasan Sheriff; Alex Lopez; Dan Friend

Cc Ian McKeown; Shane McDonagh

[Reply](#) [Reply All](#) [Forward](#)

Tue 25/03/2025 12:55



Good afternoon Al,

TCL's Phase 2, 3 water pipe installer CPPUL (Sub-contractor) has confirmed that all the pipes, bents and collars used on site are barrier pipes. Please see the attached related datasheet. Thanks

Kind regards,

Anojan Thangarajah

Project Manager

Toureen Contractors

T

M 07790587042

Toureen Group



**DESIGN & BUILD
GROUNDWORKS & RC FRAMES
DEMOLITION
REMEDICATION
RETAIL & PETROLEUM
EV & HYDROGEN INSTALLATIONS**

APPENDIX 8: DECOMISSIONING OF BOREHOLES

From: [Alex Lopez](#)
To: [Bryan, Charles](#)
Cc: [Colin Palk](#); [James McCarthy](#)
Subject: PU - 81 Planning Condition 38 & Slot-in 34 Decommission Boreholes
Date: 10 November 2023 16:22:47
Attachments: [jms06079907.png](#)

This message originated outside Concert - please treat links with caution!

Hi Charles,

I can confirm that in response to Planning Condition 38 of the original consent and Condition 34 of the Slot-in Consent regarding the decommissioning of bore holes, we ensure that there are currently no boreholes retained within the boundaries of the development. The open boreholes used for long term water monitoring were backfilled prior to commencement of the structural works in that area by our ground works contractor.

Kind Regards

Alex Lopez

Civils/Substructure Project Manager

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APPENDIX 9: EXTENT OF SURVEY AND LIMITATIONS

Extent of Survey and Limitations

Section 1 shall apply to all our appointments. The relevant sections 2 to 8 will only apply where the terms of our appointment state we are providing the corresponding service. For example, where we are appointed to provide a pre-acquisition survey, sections 1 and 2 below will apply to that appointment.

1. Standard Limitations

Inspection and Concealed Parts: Our report will cover all parts of the site made available to us during our visual inspection of the property, which is normally and safely accessible without the use of ladders, and therefore exclude all ceiling, wall and floor voids unless stated within the report. Where inspection of roof areas by use of access hoists or a drone is required this will be agreed with you prior to inspection. The structure and fabric will not be opened up for further investigation. Those parts of the building and engineering services that are concealed, inaccessible or covered will not be inspected and confirmation that such parts are free from defects cannot be provided. Where we feel further investigation is merited, reference will be made in our report. Our services survey is based on a visual inspection and comment on the condition and the quality of the installation relating to normal good standards. We will specifically exclude tests relating to the performance of any heating, air conditioning or ventilation systems, pipe pressure tests, electrical or drainage tests. The omission of such tests might give risks to the fact that certain problems could exist which are not reflected in our report. No inspection or comment is made on the below ground drainage installations or service conduits unless instructed otherwise.

Occupied Buildings: Where buildings are occupied at the time of our inspection access to some areas may be restricted or denied although these areas will be noted in our report. Regardless of occupation, we will not lift fitted carpets, nor disturb any part of the fabric or fittings which are fixed or may cause damage.

Budget Costs: Where budget costs are included in our report, these costs are for guidance purposes only and will not be calculated from measured quantities but will be based on knowledge and experience of similar repair or replacement situations. Costs are inclusive of contractor's preliminaries but exclusive of all contingencies, professional fees and VAT. They will be based on current prices and no allowances will be made for inflation. Access costs for high level works will be included. There will be no allowances for loss or damage as a result of force majeure, terrorism, discovery or removal of any deleterious materials or out of hours working. Estimates are not to be thought of as a substitute for obtaining competitive quotations from reputable contractors. We will not investigate whether the cost of carrying out all necessary works immediately will be

different in cost to carrying them out individually, as and when required.

Specialist Sub-Consultants / Sub-Contractors: Where specialist consultants or contractors are engaged on your behalf. We may make reference to their findings in our report, but this should not be considered as a substitute for reading their report in its entirety, nor can we take responsibility for their conclusion.

Compliance with Legislation: In respect of planning permissions and building regulations consents we will review relevant documentation made available to us and liaise with your lawyers in this regard. If documentation is missing we will record this as a risk in our report, as should your lawyer. Our inspection will involve a review of the state of compliance with Statutory Requirements such as Workplace Regulations, Fire Regulations, Equality Act and other relevant matters. We will provide general comments on these matters in our report. Please note that compliance with these Regulations often requires a more detailed specialist study and / or the preparation of a risk assessment. Such studies and risk assessments are beyond the scope of our report. Where appropriate we will make recommendations for further specialist surveys.

Weather conditions: Our inspection may be restricted by the prevailing weather conditions at the time of our inspection.

Communicable Disease – we shall not be liable in respect of any Claim, circumstance, loss or Defence Cost that arise as a result of, or is connected in any way, directly or indirectly with;

- a) A *Communicable Disease* or the fear or threat (whether actual or perceived) of a *Communicable Disease* regardless of any other cause or event contributing concurrently or in any other sequence thereto;
- b) any action taken to control, prevent, isolate, quarantine, suppress, mitigate or in any way relating to any actual or suspected outbreak of any *Communicable Disease* or the fear or threat (whether actual or perceived) of a *Communicable Disease*;
- c) instructions, orders, requests, restrictions or limitations given by any national or local government, regulatory or statutory body, health authority or organisation relating to any *Communicable Disease*.

A *Communicable Disease* means any disease which can be transmitted by means of any substance, medium or agent from any organism to another organism where:

- i. the substance, medium or agent includes, but is not limited to, a virus, bacterium, parasite or other organism or any variation thereof, whether deemed living or not, and
- ii. the method of transmission, whether direct or indirect, includes but is not limited to, airborne transmission, bodily fluid transmission, transmission from or to any surface or object, solid, liquid or gas or between organisms, and
- iii. the disease, substance or agent can cause or threaten damage to human health or human welfare or can cause or threaten damage to, deterioration of, loss of value of, marketability of or loss of use of property.

Reliance and disclosure: The issued findings or reports following our inspection are for the addressee's use only and no liability will be accepted to any third party. Neither the whole or any part of the report may be published or disclosed to a third party without our prior written approval.

Deleterious and Hazardous Materials

Generally: Our report and survey excludes any investigation into the unsuitable use of deleterious or hazardous materials except in so far as such matters may come to our knowledge in the normal course of inspecting the property and state of repair. We will advise you if we consider there is a significant possibility that deleterious or hazardous materials exist at the property, although we will not undertake or commission specific inspections, laboratory testing or reports unless this possibility has been raised by us as a concern and further instructions received which in any event will be confined to the following: admixtures / aggregates in concrete, asbestos, brick slips, calcium silicate brickwork, high alumina cement, lead, urea formaldehyde foam, woodwool cement slab (used as permanent shuttering), aluminium composite panels, thin stone panels.

Many factors including location, use, design and quantity determine whether a material is deleterious or not and, therefore, the inclusion in the material in the above list does not, of itself, imply that it is deleterious.

As a result of the Grenfell tower fire in 2017, external cladding systems including the materials used in them remain under intense scrutiny. There continues to be wide-ranging discussions in the Construction Industry over the use of combustible cladding materials, particularly (but not limited to) to buildings in excess of 18m in height or over 6 storeys. In our report, we will report on the suspected use of any combustible materials where this can be ascertained from a review of as-built information, or if it is suspected from our inspection. However, it may not be possible to ascertain purely from a visual inspection the presence or not

of combustible materials and we cannot be held liable for not identifying their presence in such circumstances.

Where composite cladding panels may be identified in our report we confirm that no intrusive testing will be undertaken to determine the type of insulation, classification of the insulating core or whether this is approved by the Loss Prevention Certification Board (LPCB) unless instructed otherwise.

Concrete: Where instructed to undertake a concrete investigation, our specialist report will be based on a visual examination of the concrete structure in sample test locations only. Whilst such test locations are chosen to be representative of the structure as a whole, we are not able to confirm that the structure is free from structural defects other than deleterious effect of HAC, chlorides and reinforcement corrosion durability.

Asbestos: Where instructed to undertake a specialist asbestos survey, we cannot guarantee that all asbestos containing materials will be identified, despite the best endeavours of our asbestos sub-consultant. Where instructed, every effort will be made to remove representative samples however it is possible that indiscriminate uses of asbestos may be present between sample locations of otherwise visually similar materials. An asbestos management survey is non-destructive and includes an inspection within accessible ceiling voids, above loose laid removable tiles, inside openable risers and cupboards, within accessible risers and behind removable casings.

Similarly access within lift shafts, live electrical equipment and mechanical plant may be restricted. A Refurbishment and Demolition asbestos survey is destructive and includes an inspection within accessible ceiling voids, above loose laid removable tiles, inside openable risers and cupboards, within accessible risers and behind removable casings. Representative areas of each element of building fabric will be intrusively opened up to inspect for the presence of ACM's behind built-in ducts, voids or similar enclosed or concealed areas within the building fabric. No intrusive work will be undertaken within the structural framework, concrete floors and masonry walls.

Environmental issues: Save where we are commissioned to provide environmental services (in which case the relevant section of this document shall apply), the following applies. We will not carry out nor commission formal enquiries or tests relating to potential soil or ground contamination, or the ground bearing conditions of the site or neighbouring land. We will not carry out any searches with statutory bodies to establish any mining or landfill issues, and associated potential subsidence risk as a result of historic site operations. Whilst we will comment on any potential contamination issues apparent from our survey, our report will not constitute an environmental report. You are advised to procure your own environmental reporting, but we will be happy to arrange audits, reports or tests on your behalf, by specialist consultants, who are to be directly appointed by you, if required. You should ensure that your

solicitors obtain as much information as possible about the prior use of the land. Such information should be revealed to us as soon as possible as it may materially affect our/ or the consultant's advice to you. Such advice may include recommendations for testing or obtaining a warranty.

We have no liability in relation to the presence of low frequency electronic fields, radiation, toxic mould, and the presence of Japanese Knotweed or other invasive plant species as defined in the Wildlife and Countryside Act 1981 or the Environmental Protection Act 1990. We may however note their apparent presence for investigation by others as appropriate.

Mechanical and Electrical Surveys

Generally: Our survey and report is compiled under the brief to visually inspect and comment on the condition and the quality of the installation relating to normal good standards in the building services industry as dictated by CIBSE and IEE's current recommendations and standards without testing or dismantling of the plant. Where appropriate, we have provided an overview of the lift installations, which was carried out by the attending building services consultant.

Budget Costs: Any costs indicated within this report are based on our best assessment of the situation and the work involved at current prices and should not be taken as firm costs for the items of work detailed. To provide more accurate costs an investigation will be required in greater detail for individual items of the plant and systems, and may involve the employment of specialists where appropriate.

This overview provides a description of the lift services and general condition other than inspection of the lift shafts and associated equipment.

There are occasions when the building services will be inspected by a building surveyor rather than a mechanical and electrical consultant and we will advise within the fee quotation. In this case, if you require a survey by a mechanical and electrical consultant, you should confirm this prior to our inspection.

Concealed Parts: We have not inspected parts of the Engineering Services which are encased, covered up, or otherwise made inaccessible in a normal course of construction, alteration, or fitting out. We will not carry out any internal inspection of the plant/systems.

Design Analysis: No definitive calculations have been undertaken to determine the capacity or performance of the plant items, nor have performance tests been carried out on any of the systems or plant items. Design analysis of the systems has been undertaken using generally accepted design criteria both past and present, primarily to establish the principles of design. We have specifically excluded tests relating to the performance or efficiency of any heating, air conditioning, or ventilation systems, pipe pressure tests,

electrical or drainage tests. The omission of such tests might give rise to the fact that certain problems could exist which are not reflected in this report. We would point out that during the course of our building services survey we did not carry out an inspection of the below ground services.

Deleterious & Hazardous Materials: Our report and survey excludes any investigation into structural engineering design, compliance with legislation relating to buildings, or the unsuitable use of high alumina cement or calcium chloride, calcium silicate brickwork, alkali-silicate reaction in concrete, cavity wall tie failure, radon gas seepage, woodwool slab permanent shuttering, asbestos or PCB's or other materials considered as deleterious in construction, except insofar as such matters may come to knowledge in the normal course of inspecting the materials and state of repair.

White Goods & Data: This report does not include an inspection of the white goods, catering and vending equipment, telecommunication, data or wireless systems installed within the property. We are unable to comment, advise or identify items that are reliant on day/date dependent embedded chips.

Rights of Way / Support / Light

Where necessary we will comment on apparent rights of way / support or light which may be visible or suspected albeit our comments will be outline in nature and without any detailed investigations.

2. Pre Acquisition Survey

Compliance with Legislation: Our inspection will involve a general review of the state of compliance with Statutory Requirements such as the Building Regulations, Workplace Regulations, Fire Regulations, Equality Act and other relevant matters applicable within the relevant country. Please note that compliance with these Regulations often requires a more detailed specialist study and/ or the preparation of a risk assessment. Such studies and risk assessments are beyond the scope of our report.

3. Environmental

Desk Based Risk Assessment: The risk assessment is dictated by the finite data on which it is based and is relevant only for the purpose of which the report is commissioned. If additional information or data becomes available which may affect the opinions expressed in our report, we reserve the right to review such information and, if warranted, to modify the risk assessment accordingly. We reserve the right to charge an additional fee for un-anticipated second opinion reviewing of previous reports.

The survey excludes intrusive opening up of the building fabric. Accordingly, an inspection is not undertaken behind built-in ducts, voids or similar enclosed or concealed areas within the structure and fabric.

Compliance with Legislation: The environmental risk assessment will be undertaken with due regard to Contaminated Land Guidance documents (available and relevant at the time of issuing our report) issued by (but not limited to) the Environmental Protection Act Part IIA 1990, Department for Environment, Food and Rural Affairs (DEFRA) and its predecessors, the Environment Agency (and its devolved equivalents), British Standards Institute (BSI), the Royal Institution of Chartered Surveyors (RICS) and the American Society for Testing and Materials (ASTM) Standard E 1527-00. No liability can be accepted for the effects of any future changes to such guidelines and legislation. In the event that guidance / legislation changes it may be necessary for us to update or modify reports.

Content of Report: Our Phase I Environmental Audit will be based on a visual inspection of the site, a review of available historical and environmental setting records, consultations with site representatives, pertinent information provided from the client and regulatory consultations. No samples will be taken as part of this study.

Generic Risk Assessment: The risk assessment is dictated by the finite data on which it is based and is relevant only for the purpose of which the report is commissioned. If additional information or data becomes available which may affect the opinions expressed in our report, we reserve the right to review such information and, if warranted, to modify the risk assessment accordingly. We reserve the right to charge an additional fee for un-anticipated second opinion reviewing of previous reports.

The survey excludes intrusive opening up of the building fabric. Accordingly, an inspection is not undertaken behind built-in ducts, voids or similar enclosed or concealed areas within the structure and fabric. Where necessary we will comment on apparent rights of way / support or light which may be visible or suspected albeit our comments will be outline in nature and without any detailed investigations.

Phase 2 Site Investigation

Content of report: The content and findings of the report will be based on data obtained by employing site assessment methods and techniques, considered appropriate to the site as far as can be interpreted from desk based materials and a visual walkover of the site. Such techniques and methods are subject to limitations and constraints set out in the report. The findings and opinions are relevant at the time of writing, and should not be relied upon at a substantially later date as site conditions can change. For example, seasonal groundwater levels, natural degradation of contaminants etc. No liability is accepted for areas not covered by the investigation.

Risk Assessment: The opinions and findings conveyed via the report will be based on information obtained from a variety of sources as detailed by the report. The information should not be treated as exhaustive but is, in good faith, considered as representative as possible of the site conditions when considering constraints set out by the

report. The risk assessment will be completed in line with current industry practices but is not a guarantee that the site is free of hazardous conditions. The risk assessment is completed in line with the relevant land use agreed for the site and the time of completing the works. Changes to site conditions or land use may require a reassessment.

Unforeseen Contamination: Where Colliers is responsible for directing the number and location of exploratory holes, it shall exercise all the reasonable skill, care and diligence to be expected of a properly qualified and competent member of the Consultant's profession experienced in performing such services, taking into account site conditions, and available knowledge, as well as access, budgetary and scheduling constraints. Subject to having complied with the foregoing: (1) no liability can be accepted for the conditions that have not been revealed by the exploratory hole locations, or those which occur between each location and (2) whilst every effort will be made to interpolate the conditions between exploratory locations, such information is only indicative and liability cannot be accepted for its accuracy. By their nature, it is generally the case that exploratory holes provide a relatively small and localised snapshot of the ground conditions relative to the size of the site.

Buried Services: Whilst reasonable efforts will be taken to avoid buried services, we accept no liability for damage to services which have not been accurately identified in advance of site works.

Flooding: Our commentary is only based on the publicly available mapping available via the EA, NRW or SEPA at the time of writing and we cannot accept any liability where the information is updated following the issue of our report.

4. Dilapidations

Generally: We will assume unless otherwise requested that we are engaged as an advisor to prepare or comment on a schedule or claim which is distinct from an instruction to act as an expert witness. However, in discharging the advisory role it is always necessary for us to take account of considerations relating to expert witnesses as set out in the current Practice Statement and Guidance Note for Surveyors Acting as Expert Witnesses by the Royal Institute of Chartered Surveyors, a copy of which can be provided on request. This states that the primary function, and duty, of an expert witness is to assist the court on matters within their expertise.

Ongoing Advice: Our dilapidations advice aims to provide you with an informed opinion as to the anticipated level of liability/claim. Changes in case law, statute and the passage of time may affect the accuracy of our advice; it is therefore important that our advice is reviewed at regular intervals and, in particular, prior to the expiry of the lease.

Documentation Provided: Our assessments can only be as accurate as the information provided to us; it is therefore

important that the most complete set of documentation possible is provided in order for the best advice to be given. We cannot take any responsibility for distorted findings resulting from deficient, incorrect or incomplete information.

Estimated Settlement: When an estimate of settlement is provided at any time prior to concluding the claim, this is for guidance only and should never be taken as a definitive evaluation of the likely damages which may fall due.

Final Settlement: Settlements can be limited by S.18(1) of the Landlord & Tenant Act 1927 and the common law principles to the diminution in the value of the Landlord's reversion, regardless of the cost of works and other heads of claim. We will advise you if we consider that a formal valuation (commonly known as a Section 18 valuation) is necessary.

A claim based on the cost of the works may also be capped or even extinguished if it can be shown that the premises are to be altered or demolished after the expiry of the lease. Landlords should advise us if this is the case. Again, we will advise you if we consider that a Section 18 valuation is necessary. Where no formal release is provided by a Landlord we reserve the right to charge on a time expended basis.

Solicitors: In some cases it may be necessary to liaise with a solicitor on matters of strict legal interpretation. In the event of litigation, our communications with surveyors and other experts, including solicitors, may not be privileged.

Your legal advisors need to advise you on compliance with break notices as we only look at dilapidation liabilities under a lease and there may be other liabilities which impact on the break such as vacant possession, payment of rent, etc. Your legal advisors will be responsible for service of any schedules / notices. If you do not use a lawyer then we cannot accept any liability for incorrect service of schedules / notices.

Your legal advisors will be responsible for agreeing the wording of any forms of release used to record agreement on a financial settlement. If you do not use a lawyer then we cannot accept any liability for incorrect wording in helping to conclude matters between parties.

Heads of Claim

Loss of Rent, Rates, Service Charge, etc.: For the purposes of the calculation of a loss of rent (and where applicable, service charge) claim we will provide an assessment of the period that it is likely to take to procure and complete works identified in the Schedule of Dilapidations. However, the applicability of such a claim will depend on market conditions prevailing at the end of the term and require initial input from your appointed letting agents shortly before lease expiry. Unless specifically agreed or stated within the lease, we will not include finance charges, loss of rates and other similar items in our assessments/claims.

Fees: We will include an allowance for legal fees only for the service of Schedules of Dilapidations in our assessments and claims. Surveyors' fees for the preparation and service of schedules will be included but other professionals' fees (such as building services or structural engineers) will not be included unless otherwise stated. All professional fees included will be estimates.

VAT: VAT may form part of a claim and is subject to the VAT status of the property and parties to the lease. The total claim (of which VAT may form part) is a damages payment that Customs and Excise do not deem a taxable supply. Invoices are not usually issued by landlords to tenants for this reason.

Contamination: We will include in our assessment any obvious contamination issues but we will not undertake any tests or investigation of current or previous uses of the site or adjoining land. We will advise you where we consider a need for specialist advice.

5. Energy Performance Certificates

Generally: This work is usually undertaken in three stages being:

1. Site inspection and research;
2. Data inputting and Calculating the Certificate; and
3. Lodging the certificate and reporting to the client.

We will initially determine the level of complexity of the building from the information provided by the client. Should it be determined during the site inspection that the complexity of the building and/or its services makes the standard assessment methodology inappropriate, this will be drawn to the attention of the client and a revised proposal will be submitted for sub-consulting the assessment to enable Dynamic Simulation Modelling (DSM) to be carried out.

Fees: Our fee quote is based on the assumption that the building can be inspected in one visit with unrestricted access to all areas. If we find that access is restricted to some parts of the building and that a return visit is required we will invoice all additional time on a time charge basis.

Where keys are held remotely from the property we will charge an additional fee on a time charge basis to cover our time in collecting and returning the keys. Where an instruction is made on the basis that plans are available the following applies:

- Plans must be to scale.
- Plans must accurately show the current layout of the premises.
- Plans must be provided at the time of appointment or before inspection.

Where plans are not immediately available and we are expected to recover them from other parties an additional charge may be made to cover our time in this regard.

Site Inspection: The nature of a building's construction will not always be obvious from a visual inspection alone. Where sectional details are not available we will use the inference values provided in iSBEM. Where these are poor and possibly have an effect on the banding/rating of the property we may advise the client to consider opening up elements of the property so that more accurate construction details can be obtained. Opening up works will fall outside the initial fee agreement and we reserve the right to invoice our time for this separately.

Lifespan/Carbon Checker: We will generate the EPCs using Lifespan. This system is a software application tool that provides an interface to enable the user to enter data into DCLG's SBEM (Simplified Building Energy Model). SBEM is at the heart of all government approved interface tools and whilst it has been passed for use, and Lifespan is an accredited software tool, there are inherent built in faults with the software that may affect the final rating. Although some tests have been undertaken to establish the accuracy of this software. We accept no responsibility for the software's accuracy.

Reporting and Advice: The EPC generates a Recommendations Report within which advice is given for the building owner to upgrade the building's efficiency performance. The advice is generic and in some cases is not considered to be relevant. Where we consider the advice to be poor, we will tailor the report to more accurately reflect the requirements of the building. The recommendations given in the report are not mandatory, so where a building owner implements improvement works based on the recommendations we would expect them to discuss the proposals in more detail before any expense is incurred.

Documentation Provided: We cannot take responsibility for the accuracy of any information provided by others for the purpose of carrying out the assessments. Similarly we cannot take responsibility where information to be provided is missing or its provision is delayed and that information conflicts with our assessment. Where such documents become available we recommend that copies are forwarded to us immediately in order that any advice provided can be refined.

6. Bank or Fund Monitoring

Our report is based upon discussions with the borrower (being the person to whom our client, a funder, is lending money), as well as reports, records and data provided by the borrower or on their behalf ("Information"). We will use our professional judgement and experience to evaluate and interrogate the Information, however we are not auditing the Information and we cannot guarantee that it is accurate and complete in all respects. It is the borrower's duty to ensure that the Information is accurate and complete, and

we shall not be liable for any errors or omissions in the Information, or for losses arising as a result of such errors or omissions.

7. Rights of Light and Daylight

Where necessary we will comment on apparent rights of way / support or light which may be visible or suspected albeit our comments will be outline in nature and without any detailed investigations.

Generally

This work is usually undertaken in three stages being:

1. Site inspection and research;
2. Modelling and testing; and
3. Reporting and provision of advice.

Analyses are often reliant on third party advice and particularly in relation to initial RoL and DSO studies based on a number of assumptions relating to the surrounding buildings. The RoL work also involves legal and valuation matters on which we may offer opinions but should be verified by reference to appropriate specialist consultants.

Site Inspection

Whilst we will endeavour to undertake a thorough review of the buildings surrounding the site, where certain parts are not readily visible from vantage points available to us, we cannot guarantee that all relevant receptors will be included. Assumptions may be made as to the presence and position of windows situated on elevations of existing buildings, which cannot be readily seen. To prevent alarm and respect privacy of neighbouring occupiers, close inspection of windows in neighbouring buildings may not be possible and this may affect the quality and accuracy of information taken on site. Assumptions will be made as to room size, use and layout where necessary. No topographical survey of site levels or elevation detailing will be undertaken. Should precise dimensions and window locations be required, we would recommend that separate topographical land, building and elevation surveys are instructed and provided in AutoCAD format.

Research

Limited research will be undertaken where necessary to determine:

1. Age of buildings;
2. Historic site development;
3. Legal constraints; and
4. Planning policies.

Where necessary to assist research, historic maps, aerial photographs and Land Registry title documents may be purchased and charged as disbursements.

Modelling & Testing

3D Modelling is usually undertaken using AutoCAD software. Unless provided with accurate topographical survey information relating to levels and elevation detailing, approximate dimensions will be used from limited measurements taken on site, available OS data and 'brick counting' from photographs. Where necessary we may buy third party photogrammetry models as a starting point for creating our models. The cost of same will be

charged as a disbursement. Tests are usually undertaken using software licensed to us by Waterslade/MBS Survey Software. Although some tests have been undertaken to establish the accuracy of this software we take no responsibility for the software's accuracy.

Reporting and Advice

Reports and advice will usually be based on a number of assumptions and with reliance on third party information. Where assumptions have been made, these will usually be stated and recommendations will be given for further work required. Where specialist legal, planning and/or valuation advice is required, recommendations for same will be highlighted within our report or separately.

Third Party Advice and Products

Our processes include the use of third party advice and products such as:

1. Ordinance Survey data;
2. Title documents;
3. Baseline models;
4. Topographic surveys;
5. Aerial photography;
6. Architects' drawings; and
7. Local authority archive information.

Whilst we will review this information for accuracy insofar as required for our assessments, we do not accept any liability for inaccuracies in third party information or loss or damage arising from some.

Valuation of Damages

Where appropriate we will provide book value damages estimates for right to light infringements.

Valuations Will Be

- Based on assumed rents and yields;
- Formulated in accordance with standard industry practice;
- Given at current prices; no adjustments will be made for future inflation;
- Quoted as budget estimates only and are not to be thought of as a substitute for obtaining specialist valuation advice;
- Exclusive of both parties' professional fees;
- Exclusive of any taxes that may be applicable i.e. VAT/SDLT.

We Will Not

- Provide valuations based on development gain or profit share method.

8. Party Wall Terms – Building Owner and Adjoining Owner

Surveyors Appointment

References to 'Appointing Owner' and 'Building Owner' are references to you. References to 'Adjoining Owner' relate to the owner/s of the neighbouring property adjacent to your work that is or may be subject to the Act.

To administer the requirements of the Act surveyors need a

written appointment. The appointment must be an individual and cannot be a company. Liability for work undertaken remains solely with us and not the appointed individual under the Act. We will provide a draft letter of appointment which must be completed and returned to confirm the appointment at or before the point at which there is either a deemed or actual dispute.

The letter of appointment must be signed by the Appointing Owner, or an agent with specific authorisation to sign on your behalf.

Once the appointment is confirmed it cannot be retracted or determined except if the surveyor appointed declares themselves incapable of acting in certain circumstances as prescribed by the Act. You should be aware that appointments follow a statutory procedure which requires the appointed surveyor(s) to work within the jurisdiction of the Act by administering its provisions fairly and impartially.

Fees

You are contractually responsible for payment of your surveyor's fee and those of the Adjoining Owner where we advise it is reasonable to do so.

An Award will generally determine that the Building Owner is responsible to pay the fee of both appointed surveyors. However, specific circumstances may mean this is not always the case. For example, fees may be apportioned between Owners if they both benefit from the works.

We reserve the right to charge additional fees in relation to changes in the design or scope of the works that requires addendum Award(s) or new Notice(s).

We reserve the right to charge additional fees in relation to assessing claims for damage and awarding any necessary compensation or making good.

Fees – Specialist Consultants

In some circumstances appointed Surveyors may suggest that specialists such as engineers or solicitors are appointed to assist in matters directly related to the administration of the Act or determination of the dispute.

The contract and responsibility for fees in relation to this appointment will be between the specialist and you. You are also likely to be responsible for the reasonable fees of the Adjoining Owner's Specialist Consultants' fees.

Boundary Determination

Whether a wall is built up to, or astride the boundary is not always easy to determine. Sometimes this can only be established by reviewing title deeds and with the assistance of a solicitor. Our advice without the benefit of title information is very much outline and will be based on certain assumptions.

Timescales

Whilst we will liaise with the design team and contractor to procure information required for Notices and Awards, it is outside our control if information from the design team and/or contractor is either incorrect in terms of design or

level of detail, or is not provided to us in good time.

Information for the Award

The design team and appointed contractor are responsible to provide the information requested to be included within the Award. Where possible we will give an indication of the likely information that will be required. We are not responsible for any delay to action requests for information that may impact the development programme.

Right of Access

In certain circumstances the Act allows the Building Owner to access the Adjoining Owner's land for the purpose of executing work in pursuance of the Act. Our fee does not include for discussing access to works that are not in pursuance of the Act and if that is required, a separate agreement and fee will be given.

Security for Expenses

We will not hold monies for Security for Expenses. It is usual practice that any sum agreed will be held in a solicitor's client account sometimes managed as an escrow account and only released on signature of two of the three surveyors.

Where relevant, the terms and conditions in relation to Security for Expenses will be set out in the Award.

Third Surveyor Referrals

The appointed surveyors are required to appoint a Third Surveyor to determine any disputed matters. If referral of a disputed matter to the third surveyor is necessary, the procedure will be set out to you, along with any cost implications.

We may charge an additional fee for time relating to matters incidental to third surveyor referrals.

General

We will make all reasonable efforts to identify the Adjoining Owner(s) of a property by making checks with the Land Registry (with the cost charged as a disbursement). We cannot accept any liability it after making reasonable enquiries, we do not manage to ascertain all Adjoining Owners with an interest in the property.

The ability to agree an Award is very much linked to the quality and level of detail that is provided from the design team and/or contractor. We cannot accept responsibility if the Information provided is insufficient to enable completion of an Award.

We do not accept any liability arising from the loss or delay in delivery of Notices by the Royal Mail or other carriers.

Where the depth of foundations is unknown and in the absence of any information such as trial pit Information, we will make a reasonable estimate on the foundation depth.

Our schedules of condition in relation to the Act only extend to the area of the property in close proximity to the notifiable work and will not unless considered necessary, extend to a full record of the condition of the entire Adjoining Owner's property.

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