Quality information

Prepared by

Janette Simpson
Environmental Scientist

Checked by

Brian Duggan
Senior Environmental Scientist

Approved by

Dr. Clare Glanville
Associate Director

Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Revision date</th>
<th>Details</th>
<th>Authorised</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23/03/2018</td>
<td>Issue 1</td>
<td>BD</td>
<td>Senior Environmental Scientist</td>
</tr>
</tbody>
</table>

Distribution List

<table>
<thead>
<tr>
<th># Hard Copies</th>
<th>PDF Required</th>
<th>Association / Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Woodfab Timber Limited</td>
</tr>
</tbody>
</table>
Annual Groundwater & Surface Water Monitoring Report 2017

Prepared for: Woodfab Timber Limited

Prepared by:
Brian Duggan
Senior Environmental Scientist
T: +353-1-238-3100
E: brian.duggan@aecom.com

AECOM Ireland Limited
4th Floor
Adelphi Plaza
Georges Street Upper
Dun Laoghaire
Co. Dublin A96 T927
Ireland
T: +353 1 238 3100
aecom.com

Limitations

AECOM Ireland Limited (“AECOM”) has prepared this Report for the sole use of Woodfab Timber Limited (“Client”) in accordance with the terms and conditions of appointment dated 20 February 2017. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by AECOM. This Report may not be relied upon by any other party without the prior and express written agreement of AECOM.

Where any conclusions and recommendations contained in this Report are based upon information provided by others, it has been assumed that all relevant information has been provided by those parties and that such information is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between 31 March 2017 and 07 February 2018 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM’s attention after the date of the Report.

The comments made on groundwater conditions are based on observations made during site work and the limited monitoring programme. It should be noted that groundwater levels might vary owing to seasonal or other effects.

It should be noted that the effects of ground and water borne contamination on the environment are constantly under review, and authoritative guidance values are potentially subject to change. The conclusions presented herein are based on the guidance values available at the time this Report was prepared, however, no liability by AECOM can be accepted for the retrospective effects of any changes or amendments to these values.

Copyright
© This Report is the copyright of AECOM. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.]
Table of Contents

1. Introduction.............................................................................................................................. 1
   1.1 Project Contractual Basis and Personnel Involved.......................................................... 1

2. Objectives................................................................................................................................ 1

3. Background ............................................................................................................................. 1

4. Site Description ....................................................................................................................... 2
   4.1 Surrounding Land Use ................................................................................................. 2
   4.2 Environmental Setting ............................................................................................... 2
   4.3 Site History .................................................................................................................... 4
   4.4 Process Description ....................................................................................................... 5
   4.5 Viable SPR Linkages ..................................................................................................... 5

5. Scope of Work ......................................................................................................................... 6
   5.1.1 Field Work ..................................................................................................................... 6
   5.1.2 Analysis ......................................................................................................................... 7

   6.1 Water Quality Screening Criteria .................................................................................... 7
   6.2 Field Observations ......................................................................................................... 8
   6.3 Groundwater Flow Direction ......................................................................................... 9
   6.4 QA/QC ........................................................................................................................... 9
   6.5 2017 Analytical Results ................................................................................................ 9
   6.5.1 Groundwater .................................................................................................................. 9
   6.5.2 Surface Water .............................................................................................................. 10

7. Historical Water Quality Trends .............................................................................................. 10
   7.1 Groundwater ................................................................................................................ 10
   7.2 Surface Water ................................................................................................................ 11

8. Discussion and Conclusions .................................................................................................. 12
   8.1 Groundwater ................................................................................................................ 12
   8.2 Surface Water ................................................................................................................ 12

9. Recommendations ................................................................................................................. 12

Figures

Tables

Appendix A – Historical Data Graphs

Appendix B – JEL Laboratory Reports
1. Introduction

AECOM Ireland Limited (AECOM) is pleased to present Woodfab Timber Limited (Woodfab) with this report, which provides a summary of groundwater and surface water monitoring completed during 2017 at their facility located in Tinakilly Upper, Aughrim, Co. Wicklow (the site).

A site location plan is presented in Figure 1 and a site layout plan showing sampling locations is presented in Figure 2.

1.1 Project Contractual Basis and Personnel Involved

The works presented herein were completed in accordance with AECOM Proposal dated 20 February 2017, and authorised by Woodfab on 20 February 2017.

The AECOM team for groundwater monitoring comprised the following:

- Project Director: David Mullan
- Project Manager: Brian Duggan
- Field Scientists: Colin Fitzgerald

2. Background

The site operates under Industrial Emissions Licence P0358-01, issued by the Environmental Protection Agency (EPA) in 2015. It is understood that the EPA has requested that Woodfab undertake biannual groundwater and quarterly surface water monitoring at the site.

A detailed description of the environmental site setting and conceptual site model was presented in a Hydrogeological Assessment Report prepared for the site by AECOM and submitted to the EPA in September 2015. A summary of the site setting, history and potential source-pathway-receptor linkages is presented in this report.

A non-conformance with Condition 8.1.2 of the licence was identified by the EPA following a review of the Q2 2016 groundwater and surface water monitoring report prepared for the site, specifically relating to the concentrations of metals reported in surface water. Due to the elevated metals concentrations reported in surface water, the EPA issued a request for further information (RFI) to Woodfab on 9 August 2016. The EPA RFI was addressed in a standalone report submitted to the Agency in October 2016.

The assessment completed in response to the RFI indicated that the most likely source of elevated metal concentrations in surface water drains is via overland flow and runoff to surface water drains from naturally-elevated soil metal concentrations in shallow soils. On this basis, AECOM do not consider it appropriate to assess arsenic and manganese concentrations at the Woodfab site against surface water and groundwater water quality guidelines.

3. Objectives

The main objective of this work was to provide an assessment of groundwater and surface water quality at the site during 2017. This was achieved by undertaking the following tasks:

- Biannual groundwater sampling at the site in June and December 2017;
- Collection of an annual surface water sample at monitoring point SW2 in March 2017;
• Collection of quarterly surface water samples at monitoring point SW4 in March, June, October and December 2017; and

• Upon receipt of the analytical results from Quarter 4 (Q4), preparation of this annual report compiling data collected during 2017.

4. Site Description

The site is located immediately east of Aughrim town in County Wicklow and has been an operating saw mill since 1974. The products manufactured on site include wooden fencing materials, pallet and decking timbers and the site employs circa 50 people. A proportion of the timber processed is treated on site with Tanalith E.

Site details are summarised below:

• Site ID – Woodfab Timber Limited;
• Site location – Tinakilly Upper, Aughrim, Co. Wicklow;
• National Grid Reference – 313300, 179500;
• Current operation – Manufacture of treated and non-treated timber products; and
• Site Area – The Woodfab site occupies an area of approximately 7 hectares.

4.1 Surrounding Land Use

<table>
<thead>
<tr>
<th>Site Boundary</th>
<th>Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>Low density residential housing, beyond which lies agricultural and forested land. A primary school and church are also located to the northwest of the site.</td>
</tr>
<tr>
<td>South</td>
<td>The River Aughrim runs along the southern site boundary, beyond which lie a quarry, residential housing and agricultural land.</td>
</tr>
<tr>
<td>East</td>
<td>Agricultural land, a garden centre and a residential house.</td>
</tr>
<tr>
<td>West</td>
<td>Aughrim town, including commercial and residential properties.</td>
</tr>
</tbody>
</table>

4.2 Environmental Setting

<table>
<thead>
<tr>
<th>Physical Feature</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface of site</td>
<td>The ground surface is a mixture of concrete / tarmac (estimate 50%) and unsealed ground (estimate 50%).</td>
</tr>
<tr>
<td>Topography</td>
<td>Site topography slopes towards the south-west and the Aughrim River. The site ground elevation is estimated to be approximately 70 metres (m) above Ordnance Datum (Mean Sea Level - Malin Head, Co. Donegal). Generally, the site can be described as being located in a valley setting, with several low-lying hills in the surrounding area.</td>
</tr>
<tr>
<td>Soils</td>
<td>The overburden soils consist of made ground, likely to be underlain by sandstone and shale till (glacial sediment derived from Lower Palaeozoic rocks or derived from sandstone and shale), (Geological Survey of Ireland (GSI) website (<a href="http://www.gsi.ie">www.gsi.ie</a>); accessed 11.01.18). The GSI maps also indicate the presence of bedrock at surface on the eastern portion of the site. An investigation was completed on the site by GES Limited (Carlow) on behalf of Woodfab in 2007. This investigation comprised the drilling of four boreholes ranging in depth from 10 metres to 30 metres below ground level (m bgl) and the installation of groundwater monitoring wells (BH1 – BH4). This investigation encountered made ground at two locations (BH2 and BH3) at depths of up to 5m bgl. Natural soils were encountered at depths of up to 8m bgl and comprised clay and gravel horizons.</td>
</tr>
</tbody>
</table>
| Regional Geology | Geology underlying the site is indicated to comprise dark grey, semi-pelitic, psammitic schist (metamorphic rock) of the Ballybeg Formation. A granite intrusion runs across the site, running in a northeast to southeast orientation (GSI website; (www.gsi.ie); National Draft \[5\] GES Limited, *Groundwater Monitoring Report*, Report Ref. 07/56, 28 April 2008
## Physical Feature | Comments
---|---
**Generalised Bedrock Map)** | The GES investigation indicates that depth to bedrock varies between 1.0 m bgl on the south-eastern portion of the site (BH3) and 9.1 m bgl in the central portion of the site. Granite bedrock was encountered at a depth of 7.5 m bgl at BH4 on the northern portion of the site. At boreholes BH1 – BH3 grey brown schist bedrock was encountered.

### Regional Hydrogeology and Aquifer Classification
- **The site is underlain by the Wicklow South Groundwater Body, which has a ‘good’ status according to the Water Framework Directive Ireland website (www.wfdireland.ie).**
- The schist bedrock underlying the site is classified by the GSI as a ‘Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones’. The granite intrusion is classified as a ‘Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones’.
- No gravel aquifer is indicated beneath the site.
- Groundwater vulnerability beneath the site ranges from moderate in the north-western portion of the site to high and extreme across the rest of the site.
- According to the GSI website there is no Source Protection Zone recorded within a 2 km radius of the site.
- GES reported that groundwater was encountered during drilling at depths ranging from 8.3m bgl (BH2) to 28m bgl (BH3) (within bedrock); average depths to groundwater recorded during the two groundwater monitoring events in 2015 was 6.05m bgl.
- All four monitoring wells are screened across both overburden and bedrock, therefore it is not possible to distinguish between shallow and deep groundwater bodies beneath the site.

### Inferred Groundwater Flow
- **Based on the topography of the site and the surrounding area, groundwater is considered likely to flow towards the south-west towards the Aughrim River.**
- At a site level, groundwater flow may be influenced by local abstraction of groundwater by Woodfab from a ‘Combined Heat and Power’ bedrock well located on the north-western portion of the site (known as the CHP Well). It is understood that this abstraction well is used to fill firewater tanks on the site. Installation details for the CHP are not available.
- Groundwater elevations across the site for 13 June 2016 are illustrated on Figure 3. The inferred groundwater flow is to the south west, towards the Aughrim River. A similar pattern of groundwater flow was recorded during all 2017 groundwater monitoring event and during previous monitoring events completed at the site.

### Nearby Groundwater Abstraction Wells
- **In addition to the groundwater abstraction well located on the site, the GSI website indicates a number of groundwater wells within 1km of the site. The majority of these are located to the west, in the vicinity of Aughrim town, but there are also a number of wells indicated to the south and east. Information provided by the GSI indicates that a number of these wells are used for domestic supply. None of these wells are located between the site and the Aughrim River.**
- It is noted that there is no requirement to register wells with the GSI, and, given the rural setting of the surrounding area, it is considered possible that non-registered groundwater supply wells are present.

### Nearby Surface Water Bodies
- **A search of the EPA Envision GIS viewer on the EPA website (www.epa.ie) revealed the presence of the following streams and rivers in the area surrounding the site:**
  - Ballycreen and Three Wells Streams to the north of the site; and
  - Aughrim River bordering the site to the south.
- The Ballycreen and Three Wells streams flow southwards into the Aughrim River approximately 150m west of the site. The Aughrim River flows towards the east and eventually meets the Avoca River approximately 7km east of the site.
- The river quality of the Ballycreen Stream to the north of the site is classified as having ‘High Status’ by the EPA at Tinnakilly Bridge immediately north of the site.
- The Aughrim River is classified by the EPA as having ‘Good Status’ at Coat’s Bridge, approximately 2km east (downstream) of the site. (EPA website, (www.epa.ie); EPA Maps – Water Quality).

### Nearby Flood Risk Areas
- **According to the OPW flood risk website (www.floodmaps.ie) there are no recurring flood events within 1km of the site.**

### Environmentally Sensitive Areas
- **Groundwater beneath the site is protected as a drinking water resource under the Water Framework Directive.**
- According to the National Parks and Wildlife Service website (www.npws.ie), the closest designated environmentally sensitive area to the site is the Avoca River Valley located approximately 3km east of the site. The Avoca River Valley is a proposed Natural Heritage Area (pNHA).
### Physical Feature  Comments

There are no designated environmentally sensitive areas within 1km of the site.

**Radon**

As detailed in radon maps prepared by the EPA, the site is located in an area with greater than 20% of properties in a 10km grid square that are estimated to be above the 200Bq/m³ reference level for radon. Grid squares in which the predicted percentage of properties is 10% or greater are called High Radon Areas.

**Other**

The Woodfab site excluded, there are no licenced IPC or Waste facilities located within a 1km radius of the site.

**Sensitive Receptors**

Sensitive receptors identified within 1km of the site include:
- Protected groundwater beneath the site;
- The groundwater abstraction well located on the site, which supplies water to the firewater tanks on the site; and
- The Aughrim River, which runs eastwards along the southern site boundary.

### 4.3 Site History

The history of the site was assessed based on the following:

- Interview with Woodfab site representatives;
- Review of the following information available on the Ordnance Survey of Ireland (OSI) website (www.osi.ie):
  - Historical maps dating from 1829 to 1841 (6-inch);
  - Historical maps dating from 1897 to 1913 (25 inch); and
  - Aerial photographs from 1995, 2000 and 2005;

<table>
<thead>
<tr>
<th>Year</th>
<th>Site Use</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1829 to 1841</td>
<td>Undeveloped</td>
<td>The site is undeveloped. A flour mill is indicated to the east of the site and some buildings are marked along a roadway to the north. The current road bordering the site to the north (R753) is not present. The village of Aughrim is present approximately 600m east of the site.</td>
</tr>
<tr>
<td>1897 to 1913</td>
<td>Undeveloped</td>
<td>The site remains undeveloped and now appears to be forested. The flour mill to the east of the site has developed further, as has Aughrim village. A quarry is indicated beyond the Aughrim River to the south of the site.</td>
</tr>
<tr>
<td>1974</td>
<td>Saw Mill</td>
<td>It is understood that the site remained greenfield up until 1974, when a saw mill was established on the site. It is further understood that the Smurfit Group took ownership of the site in the 1980’s and Woodfab re-acquired the site in 1998. Tanalith E is currently used on site and is stored in bunded IBCs. Chromated Copper Arsenate (CCA) was historically used to treat timber on the site. CCA treated timber was stored in the vicinity of BH2 and the CHP well.</td>
</tr>
<tr>
<td>1995</td>
<td>Saw Mill</td>
<td>The 1995 aerial photograph indicates that the layout appears similar to current site layout. Low density residential housing is present to the north of the site.</td>
</tr>
<tr>
<td>2000</td>
<td>Saw Mill</td>
<td>The 2000 aerial photograph indicates that the layout appears similar to current site layout.</td>
</tr>
<tr>
<td>2005</td>
<td>Saw Mill</td>
<td>The 2005 aerial photograph indicates that the layout appears similar to current site layout.</td>
</tr>
<tr>
<td>2010</td>
<td>Saw Mill</td>
<td>A fire occurred on the site in August 2010, resulting in the cessation of production at the site.</td>
</tr>
<tr>
<td>2014</td>
<td>Saw Mill</td>
<td>Production resumed at the site.</td>
</tr>
</tbody>
</table>
A site layout plan showing a description of each building used on-site is presented in Figure 4 and a site layout plan showing locations of current and historic chemical storage is presented in Figure 5.

4.4 Process Description

The manufacturing process on the site is as follows:

- Logs are delivered to site by road, where they are graded and stripped of their bark.
- Stripped logs are loaded into the mill where they are cut and planed to the required specifications.
- Some of the timber may be dried in the kiln to obtain the required moisture content. It is understood that heat for the kiln is generated by an oil-fired boiler located adjacent to the kiln (Building D2 on Figure 4). This boiler is serviced by a 1,500 litre double skinned above ground storage tank (AST) located in the same building.
- A post and shaving plant is located on the south-eastern portion of the site (Building F on Figure 4). The shavings are dried using an oil-fired burner, which is serviced by a bunded 14,000 litre AST. Both the burner and storage tank are located adjacent to Building F.
- Timber requiring treatment is pressure treated using Tanalith E in two areas of the site (Buildings D3 and F1 on Figure 4). Approximately 48 tonnes of Tanalith E is used on site per annum.
- Other modification works for decking and fencing are also carried out on site.
- Equipment on site includes saws, bark peelers, chippers, drying kiln, vacuum preservative tank, planers, air compressors, fork lifts and front end loaders.
- Two underground fuel storage tanks (USTs) with capacities of 13,000 litres and 20,000 litres are located on the northern portion of the site (see Figure 5). These tanks service site vehicles.
- Lubricating oil and hydraulic oil is stored in the garage within a bunded area.
- Office buildings on site (Building H on Figure 4) are heated by an oil fired boiler serviced by a 1,000 litre double skinned AST.

4.5 Viable SPR Linkages

On the basis of the information presented above and in previous investigations, viable source-pathway-receptor (SPR) linkages are considered to be present for controlled waters and human health receptors at the site. A summary of the viable linkages is provided in the table below.

<table>
<thead>
<tr>
<th>Potential Sources</th>
<th>Potential Pathways</th>
<th>Potential Receptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential release of metals, pesticides and other constituents of timber preservatives, both current (Tanalith E) and historic (Protim and CCA). Potential release of fuel or oil.</td>
<td>Vertical migration through overburden (made ground and clayey sandy gravel, if present), into bedrock and down to groundwater.</td>
<td>Workers on site may have dermal contact with soil contaminated with metals, pesticides and hydrocarbons. Workers on site may inhale/ingest soil dust contaminated with metals, pesticides and hydrocarbons; or may inhale hydrocarbon vapours.</td>
</tr>
<tr>
<td>Metals, pesticides and hydrocarbons could potentially sorb onto suspended solids and may get into surface water drains on site. There are no direct surface water discharges from the site to the River Aughrim as surface water collected in the chamber at SW2 is recycled on site and surface water from SW4 discharges to a soak away.</td>
<td>River Aughrim and associated aquatic species.</td>
<td></td>
</tr>
</tbody>
</table>
Potential Sources | Potential Pathways | Potential Receptors
--- | --- | ---
Metals and pesticides are unlikely to spread much laterally with groundwater flow due to their strong tendency to sorb. Dissolved hydrocarbons would be expected to migrate with groundwater flow down-gradient of the site. | Groundwater is not used for potable supply, either on-site or down-gradient of the site, prior to discharge to the River Aughrim. Groundwater abstraction from the CHP well will reduce the volume of groundwater from site that discharges to the River Aughrim.

5. Scope of Work

5.1.1 Field Work

Two groundwater monitoring rounds were completed on 13 June 2017 and 18 December 2017. A surface water sample was collected from monitoring point SW4 on a quarterly basis on 31 March 2017, 13 June 2017, 20 October 2017 and 18 December 2017. A surface water sample was collected from surface water monitoring point SW2 on 31 March 2017.

The following tasks were completed as part of the monitoring works:

- Inspection of five monitoring wells (BH1, BH2, BH3, BH4 and the CHP well);
- Gauging each well for groundwater elevation;
- Purging of up to three well volumes to remove stagnant water;
- Measurement of in-situ water quality parameters (temperature, pH, electrical conductivity, redox-potential and dissolved oxygen), as well as observations of colour, turbidity and odour;
- Collection of groundwater samples from each groundwater monitoring well (10 samples in total over two monitoring rounds); and
- Collection of a surface water sample from monitoring point SW4 (4 samples over 4 monitoring rounds), located on the southern corner of the treatment plant building.
- A sample was collected from surface monitoring point SW2 in March 2017.

Groundwater samples were collected by AECOM as per standard field procedure FP11 to obtain samples that were representative of in-situ groundwater conditions and to minimise changes in groundwater chemistry during sampling and handling.

An interface probe was used to measure the depth to groundwater prior to purging and sampling and to assess whether or not any separate phase dense or light non-aqueous phase liquids were present in the wells.

Each well (with the exception of the CHP well which has an abstraction pump) was purged using dedicated Waterra™ tubing and foot valves. In-situ water quality parameters (temperature, pH, dissolved oxygen, electrical conductivity and redox potential) were recorded using a system consisting of Waterra™ PP1 pump, Waterra™ tubing, flow-through cell and water quality meter at each monitoring well immediately prior to sampling. The CHP well is an active abstraction well (intermittent pumping), therefore samples were collected from a tap drawing water from the well following a period when the well pump was active.

Surface water samples were collected at monitoring points SW2 and SW4 when there was a flow into the drains at these monitoring points. There are no direct surface water discharges from the site to the River Aughrim as surface water collected in the chamber at SW2 is recycled on site and surface water from SW4 discharges to a soak away. Samples were collected directly into laboratory-supplied sample containers.
All samples were transported to Exova Jones Environmental Laboratories (JEL) in the UK (an AECOM-approved subcontractor) in cooler boxes with appropriate chain-of-custody documentation. Samples were transported by overnight courier to the laboratory.

5.1.2 Analysis

The following table outlines the groundwater and surface water analysis completed by JEL during 2017.

<table>
<thead>
<tr>
<th>Analyte</th>
<th>No. of Groundwater Samples</th>
<th>No. of Surface Water Samples</th>
<th>No. of Duplicate Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals (As, Cd, Cr III, Cr VI, Cu, Fe, Mn, Ni, Pb, Zn)</td>
<td>10</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total Petroleum Hydrocarbons (TPH) Criteria Working Group (CWG) Analysis</td>
<td>10</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total Hardness</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alkalinity</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sulphate</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chemical Oxygen Demand (COD)</td>
<td>10</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Metals (As, B, Cr III, Cr VI, Cu, Mn, P)</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Propiconazole</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Nitrate</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

6. Groundwater & Surface Water Results 2017

Groundwater level measurements, purge volumes, field observations and groundwater quality parameters measured during field works in 2017 are presented in Table 1. Groundwater analytical results screened against relevant water quality guidelines are presented in Table 2. Surface water field readings and analytical results screened against relevant assessment criteria are presented in Tables 3 and 4, respectively.

The JEL laboratory reports are also attached (Appendix B).

6.1 Water Quality Screening Criteria

Groundwater and surface water quality was assessed by comparing analytical results to the most relevant of the following water quality guidelines:

- European Communities Environmental Objectives (Groundwater) Regulations, 2010. Statutory Instrument No. 9 of 2010;
- Environmental Protection Agency, Towards Setting Guideline Values for the Protection of Groundwater in Ireland, (Interim Guideline Values (IGVs), 2003); and,

6 Selected analysis based on information provided by Woodfab, not specified in IEL Licence
6.2 Field Observations

The following was noted during water sampling at the site:

- Groundwater obtained from well BH1 during the Quarter 2 (Q2) sampling event was observed to be brown in colour with high turbidity, while during the Quarter 4 (Q4) sampling event the sampled water was noted to be orange brown in colour.

- Groundwater obtained from well BH2 during the Q2 monitoring event was observed to be light beige in colour with low turbidity. The groundwater sampled in Q4 was brown in colour with a sheen observed in one vial.

- Groundwater obtained from well BH3 during the Q2 monitoring event was observed to be beige in colour with high turbidity. The groundwater sampled in Q4 was pale grey / pale yellow in colour, a slight sheen was noted during purging.

- Groundwater obtained from well BH4 during both 2017 monitoring events was observed to be brown in colour with low turbidity.

- Groundwater obtained from the CHP well was observed to be clear with low turbidity.

- Surface water sampled at monitoring point SW2 was brown with high turbidity. No physical evidence of contamination was noted.

- Surface water at monitoring point SW4 was observed to be brown or grey in all monitoring events with high to moderate turbidity. No physical evidence of contamination was noted.

Groundwater field measurements of water quality parameters are presented in Table 1 and are summarised below:

- pH values ranged from 6.18 (BH1, Dec 2017) to 7.68 (BH3, Dec 2017). Similar to previous monitoring rounds the reported pH values are occasionally less than the lower IGV value of 6.5 in wells BH1, BH2 and BH4. The slightly acidic pH readings are likely to be naturally-occurring and related to the non-carbonate schist bedrock in the area and the granite intrusion beneath the site.

- Electrical conductivity values recorded in groundwater ranged from 154.5 µS/cm (BH4, Jun 2017) to 357.5 µS/cm (BH2, Dec 2017) and were all below the groundwater threshold value (GTV) of 1,875 µS/cm.

- Groundwater temperatures ranged from 7.1°C (BH3 Dec 2017) to 13.2°C (BH4 Jun 2017), with lower temperatures recorded during the December monitoring round. Temperatures are close to the normal range for groundwater in Ireland (10.0°C to 12.0°C) and show seasonal variability.

- Field oxidation reduction potential (ORP) readings were compensated, as recommended by the instrument manufacturer. The adjusted redox (Eh) readings ranged between -47.5 mV (BH2, Dec 2017) and 367.7 mV (BH4, Jun 2017). The recorded redox values indicate reducing – oxidising conditions in groundwater beneath the site.

- Dissolved oxygen ranged from 0.9 mg/L (BH2, Dec 2017) to 9.0 mg/L (BH3, Jun 2017). It should be noted that BH3 purged dry, likely introducing air into the sample and accounting for the elevated dissolved oxygen concentration.

Surface water field measurements of water quality parameters at monitoring points SW2 and SW4 are presented in Table 3 and are summarised below:

- pH values ranged from 6.63 to 7.48, which was within the environmental quality standard (EQS) range of 6 to 9 for “Hard” waters (wider range of 4.5 to 9 applicable to “Soft” waters, as likely to be present at the Woodfab site).

- Electrical conductivity values ranged from 322 µS/cm to 432 µS/cm.

- Surface water temperatures ranged from 4.4°C to 26.5°C with the highest temperatures recorded at SW4 during the Q2 June monitoring round.
6.3 Groundwater Flow Direction

Based on the site setting, groundwater flow direction is expected to be generally towards the south and the River Aughrim.

Gauging information collected on 13 June 2016 was used to calculate groundwater elevations and contours, which are illustrated on Figure 3. Based on this data, it is inferred that groundwater flow direction is to the south west, towards the Aughrim River. A similar pattern of groundwater flow was recorded during all 2017 groundwater monitoring event and during previous monitoring events completed at the site.

6.4 QA/QC

Water samples were subject to sampling, sample custody and laboratory protocols to ensure traceability and reliability of analytical results. These included:

- Record of all works and sampling in site field notes;
- Transport of samples with chain of custody documents; and
- Confirming receipt of all samples and correct analytical instructions against laboratory supplied test schedules.

The analytical techniques employed by the laboratories are regarded as acceptable by regulatory authorities in Republic of Ireland.

As part of AECOM’s quality control procedure, two groundwater field duplicates (DUP01 and DUP02) of samples from BH2 were taken in June and December 2017, respectively.

Duplicate sampling allows calculation of the relative percentage differences (RPD) between the groundwater primary and duplicate samples. An RPD is not acceptable where:

- The sample or the duplicate result is less than or equal to 10 times the Method Detection Limit (MDL), RPD is not considered suitable.
- Where the sample concentration is between 10 times and 20 times the reporting limit, the RPD should be less than 50%.
- Where the sample concentration is greater than 20 times the reporting limit, the RPD should be less than 30%.

Relative percentage differences (RPDs) between the primary and duplicate samples are presented in Table 5.

Arsenic, Iron and Manganese in December 2017 are the only applicable RPDs, with values of 2.99%, 14.96% and 0.69%, which are within the acceptable limit of 30% or 50% RPD as applicable. As such, analytical results are considered acceptable for interpretive use.

6.5 2017 Analytical Results

6.5.1 Groundwater

Reported concentrations of cadmium, chromium III and VI, copper, lead, nickel and zinc in groundwater were reported to be below the respective assessment criteria for both monitoring rounds completed in 2017 and

Arsenic was reported at concentrations of 9.8 µg/L and 47.5 µg/L in BH2 in Q2 and Q4 respectively and 22.1 µg/l and 17.2 µg/l in the CHP Well in Q2 and Q4 respectively, which exceed the GTV of 7.5 µg/L. Arsenic concentrations in the remaining three wells were either below the laboratory MDL of 2.5 µg/L or below the GTV for both monitoring rounds.

Iron was reported at a concentration of 402 µg/L (Q2) in BH2, which exceeded the IGV of 200 µg/L. Iron concentrations in all other groundwater samples were either below the MDL of 20 µg/L or below the IGV.
Manganese was reported at a concentration of 2,592 µg/L (Q4) were reported in BH2. Concentrations of 389 µg/L (Q2) and 443 µg/L (Q4) were reported in monitoring well BH3; these concentrations are similar to previous monitoring rounds but exceeded the IGV of 50 µg/L. Concentrations in the other locations sampled were close to or below the laboratory MDL of 2 µg/L and also below the IGV for manganese.

Concentrations of other analytes were below their respective screening values (where present) and are considered to be representative of normal groundwater conditions.

### 6.5.2 Surface Water

Reported concentrations of arsenic, boron, chromium III and VI and nitrate in surface water were below the respective assessment criteria (where present) for both monitoring rounds completed in 2017.

The copper concentrations of 51 µg/L reported at SW2 in Q1 2017 and 18 µg/L reported at SW4 in Q4 2017 were above the EQS of 5 µg/L. Copper concentrations during Q2 and Q3 were below the laboratory MDL.

Manganese was reported at a concentration of 320 µg/l at SW2 in Q1 2017 and at concentrations ranging from 1,009 µg/L to 1,624 µg/L at SW4 throughout 2017.

The site-specific compound propiconazole (fungicide used in timber preservative) was reported at a concentration of 26.4 µg/L at SW2 in Q1 2017. Propiconazole was not detected at concentrations above the laboratory MDL of 0.1 µg/L at SW4 during 2017.

Reported COD values ranged from 117 mg/L (SW2 Q1) to 991 mg/L (SW4 Q1).

### 7. Historical Water Quality Trends

Tabulated historic groundwater and surface water data obtained from annual environmental reports (AER) reports (2008 – 2013) combined with 2014, 2015, 2016 and 2017 data are presented in Tables 6 and 7 respectively. Graphed data is also presented in Appendix A.

Screening of this data indicates that there have been exceedances of certain assessment criteria at all monitoring points over the past eight years. The following summarises historical data in terms of the respective assessment criteria:

#### 7.1 Groundwater

- Cadmium and copper, hardness (as CaCO3) and sulphate concentrations in groundwater have not been reported above their respective assessment criteria and reported hydrocarbon concentrations were below the laboratory MDL in all samples.

- Since Q4 2009 and prior to Q4 2016 reported arsenic concentrations in groundwater were consistently low and generally below the GTV in all wells except the CHP well, in which concentrations approximately twice the GTV are typically detected. Exceedances of the GAC have also been reported at BH2 since Q4 2016, with concentrations rising in Q4 2017 to 47.5 µg/L. The arsenic concentrations reported in the CHP well were similar to those reported in 2016 and again exceeded the IGV of 7.5 µg/L in both Q2 and Q4. The arsenic concentrations in BH1, BH3 and BH4 are similar to those detected in 2014, 2015 and 2016.

- Chromium has not been detected at a concentration exceeding the GTV (37.5 µg/L) at any location since September 2010.

- Concentrations of iron have historically been substantially below the IGV; however, a concentration of 402 µg/L was reported in BH2 in Q4 2017, twice the IGV of 200 µg/L.

- Lead has not been detected at a concentration exceeding the GTV since September 2010. It should be noted that the GTV for lead was reduced in 2016 from 18.75 µg/l to 7.5 µg/l.

- Elevated manganese concentrations have not been detected at the CHP well since monitoring commenced at this location. Prior to 2010, elevated manganese concentrations were detected.
sporadically at BH1, BH2, BH3 and BH4. Manganese concentrations at BH1 and BH4 have remained below the IGV (50 µg/L) since September 2010 and in BH2 since July 2014, however a significant exceedance of 2592 µg/L was reported at BH2 in Q4 2017. Elevated manganese concentrations are consistently detected in BH3 and concentrations of 389 µg/L and 443 µg/L were reported at BH3 in Q2 and Q4 2017 respectively which are similar to those detected in 2016.

- Nickel has not been detected at a concentration exceeding the GTV (15 µg/L) at any location since September 2010.

- Zinc was not analysed prior to 2015. Zinc concentrations detected at BH1 – BH4 have been below the IGV (100 µg/L) in all 2015 – 2017 monitoring rounds. Zinc concentrations in the CHP well were below the IGV in 2017 and show a continued decline from the peak concentrations reported Q4 2014.

- Similar to previous monitoring rounds, the reported pH values were less than the lower IGV value of 6.5 in wells BH1, BH2 and BH4 (Q4). The slightly acidic pH readings are likely to be naturally-occurring and related to the non-carbonate schist bedrock in the area and the granite intrusion beneath the site.

7.2 Surface Water

- Prior to September 2009, arsenic was sporadically elevated at both SW2 and SW4. Since then, concentrations at both locations have been typically lower, with the exception of June 2016 when a concentration of 46.3 µg/l in SW4 was reported.

- Boron has not been detected at a concentration exceeding the GTV (750 µg/L) at any location since July 2008.

- There was a single exceedance of the EQS for chromium (32 µg/L) in September 2009. All reported chromium concentrations at SW2 and SW4 have been below the EQS since 2009.

- Reported copper concentrations in surface water sampling point SW2 have been above the EQS value of 5 µg/l in all but one monitoring event since 2008 and remain above the EQS in 2017. Reported copper concentrations at SW4 have been historically above the EQS of 5 µg/L, however have been at or below the laboratory MDL of 7 µg/l since November 2014, with the exception of Q4 2017, when a concentration of 18 µg/l was reported.

- Manganese was sampled for the first time at SW4 in 2014 and at SW2 in 2015. Since then reported concentrations in SW2 and SW4 in all sampling events have been variable, ranging between 320 µg/l and 757 µg/l at SW2 and 354 µg/l and 1,897 µg/l at SW4.

- There was a single exceedance (at 86.1 µg/l) of the EQS for nitrate (37.5 µg/L) at SW4 in June 2011. All reported nitrate concentrations at SW2 and SW4 since 2011 have been below the EQS.

- There are no screening values available for phosphorus, propiconazole or COD. Propiconazole was detected at SW2 in Q1 2017 for the first time since April 2009 at a concentration of 26.4 µg/L. Propiconazole was not detected at SW4 and has not been detected since April 2009. COD and phosphorus concentrations fluctuate but do not show an upward trend in concentrations.
8. Discussion and Conclusions

8.1 Groundwater

There were exceedances of the groundwater assessment criteria for pH, arsenic, iron and manganese in 2017, which generally shows a similar pattern to the 2016 results; however exceedances of iron have not been reported prior to Q4 2017.

In relation to the elevated arsenic concentrations, which are consistently reported in the CHP well and also present in BH2 since Q4 2016, it is understood that CCA was historically used to treat timber on the site, and that CCA treated timber was stored in the vicinity of the CHP well. However, given that elevated concentrations of copper and chromium were not detected at this location, it is not considered likely that the source of the elevated arsenic concentration was related to current site operations. Reference to the Teagasc and EPA Soil Geochemical Atlas indicates that arsenic concentrations in soil are naturally elevated in the Aughrim area, and it is considered likely that the elevated arsenic concentration is therefore due to the surrounding natural soil and bedrock conditions and the extensive base metal mineralisation in the bedrock in this area.

In relation to the elevated manganese concentrations and acidic pH values reported, the Soil Geochemical Atlas also indicates manganese is naturally elevated in soils in the Aughrim area and with natural soil pH in the area ranging from 5.0-5.5. The source of these exceedances is therefore thought to relate to naturally-occurring conditions rather than activities on the site.

The source of the iron exceedance at BH2 during Q4 is unknown. As with arsenic and manganese, the elevated iron concentration may be related to naturally occurring soil conditions in the area which according to the Soil Geochemical Atlas, contain moderate to high concentrations of iron.

The presence of underground fuel storage tanks on the site was identified as a potential risk to groundwater during an assessment of the site in 2014 and it was recommended that groundwater samples be analysed for hydrocarbons. Following this recommendation, samples from all five groundwater monitoring wells were analysed for hydrocarbons in all monitoring events in 2015, 2016 and 2017. Reported hydrocarbon concentrations were below the laboratory MDL in all samples.

8.2 Surface Water

Elevated concentrations of copper and manganese were reported at surface water monitoring point SW2 and SW4 during 2017, similar to previous monitoring events.

There is no historical data for manganese concentrations in surface water at the site. However, the Soil Geochemical Atlas indicates that manganese concentrations in soil are naturally elevated in the Aughrim area, and it is considered likely that the elevated manganese concentrations detected may be related to the surrounding natural soil and bedrock conditions.

Propiconazole was detected at SW2 in Q1 2017 for the first time since April 2009 with a concentration of 26.4 µg/L. Propiconazole was not detected in SW4 at concentrations above the laboratory MDL during any monitoring round. Surface water at SW2 is recycled on site in a closed loop system, the water collected here is circulated back to the treatment tank in shed D3 and there is no direct surface water discharges from the site to the River Aughrim.

9. Recommendations

It is recommended that groundwater and surface water monitoring continues as agreed with the Environmental Protection Agency.
Figures
FIGURE 1 - SITE LOCATION PLAN

CLIENT
WOODFAB TIMBER LIMITED

PROJECT LOCATION
WATER QUALITY MONITORING

DRAWING TITLE
FIGURE 1 - SITE LOCATION PLAN

As Shown

BRANCH
SML
ILLUSTRATED
RD
CHECKED
DM
APPROVED
DATE
JAN 2018

REV.

SCALE
As Shown

60542160

4TH FLOOR, ADELPHI PLAZA, ADELPHI CENTRE, GEORGE'S STREET UPPER, DUN LAOGHAIRE, Co. DUBLIN, IRELAND. T +353 (0)1 238 3100, F +353 (0)1 238 3199
FIGURE 2  SITE AERIAL PHOTOGRAPH SHOWING MONITORING LOCATIONS

CLIENT  WOODFAB TIMBER LIMITED

PROJECT LOCATION  WATER QUALITY MONITORING

DRAWING TITLE  FIGURE 2  SITE AERIAL PHOTOGRAPH SHOWING MONITORING LOCATIONS

KEY

- GROUNDWATER MONITORING WELL
- SURFACE WATER MONITORING POINT

For inspection purposes only.
Consent of copyright owner required for any other use.
Building Description
A, A1, A2 Added Value Timber Manufacture
A3 Timber Storage
A4 ESB Power House
B, B1 Added Value Timber Manufacture
B2, B3 ESB Junction Point
C Added Value Timber Manufacture
C1 Garage
D1 Old Saw Shop
D2 Kiln
D3 Tanalith Treatment Plant
D4 CHP Fuel Storage
D5 CHP Plant
E1 Profile Mill Outfeed
E2 New Saw Shop
E, E3, E6 Profile Mill
E5 Log Infeed Profile Mill
F Post Plant & Shaving Plant
F1 Tanalith Treatment Plant
F2 Water Storage for Fire Hoses
G Drip Dry Shed for Treatment Plant
G1 Timber Storage
H Offices
K Sales Office for DIY Yard

KEY
- Groundwater Monitoring Well
- Surface Water Monitoring Point

CLIENT
WOODFAB TIMBER LIMITED

PROJECT LOCATION
WATER QUALITY MONITORING

DRAWING TITLE
FIGURE 4. SITE AERIAL PHOTOGRAPH SHOWING SITE MAP AND BUILDING LOCATIONS

AECOM
4TH FLOOR, ADELPHI PLAZA, ADELPHI CENTRE, GEORGE’S STREET UPPER, DUN LAOGHAIRE, CO. DUBLIN, IRELAND. T +353 (0)1 238 3100, F +353 (0)1 238 3199

DRAWN ILLUSTRATED CHECKED APPROVED DATE

REV.
JAN 2018

As Shown 60542160

CONSULTANT

SCALE

SML

REF. 0
### Client
WOODFAB TIMBER LIMITED

### Project Location
WATER QUALITY MONITORING

### Drawing Title
FIGURE 5 - SITE AERIAL PHOTOGRAPH SHOWING HISTORIC AND PRESENT LOCATIONS OF CHEMICAL STORAGE

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>PROJECT LOCATION</th>
<th>DRAWING TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WOODFAB TIMBER LIMITED</td>
<td>WATER QUALITY MONITORING</td>
<td>FIGURE 5 - SITE AERIAL PHOTOGRAPH SHOWING HISTORIC AND PRESENT LOCATIONS OF CHEMICAL STORAGE</td>
</tr>
</tbody>
</table>

#### Key
- Groundwater Monitoring Well
- Surface Water Monitoring Point
- Underground Fuel Storage Tank
- Historic Storage of CCA Treated Timber
- Tanalith E Storage Under Cover in IBC
- CCA Storage Area
- Above Ground Bunded Oil Storage

---

**FIGURE 5**

SITE AERIAL PHOTOGRAPH SHOWING HISTORIC AND PRESENT LOCATIONS OF CHEMICAL STORAGE

- **BH1**: Historic Storage of CCA Treated Timber (inside old caterpillar tyre)
- **BH2**: CHP Well and taps (inside old caterpillar tyre)
- **BH3**: surface water monitoring point
- **BH4**: Historic Storage of CCA Treated Timber
- **SW1**: Surface Water Monitoring Point
- **SW2**: Underground Fuel Storage Tank
- **SW3**: Historic Storage of CCA Treated Timber
- **SW4**: Above Ground Bunded Oil Storage

---

**Caption:**

For inspection purposes only.

Consent of copyright owner required for any other use.

4TH FLOOR, ADELPHI PLAZA, ADELPHI CENTRE, GEORGE'S STREET UPPER, DUN LAOGHAIRE, Co. DUBLIN, IRELAND. T +353 (0)1 238 3100, F +353 (0)1 238 3199

---

**Drawing Information**

- **SML**: As Shown
- **Scale**: 60542160
- **Job No.**: 436582
- **Date**: JAN 2018
- **Rev.**: A

---

**Legend**

- **P**: Groundwater Monitoring Well
- **X**: Surface Water Monitoring Point
- **N**: Underground Fuel Storage Tank
- **H**: Historic Storage of CCA Treated Timber
- **T**: Tanalith E Storage Under Cover in IBC
- **C**: CCA Storage Area
- **B**: Above Ground Bunded Oil Storage

---

**Note:**

EPA Export 17-05-2018:04:34:14
Table 1: Field Observations, Groundwater Depths, Purge Volumes and Water Quality Measurements

Client: Woodfab Timber Limited
Project: 2017 Annual Water Quality Report
Location: Aughrim, Co. Wicklow
Job No: 60542160

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>BH1</th>
<th>BH2</th>
<th>BH3</th>
<th>BH4</th>
<th>CHP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13-Jun-17</td>
<td>18-Dec-17</td>
<td>13-Jun-17</td>
<td>18-Dec-17</td>
<td>13-Jun-17</td>
<td>18-Dec-17</td>
</tr>
<tr>
<td>Well Elevation</td>
<td>m aOD</td>
<td>na</td>
<td>na</td>
<td>48.72</td>
<td>46.33</td>
<td>45.88</td>
</tr>
<tr>
<td>SWL</td>
<td>m bTOC</td>
<td>na</td>
<td>na</td>
<td>7.168</td>
<td>6.671</td>
<td>6.280</td>
</tr>
<tr>
<td>Groundwater Elevation</td>
<td>m aOD</td>
<td>na</td>
<td>na</td>
<td>41.56</td>
<td>42.05</td>
<td>40.05</td>
</tr>
<tr>
<td>Total Well depth</td>
<td>m bTOC</td>
<td>na</td>
<td>na</td>
<td>30.35</td>
<td>30.35</td>
<td>30.35</td>
</tr>
<tr>
<td>Purge Volume</td>
<td>L</td>
<td>na</td>
<td>na</td>
<td>143</td>
<td>152</td>
<td>23</td>
</tr>
<tr>
<td>Conductivity</td>
<td>uS/cm</td>
<td>1875 GTV</td>
<td>234.7</td>
<td>229.5</td>
<td>333.1</td>
<td>357.5</td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>6.5 &lt; pH &lt; 9.5</td>
<td>IGV</td>
<td>6.72</td>
<td>6.18</td>
<td>7.23</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
<td>25</td>
<td>IGV</td>
<td>12.4</td>
<td>11.4</td>
<td>13.1</td>
</tr>
<tr>
<td>Redox Potential*</td>
<td>mV</td>
<td>nv</td>
<td>na</td>
<td>354.0</td>
<td>-22.8</td>
<td>281.1</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>mg/L</td>
<td>nv</td>
<td>na</td>
<td>3.1</td>
<td>4.7</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Sample Description / Comments

- Brown, High turbidity. NEC
- Brown, orange, milky. NEC
- Light beige, low turbidity, NEC
- Brownish, cloudy, milky. Occurred in one vial (light grey, stringy)
- Beige water, high turbidity, NEC. Well purged dry
- Pale grey - pale yellow, milky. No odour. Non-blocky, pale grey sheen (possible contamination from jug)
- Light brown, low turbidity. NEC
- Brown, cloudy. NEC
- Clear. NEC
- Clear. NEC

Legend

<table>
<thead>
<tr>
<th>xx</th>
<th>Exceeds Generic Assessment Criteria (GAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGV</td>
<td>Interim Guideline Values (IGVs) presented by EPA in 2003</td>
</tr>
<tr>
<td>NEC</td>
<td>No Physical Evidence of Contamination</td>
</tr>
<tr>
<td>na</td>
<td>Not Available</td>
</tr>
<tr>
<td>m aOD</td>
<td>meters above Ordnance Datum</td>
</tr>
<tr>
<td>m bTOC</td>
<td>meters below Top of Casing</td>
</tr>
<tr>
<td>SWL</td>
<td>Static Water Level</td>
</tr>
<tr>
<td>L</td>
<td>Litres</td>
</tr>
<tr>
<td>uS/cm</td>
<td>microsiemens per centimeter</td>
</tr>
<tr>
<td>°C</td>
<td>degrees celsius</td>
</tr>
<tr>
<td>mV</td>
<td>millivolts</td>
</tr>
<tr>
<td>mg/L</td>
<td>milligram per litre</td>
</tr>
</tbody>
</table>

Note: redox potential readings compensated by adding 215 mV to field readings as recommended by instrument manufacturer

January 2018
AECOM
Compiled by: JS
Checked by: BD

Consent of copyright owner required for any other use.
### Table 2: Groundwater Analytical Results

#### Client:
Woodfab Timber Limited

#### Project:
2017 Annual Water Quality Report

#### Location:
Aughrim, Co. Wicklow

#### Job No:
60542160

#### Sample ID
<table>
<thead>
<tr>
<th>Parameter Units</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals ug/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>&lt;2.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Cadmium</td>
<td>&lt;0.5</td>
<td>3.75</td>
</tr>
<tr>
<td>Chromium</td>
<td>&lt;1.5</td>
<td>37.5</td>
</tr>
<tr>
<td>Iron</td>
<td>&lt;0.5</td>
<td>50</td>
</tr>
<tr>
<td>Lead</td>
<td>&lt;5</td>
<td>7.5</td>
</tr>
<tr>
<td>Nickel</td>
<td>&lt;2</td>
<td>15</td>
</tr>
<tr>
<td>Zinc</td>
<td>&lt;3</td>
<td>100</td>
</tr>
<tr>
<td>Hydrocarbons ug/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Aromatics (C5-C35)</td>
<td>&lt;10</td>
<td>nv</td>
</tr>
<tr>
<td>Total Aliphatics (C5-C35)</td>
<td>&lt;10</td>
<td>nv</td>
</tr>
<tr>
<td>Total Xylenes ug/l</td>
<td>&lt;10</td>
<td>10</td>
</tr>
<tr>
<td>Methyl tert butyl ether (MTBE) ug/l</td>
<td>&lt;5</td>
<td>10</td>
</tr>
<tr>
<td>Miscellaneous mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Alkalinity as CaCO3</td>
<td>110</td>
<td>88</td>
</tr>
<tr>
<td>Total Hardness Dissolved (as CaCO3)</td>
<td>285</td>
<td>88</td>
</tr>
<tr>
<td>BTEXs by GC-MS ug/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>&lt;5</td>
<td>5</td>
</tr>
<tr>
<td>Toluene (Methyl benzene)</td>
<td>&lt;5</td>
<td>525</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>&lt;5</td>
<td>10</td>
</tr>
<tr>
<td>M,P-Xylene</td>
<td>&lt;5</td>
<td>10</td>
</tr>
<tr>
<td>O-Xylene</td>
<td>&lt;5</td>
<td>10</td>
</tr>
<tr>
<td>Total Xylenes</td>
<td>&lt;10</td>
<td>10</td>
</tr>
<tr>
<td>Methyl tert butyl ether (MTBE)</td>
<td>&lt;5</td>
<td>10</td>
</tr>
<tr>
<td>Miscellaneous mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Alkalinity as CaCO3</td>
<td>110</td>
<td>88</td>
</tr>
<tr>
<td>Total Hardness Dissolved (as CaCO3)</td>
<td>285</td>
<td>88</td>
</tr>
</tbody>
</table>

#### Legend

- **xx**: Exceeds Generic Assessment Criteria (GAC)
- **GTV** Interim Guideline Values (IGVs) presented by EPA in 2003
- **WHO** World Health organisation - Petroleum in Drinking Water 2008
- **MDL** Method Detection Limit
- **NAC** No abnormal change
- **nv** No value

---

January 2018

AECOM

Compiled by: JS

Checked by: BD
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conductivity</td>
<td>pH</td>
<td>Temperature</td>
</tr>
<tr>
<td></td>
<td>uS/cm</td>
<td>31-Mar-17</td>
<td>31-Mar-17</td>
</tr>
<tr>
<td></td>
<td>1825</td>
<td>337</td>
<td>432</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>6 - 9</td>
<td>7.48</td>
</tr>
<tr>
<td></td>
<td>°C</td>
<td>25</td>
<td>12.2</td>
</tr>
</tbody>
</table>

**Table 3:** Surface Water Field Observations and Water Quality Measurements

**Client:** Woodfab Timber Limited

**Project:** 2017 Annual Water Quality Report

**Location:** Aughrim, Co. Wicklow

**Job No:** 60542160

**Sample Description / Comments**
- Brown, high turbidity. Moderate flow. NEC
- Brown/grey, high silt and turbidity. Moderate flow. NEC
- Brown, high turbidity, reducing odor. Low flow. NEC
- Brown, moderate turbidity. NEC
- Brown, milky, low flow. Organic material removed from drain. NEC

**Legend**
- xx: Exceeds Generic Assessment Criteria (GAC)
- IGV: Interim Guideline Values (IGVs) presented by EPA in 2003
- uS/cm: microsiemens per centimeter
- °C: degrees celsius

*Compiled by: JS*
*Checked by: BD*
Table 4: Surface Water Analytical Results

Client: Woodfab Timber Limited
Project: 2017 Annual Water Quality Report
Location: Aughrim, Co. Wicklow
Job No: 60542160

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31-Mar-17</td>
<td>31-Mar-17</td>
<td>13-Jun-17</td>
</tr>
<tr>
<td>AECOM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 2018</td>
<td>JS</td>
<td>BD</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>MDL</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>ug/l</td>
<td>2.5</td>
<td>25</td>
<td>EQS</td>
</tr>
<tr>
<td>Boron</td>
<td>ug/l</td>
<td>12</td>
<td>750</td>
<td>GTV</td>
</tr>
<tr>
<td>Chromium</td>
<td>ug/l</td>
<td>1.5</td>
<td>32</td>
<td>EQS</td>
</tr>
<tr>
<td>Chromium III</td>
<td>ug/l</td>
<td>6</td>
<td>32</td>
<td>EQS</td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>ug/l</td>
<td>6</td>
<td>32</td>
<td>EQS</td>
</tr>
<tr>
<td>Copper</td>
<td>ug/l</td>
<td>7</td>
<td>5</td>
<td>EQS</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>ug/l</td>
<td>5</td>
<td>nv</td>
<td></td>
</tr>
<tr>
<td>Propiconazole</td>
<td>ug/l</td>
<td>0.1</td>
<td>nv</td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>mg/l</td>
<td>7</td>
<td>nv</td>
<td></td>
</tr>
<tr>
<td>Nitrate</td>
<td>mg/l</td>
<td>0.2</td>
<td>37.5</td>
<td>GTV</td>
</tr>
</tbody>
</table>

**Legend**

- **xx**: Exceeds Generic Assessment Criteria (GAC)
- **IGV**: Interim Guideline Values (IGVs) presented by EPA in 2003.
- **MDL**: Method Detection Limit
- **nv**: No value

For inspection purposes only.
Consent of copyright owner required for any other use.
### Table 5: Relative Percentage Differences

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Aughrim, Co. Wicklow  
**Job No:** 60542160

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>BH2</th>
<th>DUP01</th>
<th>%RDs</th>
<th>BH2</th>
<th>DUP02</th>
<th>%RDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>13-Jun-17</td>
<td>18-Dec-17</td>
<td></td>
<td>18-Dec-17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>MDL</th>
<th>Units</th>
<th>%RDs</th>
<th>MDL</th>
<th>Units</th>
<th>%RDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>2.5 ug/l</td>
<td>&lt;3.8</td>
<td>-4.7</td>
<td>NC</td>
<td>47.50</td>
<td>46.10</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.5 ug/l</td>
<td>&lt;0.5</td>
<td>-0.5</td>
<td>NC</td>
<td>&lt;0.5</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Total Chromium</td>
<td>1.5 ug/l</td>
<td>&lt;1.5</td>
<td>-1.5</td>
<td>NC</td>
<td>&lt;1.5</td>
<td>&lt;1.5</td>
</tr>
<tr>
<td>Copper</td>
<td>7 ug/l</td>
<td>&lt;7</td>
<td>&lt;7</td>
<td>NC</td>
<td>&lt;7</td>
<td>&lt;7</td>
</tr>
<tr>
<td>Zinc</td>
<td>5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Manganese</td>
<td>2 ug/l</td>
<td>&lt;9</td>
<td>10</td>
<td>NC</td>
<td>2592</td>
<td>2610</td>
</tr>
<tr>
<td>Nickel</td>
<td>2 ug/l</td>
<td>&lt;2</td>
<td>&lt;2</td>
<td>NC</td>
<td>&lt;2</td>
<td>&lt;2</td>
</tr>
<tr>
<td>TPH (EC5-7) aromatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC8-10) aromatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC11-14) aromatic</td>
<td>5 ug/l</td>
<td>&lt;15</td>
<td>&lt;15</td>
<td>NC</td>
<td>&lt;15</td>
<td>&lt;15</td>
</tr>
<tr>
<td>TPH (EC15-18) aromatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC19-21) aromatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC5-8) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC9-11) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC12-16) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC17-21) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC22-35) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Benzene</td>
<td>0.5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Toluene (Methyl benzene)</td>
<td>0.5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>0.5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>M,P-Xylene</td>
<td>0.5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>TPH (EC1-5) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>TPH (EC9-11) aliphatic</td>
<td>5 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC12-16) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC17-21) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC22-35) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC21-35) aromatic</td>
<td>10 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>TPH (EC7-10) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC11-14) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC15-18) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC19-21) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TPH (EC22-35) aliphatic</td>
<td>10 ug/l</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>NC</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>MTB</td>
<td>0.5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Methyl tert butyl ether (MTBE)</td>
<td>0.5 ug/l</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>NC</td>
<td>&lt;5</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

% RPDs have only been considered where a concentration is greater than 10 times the MDL.

**Value**  
- % RPD > 30%, and concentration of primary and duplicate >10 times the MDL
- % RPD > 50%, and concentration of primary and duplicate >10 times and <20 times the MDL

**MDL**  
Method Detection Limit

**NC**  
Not Calculable as duplicate or primary concentration <10 times the MDL

**na**  
not analysed

---

Compiled by: JS  
Checked by: BD
### Table 6: Historic Groundwater Data

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Aughrim, Co. Wicklow  
**Job No:** 60542160

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>Sampled By</th>
<th>Sampled By</th>
<th>Sampled By</th>
<th>Sampled By</th>
<th>Sampled By</th>
<th>Sampled By</th>
<th>Sampled By</th>
<th>Sampled By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28/07/2008</td>
<td>STL</td>
<td>STL</td>
<td>STL</td>
<td>STL</td>
<td>STL</td>
<td>STL</td>
<td>STL</td>
<td>STL</td>
</tr>
<tr>
<td></td>
<td>29/07/2008</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
</tr>
<tr>
<td></td>
<td>14/07/2009</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
<td>EPA</td>
</tr>
<tr>
<td></td>
<td>06/09/2010</td>
<td>BHP</td>
<td>BHP</td>
<td>BHP</td>
<td>BHP</td>
<td>BHP</td>
<td>BHP</td>
<td>BHP</td>
<td>BHP</td>
</tr>
<tr>
<td></td>
<td>27/07/2011</td>
<td>SAL</td>
<td>SAL</td>
<td>SAL</td>
<td>SAL</td>
<td>SAL</td>
<td>SAL</td>
<td>SAL</td>
<td>SAL</td>
</tr>
<tr>
<td></td>
<td>01/01/2012</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>26/11/2013</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>20/09/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>23/12/2009</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>06/09/2010</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>27/07/2011</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>01/01/2012</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>26/11/2013</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>20/09/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>23/12/2009</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>06/09/2010</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>27/07/2011</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>01/01/2012</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>26/11/2013</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>20/09/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>23/12/2009</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>06/09/2010</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>27/07/2011</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>01/01/2012</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>26/11/2013</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>20/09/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>23/12/2009</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>06/09/2010</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>27/07/2011</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>01/01/2012</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>26/11/2013</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
<tr>
<td></td>
<td>20/09/2014</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
<td>AECOM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Units</th>
<th>GAC Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Cadmium</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Chromium</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Copper</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Iron</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Manganese</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Nickel</td>
<td>ug/l</td>
<td>GTV</td>
</tr>
<tr>
<td>Nickel</td>
<td>ug/l</td>
<td>Interim Guideline Value (IGV)</td>
</tr>
<tr>
<td>pH</td>
<td>pH</td>
<td>6.5 - 9.5</td>
</tr>
<tr>
<td>Hardness</td>
<td>mg/l</td>
<td>200</td>
</tr>
<tr>
<td>Sulphate</td>
<td>mg/l</td>
<td>187.5</td>
</tr>
<tr>
<td>Total Alkalinity</td>
<td>mg/l</td>
<td>NAC</td>
</tr>
<tr>
<td>COD</td>
<td>mg/l</td>
<td>nv</td>
</tr>
</tbody>
</table>

**Legend**

- **IGV** Interim Guideline Values (IGVs) presented by EPA in 2003

For inspection purposes only. Consent of copyright owner required for any other use.

EPA Export 17-05-2018:04:34:14
## Table 6: Historic Groundwater Data

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Aughrim, Co. Wicklow  
**Job No:** 82542160

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date Sampled</th>
<th>Sample By</th>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cadmium</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Chromium</td>
<td>ug/l</td>
<td>GTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Chromium III</td>
<td>ug/l</td>
<td>GTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hexavalent Chromium</td>
<td>ug/l</td>
<td>GTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Copper</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lead</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Manganese</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nickel</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Zinc</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pH</td>
<td>pH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Hardness (as CaCO3)</td>
<td>mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sulphate</td>
<td>mg/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Alkalinity as CaCO3</td>
<td>mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COD</td>
<td>g/l</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**  
- Exceeds Generic Assessment Criteria (GAC)  
- GTV: Groundwater Threshold Values (GTVs). Ou  
- IGV: Interim Guideline Values (IGVs) presented b

<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Date Sampled</th>
<th>Sample By</th>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cadmium</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Chromium</td>
<td>ug/l</td>
<td>GTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Chromium III</td>
<td>ug/l</td>
<td>GTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hexavalent Chromium</td>
<td>ug/l</td>
<td>GTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Copper</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lead</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Manganese</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nickel</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Zinc</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pH</td>
<td>pH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Hardness (as CaCO3)</td>
<td>mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sulphate</td>
<td>mg/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Alkalinity as CaCO3</td>
<td>mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COD</td>
<td>g/l</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**  
Compiled by: JS  
Checked by: BD  
Consent of copyright owner required for any other use.  
EPA Export 17-05-2018:04:34:14
## Historic Groundwater Data

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Aughrim, Co. Wicklow  
**Job No:** 80542160

### Table 6

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>Sampled By</th>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cadmium</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Chromium</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hexavalent Chromium</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Copper</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Iron</td>
<td>mg/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lead</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Manganese</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nickel</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Zinc</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pH</td>
<td>pH</td>
<td>Units</td>
<td>6.5 - 9.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Hardness (as CaCO₃)</td>
<td>mg/l</td>
<td></td>
<td>NAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sulphate</td>
<td>mg/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Alkalinity as CaCO₃</td>
<td>mg/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>COD</td>
<td>mg/l</td>
<td></td>
<td>IGV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
<th>2029</th>
<th>2030</th>
<th>2031</th>
<th>2032</th>
<th>2033</th>
<th>2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.40</td>
<td>7.20</td>
<td>7.00</td>
<td>6.80</td>
<td>6.60</td>
<td>6.40</td>
<td>6.20</td>
<td>6.00</td>
<td>5.80</td>
<td>5.60</td>
<td>5.40</td>
<td>5.20</td>
<td>5.00</td>
<td>4.80</td>
<td>4.60</td>
<td>4.40</td>
<td>4.20</td>
<td>4.00</td>
</tr>
<tr>
<td>GTV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IGV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Legend

- m: Exceeds Generic Assessment Criteria (GAC)
- GTV: Groundwater Threshold Values (GTVs). Ou
- IGV: Interim Guideline Values (IGVs) presented by
- m: Not analysed

---

Consent of copyright owner required for any other use.

EPA Export 17-05-2018:04:34:14
## Table 6: Historic Groundwater Data

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Aughrim, Co. Wicklow  
**Job No:** 60542160

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28/07/2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29/07/2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14/07/2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23/12/2009</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>7.5</td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td>06/09/2010</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>27/07/2011</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>01/01/2012</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>20/09/2013</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>26/05/2015</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>11/11/2015</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>13/06/2016</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>13/06/2017</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td>18/12/2017</td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>0.9</td>
<td>&lt;2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Arsenic</td>
<td>ug/l</td>
<td>2</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Date</td>
<td>Sampled By</td>
<td>Sample Matrix</td>
<td>Parameters</td>
<td>Units</td>
<td>GAC</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------------</td>
<td>---------------</td>
<td>--------------</td>
<td>-------</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>09/07/2014</td>
<td></td>
<td>Groundwater</td>
<td>Arsenic</td>
<td>ug/l</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>28/11/2014</td>
<td></td>
<td>Groundwater</td>
<td>Cadmium</td>
<td>ug/l</td>
<td>3.75</td>
</tr>
<tr>
<td></td>
<td>11/11/2015</td>
<td></td>
<td>Groundwater</td>
<td>Total Chromium (II)</td>
<td>ug/l</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>13/06/2016</td>
<td></td>
<td>Groundwater</td>
<td>Total Chromium (III)</td>
<td>ug/l</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>17/11/2016</td>
<td></td>
<td>Groundwater</td>
<td>Hexavalent Chromium</td>
<td>ug/l</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>13/06/2017</td>
<td></td>
<td>Groundwater</td>
<td>Copper</td>
<td>ug/l</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td>18/12/2017</td>
<td></td>
<td>Groundwater</td>
<td>Copper</td>
<td>ug/l</td>
<td>&lt;7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Groundwater</td>
<td>Lead</td>
<td>ug/l</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Groundwater</td>
<td>Nickel</td>
<td>ug/l</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Groundwater</td>
<td>Zinc</td>
<td>ug/l</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Groundwater</td>
<td>pH</td>
<td>pH</td>
<td>6.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Groundwater</td>
<td>COD</td>
<td>mg/l</td>
<td>&lt;7</td>
</tr>
</tbody>
</table>

**Legend**
- GTV: Groundwater Threshold Values (GTVs)
- IGV: Interim Guideline Values (IGVs)
- Exceeds Generic Assessment Criteria (GAC)
- Not analysed

For inspection purposes only: Consent of copyright owner required for any other use.
## Historic Surface Water Data

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Aughnim, Co. Wicklow  
**Job No:** 6042160

<table>
<thead>
<tr>
<th>Sample Id</th>
<th>Date</th>
<th>Sampled By</th>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>GAC</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>ug/l</td>
<td></td>
<td>EQS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Total Boron</td>
<td>ug/l</td>
<td></td>
<td>GTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Total Chromium</td>
<td>ug/l</td>
<td></td>
<td>EQS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Total Copper</td>
<td>ug/l</td>
<td></td>
<td>EQS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Total Manganese</td>
<td>ug/l</td>
<td></td>
<td>IGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Total Phosphorus</td>
<td>ug/l</td>
<td></td>
<td>nv</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Propiconazole</td>
<td>ug/l</td>
<td></td>
<td>nv</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>COD</td>
<td>mg/l</td>
<td></td>
<td>nv</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surface Water</td>
<td>Nitrate</td>
<td>mg/l</td>
<td></td>
<td>37.5</td>
</tr>
</tbody>
</table>

### Parameters Units GAC Source

<table>
<thead>
<tr>
<th>Total Arsenic</th>
<th>ug/l</th>
<th>EQS</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>34</td>
<td>52</td>
<td>&lt;0.9</td>
</tr>
<tr>
<td>1.5</td>
<td>&lt;0.9</td>
<td>&lt;0.9</td>
<td>&lt;0.9</td>
</tr>
<tr>
<td>&lt;0.96</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>14.7</td>
<td>5.1</td>
<td>3.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Boron</th>
<th>ug/l</th>
<th>GTV</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>273</td>
<td>275</td>
<td>275</td>
</tr>
<tr>
<td>36</td>
<td>6</td>
<td>&lt;1</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Chromium</th>
<th>ug/l</th>
<th>EQS</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>25</td>
<td>79</td>
<td>&lt;3</td>
</tr>
<tr>
<td>2</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Copper</th>
<th>ug/l</th>
<th>EQS</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>240</td>
<td>36</td>
<td>23</td>
</tr>
<tr>
<td>44</td>
<td>67</td>
<td>81</td>
<td>87</td>
</tr>
<tr>
<td>&lt;0.001</td>
<td>0.01</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>757</td>
<td>344</td>
<td>320</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Manganese</th>
<th>ug/l</th>
<th>IGV</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>206</td>
<td>70</td>
<td>0.21</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>0.24</td>
<td>0.09</td>
<td>0.09</td>
<td>0.01</td>
</tr>
<tr>
<td>2.28</td>
<td>52</td>
<td>52</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Phosphorus</th>
<th>ug/l</th>
<th>nv</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.91</td>
<td>3.01</td>
<td>3.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>9.4</td>
<td>9.4</td>
<td>9.4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Propiconazole</th>
<th>ug/l</th>
<th>nv</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.7</td>
<td>9.7</td>
<td>9.7</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>7.7</td>
<td>7.7</td>
<td>7.7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COD</th>
<th>mg/l</th>
<th>nv</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,720</td>
<td>3800</td>
<td>3800</td>
<td>3800</td>
</tr>
<tr>
<td>30</td>
<td>20</td>
<td>400</td>
<td>19</td>
</tr>
<tr>
<td>105</td>
<td>154</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>204</td>
<td>117</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nitrate</th>
<th>mg/l</th>
<th>GTV</th>
<th>August -</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
<td>&lt;0.3</td>
</tr>
<tr>
<td>5.18</td>
<td>5.18</td>
<td>5.18</td>
<td>5.18</td>
</tr>
<tr>
<td>3.14</td>
<td>3.14</td>
<td>3.14</td>
<td>3.14</td>
</tr>
<tr>
<td>7.72</td>
<td>7.72</td>
<td>7.72</td>
<td>7.72</td>
</tr>
</tbody>
</table>

### Legend

- **IGV**: Interim Guideline Values (IGVs) presented by EPA in 2003
- **Not analysed**

---

Consent of copyright owner required for any other use.
## Table 7: Historic Surface Water Data

**Client:** Woodfab Timber Limited  
**Project:** 2017 Annual Water Quality Report  
**Location:** Asphavn, Co. Wicklow  
**Job No:** 60542160

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
<th>Surface Water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Arsenic</td>
<td>ug/l</td>
<td>25</td>
<td>34</td>
<td>27</td>
<td>18</td>
<td>92</td>
<td>1</td>
<td>21</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total Boron</td>
<td>ug/l</td>
<td>750</td>
<td>5</td>
<td>45</td>
<td>6</td>
<td>1</td>
<td>95</td>
<td>29</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total Chromium</td>
<td>ug/l</td>
<td>32</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>93</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total Copper</td>
<td>ug/l</td>
<td>5</td>
<td>240</td>
<td>38</td>
<td>21</td>
<td>133</td>
<td>46</td>
<td>56</td>
<td>73</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Total Manganese</td>
<td>um/l</td>
<td>34</td>
<td>9</td>
<td>392</td>
<td>92</td>
<td>&lt;1</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total Phosphorus</td>
<td>um/l</td>
<td>273</td>
<td>86</td>
<td>387</td>
<td>503</td>
<td>2900</td>
<td>100</td>
<td>210</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Propiconazole</td>
<td>um/l</td>
<td>240</td>
<td>86</td>
<td>387</td>
<td>503</td>
<td>2900</td>
<td>100</td>
<td>210</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**Legend:**  
- GAC: Generic Assessment Criteria  
- EQS: Environmental Quality Standard (EQS)  
- GTV: Groundwater Threshold Values (GTVs)  
- IGV: Interim Guideline Values (IGVs)  
- - Not analyzed

For inspection purposes only:  
Consent of copyright owner required for any other use.
## Table 7: Historic Surface Water Data

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>Sampled By</th>
<th>Sample Matrix</th>
<th>Parameters</th>
<th>Units</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>01/03/2011</td>
<td></td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>ug/l</td>
<td>EQS</td>
</tr>
<tr>
<td></td>
<td>01/06/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>01/07/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>01/13/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>01/18/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>01/20/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>01/22/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>01/26/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>01/28/2011</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>02/01/2012</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>02/06/2012</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>02/08/2012</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>02/12/2012</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>02/22/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>02/26/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>02/27/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>03/01/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>03/06/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>03/08/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>03/12/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>03/17/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>03/19/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>03/21/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>03/22/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>03/26/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>03/27/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>03/28/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>03/29/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>04/01/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>04/06/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>04/08/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>04/12/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>04/17/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>04/19/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>04/23/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>04/25/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>04/27/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>04/29/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>05/01/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>05/06/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>05/08/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>05/12/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>05/17/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>05/19/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>05/23/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>05/25/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
<tr>
<td></td>
<td>05/29/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td></td>
<td>05/31/2013</td>
<td>BHP</td>
<td>Surface Water</td>
<td>Total Arsenic</td>
<td>&lt;0.96</td>
<td>&lt;0.96</td>
</tr>
</tbody>
</table>

### Legend

<table>
<thead>
<tr>
<th>xx</th>
<th>Enschede Generic Assessment Criteria (GAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQS</td>
<td>Environmental Quality Standard (EQS).</td>
</tr>
<tr>
<td>GTV</td>
<td>Groundwater Threshold Values (GTVs).</td>
</tr>
<tr>
<td>IGV</td>
<td>Interim Guideline Values (IGVs) presented by EPA in 2003</td>
</tr>
<tr>
<td>-</td>
<td>Not analysed</td>
</tr>
<tr>
<td>Sample ID</td>
<td>Date</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>28/11/2014</td>
</tr>
<tr>
<td></td>
<td>13/03/2015</td>
</tr>
<tr>
<td></td>
<td>26/05/2015</td>
</tr>
<tr>
<td></td>
<td>21/09/2015</td>
</tr>
<tr>
<td></td>
<td>11/11/2015</td>
</tr>
<tr>
<td></td>
<td>14/03/2016</td>
</tr>
<tr>
<td></td>
<td>13/06/2016</td>
</tr>
<tr>
<td></td>
<td>25/08/2016</td>
</tr>
<tr>
<td></td>
<td>17/11/2016</td>
</tr>
</tbody>
</table>

**Legend**
- xx: Exceeds Generic Assessment Criteria (GAC)
- EQS: Environmental Quality Standard (EQS)
- GTV: Groundwater Threshold Values (GTVs)
- IGV: Interim Guideline Values (IGVs) present
- Not analysed

For inspection purposes only: Consent of copyright owner required for any other use.
Appendix A – Historical Data Graphs
Graph 5 - Manganese (Groundwater)

- BH1
- BH2
- BH3
- BH4
- CHP
- IGV

For inspection purposes only. Consent of copyright owner required for any other use.
Graph 7 - Zinc (Groundwater)
Graph 10 - Boron (Surface Water)

For inspection purposes only. Consent of copyright owner required for any other use.
Graph 11 - Chromium (Surface Water)

For inspection purposes only. Consent of copyright owner required for any other use.
Graph 13 - Phosphorus (Surface Water)

For inspection purposes only. Consent of copyright owner required for any other use.
Graph 15 - COD (Surface Water)
Appendix B – JEL Laboratory Reports
Two samples were received for analysis on 4th April, 2017 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Boden BSc
Project Manager
<table>
<thead>
<tr>
<th>J E Sample No.</th>
<th>SW2</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID</td>
<td>SW2</td>
<td>SW4</td>
</tr>
<tr>
<td>Depth</td>
<td>31/03/2017</td>
<td>31/03/2017</td>
</tr>
<tr>
<td>COC No / misc</td>
<td>V N H N P</td>
<td>V N H N P</td>
</tr>
<tr>
<td>Containers</td>
<td>V N H N P</td>
<td>V N H N P</td>
</tr>
<tr>
<td>Sample Date</td>
<td>31/03/2017</td>
<td>31/03/2017</td>
</tr>
<tr>
<td>Sample Type</td>
<td>Liquid</td>
<td>Liquid</td>
</tr>
<tr>
<td>Batch Number</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Date of Receipt</td>
<td>04/04/2017</td>
<td>04/04/2017</td>
</tr>
</tbody>
</table>

| | LOD/LOR | Units | Method No. |
| Dissolved Arsenic | 9.3 | <2.5 | ug/l | TM30/PM14 |
| Dissolved Boron | 31 | <12 | ug/l | TM30/PM14 |
| Total Dissolved Chromium | 1.6 | <1.5 | ug/l | TM30/PM14 |
| Dissolved Copper | 51 | <7 | ug/l | TM30/PM14 |
| Dissolved Manganese | 320 | <2 | ug/l | TM30/PM14 |
| Dissolved Phosphorus | 48 | <5 | ug/l | TM30/PM14 |
| Propiconazole | 26.4 | <0.1 | ug/l | TM16/PM30 |
| Nitrate as NO3 | <0.2 | <0.2 | mg/l | TM38/PMD |
| Hexavalent Chromium | <0.006 | <0.006 | mg/l | TM38/PMD |
| Total Dissolved Chromium III | <6 | <6 | NO/NO/NO/NO |
| COD (Settled) | 117 | <7 | mg/l | TM57/PMD |
| Electrical Conductivity @25C | 337 | <2 | uS/cm | TM76/PMD |
| pH | 7.48 | <0.01 | pH units | TM73/PMD |

Please include all sections of this report if it is reproduced.

All solid results are expressed on a dry weight basis unless stated otherwise.
Client Name: AECOM
Reference: Misc
Location: Woodfab
Contact: Brian Duggan
JE Job No.: 17/6504

<table>
<thead>
<tr>
<th>J E Sample No.</th>
<th>1-7</th>
<th>Sample ID</th>
<th>50X2</th>
<th>Depth</th>
<th>31/03/2017</th>
<th>Sample Date</th>
<th>Sample Type</th>
<th>Liquid</th>
<th>Batch Number</th>
<th>1</th>
<th>Date of Receipt</th>
<th>04/04/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>COC No / misc</td>
<td>V H H N</td>
<td>Containers</td>
<td>P F G</td>
<td>Sample Temperature</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOD/LOR</td>
<td>&lt;0.1</td>
<td>Degrees C</td>
<td>NONE</td>
<td>Method No.</td>
<td>AECOM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please see attached notes for all abbreviations and acronyms.

For inspection purposes only.
Consent of copyright owner required for any other use.
### Notification of Deviating Samples

**Client Name:** AECOM  
**Reference:**  
**Location:** Woodfab  
**Contact:** Brian Duggan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No deviating sample report results for job 17/6504

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/6504

SOILS

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.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory.

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.
# ABBREVIATIONS and ACRONYMS USED

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>ISO17025 (UKAS) accredited - UK.</td>
</tr>
<tr>
<td>SA</td>
<td>ISO17025 (SANAS) accredited - South Africa.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates analyte found in associated method blank.</td>
</tr>
<tr>
<td>DR</td>
<td>Dilution required.</td>
</tr>
<tr>
<td>M</td>
<td>MCERTS accredited.</td>
</tr>
<tr>
<td>NA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NAD</td>
<td>No Asbestos Detected.</td>
</tr>
<tr>
<td>ND</td>
<td>None Detected (usually refers to VOC and/SVOC TICs).</td>
</tr>
<tr>
<td>NDP</td>
<td>No Determination Possible</td>
</tr>
<tr>
<td>SS</td>
<td>Calibrated against a single substance</td>
</tr>
<tr>
<td>SV</td>
<td>Surrogate recovery outside performance criteria. This may be due to a matrix effect.</td>
</tr>
<tr>
<td>W</td>
<td>Results expressed on as received basis.</td>
</tr>
<tr>
<td>+</td>
<td>AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.</td>
</tr>
<tr>
<td>++</td>
<td>Result outside calibration range, results should be considered as indicative only and are not accredited.</td>
</tr>
<tr>
<td>*</td>
<td>Analysis subcontracted to a Jones Environmental approved laboratory.</td>
</tr>
<tr>
<td>AD</td>
<td>Samples are dried at 35°C ±5°C</td>
</tr>
<tr>
<td>CO</td>
<td>Suspected carry over</td>
</tr>
<tr>
<td>LOD/LOR</td>
<td>Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS</td>
</tr>
<tr>
<td>ME</td>
<td>Matrix Effect</td>
</tr>
<tr>
<td>NFD</td>
<td>No Fibres Detected</td>
</tr>
<tr>
<td>BS</td>
<td>AQC Sample</td>
</tr>
<tr>
<td>LB</td>
<td>Blank Sample</td>
</tr>
<tr>
<td>N</td>
<td>Client Sample</td>
</tr>
<tr>
<td>TB</td>
<td>Trip Blank Sample</td>
</tr>
<tr>
<td>OC</td>
<td>Outside Calibration Range</td>
</tr>
<tr>
<td>Test Method No.</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TM16</td>
<td>Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.</td>
</tr>
<tr>
<td>TM30</td>
<td>Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B</td>
</tr>
<tr>
<td>TM57</td>
<td>Modified US EPA Method 410.4. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometrically.</td>
</tr>
<tr>
<td>TM73</td>
<td>Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.</td>
</tr>
<tr>
<td>TM76</td>
<td>Modified US EPA method 120.1. Determination of Specific Conductance by Metrohm automated probe analyser.</td>
</tr>
<tr>
<td>NONE</td>
<td>No Method Code</td>
</tr>
</tbody>
</table>
Seven samples were received for analysis on 15th June, 2017 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Simon Gomery BSc
Project Manager
<table>
<thead>
<tr>
<th>J E Sample No.</th>
<th>1-6</th>
<th>7-12</th>
<th>13-18</th>
<th>19-24</th>
<th>25-30</th>
<th>31-37</th>
<th>38-43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID</td>
<td>BH1</td>
<td>BH2</td>
<td>BH3</td>
<td>BH4</td>
<td>CH1</td>
<td>DH1</td>
<td>DLU1</td>
</tr>
<tr>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD No / misc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Containers</td>
<td>V-HN</td>
<td>V-HN</td>
<td>V-HN</td>
<td>V-HN</td>
<td>V-HN</td>
<td>V-HN</td>
<td>V-HN</td>
</tr>
<tr>
<td>Sample Date</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
</tr>
<tr>
<td>Sample Type</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
</tr>
<tr>
<td>Batch Number</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Date of Receipt</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
</tr>
<tr>
<td>LOD/LOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>ug/l</td>
<td>ug/l</td>
<td>ug/l</td>
<td>ug/l</td>
<td>ug/l</td>
<td>ug/l</td>
<td>ug/l</td>
</tr>
<tr>
<td>Method No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dissolved Species

- **Arsenic**: 0.5 ug/l<br>**Boron**: 0.5 ug/l<br>**Cadmium**: 0.5 ug/l<br>**Chromium**: 0.5 ug/l<br>**Copper**: 0.5 ug/l<br>**Iron**: 0.5 ug/l<br>**Lead**: 0.5 ug/l<br>**Nickel**: 0.5 ug/l<br>**Phosphorus**: 0.5 ug/l<br>**Zinc**: 0.5 ug/l

### Aliphatics

- **C5-C6**: <10 ug/l<br>**C6-C8**: <10 ug/l<br>**C8-C10**: <10 ug/l<br>**C10-C12**: <10 ug/l<br>**C12-C16**: <10 ug/l<br>**C16-C21**: <10 ug/l<br>**C21-C35**: <10 ug/l

### Aromatics

- **C5-EC**: <10 ug/l<br>**C7-EC**: <10 ug/l<br>**C8-EC**: <10 ug/l<br>**C10-EC**: <10 ug/l<br>**C12-EC**: <10 ug/l<br>**C14-EC**: <10 ug/l<br>**C16-EC**: <10 ug/l<br>**C21-EC**: <10 ug/l<br>**C35**: <10 ug/l

### MTBE

- 0.5 mg/l

### Other

- **Propiconazole**: 0.1 ug/l
<table>
<thead>
<tr>
<th>J E Sample No.</th>
<th>1-6</th>
<th>7-12</th>
<th>13-18</th>
<th>19-24</th>
<th>25-30</th>
<th>31-37</th>
<th>38-43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID</td>
<td>BH1</td>
<td>BH2</td>
<td>BH3</td>
<td>BH4</td>
<td>CHP</td>
<td>SH4</td>
<td>QUP01</td>
</tr>
<tr>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Date</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
<td>13/06/2017</td>
</tr>
<tr>
<td>Sample Type</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Surface Water</td>
<td>Ground Water</td>
</tr>
<tr>
<td>Batch Number</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Date of Receipt</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
<td>15/06/2017</td>
</tr>
</tbody>
</table>

For inspection purposes only. Consent of copyright owner required for any other use.
<table>
<thead>
<tr>
<th>J E Sample No.</th>
<th>1-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID</td>
<td>361</td>
</tr>
<tr>
<td>Depth</td>
<td></td>
</tr>
<tr>
<td>COC No / misc</td>
<td></td>
</tr>
<tr>
<td>Containers</td>
<td>V H N B P G</td>
</tr>
<tr>
<td>Sample Date</td>
<td>13/06/2017</td>
</tr>
<tr>
<td>Sample Type</td>
<td>Ground Water</td>
</tr>
<tr>
<td>Batch Number</td>
<td>1</td>
</tr>
<tr>
<td>Date of Receipt</td>
<td>15/06/2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Temperature</th>
<th>6.1</th>
<th>LOD/LOR</th>
<th>Units</th>
<th>Method No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>&lt;0.1</td>
<td>Degrees C</td>
<td>NONE/NONE</td>
</tr>
</tbody>
</table>

**Exova Jones Environmental**

Client Name: AECOM
Reference: 60542160
Location: Woodfab
Contact: Brian Duggan
JE Job No.: 17/10411

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms.

For inspection purposes only.
Consent of copyright owner required for any other use.
|------------|-------|-----------|-------|---------------|----------|--------|

No deviating sample report results for job 17/10411

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

SOILS

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.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 105°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory.

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEViating Samples

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURrogates

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

Dilutions

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLanks

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>ISO17025 (UKAS) accredited - UK.</td>
</tr>
<tr>
<td>SA</td>
<td>ISO17025 (SANAS) accredited - South Africa.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates analyte found in associated method blank.</td>
</tr>
<tr>
<td>DR</td>
<td>Dilution required.</td>
</tr>
<tr>
<td>M</td>
<td>MCERTS accredited.</td>
</tr>
<tr>
<td>NA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NAD</td>
<td>No Asbestos Detected.</td>
</tr>
<tr>
<td>ND</td>
<td>None Detected (usually refers to VOC and/SVOC TICs).</td>
</tr>
<tr>
<td>NDP</td>
<td>No Determination Possible</td>
</tr>
<tr>
<td>SS</td>
<td>Calibrated against a single substance</td>
</tr>
<tr>
<td>SV</td>
<td>Surrogate recovery outside performance criteria. This may be due to a matrix effect.</td>
</tr>
<tr>
<td>W</td>
<td>Results expressed on as received basis.</td>
</tr>
<tr>
<td>+</td>
<td>AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.</td>
</tr>
<tr>
<td>++</td>
<td>Result outside calibration range, results should be considered as indicative only and are not accredited.</td>
</tr>
<tr>
<td>*</td>
<td>Analysis subcontracted to a Jones Environmental approved laboratory.</td>
</tr>
<tr>
<td>AD</td>
<td>Samples are dried at 35°C ±5°C</td>
</tr>
<tr>
<td>CO</td>
<td>Suspected carry over</td>
</tr>
<tr>
<td>LOD/LOR</td>
<td>Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS</td>
</tr>
<tr>
<td>ME</td>
<td>Matrix Effect</td>
</tr>
<tr>
<td>NFD</td>
<td>No Fibres Detected</td>
</tr>
<tr>
<td>BS</td>
<td>AQC Sample</td>
</tr>
<tr>
<td>LB</td>
<td>Blank Sample</td>
</tr>
<tr>
<td>N</td>
<td>Client Sample</td>
</tr>
<tr>
<td>TB</td>
<td>Trip Blank Sample</td>
</tr>
<tr>
<td>OC</td>
<td>Outside Calibration Range</td>
</tr>
<tr>
<td>Test Method No.</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>TM5</td>
<td>Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.</td>
</tr>
<tr>
<td>TM5/TM36</td>
<td>Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.</td>
</tr>
<tr>
<td>TM16</td>
<td>Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.</td>
</tr>
<tr>
<td>TM30</td>
<td>Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009</td>
</tr>
<tr>
<td>TM30</td>
<td>Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009</td>
</tr>
<tr>
<td>TM31</td>
<td>Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.</td>
</tr>
<tr>
<td>TM36</td>
<td>Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.</td>
</tr>
<tr>
<td>TM38</td>
<td>Soluble ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1</td>
</tr>
<tr>
<td>TM57</td>
<td>Modified US EPA Method 410.4. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometrically.</td>
</tr>
<tr>
<td>TM75</td>
<td>Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser.</td>
</tr>
<tr>
<td>Test Method No.</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>NONE</td>
<td>No Method Code</td>
</tr>
</tbody>
</table>
One sample were received for analysis on 23rd October, 2017 of which one were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Simon Gomery BSc
Project Manager
<table>
<thead>
<tr>
<th>Sample Date</th>
<th>Sample Type</th>
<th>Batch Number</th>
<th>J E Sample No.</th>
<th>Sample ID</th>
<th>C COC No / misc</th>
<th>Containers</th>
<th>Depth</th>
<th>COC No / misc</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>20/10/2017</td>
<td>Surface Water</td>
<td>1</td>
<td>1-10</td>
<td>204</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOD/LOR</th>
<th>Units</th>
<th>Method No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ug/l</td>
<td>TM30/PM14</td>
</tr>
<tr>
<td></td>
<td>ug/l</td>
<td>TM30/PM14</td>
</tr>
<tr>
<td></td>
<td>ug/l</td>
<td>TM30/PM14</td>
</tr>
<tr>
<td></td>
<td>mg/l</td>
<td>TM38/PM0</td>
</tr>
<tr>
<td></td>
<td>ug/l</td>
<td>TM30/PM14</td>
</tr>
<tr>
<td></td>
<td>ug/l</td>
<td>TM30/PM14</td>
</tr>
<tr>
<td></td>
<td>mg/l</td>
<td>TM57/PM0</td>
</tr>
</tbody>
</table>

### Dissolved Arsenic
- **Method No.**: TM30/PM14
- **Units**: ug/l
- **Result**: <2.5

### Dissolved Boron
- **Method No.**: TM30/PM14
- **Units**: ug/l
- **Result**: <12

### Total Dissolved Chromium
- **Method No.**: TM30/PM14
- **Units**: ug/l
- **Result**: <1.5

### Dissolved Copper
- **Method No.**: TM30/PM14
- **Units**: ug/l
- **Result**: <7

### Dissolved Manganese
- **Method No.**: TM30/PM14
- **Units**: ug/l
- **Result**: <2

### Dissolved Phosphorus
- **Method No.**: TM30/PM14
- **Units**: ug/l
- **Result**: <5

### Propiconazole
- **Method No.**: TM16/PM30
- **Units**: ug/l
- **Result**: <0.1

### Nitrate as NO3
- **Method No.**: TM38/PM0
- **Units**: mg/l
- **Result**: <0.2

### Hexavalent Chromium
- **Method No.**: TM38/PM0
- **Units**: ug/l
- **Result**: <6

### Total Dissolved Chromium III
- **Method No.**: NONE/NONE
- **Units**: ug/l
- **Result**: <6

### COD (Settled)
- **Method No.**: TM57/PM0
- **Units**: mg/l
- **Result**: <7

---

**Disclaimer:**
All solid results are expressed on a dry weight basis unless stated otherwise.

Please include all sections of this report if it is reproduced.

For inspecting purposes only.
Consent of copyright owner required for any other use.
<table>
<thead>
<tr>
<th>Job No.</th>
<th>Sample ID</th>
<th>Depth</th>
<th>J E Sample No.</th>
<th>Analysis</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>17/17501</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Liquid Samples were received at a temperature above 9°C.</td>
</tr>
</tbody>
</table>

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
SOILS

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.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominately these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory.

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
### ABBREVIATIONS and ACRONYMS USED

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>ISO17025 (UKAS) accredited - UK.</td>
</tr>
<tr>
<td>SA</td>
<td>ISO17025 (SANAS) accredited - South Africa.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates analyte found in associated method blank.</td>
</tr>
<tr>
<td>DR</td>
<td>Dilution required.</td>
</tr>
<tr>
<td>M</td>
<td>MCERTS accredited.</td>
</tr>
<tr>
<td>NA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NAD</td>
<td>No Asbestos Detected.</td>
</tr>
<tr>
<td>ND</td>
<td>None Detected (usually refers to VOC and/SVOC TICs).</td>
</tr>
<tr>
<td>NDP</td>
<td>No Determination Possible</td>
</tr>
<tr>
<td>SS</td>
<td>Calibrated against a single substance</td>
</tr>
<tr>
<td>SV</td>
<td>Surrogate recovery outside performance criteria. This may be due to a matrix effect.</td>
</tr>
<tr>
<td>W</td>
<td>Results expressed on as received basis.</td>
</tr>
<tr>
<td>+</td>
<td>AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.</td>
</tr>
<tr>
<td>++</td>
<td>Result outside calibration range, results should be considered as indicative only and are not accredited.</td>
</tr>
<tr>
<td>*</td>
<td>Analysis subcontracted to a Jones Environmental approved laboratory.</td>
</tr>
<tr>
<td>AD</td>
<td>Samples are dried at 35°C ±5°C</td>
</tr>
<tr>
<td>CO</td>
<td>Suspected carry over</td>
</tr>
<tr>
<td>LOD/LOR</td>
<td>Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS</td>
</tr>
<tr>
<td>ME</td>
<td>Matrix Effect</td>
</tr>
<tr>
<td>NFD</td>
<td>No Fibres Detected</td>
</tr>
<tr>
<td>BS</td>
<td>AQC Sample</td>
</tr>
<tr>
<td>LB</td>
<td>Blank Sample</td>
</tr>
<tr>
<td>N</td>
<td>Client Sample</td>
</tr>
<tr>
<td>TB</td>
<td>Trip Blank Sample</td>
</tr>
<tr>
<td>OC</td>
<td>Outside Calibration Range</td>
</tr>
</tbody>
</table>

For inspection purposes only. Consent of copyright owner required for any other use.
<table>
<thead>
<tr>
<th>Test Method No.</th>
<th>Description</th>
<th>Prep Method No. (if appropriate)</th>
<th>Description</th>
<th>ISO 17025 (UKAS/SKNAS)</th>
<th>MCERTS (UK soils only)</th>
<th>Analysis done on As Received (AR) or Dried (AD)</th>
<th>Reported on dry weight basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM16</td>
<td>Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.</td>
<td>PM30</td>
<td>Water samples are extracted with solvent using a magnetic stirrer to create a vortex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM30</td>
<td>Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009</td>
<td>PM14</td>
<td>Analysis of waters and leachates for metals by ICP-OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>TM38</td>
<td>Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1</td>
<td>PM0</td>
<td>No preparation is required.</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>TM57</td>
<td>Modified US EPA Method 410.4. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometrically.</td>
<td>PM0</td>
<td>No preparation is required.</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>NONE</td>
<td>No Method Code</td>
<td>NONE</td>
<td>No Method Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Seven samples were received for analysis on 20th December, 2017 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>BH1</th>
<th>BH2</th>
<th>BH3</th>
<th>BH4</th>
<th>CHP Wae</th>
<th>DUP91</th>
<th>SW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHP Wae</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUP91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of Receipt</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
<th>20/12/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissolved Arsenic ³</td>
<td>&lt;2.5</td>
<td>47.5</td>
<td>&lt;2.5</td>
<td>2.5</td>
<td>17.2</td>
<td>46.1</td>
<td>10.9</td>
<td>&lt;2.5</td>
</tr>
<tr>
<td>Dissolved Boron</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&lt;12</td>
<td>&lt;12</td>
</tr>
<tr>
<td>Dissolved Cadmium ³</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>-</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Total Dissolved Chromium ³</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>&lt;1.5</td>
</tr>
<tr>
<td>Dissolved Copper ³</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Total Dissolved Iron ³</td>
<td>20</td>
<td>402</td>
<td>25</td>
<td>62</td>
<td>467</td>
<td>-</td>
<td>&lt;20</td>
<td>&lt;20</td>
</tr>
<tr>
<td>Dissolved Lead ³</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Dissolved Manganese ³</td>
<td>2</td>
<td>2592</td>
<td>443</td>
<td>2</td>
<td>2</td>
<td>2610</td>
<td>1396</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Dissolved Nickel ³</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Dissolved Phosphorus ³</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>59</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Dissolved Zinc ³</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>48</td>
<td>3</td>
<td>&lt;3</td>
<td>&lt;3</td>
</tr>
<tr>
<td>Total Hardness Dissolved (as CaCO₃)</td>
<td>78</td>
<td>115</td>
<td>107</td>
<td>70</td>
<td>109</td>
<td>-</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Propiconazole</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

**TPH CWG**

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>&lt;C₅-C₆ ³</th>
<th>&lt;C₆-C₉ ³</th>
<th>&lt;C₈-C₁₀ ³</th>
<th>&lt;C₁₀-C₁₂ ³</th>
<th>&lt;C₁₂-C₁₆ ³</th>
<th>&lt;C₁₆-C₂₁ ³</th>
<th>&lt;C₂₁-C₃₅ ³</th>
<th>Total aliphatics C₅-3₅ ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BH3</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BH4</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>CHP Wae</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>DUP91</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>SW4</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>&lt;C₅-EC₇ ³</th>
<th>&lt;C₇-EC₈ ³</th>
<th>&lt;C₈-EC₁₀ ³</th>
<th>&lt;C₁₀-EC₁₂ ³</th>
<th>&lt;C₁₂-EC₁₆ ³</th>
<th>&lt;C₁₆-EC₂₁ ³</th>
<th>&lt;C₂₁-EC₃₅ ³</th>
<th>Total aromatics C₅-3₅ ³</th>
<th>Total aliphatics and aromatics(C₅-3₅) ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BH3</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>BH4</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>CHP Wae</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>DUP91</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>SW4</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>MTBE ³</th>
<th>Benzene ³</th>
<th>Toluene ³</th>
<th>Ethylbenzene ³</th>
<th>m/p-Xylene ³</th>
<th>o-Xylene ³</th>
<th>Sulphate as SO₄ ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>18.6</td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>21.8</td>
</tr>
<tr>
<td>BH3</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>13.4</td>
</tr>
<tr>
<td>BH4</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>&lt;5</td>
<td>15.8</td>
</tr>
</tbody>
</table>

For inspection purposes only.

Consent of copyright owner required for any other use.
<table>
<thead>
<tr>
<th>J E Sample No.</th>
<th>1-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>21-25</th>
<th>26-30</th>
<th>31-33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample ID</td>
<td>BH1</td>
<td>BH2</td>
<td>BH3</td>
<td>BH4</td>
<td>CHIP</td>
<td>CUPS1</td>
<td>SH1</td>
</tr>
<tr>
<td>Containers</td>
<td>V HN P G</td>
<td>V HN P G</td>
<td>V HN P G</td>
<td>V HN P G</td>
<td>V HN P G</td>
<td>V HN P G</td>
<td>HN P G</td>
</tr>
<tr>
<td>Sample Date</td>
<td>18/12/2017</td>
<td>18/12/2017</td>
<td>18/12/2017</td>
<td>18/12/2017</td>
<td>18/12/2017</td>
<td>18/12/2017</td>
<td>18/12/2017</td>
</tr>
<tr>
<td>Sample Type</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Ground Water</td>
<td>Surface Water</td>
</tr>
<tr>
<td>Batch Number</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Date of Receipt</td>
<td>20/12/2017</td>
<td>20/12/2017</td>
<td>20/12/2017</td>
<td>20/12/2017</td>
<td>20/12/2017</td>
<td>20/12/2017</td>
<td>20/12/2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>1-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>21-25</th>
<th>26-30</th>
<th>31-33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexavalent Chromium</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
</tr>
<tr>
<td>Total Dissolved Chromium III</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
<td>&lt;6</td>
</tr>
<tr>
<td>Total Alkalinity as CaCO₃</td>
<td>88</td>
<td>94</td>
<td>104</td>
<td>54</td>
<td>62</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>COD (Settled)</td>
<td>&lt;7</td>
<td>23</td>
<td>22</td>
<td>&lt;7</td>
<td>&lt;7</td>
<td>261</td>
<td>&lt;7</td>
</tr>
</tbody>
</table>

For inspection purposes only. Consent of copyright owner required for any other use.
# Notification of Deviating Samples

**Matrix:** Liquid

**Location:**

**Contact:** Brian Duggan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17/20995</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Liquid Samples were received at a temperature above 9°C.</td>
</tr>
</tbody>
</table>

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.
NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/20995

SOILS

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.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory.

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEViating SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.
**ABBREVIATIONS and ACRONYMS USED**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>ISO17025 (UKAS Ref No. 4225) accredited - UK.</td>
</tr>
<tr>
<td>SA</td>
<td>ISO17025 (SANAS Ref No.T0729) accredited - South Africa.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates analyte found in associated method blank.</td>
</tr>
<tr>
<td>DR</td>
<td>Dilution required.</td>
</tr>
<tr>
<td>M</td>
<td>MCERTS accredited.</td>
</tr>
<tr>
<td>NA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NAD</td>
<td>No Asbestos Detected.</td>
</tr>
<tr>
<td>ND</td>
<td>None Detected (usually refers to VOC and/SVOC TICs).</td>
</tr>
<tr>
<td>NDP</td>
<td>No Determination Possible</td>
</tr>
<tr>
<td>SS</td>
<td>Calibrated against a single substance</td>
</tr>
<tr>
<td>SV</td>
<td>Surrogate recovery outside performance criteria. This may be due to a matrix effect.</td>
</tr>
<tr>
<td>W</td>
<td>Results expressed on as received basis.</td>
</tr>
<tr>
<td>+</td>
<td>AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.</td>
</tr>
<tr>
<td>++</td>
<td>Result outside calibration range, results should be considered as indicative only and are not accredited.</td>
</tr>
<tr>
<td>*</td>
<td>Analysis subcontracted to a Jones Environmental approved laboratory.</td>
</tr>
<tr>
<td>AD</td>
<td>Samples are dried at 35°C ±5°C</td>
</tr>
<tr>
<td>CO</td>
<td>Suspected carry over</td>
</tr>
<tr>
<td>LOD/LOR</td>
<td>Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS</td>
</tr>
<tr>
<td>ME</td>
<td>Matrix Effect</td>
</tr>
<tr>
<td>NFD</td>
<td>No Fibres Detected</td>
</tr>
<tr>
<td>BS</td>
<td>AQC Sample</td>
</tr>
<tr>
<td>LB</td>
<td>Blank Sample</td>
</tr>
<tr>
<td>N</td>
<td>Client Sample</td>
</tr>
<tr>
<td>TB</td>
<td>Trip Blank Sample</td>
</tr>
<tr>
<td>OC</td>
<td>Outside Calibration Range</td>
</tr>
<tr>
<td>Test Method No.</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>TM5</td>
<td>Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.</td>
</tr>
<tr>
<td>TM5/TM36</td>
<td>please refer to TMs and TM36 for method details</td>
</tr>
<tr>
<td>TM16</td>
<td>Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.</td>
</tr>
<tr>
<td>TM30</td>
<td>Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009</td>
</tr>
<tr>
<td>TM30</td>
<td>Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009</td>
</tr>
<tr>
<td>TM38</td>
<td>Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1</td>
</tr>
<tr>
<td>TM37</td>
<td>Modified US EPA Method 410.4. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometrically.</td>
</tr>
<tr>
<td>Test Method No.</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>TM75</td>
<td>Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser.</td>
</tr>
<tr>
<td>NONE</td>
<td>No Method Code</td>
</tr>
</tbody>
</table>
Seven samples were received for analysis on 20th December, 2017 of which one were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.
# Sample Details

**JE Sample No.**: 31-33  
**Sample ID**: NA  
**Depth**: 2m  
**COC No / misc**: H P G  
**Sample Date**: 18/12/2017  
**Sample Type**: Surface Water  
**Batch Number**: 1  
**Date of Receipt**: 20/12/2017  

## Nitrate as NO₃⁻

<table>
<thead>
<tr>
<th>LOD/LOR</th>
<th>Units</th>
<th>Method No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.2</td>
<td>mg/l</td>
<td>TM38/PM0</td>
</tr>
</tbody>
</table>

Please see attached notes for all abbreviations and acronyms.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17/20995</td>
<td>1</td>
<td></td>
<td></td>
<td>31-33</td>
<td>Nitrate</td>
<td>Liquid Samples were received at a temperature above 9°C.</td>
</tr>
<tr>
<td>17/20995</td>
<td>1</td>
<td>SW4</td>
<td>31-33</td>
<td></td>
<td>Nitrate</td>
<td>Sample holding time exceeded</td>
</tr>
</tbody>
</table>

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.
NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/20995

SOILS

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.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory.

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEViating SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SUROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.
ABBREVIATIONS and ACRONYMS USED

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>ISO17025 (UKAS Ref No. 4225) accredited - UK.</td>
</tr>
<tr>
<td>SA</td>
<td>ISO17025 (SANAS Ref No. T0729) accredited - South Africa.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates analyte found in associated method blank.</td>
</tr>
<tr>
<td>DR</td>
<td>Dilution required.</td>
</tr>
<tr>
<td>M</td>
<td>MCERTS accredited.</td>
</tr>
<tr>
<td>NA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NAD</td>
<td>No Asbestos Detected.</td>
</tr>
<tr>
<td>ND</td>
<td>None Detected (usually refers to VOC and SVOC TICs).</td>
</tr>
<tr>
<td>NDP</td>
<td>No Determination Possible</td>
</tr>
<tr>
<td>SS</td>
<td>Calibrated against a single substance</td>
</tr>
<tr>
<td>SV</td>
<td>Surrogate recovery outside performance criteria. This may be due to a matrix effect.</td>
</tr>
<tr>
<td>W</td>
<td>Results expressed on as received basis.</td>
</tr>
<tr>
<td>+</td>
<td>AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.</td>
</tr>
<tr>
<td>++</td>
<td>Result outside calibration range, results should be considered as indicative only and are not accredited.</td>
</tr>
<tr>
<td>*</td>
<td>Analysis subcontracted to a Jones Environmental approved laboratory.</td>
</tr>
<tr>
<td>AD</td>
<td>Samples are dried at 35°C ±5°C</td>
</tr>
<tr>
<td>CO</td>
<td>Suspected carry over</td>
</tr>
<tr>
<td>LOD/LOR</td>
<td>Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS</td>
</tr>
<tr>
<td>ME</td>
<td>Matrix Effect</td>
</tr>
<tr>
<td>NFD</td>
<td>No Fibres Detected</td>
</tr>
<tr>
<td>BS</td>
<td>AQC Sample</td>
</tr>
<tr>
<td>LB</td>
<td>Blank Sample</td>
</tr>
<tr>
<td>N</td>
<td>Client Sample</td>
</tr>
<tr>
<td>TB</td>
<td>Trip Blank Sample</td>
</tr>
<tr>
<td>OC</td>
<td>Outside Calibration Range</td>
</tr>
</tbody>
</table>

For inspection purposes only. Consent of copyright owner required for any other use.
<table>
<thead>
<tr>
<th>Test Method No.</th>
<th>Description</th>
<th>Prep Method No. (if appropriate)</th>
<th>Description</th>
<th>ISO 17025 (UKAS/SNAS)</th>
<th>MCERTS (UK soils only)</th>
<th>Analysis done on As Received (AR) or Dried (AD)</th>
<th>Reported on dry weight basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM38</td>
<td>Soluble ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1</td>
<td>PM0</td>
<td>No preparation is required.</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>