APPENDIX 9-4

Water Survey Features Report

Cavan Regional Sports Campus, Cavan, County Cavan

Client: McAdam Design

Issued: March 2024

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1.0 INTRODUCTION

MCL Consulting Ltd (MCL) was appointed by McAdam Design, on behalf of Cavan County Council, to undertake a Water Features Survey Assessment for lands north, south and west of Royal School Cavan and west of Breffni Park GAA grounds, County Cavan.

The proposed project relates to circa 27.5ha situated to the Southwest of Cavan Town, located between Kingspan Breffni Park and the Royal School, Cavan and is presented in Appendix A.

The current proposal includes;

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.
- The proposed bridge is a single span integral reinforced concrete bridge, supported on piled foundations.

This report provides a review of local water features at and around the site, for the purposes of identifying all water features and water-dependent features that could potentially be influenced by the proposed development.

The report has been prepared in accordance with all statutory guidance including:-

- IGI Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- DAERA Environmental Advice for Planning : Practice Guide, Water Features Survey, August 2018.

The assessment has been undertaken based on a desk-based review and detailed site walkover works including field data gathering works, and also drawing from recent investigations undertaken for land contamination, hydrology (flood risk) and aquatic ecology.

1.1 Site Setting

The site, c.27.5ha, is located in central Cavan, County Cavan, on lands surrounding Royal School, College Street and west/northeast of Kingspan Breffni (IGR: 241769, 303932). A site location map is presented as **Figure 1** and the site area is presented as **Figure 2**.

Figure 1: Site Location Map

The site currently occupied by agricultural land surrounding Royal College, County Cavan. The surrounding area is characterised as largely residential, with mixed recreational and commercial land uses surrounding. A summary of the properties / land-use immediately adjacent to the site is presented in **Table 1**.

Table 1: Summary of Adjacent Land Use

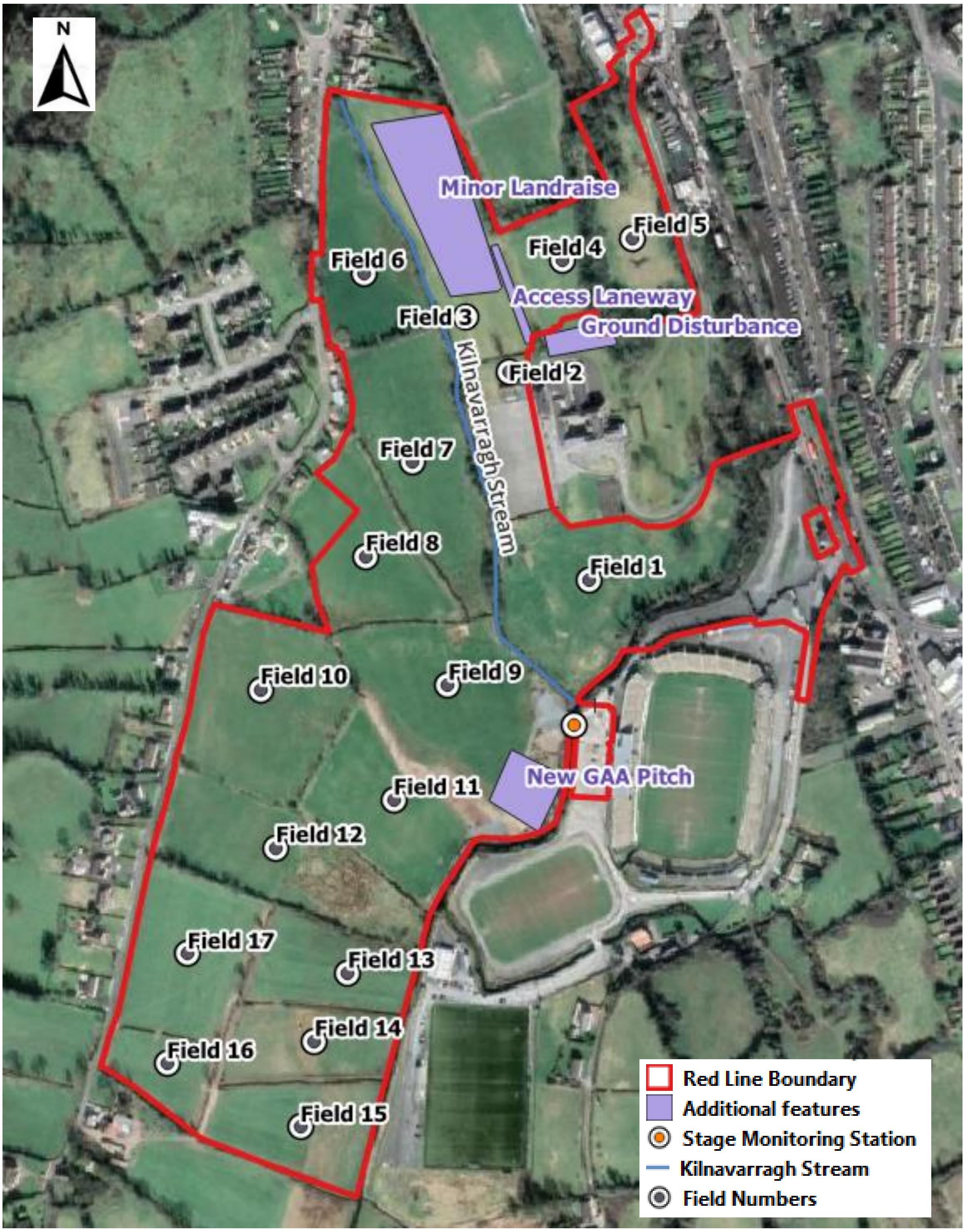
Orientation from Site	Neighbouring Property/ Land Use beyond Site Boundaries
North	Sport fields are directly to the north of the site with residential/commercial properties beyond this leading into Cavan town.
South	Developed sport fields lie directly to the south with adjacent agricultural fields. Lands beyond this are dominated by agricultural lands with small residential properties within.
East	Residential/commercial properties with agricultural properties beyond.
West	Agricultural/residential properties are adjacent to the site with Swellan Lough beyond this. Lands beyond this are for agricultural/residential use.

Figure 2: Aerial Image of the Site Boundary

1.2 Site Walkover

An initial site walkover was undertaken by MCL on 20th April 2023. Surface Water sampling was undertaken on 25th January 2024 (including in-situ Electrical Conductivity monitoring, described within the report). On 15th February 2024, a site walkover was undertaken to map out all Water features within the site and surrounding area. A tributary (Kilnavarragh Stream) of the Cavan River enters the site via a culvert under the Kinavarragh Lane, flowing southwards in an open wooded channel, before flowing southeast into the Cavan River. This tributary roughly dissects the site into east and west. Therefore, for ease of description, the site can be divided into lands east of Kilnavarragh Stream and west of the Kilnavarragh Stream as shown on **Figure 3**. The site consists of seventeen separate fields also shown on **Figure 3**.

Figure 3: Separation of Site into field sections



1.2.1 East of the Kilnavarragh Stream

This area of site can be accessed via access road into Royal School Cavan. From this access road, there is an all-weather gravel sports pitch used by the school. To the west of this pitch is the Kilnavarragh Stream which dissects the site. South of the pitch is Field 1, which is greenfield land. The topography slopes to the south/southeast in this area, where the field borders the Cavan River. There was an area of marshy land in the southwest of this field along the Kilnavarragh Stream. Drainage pipes from Breffni Park grounds, were identified flowing into the Cavan River. Looking south from the recently constructed Aggregate Access Laneway allowing access to farmlands north of new school building, ponded water is noted on the surface of the laneway.

North of Field 1 is a gravel pitch currently used by Royal School Cavan as a Car Park in the south and a Physical Education ground. Slightly upgradient of the Gravel Pitch is a grass field (Field 2). East of Field 2, beyond the site boundary and encroaching into Field 4 is an active construction site, where the construction of a new 2-storey school building structure has recently been completed. Groundworks within this area include a land cut / reprofiling and land-raising in an area behind the new-constructed retaining structure.

To the north of the new school building, within Field 3 and Field 4, localised land-stripping has been undertaken to create a new hardcore access lane. This leads northwards, opening up into a large area of very recent minor land raise. A c.1m thick layer of what appears to be mainly clay materials arising from the school development cut has been spread out over agricultural lands to the north of the school development. The western area of Field 3 and the eastern area of Field 4 have remained mainly greenfield.

To the north of the new school building, within Field 3 and Field 4, localised land-stripping has been undertaken to create a new hardcore access lane. This leads northwards, opening up into a large area of very recent minor land raise. A c.1m thick layer of what appears to be mainly clay materials arising from the school development cut has been spread out over agricultural lands to the north of the school development. The western area of Field 3 and the eastern area of Field 4 have remained mainly greenfield.

Field 5 is located slightly upgradient of Field 4 and is greenfield land. There is then a steep decline in topography eastwards towards the Cavan River.

1.2.2 West of the Kilnavarragh Stream

Field 6 and Field 7 are located west of the Kilnavarragh Stream. The topography increases west from Field 2 and Field 3 to Field 6 and Field 7. The topography decreases from Field 6 towards Field 7. Field 6, Field 7 and Field 8 are all greenfield land with no previous activities occurring in these areas.

Field 9 can be accessed via a newly-constructed bridge across the Cavan River located within the grounds of Breffni Park GAA grounds car park. A river stage monitoring station is located to the immediate south of the bridge. The land slopes upgradient in a north west direction from the bridge. In the east of this field, a car park associated with Cavan GAA is currently under construction. A GAA playing pitch has recently been constructed along the south/south west of Field 9. This would have required a programme of ground disturbance cut and fill / alteration of land profile to create a flat platform on what have originally been sloping lands.

The field boundary and associated small area of woodland observed to exist between Field 9 and Field 11, as observed by comparing aerial photography dated between 2021 and 2022, has recently been removed creating a strip of bare / disturbed cleared ground now partly occupied by the new playing field.

In the northwest corner of Field 9, along the boundary with Field 8, a low flowing watercourse enters the site flowing southeast.

Field 10 located upgradient of Field 11, the boundaries of which is separated by a ditch with limited water flow. Field 12 is also separated from Field 10 and Field 11 by a ditch, with limited, stagnant water. Field 10, Field 11 and Field 12 (scrub) are all greenfield land with no evidence of former land use activity.

Field 13-17 are located in the southernmost regions of the site. The walkover of these fields indicated that the vast majority of areas are all greenfield land, with no evidence of contaminating land use evident. There is a clear decrease in elevation between Fields 16 and 17 and the lower Fields 13-15, with the lower fields meeting the Cavan River on the eastern boundary. Fields 13-15 showed extensive flooding during the site visit, likely from field drains present along the field boundaries. The flooding covered a large portion of the eastern sections of the fields.

1.3 Ground Investigation

A ground investigation was carried out between November 2023 and February 2024 by *Northwest Geotech.* Details of the Ground investigation are useful context within this Water Features Survey Report. The ground investigation involved;

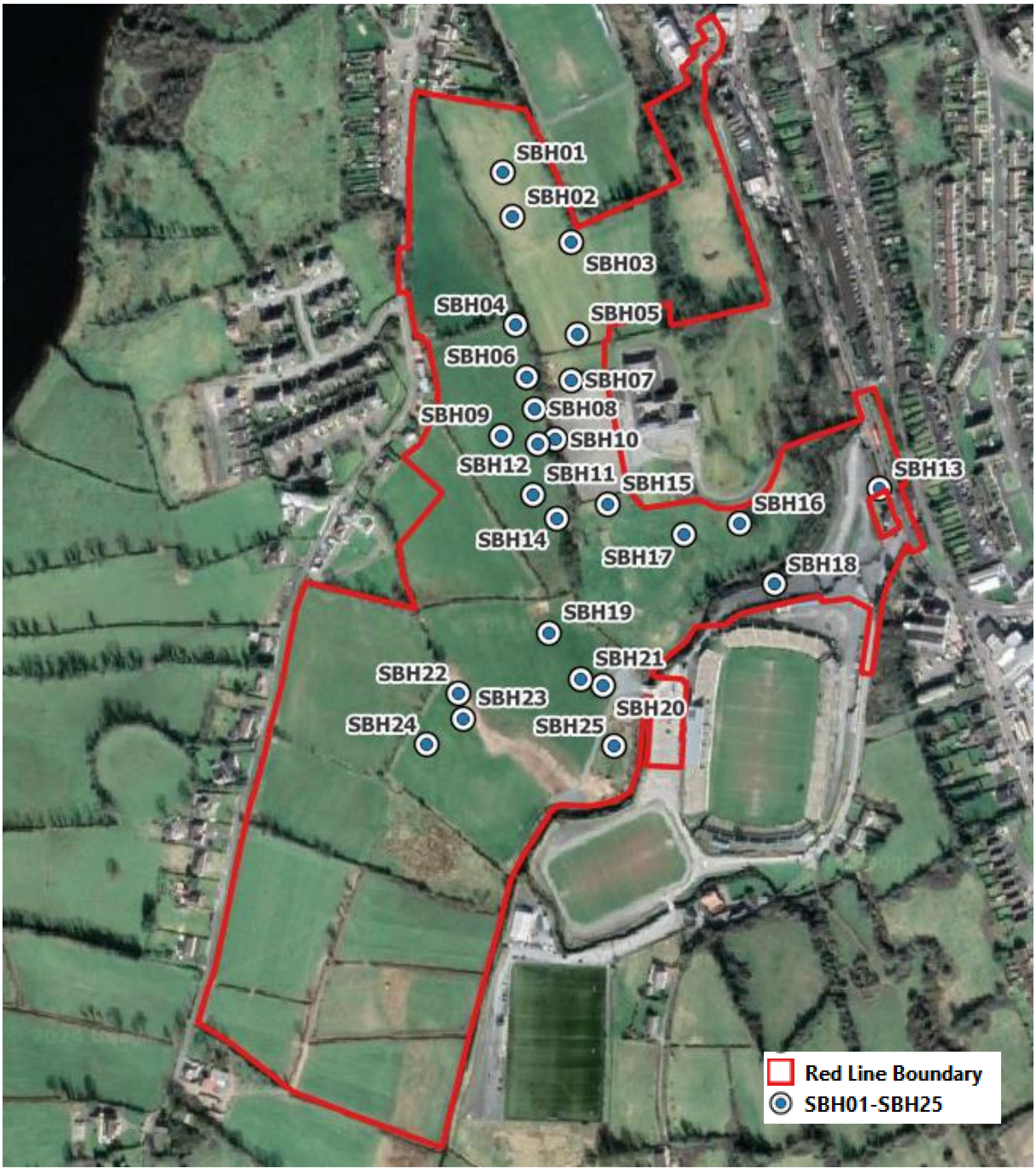
- Digging of 35no. Trial Pits (TP01-TP35)
- Drilling of 25no. Shallow Boreholes (SBH01-SBH25)
- Drilling of 19no. Boreholes (BH01-BH19)
- Drilling of 7no. Deep Boreholes (DBH01-DBH07)
- Installation of 25no. groundwater and Ground Gas Monitoring wells (SBH01-SBH25)
- 4no. return gas and groundwater monitoring visits;
- Sampling and analysis of selected soils, groundwater and surface water;
- Interpretation of analytical results and determination of relevant assessment criteria;

The locations of all soil / groundwater monitoring points are presented in **Figure 4.**

Monitoring standpipes were installed in SBH01 to SBH25 to allow for groundwater (manual level and water quality) and ground gas monitoring. Soil and groundwater samples were retrieved across the site.

A programme of Electrical Conductivity (EC) surveying and surface water sampling was undertaken in relevant watercourses in and around the site. The MCL ecology team also completed a preliminary habitat survey of the Cavan River in respect of aquatic fauna. Detailed surveys are scheduled for Spring/Summer 2024. Relevant elements of these works will be described later in this report.

Figure 4: Borehole Locations



2.0 WATER FEATURES SURVEY

2.1 Groundwater features

2.1.1 Licensed abstractions

A review of the Groundwater Data Viewer online map viewer indicates there are no abstractions (licensed or private) within 500m of the site.

2.1.2 Designations

A 15km buffer zone of influence (ZoI) has been chosen as a precautionary measure, to ensure that all potentially affected European Sites are included in the screening process, which is in line with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG, 2009, rev. 2010). **Figure 5** presents the locations of European Sites relative to the development site.

The site is not located within any sites that are nationally or internationally designated for their nature conservation importance. However, the proposed development site is located approximately 3.6km south-east of the Lough Oughter SPA and Lough Oughter and Associated Loughs SAC. The hydraulic distance between the site and the SPA / SAC is c.5km. There are no Proposed Natural Heritage Areas within 15km of the site with the nearest designated Proposed Natural Heritage Areas, Lough Oughter and Associated Loughs pNHA and Drumkeen House Woodland pNHA, located approximately 3.69km north-west / west and 3.02km north respectively.

Figure 5: Distances to European Sites

2.1.3 Water Features From Published Mapping / Walkover

A review of relevant historical OS Maps has been undertaken to assess the presence of all historical and mapped water features, including water bodies, shallow wells and springs etc. in the vicinity of the site. A summary of mapped features is presented in **Table 2**.

The Historical Ordnance Survey mapping, as presented in **Figure 6, 7 and 8**, shows multiple relevant water features in and around the site, with varying degrees of change over time, attributed to associated developments on site over time. Annotated maps compiling the water features present are presented in **Figure 9-11**.

The Cavan River is mapped to the east of the site, with multiple drainage channels and tributaries noted across the site and surrounding area. Areas noted as liable to flooding / wetlands are noted in the maps via a green hashed outline, whilst large standing water bodies are presented via a red hashed outline and watercourses via a red line.

Table 2: OSI Mapped Features (Refer to Figure 6, 7, 8, and 9)

Ref.	Feature	Locality	Comments
OW1	Watercourse (unlabelled)	Northwest extent of the site. Watercourse flows to the southeast, bisecting the site and joining the Cavan River. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref OW1.	In the current day, the watercourse originated from a culvert running under the Kilnavarragh Lane and runs through a series of fields. Moderate flow observed.
OW2	Watercourse (Cavan River)	Adjacent to the east of the site. Watercourse flows to the north along the eastern boundary of the site. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref OW2.	The watercourse remains to the east of the site. Areas in the south of the site are marked as prone to flooding (areas marked in green), partly due to the risk of overflow from this river, as seen in historical OSI mapping (Figure 5, 6 and 7). Moderate-high flow observed.

OW3	Watercourse (unlabelled)	East of the site. Watercourse flows to the west as a tributary to the Cavan River. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref OW3.	The watercourse remains to the east of the site and continues to act as a tributary to the Cavan River. Moderate flow observed.
OW4	Watercourse (unlabelled)	West of the site. Watercourse runs south from the Swellan Lough, eventually flowing into the Cavan River. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref OW4.	The watercourse remains to the west of the site. Historical OSI maps (Figure 5, 6 and 7) show areas of potential flooding surrounding this watercourse (areas marked in green). Moderate flow observed.
OW5	Watercourse (unlabelled)	East of the site, below Green Lough (L2). The watercourse is the outflow from L2, flowing to the south and joining SW3, eventually flowing into the Cavan River. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref OW5.	Watercourse remains to the east of the site.
OW6	Watercourse (unlabelled)	West of the site. Watercourse flows from an unknown source and flows southeast, joining SW4 and eventually flowing into the Cavan River. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref OW6.	Watercourse remains to the west of the site.

OW7	Watercourse (unlabelled)	On site. Watercourse flows from the north of the site, south towards C1. Identified only during the water features survey walkover on 16th February 2024. Point Ref OW7.	Watercourse remains on site. Watercourse has a moderate flow and shows pooling in its southern extent by C1.
OW8	Watercourse (unlabelled)	On Site. Watercourse flows from the northwest to the southeast, eventually discharging into OW1. Identified only during the water features survey walkover on 16th February 2024. Point Ref OW8.	Watercourse remains on site. Watercourse has a low flow.
OW9	Watercourse (unlabelled)	c.115m Northwest of site. Flows west into Swellan Lough. Source unknown, however expected to rise within local springs.	Watercourse has a low flow.
L1	Open Water Body (labelled as 'Swellan Lough')	West of the site. The Lough lies at a similar elevation to the site, however a large hill separates the two. OW4 acts as an outflow from the Lough. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref L1.	The Lough remains to the east of the site. The Lough remains relatively unchanged from historical mapping.
L2	Open water body (labelled as 'Green Lough')	East of the site. The Lough is at a similar elevation to the site, however the two locations are separated by the Cavan River. First identified in OSI 6 Inch First Edition (1829-1841) and persisting through to the OSI 6 Inch Last Edition (1830-1930). Point Ref L2.	The Lough remains to the east of the site. The Lough has diminished in size when compared to historical mapping.
W1	Well (unlabelled)	Northwest of the site. The Well is located c.130m from the site.	Well is no longer noted on any mapping and was not able to be located.

		Identified only in OSI 25 Inch Mapping (1897-1913). Point Ref W1.	
W2	Well (unlabelled)	West of the site. The Well is located c.50m from the site. Identified only in OSI 25 Inch Mapping (1897-1913). Point Ref W2.	Well is no longer noted on any mapping and was not able to be located.
W3	Well (unlabelled)	West of the site. The Well is located c.140m from the site. Identified only in OSI 25 Inch Mapping (1897-1913). Point Ref W3.	Well is no longer noted on any mapping and was not able to be located.
W4	Well (unlabelled)	West of the site. The Well is located c.110m from the site. Identified only in OSI 25 Inch Mapping (1897-1913). Point Ref W4.	Well is no longer noted on any mapping and was not able to be located.
W5	Well (unlabelled)	North of the site. The Well is located immediately adjacent to the site, within the Royal School grounds. Identified only in OSI 25 Inch Mapping (1897-1913). Point Ref W5.	Well is no longer noted on any mapping and was not able to be located.
W6	Well (unlabelled)	East of the site. The Well is located c.150m from the site. Identified only in OSI 25 Inch Mapping (1897-1913). Point Ref W6.	Well is no longer noted on any mapping and was not able to be located.
D1	Open Watercourse (unlabelled)	On site. The watercourse is located in the southern portion of the site and is suspected to be a drain. Identified in OSI 25 Inch Mapping (1897-1913) and water	Watercourse remains on site, flowing from the northwest to the southeast, joining the Cavan River.

		features survey walkover on 16th February 2024. Point Ref D1.	
D2	Open Watercourse (unlabelled)	On site. The watercourse is located in the southern portion of the site and is suspected to be a drain. Identified in OSI 25 Inch Mapping (1897-1913) and water features survey walkover on 16th February 2024. Point Ref D2.	Watercourse remains on site, flowing from the northwest to the southeast, joining the Cavan River.
D3	Open Watercourse (unlabelled)	On site. Location denotes a group of watercourses located in the southern portion of the site and are suspected to be drains. Identified in OSI 25 Inch Mapping (1897-1913) and water features survey walkover on 16th February 2024. Point Ref D3.	The watercourses remain on site. Watercourses show extensive flooding towards the Cavan River.
D4	Open Watercourse (unlabelled)	West of the site. Location denotes a group of watercourses suspected to the drains, flowing into OW4. Identified in OSI 25 Inch Mapping (1897-1913) and water features survey walkover on 16th February 2024. Point Ref D4.	The watercourses remain to the west of the site.
D5	Open Watercourse (unlabelled)	East of the site. The watercourse is suspected to be a drain and flows to the west, into the Cavan River. Identified in OSI 25 Inch Mapping (1897-1913) and water features survey walkover on 16th February 2024. Point Ref D5.	The watercourse remains to the east of the site.
D6	Open watercourse (unlabelled)	On site. The watercourse is suspected to be a drain, running from the northern site extent to the south, towards Roay School.	Watercourse was dry, however is suspected to act as a channel for storm waters.

		Watercourse was dry when identified during the water features survey walkover on 16th February 2024. Point Ref. D6.	
D7	Open watercourse (unlabelled)	On Site. The watercourse is located on the northern boundary of the site and flows west, towards OW7 and C1. Identified during the water features survey walkover on 16th February 2024. Point Ref. D7.	Watercourse remains on site.
C1	Culverted Watercourse (unlabelled)	On Site. Watercourse is located in the northern section of the site. The watercourse flows to the west, with an exposed outfall into OW1. Identified during the water features survey walkover on 16th February 2024. Point Ref. C1.	Watercourse is culverted and is suspected to act as a drainage channel for the northeastern section of the site.
C2	Culverted Watercourse (unlabelled)	On site. Watercourse follows the path of D1, as shown on OSI Historical Mapping. Identified during the water features survey walkover on 16th February 2024.	Watercourse is culverted, with only the entrance evident during the walkover. Culvert is suspected to follow the old drainage channel trace shown in historical OSI mapping.

Figure 6: OSI 6 Inch First Edition: 1829-1841 (Collated Water Features)

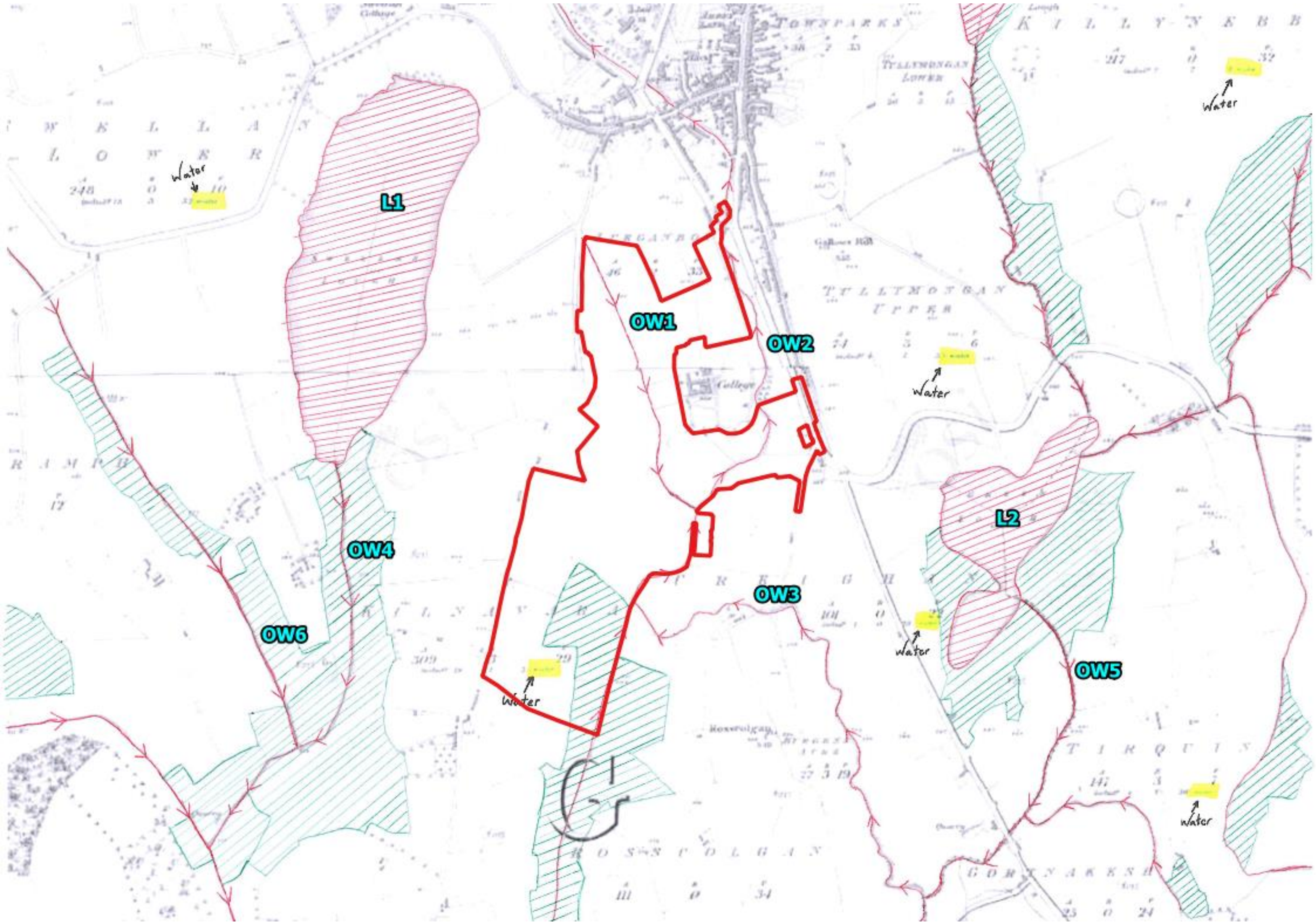


Figure 7: OSI 25 Inch Edition: 1897-1913 (Collated Water Features)

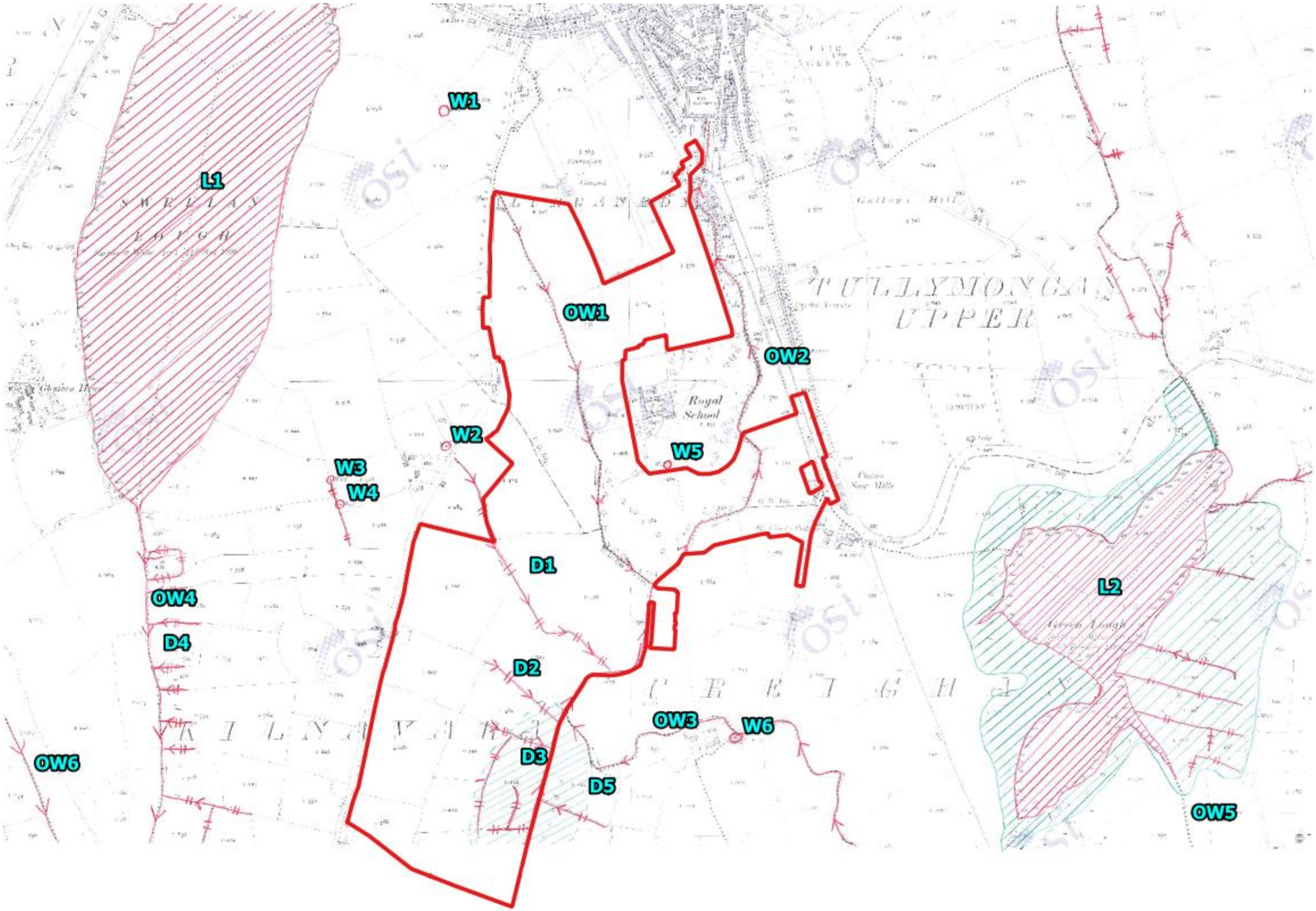


Figure 8: OSI 6 Inch Last Edition: 1830-1930 (Collated Water Features)

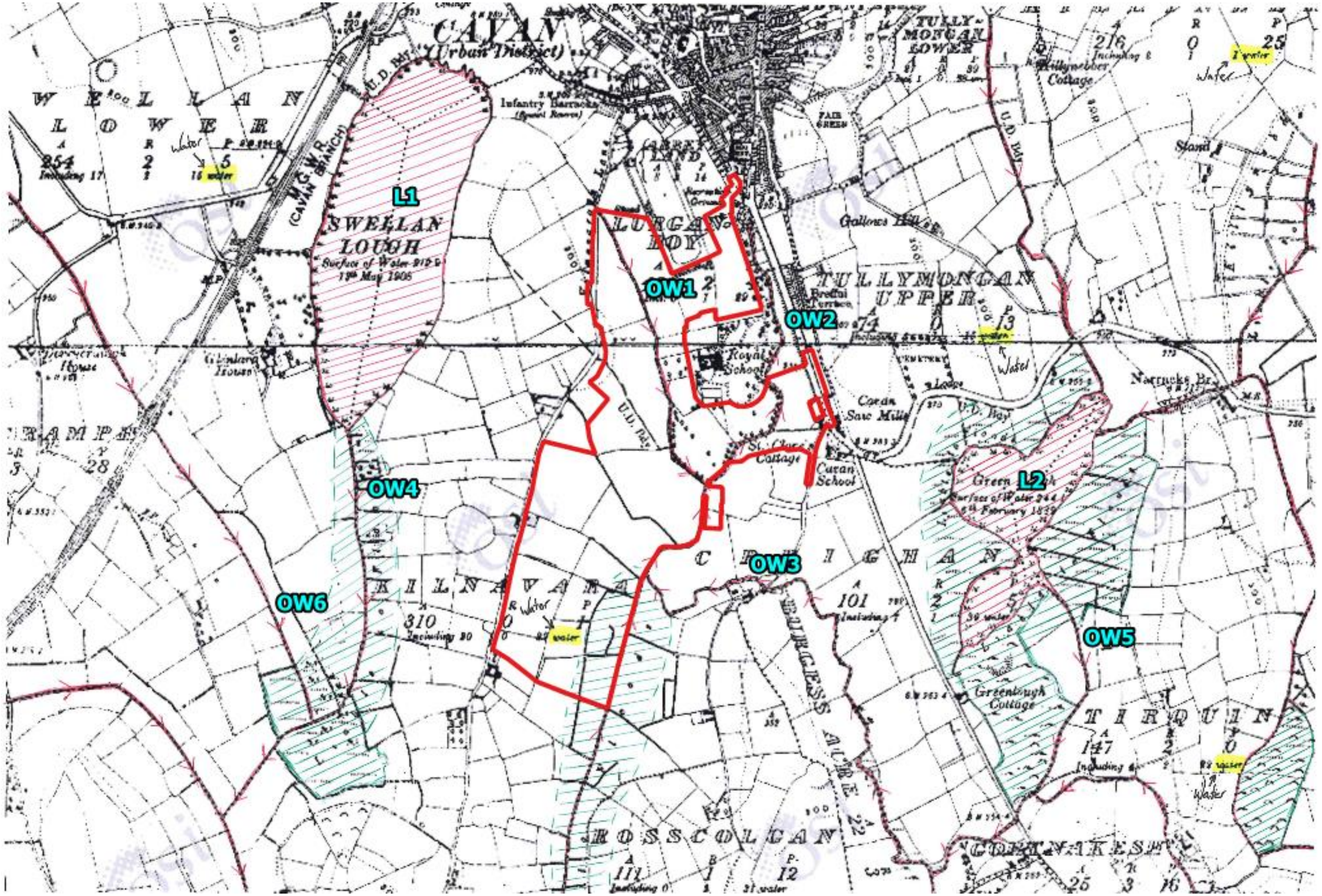
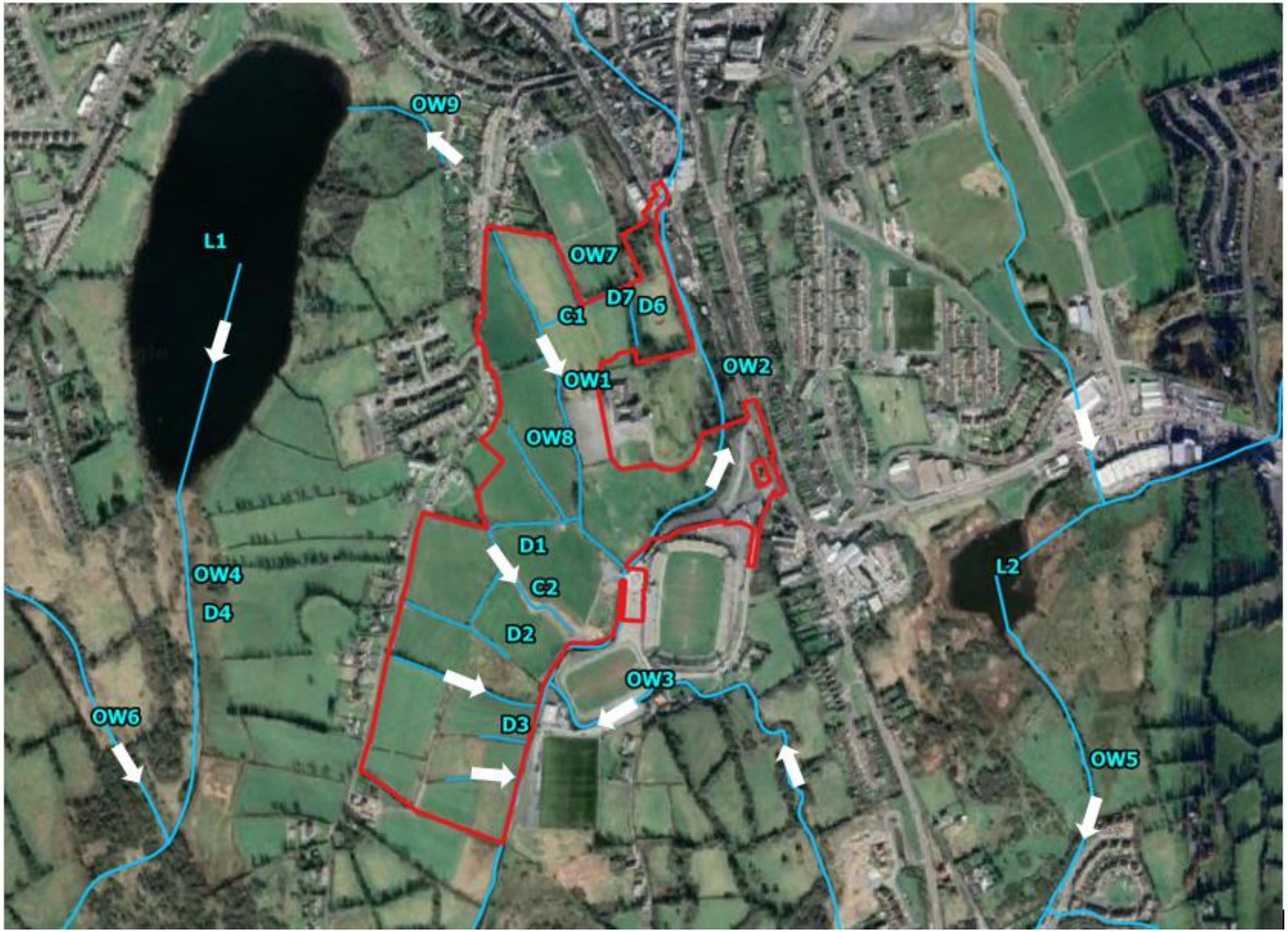


Figure 9: Water Features Survey Walkover: 15th February 2024 (Collated Water Features)



The historical mapping indicates a complex hydrological history across the Cavan site, with various water features past and present recorded. The majority of historical watercourses remain on site or in the proximity of the site, whilst some have been infilled or culverted. Multiple, previously unknown watercourses were discovered on site, particularly in the northern and middle sections of the site.

2.1.4 Local Property Survey

No owners/occupiers of nearby properties were approached directly but anecdotal information from the local community indicates that it is highly unlikely that there are any private water supplies in the vicinity of the site. The urban location dictates that the local population are served by mains water and sewerage systems.

2.1.5 Open Water Bodies

Swellan Lough is located on lower ground c.300m to the west of the site, as shown in **Figure 10** below. The site is not hydraulically linked to Swellan Lough, as all groundwater on site flows east/south east towards the Cavan River. A small watercourse c.130m north west of the site was identified flowing west towards and into Swellan Lough. This watercourse is not hydraulically connected the site.

Figure 10: Swellan Lough

2.1.6 Watercourses and Drains

According to the EPA Ireland online map viewer, the Cavan River (36C02), flows along the eastern boundary, with the Green lough stream (36G01) joining the Cavan River at the southern most point of the site, as shown below in **Figure 11** and **Table 3**. Kinnypottle Stream (36K05) then joins the Cavan River as a tributary c.360m to the north. The Swellan Lower is located c.310m to the west of the site and flows to the south.

During the site walkover, the Kilnavarragh Stream of the Cavan River was identified to be dissecting the site into east and west, flowing in an open channel south through the site and converging with the Cavan River along the eastern site boundary. A small watercourse / ditch was observed draining lands north of the school. Various other very small field drains / ditches were recorded along various field boundaries within and around the site.

Figure 11: Local Watercourses

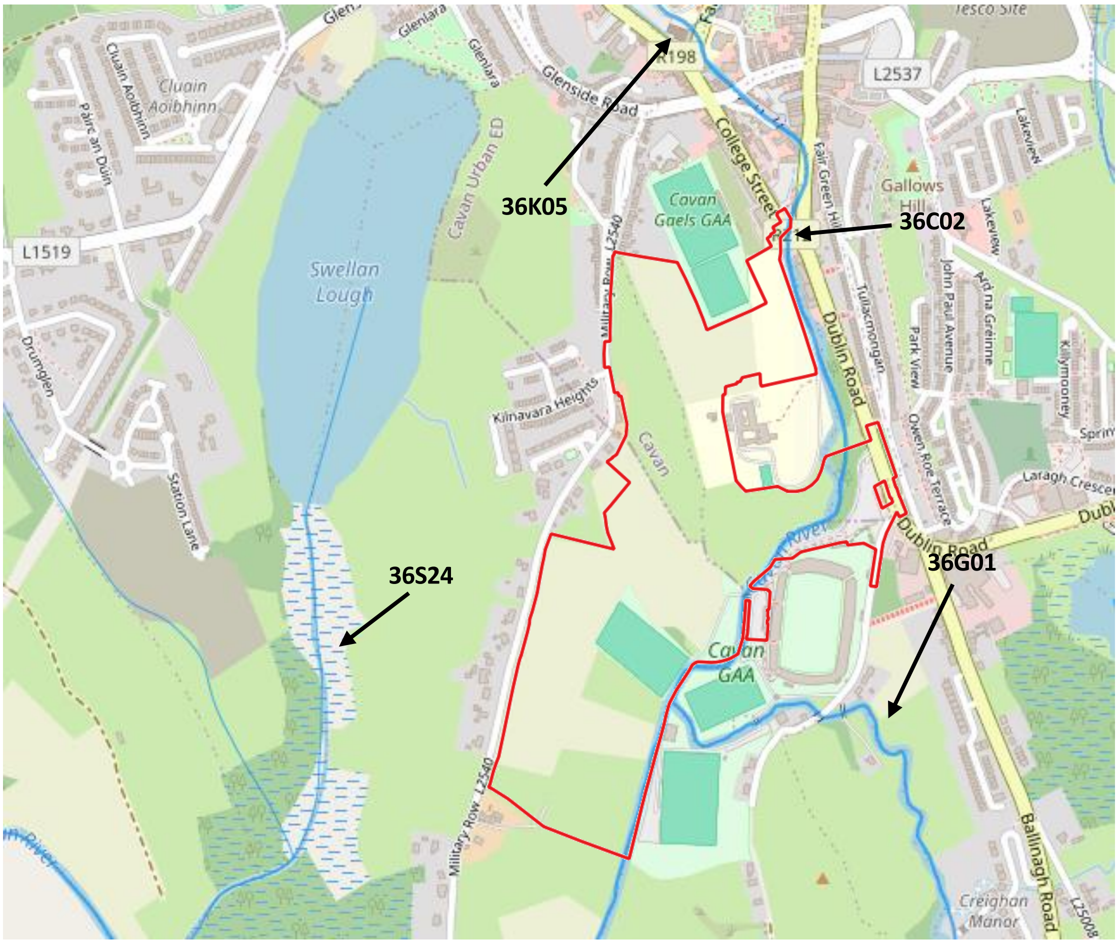


Table 3: Summary of Local Watercourses

EPA Name	EPA Code	Distance from site
Cavan 36	36C02	Eastern border
Kinnypottle Stream	36K05	c.360m north
Swellan Lower	36S24	c.310m west
Green lough stream	36G01	Southern most point

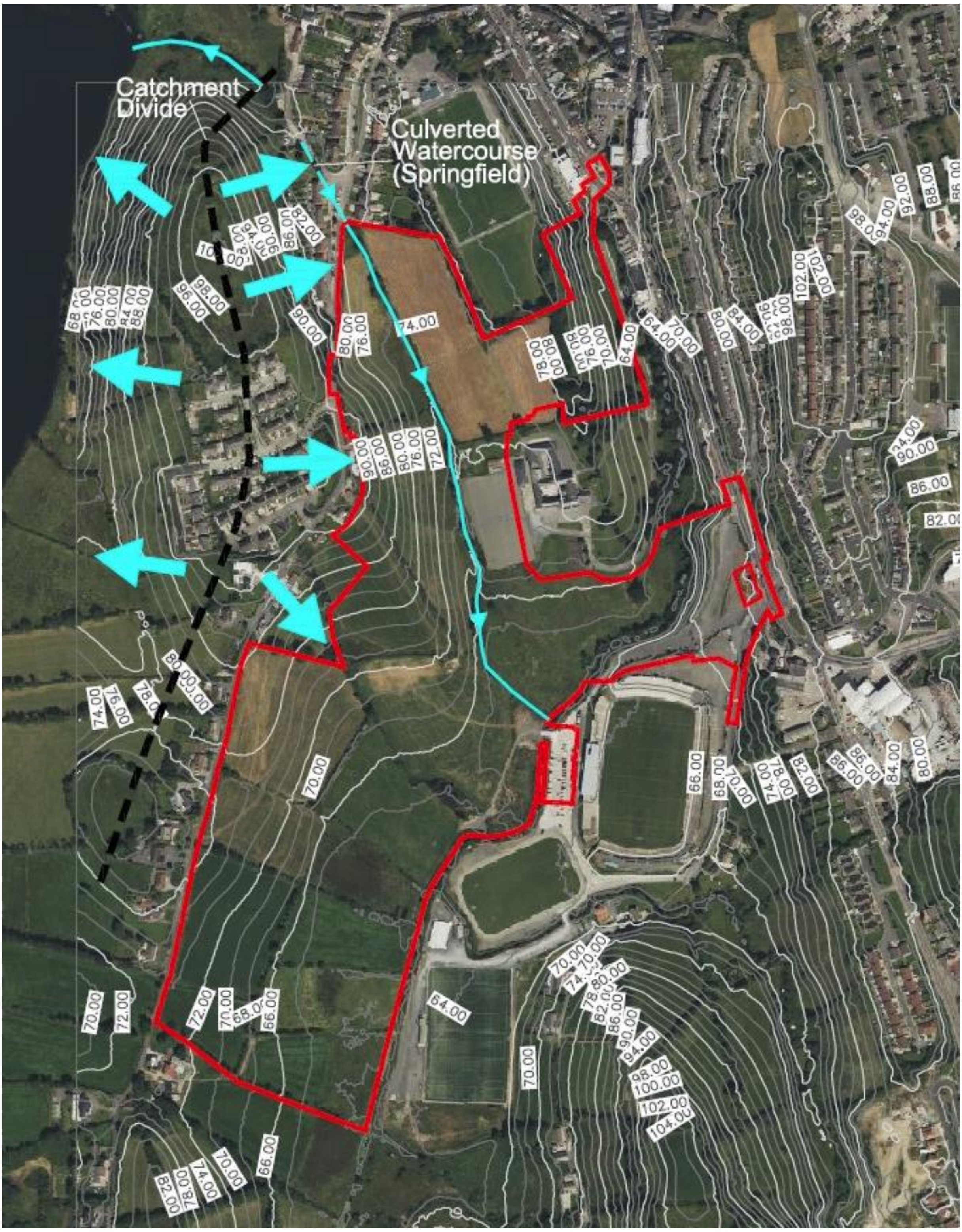
The site is located within the Cavan River – Erne Catchment and all drainage arising from the site ultimately discharges to Lough Oughter and Associated Loughs (SAC).

Lands to the north of the site comprise built up urban lands of Cavan Town, including commercial and industrial buildings, private residential properties and Keadew Wastewater Treatment Works (WwTW).

The site itself contains multiple surface water features across the open grass areas. Areas of open grass at lower elevations were typically slightly waterlogged, if not flooded, whilst higher elevations demonstrated drier conditions, indicating free draining soils, with rainfall infiltrating to ground and hence to the shallow groundwater system. Borehole logs form Northwest Geotech Site investigations (GQRA) indicate the dominant underlying material is clay, extending to a considerable thickness in most areas. These deposits are likely attributing to the poor degree of surface water infiltration of the site. Additionally, the proximity to the Cavan River, with lower levels of the site being topographically similar to the river is likely causing the saturation of soils with water from the shallow water table, and thus limiting the infiltration of surface waters, causing waterlogging / flooding.

The Kilnavarragh Lane stream bisects the site, flowing into the site via a culvert from the northwest and discharging into the Cavan River along the southeastern boundary of the site. Field mapping has indicated that this watercourse has a very limited surface water catchment upgradient of where it enters the site. This comprises an area of urbanised development (residential) and surrounding farmland. A catchment divide must be present a short distance north of the site, since most drainage here falls to Swellan Lough, via a small northerly flowing watercourse (Figure 12). The winter flow rates in the Kilnavarragh Lane stream were observed to be in 10-15 L/second range.

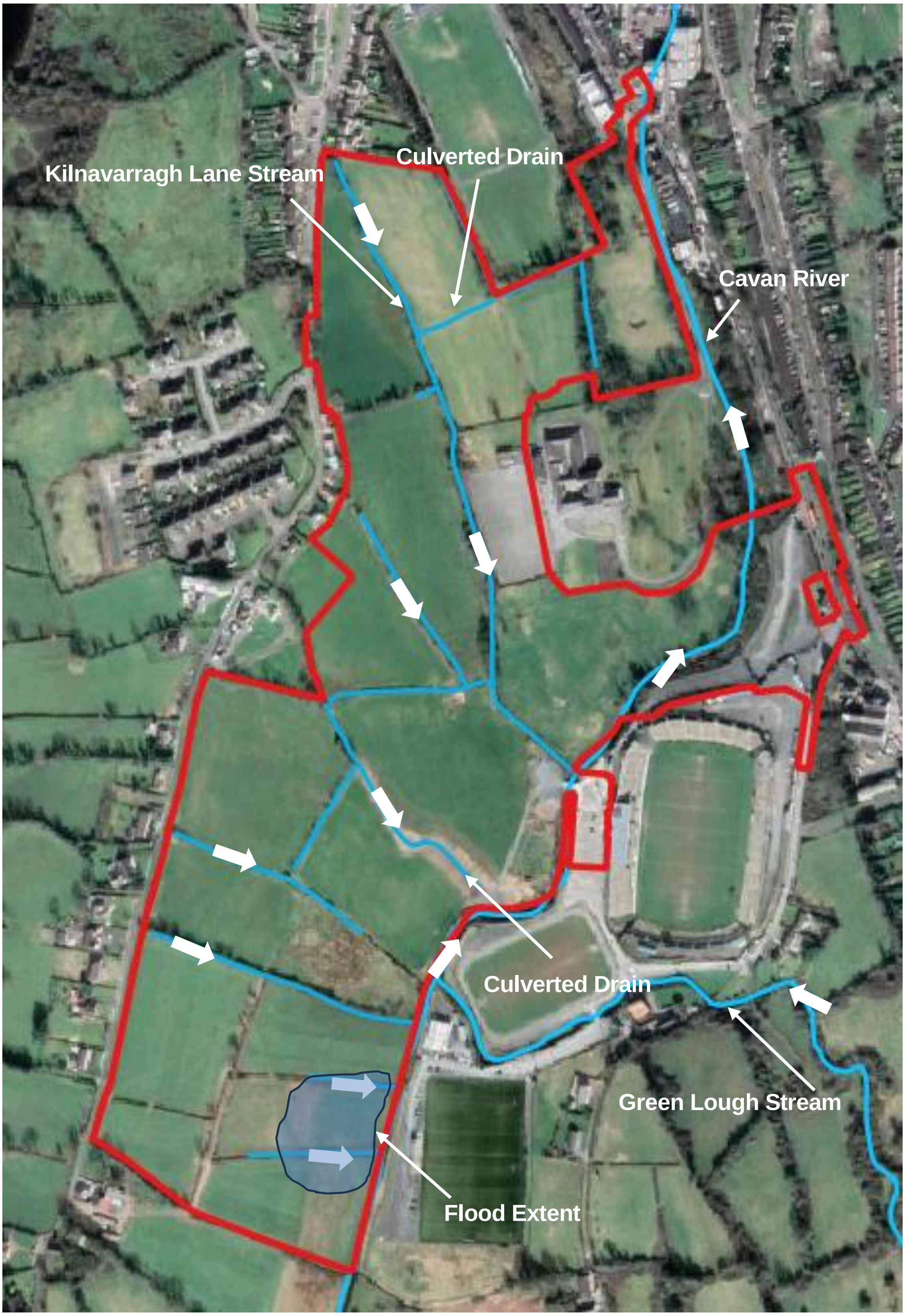
Figure 12: Catchment Divide



It is proposed to culvert this watercourse through the site to facilitate the proposed development.

Multiple drains are present throughout the site, with a majority in the southern section of the site area. These drains are largely open watercourses, however there are two culverts present on site, as detailed in Section 2.1.2. The drains present on site all flow in a southeasterly direction and discharge into the Cavan River, however, the drains present in the southeastern most extent of the site experience extensive flooding, likely due to their similarity in elevation to that of the Cavan River.

Figure 13: Watercourses



2.1.7 Discharge Consents

The EPA Ireland online map viewer indicates that there are 5no. Wastewater Discharge Authorisations within 500m of the site as shown in **Figure 14** below and summarised in **Table 4**. These discharges are located upflow of the site and therefore are not expected to have any impact on the development.

Figure 14: EPA Discharges within 500m

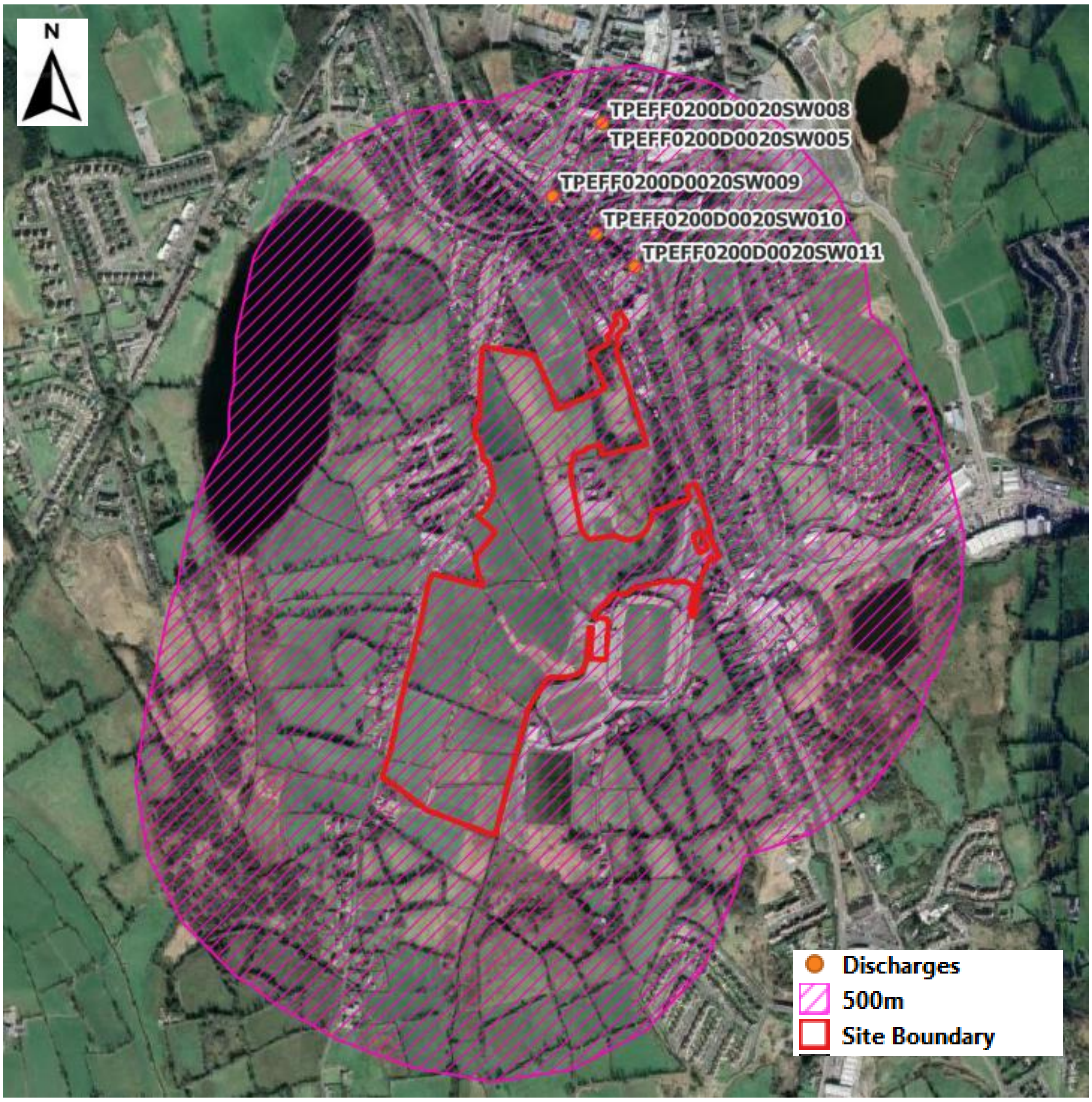


Table 4: Summary of EPA Discharges within 500m

Discharge Location Emission ID	Distance	Emission Type
TPEFF0200D0020SW005	c.420m north	Storm Water Overflow
TPEFF0200D0020SW008	c.420m north	Storm Water Overflow
TPEFF0200D0020SW009	c.300m north	Storm Water Overflow
TPEFF0200D0020SW010	c.210m north	Storm Water Overflow
TPEFF0200D0020SW011	c.140m north	Storm Water Overflow

2.1.8 Water Dependent Ecological Features

The River Cavan which flows adjacent to site is a tributary to the Lough Oughter Complex which is designated as a Special Protection Area (SPA) and Special Area of Conservation (SAC). Otter are listed as a qualifying feature for this designated site and the site is also hydrologically connected via the Cavan River.

2.2 Surface Water Quality Testing

Six surface water samples were obtained on 25th January 2024 at sample points (SW1 to SW6), as presented in **Figure 15** and **Table 5**.

Table 5: Surface Water Sampling

I.D	Description
SW1	Cavan River: Upflow
SW2	Cavan River: Midflow. After stream outfall
SW3	Cavan River: Midflow
SW4	Cavan River: Downflow
SW5	Kilnavarragh Stream: Upflow
SW6	Kilnavarragh Stream: Downflow prior to discharge into Cavan River

Surface Water analysis from SW1 to SW6 sample points included:

• Low Level CLEA Metals: (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, V, Be, Ba, B, Cr VI, Cr III, Fe, Ca, Mg, Na, K, Mn), Total Cyanide, Free Cyanide, PAH 16, TPH CWG, BTEX, VOCs, Phenols, pH, SO4, Electrical Conductivity, BOD, COD, Ammoniacal Nitrogen, NO_2 ,NO_3, Colour, Odour, Cl, PO4, Total Alkalinity, Total Hardness, TDS, TOC and Total Surfactants. The laboratory analysis was undertaken by UKAS accredited laboratory Eurofins Chemtest Ltd. The surface water laboratory results are included in **Appendix B**.

All Surface Water results were compared against available Environmental Quality Standards (EQS). The following exceedances were detected:

- Chromium EQS of 4.7ug/l exceeded at SW5 5.9ug/l
- Copper EQS of 1.0ug/l exceeded at SW1 4.3ug/l, SW2 5.3ug/l, SW3 3.7ug/l, SW4 4.9ug/l, SW5 1.8ug/l and at SW6 3.2ug/l. The EQS of 1ug/l is a relatively low EQS based on trying to achieve a Good standard for the watercourse. These results are significantly below the DWS of 2,000ug/l.

- Iron EQS of 1000ug/l exceeded at SW2 1500ug/l and at SW6 1500ug/l
- Lead EQS of 1.2ug/l exceeded at SW2 1.5ug/l, SW4 1.6ug/l and SW6 1.9ug/l
- Manganese EQS of 123ug/l exceeded at SW2 360ug/l, SW5 140ug/l and at SW6 250ug/l

These metals are likely to be naturally occurring in the watercourse, given that there are no nearby anthropogenic sources. The exceedances are unlikely to be environmentally significant. There were no detections of, Phenol, Cyanide, Hydrocarbons or VOCs in any of the surface water samples. There are no significant changes in water quality between up flow, midflow and downflow locations. Overall, there is no concern with surface water quality.

Figure 15: Surface Water Samples

2.3 Water Quality In-Situ Electrical Conductivity Survey

In-situ Electrical Conductivity readings were carried out at close intervals along all relevant water features identified, as shown in **Figure 16,** using a multiparameter waterproof meter. A descriptive location of the readings and the results of the In-Situ Electrical Conductivity survey are presented in **Table 6.**

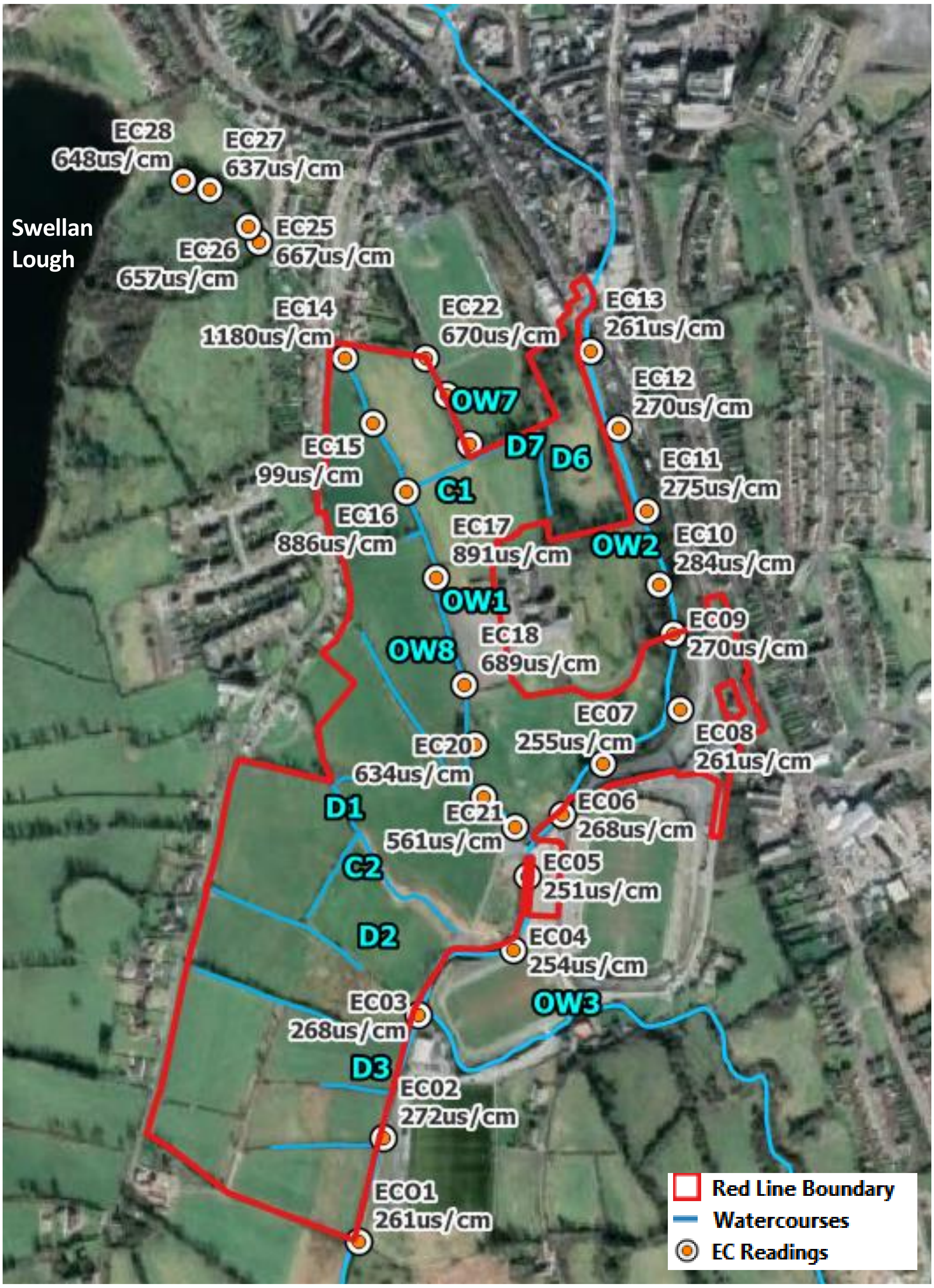
The expected range of Electrical Conductivity in Surface Waters is generally within the range of 200-1,000us/cm. As seen in **Table 6**, all 28no. Readings were within this range, except for EC14 (SW5) which was taken from the inflow pipe of the Kilnavarragh Stream which dissects the site. The source of this higher Electrical Conductivity is from outside of the site. The source of the Kilnavarragh Stream is likely to be local springs arising west of the site. The Kilnavarragh Stream enters the site in the northwest via an outfall pipe. The higher EC readings could be a combination of Limestone groundwater and underlying utilities/sewerage systems from the houses northwest of the site. Electrical Conductivity is seen to decrease downflow of SW5 within the site. The Kilnavarragh Stream flows into the Cavan River, where EC readings where typically 255-284us/cm between SW2 and SW4, indicating that the higher EC from the Kilnavarragh Stream is not continuing into the Cavan River. EC was between 251 and 284us/cm from entering the site at SW1 to the outflow location of SW4. Overall, there are no concerns with Electrical Conductivity form the surface waters within the site.

Table 6: In-Situ Electrical Conductivity Readings

I.D	Location	Electrical Conductivity (us/cm)
EC01	SW1	261
EC02	Upflow of SW1	272
EC03	Upflow of SW1	268
EC04	Upflow of SW1	254
EC05	Upflow of SW1	251
EC06	SW2	268
EC07	Upflow of SW2	255
EC08	Upflow of SW2	261
EC09	Upflow of SW2	270
EC10	SW3	284
EC11	Upflow of SW3	275
EC12	Upflow of SW3	270
EC13	SW4	261
EC14	SW5	1,180
EC15	Downflow of SW5	992
EC16	Downflow of EC15	886
EC17	Downflow of EC16	891

EC18	Downflow of EC17	689
EC19	Downflow of EC18	625
EC20	Downflow of EC19	634
EC21	SW6	561
EC22	Low flowing field drain in North East of Field 3 (OW7)	670
EC23	Downflow of EC22	656
EC24	Downflow of EC23	645
EC25	Swellan Lough Inflow (OW9)	667
EC26	Swellan Lough Inflow Downflow of EC25	657
EC27	Swellan Lough Inflow Downflow of EC26	637
EC28	Swellan Lough Inflow Downflow of EC27	648

Figure 16: In-Situ Electrical Conductivity



By far the highest EC recorded was in the Kilnavarragh Stream where it flows into the norther end of the site from lands to the north. EC gradually declines downstream in this watercourse. With an EC of 1,180µS/cm at the inflow point, this strongly suggests that the stream is a limestone groundwater-fed watercourse, perhaps derived from a buried natural spring in the urbanised area immediately north of the site. Historical Maps do no show this watercourse extending further than the northern boundary of the site, and one from

1897-1913 (**Figure 6**) show the presence of a well in the field to the north of this rising, which is the likely source of this surface water feature. This feature is no longer obvious.

The EC Survey also suggests a groundwater input to the small watercourse north of the catchment divide which feeds northwards into Swellan Lough, with EC here in the order of 650µS/cm.

All other watercourses and the Cavan River demonstrate much lower EC in the order of 250µS/cm, more typical of fresh (chemically immature) surface waters.

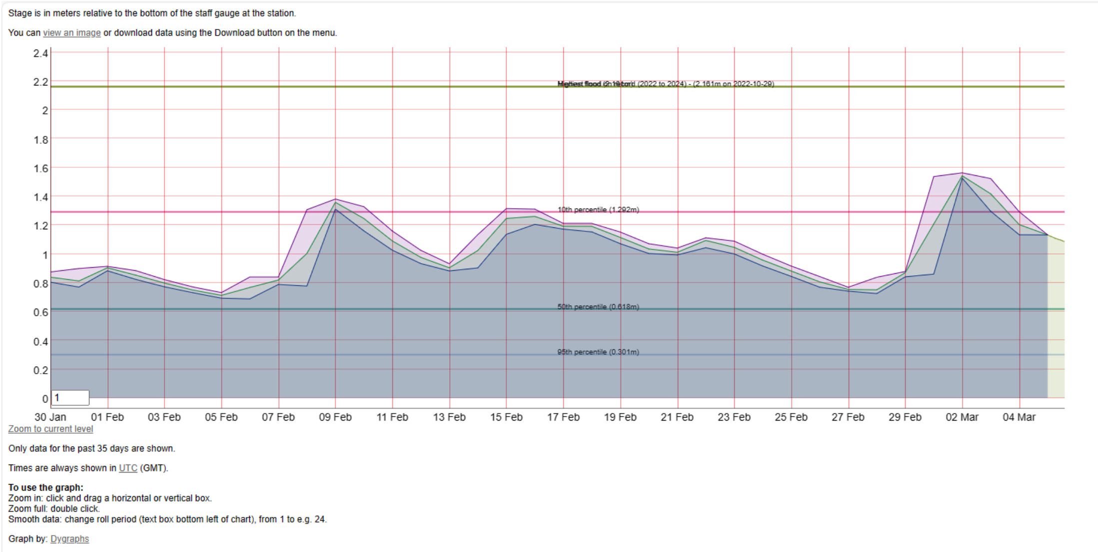
2.4 Stage Monitoring, River Cavan

A River Stage Monitoring Station was identified in the Cavan River south of the new car park bridge within the site, as shown in **Figure 3** and **Plate 1**, below.

Plate 1 Stage Monitoring, Cavan River

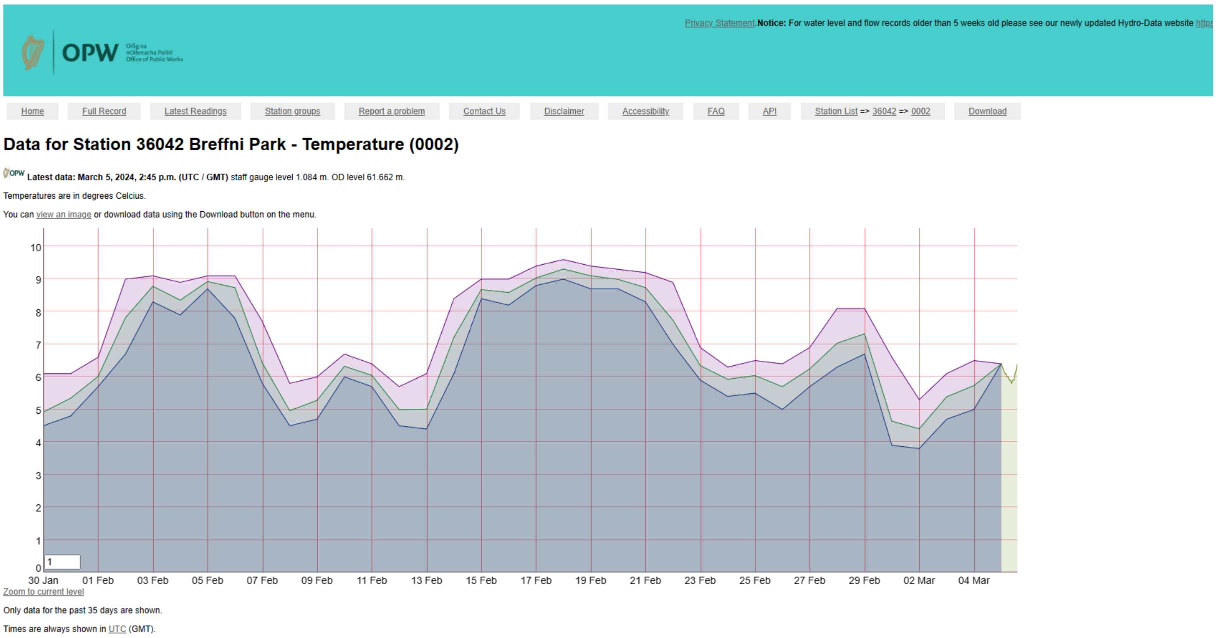
Recent stage monitoring data for this monitoring point (36042 Breffni Park) was obtained from the OPW and is presented in **Figure 17** (Water Levels) and **Figure 18** (Water Temperature).

Figure 17: Surface Water Levels, Breffni Park



OPW record a river base level of 60.578mOD for this location and the data indicates winter water levels fluctuating by around 1m in this stretch of the Cavan River.

Figure 18: Surface Water Temperature Profile, Breffni Park



Temporal Temperature profiles indicate winter temperature variations in the order of 3.5°C, with river temperatures fluctuating between around 6 °C and 9.3 °C.

2.5 Freshwater Aquatic Ecology Survey (Watercourses and Ponds)

In April 2023, an Ecology team from MCL Consulting carried out an initial habitat assessment of the site, including assessment of the River Cavan for protected aquatic fauna. Evidence of otter, white clawed crayfish and freshwater pearl mussel were identified during this survey. As such a suite of surveys and camera monitoring was undertaking to assess otter presence within the site, during summer-autumn 2023. The results of this can be found in the separate Preliminary Ecological Appraisal and Otter Survey Reports, contained in the Ecology Chapter of EIAr.

Further surveys for white clawed crayfish and freshwater mussel are scheduled for spring/summer 2024, with results to be provided as an addendum to this EIAr.

2.6 Groundwater Level Monitoring

As part of the Land Quality Ground Investigation, groundwater monitoring wells were installed in various boreholes throughout the site. Spot dips were taken at each point on 4no. occasions throughout the monitoring period.

2.7 Groundwater Quality Testing

A programme of shallow groundwater sampling was undertaken in shallow boreholes drilled across the site as part of the GQRA Land Contamination Assessment. A total of 4 No. groundwater samples were obtained across the Lifford site and a total of 4 No. groundwater samples were obtained across the Strabane site.

Samples were tested for the following range of parameters:-

> Metals (As, Ba, Be, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn, Hexavalent Chromium, TPH CWG, PAH16, VOC, Phenols, Sulphate as SO4, Free and Total Cyanide, Thiocyanate, pH, Total Suspended Solids and Hardness. The laboratory analysis was undertaken by UKAS accredited laboratory Element Material Technology.

The results are presented as laboratory certificates in **Appendix B**.

2.7.1 Freshwater Aquatic Survey

In summary, the potential presence of white clawed crayfish and freshwater mussel indicates reasonable water quality within the local stretches of the Cavan River, suggesting suitable invertebrate presence as prey species for the crayfish. Further details will be provided as an addendum of the ecological reports following updated surveys.

2.8 Groundwater Level Monitoring and Flow Patterns

A groundwater flow map for the general conditions in the natural gravelly Clay unit has been produced from available site-specific groundwater levels from SBH01-SB25, and is presented in Figure 4. Groundwater levels are presented in Figure 5. It can be seen that groundwater levels remained relatively consistent over the monitoring period.

The groundwater flow map and hydrographs indicate a general west to east groundwater flow direction over lands to the west of the Cavan River, and a general east to west groundwater flow direction over lands to the east of the Cavan River. This confirms, as expected, that all shallow groundwater flow is toward the Cavan River. The Cavan River will therefore receive baseflow from the shallow groundwaters at the site. The shallow groundwater system underlying the site is therefore hydraulically connected to the Cavan River.

Figure 19: Groundwater Flow Map

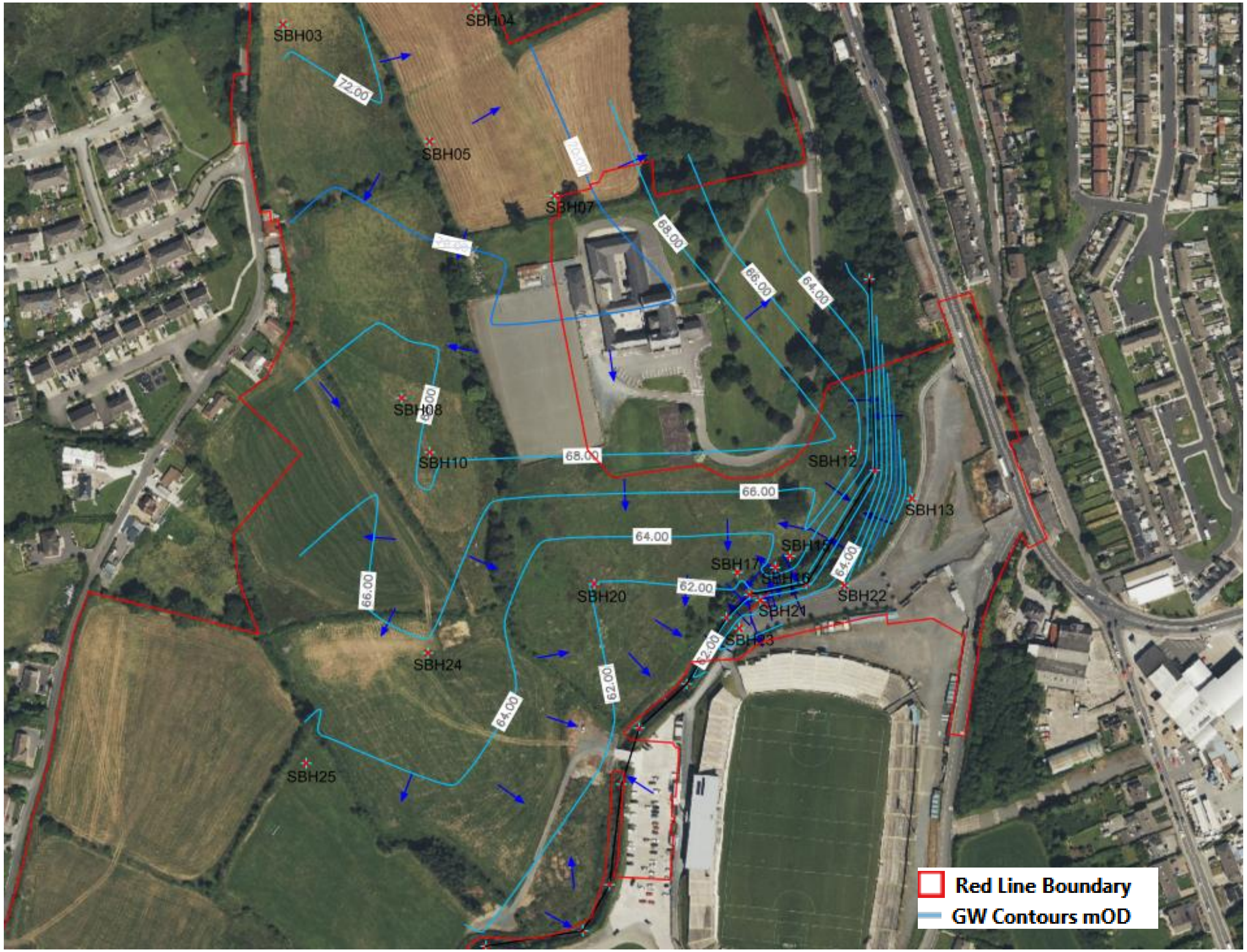
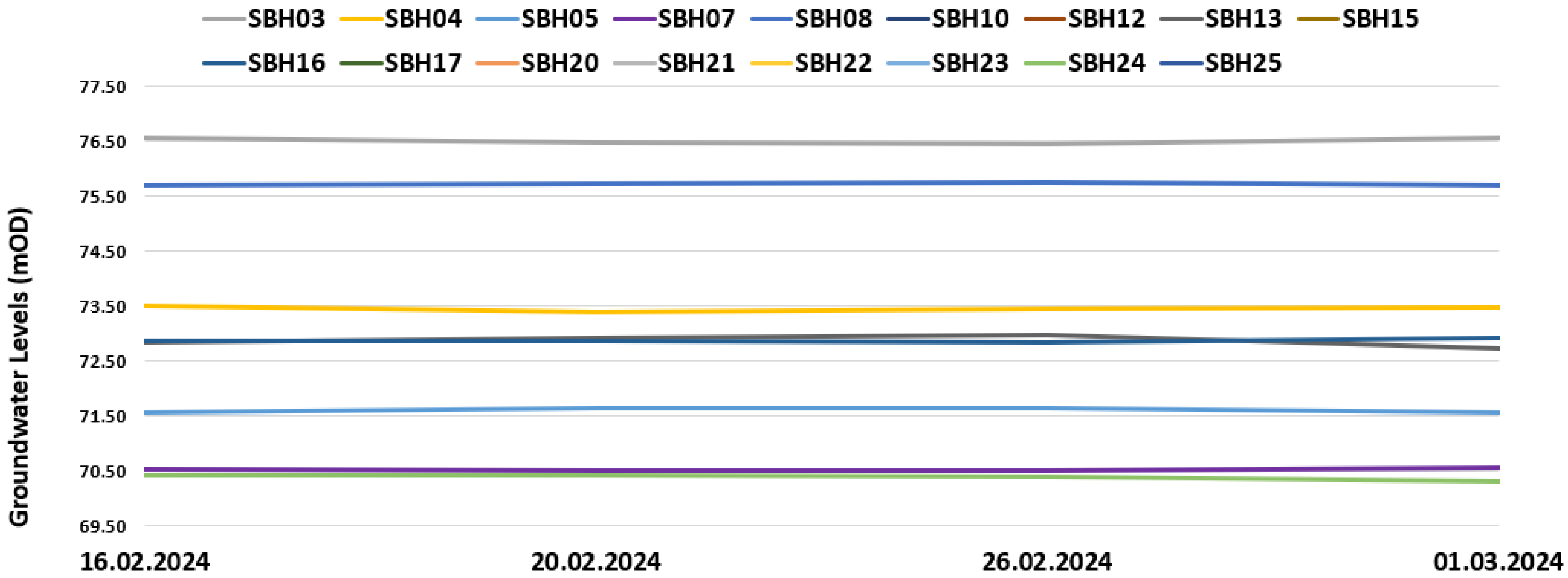


Figure 20: Groundwater Levels



2.9 Groundwater Sampling (see also GQRA)

Groundwater samples were obtained on 12th February 2024 from SBH02, SBH07, SBH09, SBH12, SBH16, SBH19, SBH20, SBH22, SBH24 and SBH25.

Groundwaters from all sample points were analysed for:

• Low Level CLEA Metals: (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, V, Be, Ba, B, Cr VI, Cr III, Fe, Ca, Mg, Na, K, Mn), Total Cyanide, Free Cyanide, PAH 16, TPH CWG, BTEX, VOCs, Phenols, pH, SO4, Electrical Conductivity, BOD, COD, Ammoniacal Nitrogen, NO_2 ,NO_3, Colour, Odour, Cl, PO4, Total Alkalinity, Total Hardness, TDS, TOC and Total Surfactants. The laboratory analysis was undertaken by UKAS accredited laboratory Eurofins Chemtest Ltd. The groundwater laboratory results are included in **Appendix B**.

All groundwater results were compared against available Drinking Water Standards (DWS). The following exceedances were detected;

- Iron DWS of 200ug/l exceeded at SBH22 300ug/l and at SBH25 280ug/l
- Nickel DWS of 20ug/l exceeded at SBH22 37ug/l and SBH25 29ug/l

These exceedances are not considered environmentally significant. It is possible that these exceedances are naturally occurring. The groundwaters were located within the natural gravelly Clay.

There were no detections of, Phenol, Cyanide, Hydrocarbons or VOCs in any of the groundwater samples. Overall, there is no concern with groundwater quality.

3.0 CONCLUSIONS

An analysis of OSI historical maps shows multiple watercourses present both on site and in the vicinity of the site, including the Cavan River, Swellan Lower, Green Lough stream and a stream identified as the Kilnavaragh Stream (OW1) bisecting the site. The latter, which appears to be groundwater-fed with little surface water catchment beyond the site, is proposed to be culverted from where it enters the site in the north to the point of discharge to the Cavan River in the south. The presence of these watercourses was then confirmed during a site walkover on the 16th February 2024, which also identified a vast network of drainage channels and additional watercourses (both open and culverted) present on site.

The main watercourse at the site is the northerly flowing Cavan River which transects the site and flows along portions of its eastern boundary. It is proposed to construct an access bridge over the Cavan River as part of this development.

A moderate number of natural springs / shallow wells were identified in the general area around the site, including a historical well at the Royal School (now disused and abandoned).

A topological profile of the site shows a clear sloping to the southeast, with the southeastern extent of the site nearly meeting the elevation of the Cavan River. All watercourses on site are shown to flow to the southeast, eventually discharging into the Cavan River. Watercourses to the north drain the opposite direction toward and into Swellan Lough.

A ground investigation was undertaken by Northwest Geotech which involved the drilling of a series of boreholes, trial pits and a suite of surface water and groundwater analysis. Borehole logs from this investigation indicated that the site is underlain by thick Clay beds up to c.15m thick in places, which is then underlain by Limestone Bedrock. The surface water and groundwater analysis did not return any significant exceedances which would indicate contamination, with any metal exceedances attributed to the natural environment. This indicated a good water quality at all locations sampled.

Flooding / waterlogging was noted on site, particularly in the southeastern extent, immediately adjacent to the Cavan River. This is attributed to the clay content in the superficial deposits creating a low permeability environment, and the similar elevation of the site and Cavan River at this location, potentially inhibiting good surface water infiltration due to the presence of the shallow water table.

Ecological surveys were undertaken on site, in which evidence for the presence of various aquatic species including Otters, abundant Trout, White Clawed Crayfish and freshwater Pearl Mussel. The presence of these species indicates a good water quality in the local environment. Additionally, the site is hydraulically linked to the Lough Oughter and Associated Loughs SAC and SPA via the Cavan River.

Overall, the watercourses present on and in close proximity to the site are considered to have a good water quality. Due to the presence of otters and likely presence of white clawed crayfish and freshwater pearl mussels within local watercourses, and the hydrological connection to the Lough Oughter and Associated Loughs SAC and SPA, this water quality must be maintained during and after site works, so not to affect the species present / the protected sites.

Report prepared by: **Reviewed by:**

Ryan McCluskey BSc MSc FGS
Consultant Geologist

Thomas Martin BSc MSc AMIEnvSc
Land Quality Consultant

Appendix A: Site Development Plan

LEGEND

1. Sports Building
2. Sports Arena
3. Synthetic Hockey Pitch (non-water based)
4. Athletics Track (400m)
5. External Synthetic Multi-Sport Pitch
6. Sand Mattress GAA Fields
7. Covered Stands (3No.)
8. Toilet Block
9. Cricket Practice Nets

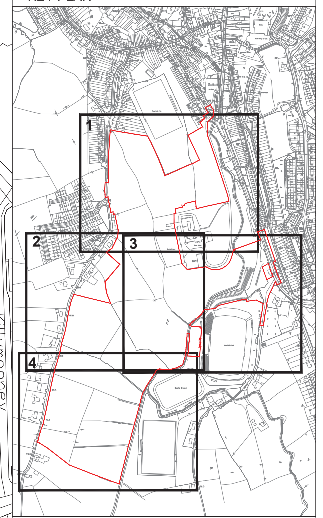
- SITE BOUNDARY
- NATURAL TURF PITCH SURFACE
- SYNTHETIC GRASS PITCH SURAFCE
- ATHLETICS TRACK - EPDM POLYMERIC RUBBER SURFACE
- GRASS SURFACE / SOFT LANDSCAPED AREAS (Refer to Landscape Architects Drawings ref: XXXX)
- EXISTING NATURAL LANDSCAPE AND HABITAT MAINTAINED
- WILDLIFE HABITAT CREATION ZONE (Refer to Landscape Architects Drawings ref: XXXX)
- PEDESTRIAN PAVEMENT - ASPHALT / BITMAC
- PEDESTRIAN PAVEMENT - NATURAL GRANITE AGGREGATE CONCRETE PAVING SLABS
- VEHICULAR PAVEMENT - ACCESS ROAD / PARKING
- EXISTING DENSE HEDGEROW VEGETATION
- EXISTING TREE
- PROPRIETARY CONCRETE BLOCK GEOSYNTHETIC REINFORCED SEGMENTAL RETAINING WALL SYSTEM (Refer Detail X on Dwg XXXXX)
- TIMBER CRIBB RETAINING WALL STRUCTURE (Refer Detail X on Dwg XXXXX)
- 12M HIGH BALL CATCH NET (Refer Detail X on Dwg XXXXX)
- 1.2M HIGH OPEN MESH FENCING (Refer Detail X on Dwg XXXXX)
- 3.0M HIGH OPEN MESH FENCING (Refer Detail X on Dwg XXXXX)
- 4.2M HIGH OPEN MESH FENCING (Refer Detail X on Dwg XXXXX)
- 1.1M HIGH GALVANISED STEEL SAFETY RAILINGS (Refer Detail X on Dwg XXXXX)
- 1.2M HIGH TIMBER POST & RAIL FENCE (Refer Detail X on Dwg XXXXX)
- 2M HIGH TIMBER ACOUSTIC FENCE (Refer Detail X on Dwg XXXXX)
- 600MM HIGH TIMBER KNEE RAIL FENCE (Refer Detail X on Dwg XXXXX)
- PROPOSED ACCESSIBLE SHARED PEDESTRIAN AND CYCLE ROUTE LINKING DUBLIN ROAD AND KILNAVARRAGH LANE - Max Gradient < 1:21
- PROPOSED LOCATION OF FLOODLIGHT COLUMN (Refer Detail X on Dwg XXXXX)
- PROPOSED BOLLARD PATHWAY LIGHT
- PROPOSED LIGHTING COLUMN - SINGLE LUMINAIRE
- PROPOSED LIGHTING COLUMN - DOUBLE LUMINAIRE
- ELECTRIC VEHICLE (EV) CHARGE POINT
- PROPOSED DUCTING PROVIDED FOR FUTURE EV CHARGING POINT
- PROPOSEDF FIXED BOLLARD - STAINLESS STEEL WITH VISIBILITY BAND. REFER TO LANDSCAPE MATERIALITY SHEET CSC-MLA-XX-00-DR-L-3001
- PROPOSED REMOVABLE BOLLARD - STAINLESS STEEL WITH VISIBILITY BAND. REFER TO LANDSCAPE MATERIALITY SHEET CSC-MLA-XX-00-DR-L-3001
- PROPOSED LITTER BIN. REFER TO LANDSCAPE MATERIALITY SHEET CSC-MLA-XX-00-DR-L-3001
- PROPOSED EV CHARGING PARKING SPACE
- PROPOSED ACCESSIBLE PARKING SPACE
- 75.45 PROPOSED LEVELS

NOTES

1. All measurements shown are in metres, and all levels are to ordnance datum unless otherwise indicated
2. All Coordinates are to Irish Grid, unless otherwise noted.

N

KEY PLAN



Rev	Issue Date	Description	App

Status	PLANNING
Client	Cavan County Council
Project	Cavan Regional Sports Campus
Drawing	Proposed Site Plan Overall
Scale	1:1250 @ A0

McAdam ENHANCING LOCAL COMMUNITIES

Contact Details: 1c Montgomery House, 478 Castlereagh Road, Belfast, BT5 6BQ. T: 028 9040 2000 E: admin@mcadamdesign.co.uk www.mcadamdesign.co.uk

Drawn moc Date 04/03/24	Checked pa Date 04/03/24	Approved moc Date 04/03/24
Project Number A2156	Drawing Number 100-10	Revision -

All dimensions are in metres. Figured dimensions to be taken in preference to scale dimensions. Dimensions to be checked on site.

Appendix B: Laboratory Certificates, Surface Waters & Groundwaters

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

Final Report

Report No.:	24-02930-1		
Initial Date of Issue:	15-Feb-2024		
Re-Issue Details:			
Client	Northwest Geotech		
Client Address:	Unit 9 Northwest Business Complex Skeoge Industrial Estate Derry IRELAND		
Contact(s):	Paul McNamara		
Project	23-0092 Cavan RS		
Quotation No.:		**Date Received:**	31-Jan-2024
Order No.:		**Date Instructed:**	31-Jan-2024
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	06-Feb-2024
Date Approved:	07-Feb-2024		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

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

Results - Water

Project: 23-0092 Cavan RS

Client: Northwest Geotech					**Chemtest Job No.:**	24-02930	24-02930	24-02930	24-02930	24-02930	24-02930
Quotation No.:					**Chemtest Sample ID.:**	1760536	1760537	1760538	1760539	1760540	1760541
					Sample Location:	SW1	SW2	SW3	SW4	SW5	SW6
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
					Sample Sub Type:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
					Date Sampled:	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
pH at 20C		U	1010		4.0	7.8	7.7	7.7	7.8	8.1	8.0
Electrical Conductivity at 25C		U	1020	µS/cm	1.0	260	260	260	260	1100	550
Total Dissolved Solids		N	1020	mg/l	1.0	170	170	170	170	740	360
Colour		N	1050	Hazen unit	1.0	60	65	45	< 1.0	< 1.0	< 1.0
Odour		N	1070		N/A	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless
Biochemical Oxygen Demand		N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand		U	1100	mg O2/l	10	[B] 23	[B] 22	[B] 21	[B] 21	[B] < 10	[B] 11
Alkalinity (Total)		U	1220	mg/l	10	77	67	77	69	220	240
Chloride		U	1220	mg/l	1.0	19	22	22	22	220	34
Ammoniacal Nitrogen		U	1220	mg/l	0.050	0.23	0.22	0.093	0.078	0.10	0.14
Nitrite as NO2		U	1220	mg/l	0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Nitrate as NO3		U	1220	mg/l	0.50	3.1	3.9	3.7	3.8	14	2.6
Phosphate		U	1220	mg/l	0.200	0.34	0.59	0.31	0.33	0.22	0.38
Sulphate		U	1220	mg/l	1.0	9.6	11	11	11	30	15
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium (Dissolved)		U	1455	mg/l	2.00	38	32	31	32	130	94
Potassium (Dissolved)		U	1455	mg/l	0.50	4.5	3.9	3.8	3.8	2.2	2.6
Magnesium (Dissolved)		U	1455	mg/l	0.20	4.7	4.6	4.3	4.4	7.1	5.0
Sodium (Dissolved)		U	1455	mg/l	1.50	13	14	13	13	120	19
Total Hardness as CaCO3		U	1270	mg/l	15	110	100	94	99	350	260
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.74	0.86	0.56	0.58	0.48	0.69
Boron (Dissolved)		U	1455	µg/l	10.0	26	17	13	12	22	15
Barium (Dissolved)		U	1455	µg/l	5.00	36	47	34	34	53	50
Beryllium (Dissolved)		U	1455	µg/l	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	0.78	1.2	0.62	0.84	5.9	< 0.50
Copper (Dissolved)		U	1455	µg/l	0.50	4.3	5.3	3.7	4.9	1.8	3.2
Iron (Dissolved)		N	1455	µg/l	5.0	360	1500	300	390	190	1500
Manganese (Dissolved)		U	1455	µg/l	0.50	53	360	36	45	140	250
Nickel (Dissolved)		U	1455	µg/l	0.50	3.2	3.4	2.5	2.6	1.2	2.7
Lead (Dissolved)		U	1455	µg/l	0.50	0.58	1.5	< 0.50	1.6	< 0.50	1.9
Selenium (Dissolved)		U	1455	µg/l	0.50	0.76	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Vanadium (Dissolved)		U	1455	µg/l	0.50	0.79	1.6	0.65	0.88	< 0.50	0.65
Zinc (Dissolved)		U	1455	µg/l	2.5	30	41	30	32	28	34
Mercury Low Level		U	1460	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Low-Level Chromium (Hexavalent)		U	1495	µg/l	0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10	[B] < 0.10
Chromium (Trivalent) LL		N	1455	µg/l	1.00	[B] < 1.0	[B] 1.2	[B] < 1.0	[B] < 1.0	[B] 5.9	[B] < 1.0

Results - Water

Project: 23-0092 Cavan RS

Client: Northwest Geotech					**Chemtest Job No.:**	24-02930	24-02930	24-02930	24-02930	24-02930	24-02930
Quotation No.:					**Chemtest Sample ID.:**	1760536	1760537	1760538	1760539	1760540	1760541
					Sample Location:	SW1	SW2	SW3	SW4	SW5	SW6
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
					Sample Sub Type:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
					Date Sampled:	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Total Organic Carbon		U	1610	mg/l	2.0	8.3	8.3	8.9	8.2	3.5	5.3
Aliphatic TPH >C5-C6	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_AL_2D_#1	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	EH_AR_2D_#1	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	EH_Total_2D_#1	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: 23-0092 Cavan RS

Client: Northwest Geotech					**Chemtest Job No.:**	24-02930	24-02930	24-02930	24-02930	24-02930	24-02930
Quotation No.:					**Chemtest Sample ID.:**	1760536	1760537	1760538	1760539	1760540	1760541
					Sample Location:	SW1	SW2	SW3	SW4	SW5	SW6
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
					Sample Sub Type:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
					Date Sampled:	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Dibromomethane		U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene		N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene		N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane		U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane		N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane		U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Surfactants as MBAS		N	1770	mg/l	0.020	0.13	0.099	0.39	0.13	0.27	0.27
Naphthalene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: 23-0092 Cavan RS

Client: Northwest Geotech					**Chemtest Job No.:**	24-02930	24-02930	24-02930	24-02930	24-02930	24-02930
Quotation No.:					**Chemtest Sample ID.:**	1760536	1760537	1760538	1760539	1760540	1760541
					Sample Location:	SW1	SW2	SW3	SW4	SW5	SW6
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
					Sample Sub Type:	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
					Date Sampled:	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024	25-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Acenaphthylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's		U	1800	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols		U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1760536			SW1	25-Jan-2024	B	Coloured Winchester 500ml
1760536			SW1	25-Jan-2024	B	EPA Vial 40ml
1760536			SW1	25-Jan-2024	B	Miscellaneous
1760537			SW2	25-Jan-2024	B	Coloured Winchester 500ml
1760537			SW2	25-Jan-2024	B	EPA Vial 40ml
1760537			SW2	25-Jan-2024	B	Miscellaneous
1760538			SW3	25-Jan-2024	B	Coloured Winchester 500ml
1760538			SW3	25-Jan-2024	B	EPA Vial 40ml
1760538			SW3	25-Jan-2024	B	Miscellaneous
1760539			SW4	25-Jan-2024	B	Coloured Winchester 500ml
1760539			SW4	25-Jan-2024	B	EPA Vial 40ml
1760539			SW4	25-Jan-2024	B	Miscellaneous
1760540			SW5	25-Jan-2024	B	Coloured Winchester 500ml
1760540			SW5	25-Jan-2024	B	EPA Vial 40ml
1760540			SW5	25-Jan-2024	B	Miscellaneous
1760541			SW6	25-Jan-2024	B	Coloured Winchester 500ml
1760541			SW6	25-Jan-2024	B	EPA Vial 40ml
1760541			SW6	25-Jan-2024	B	Miscellaneous

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	TE TS PL LE SW GW
1050	Colour	Colour	Spetctrophotometry	
1070	Odour	Odour	Olfactory examination	
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.	
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].	TE TS PL LE GW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 $CaCO_3$ equivalent.	RE PW PL SW DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.	PL GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.	GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1770	MBAS	MBAS	Spectrophotometry	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	PL GW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	

Report Information

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

A - Date of sampling not supplied

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

C - Sample not received in appropriate containers

D - Broken Container

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

Water Sample Category Key for Accreditation

DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

PL - Prepared Leachate

PW - Processed Water

Report Information

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

Clean Up Codes

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

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

UKAS TESTING 2183

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CB8 0AL
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Email: info@chemtest.com

Final Report

Report No.:	24-04393-1
Initial Date of Issue:	27-Feb-2024
Re-Issue Details:	
Client	Northwest Geotech
Client Address:	Unit 9 Northwest Business Complex Skeoge Industrial Estate Derry IRELAND
Contact(s):	Paul McNamara
Project	23-0092

Quotation No.:		**Date Received:**	14-Feb-2024
Order No.:		**Date Instructed:**	14-Feb-2024
No. of Samples:	10		
Turnaround (Wkdays):	10	**Results Due:**	27-Feb-2024
Date Approved:	21-Feb-2024		

Approved By:

Details: Stuart Henderson, Technical Manager

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

Results - Water

Project: 23-0092

Client: Northwest Geotech		**Chemtest Job No.:**				24-04393	24-04393	24-04393	24-04393	24-04393	24-04393	24-04393
Quotation No.:		**Chemtest Sample ID.:**				1766356	1766357	1766358	1766359	1766360	1766361	1766362
		Sample Location:				SBH2	SBH7	SBH9	SBH12	SBH16	SBH19	SBH20
		Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Sample Sub Type:				Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
		Date Sampled:				12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
pH at 20C		U	1010		4.0	7.6	8.2	7.6	7.8	7.8	8.2	7.7
Electrical Conductivity at 25C		U	1020	µS/cm	1.0	770	360	830	560	570	710	700
Total Dissolved Solids		N	1020	mg/l	1.0	500	240	540	360	370	460	460
Colour		N	1050	Hazen unit	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Odour		N	1070		N/A	None	None	None	None	None	None	None
Biochemical Oxygen Demand		N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand		U	1100	mg O2/l	10	12	< 10	15	12	< 10	15	16
Alkalinity (Total)		U	1220	mg/l	10	230	170	220	170	170	190	200
Chloride		U	1220	mg/l	1.0	16	25	16	16	14	28	20
Ammoniacal Nitrogen		U	1220	mg/l	0.050	0.25	0.19	0.17	0.23	0.24	0.28	0.44
Nitrite as NO2		U	1220	mg/l	0.020	0.083	0.054	0.078	0.13	0.11	0.093	0.042
Nitrate as NO3		U	1220	mg/l	0.50	< 0.50	1.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phosphate		U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulphate		U	1220	mg/l	1.0	71	15	71	21	20	130	120
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium (Dissolved)		U	1455	mg/l	2.00	190	59	180	120	130	120	120
Potassium (Dissolved)		U	1455	mg/l	0.50	1.8	1.8	1.8	0.87	0.74	2.3	2.3
Magnesium (Dissolved)		U	1455	mg/l	0.20	14	8.5	14	7.5	7.6	5.9	6.0
Sodium (Dissolved)		U	1455	mg/l	1.50	11	5.3	11	9.3	8.7	43	44
Total Hardness as CaCO3		U	1270	mg/l	15	530	180	510	340	350	330	340
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.55	0.27	0.43	0.28	< 0.20	0.31	0.31
Boron (Dissolved)		U	1455	µg/l	10.0	31	11	30	21	21	22	23
Barium (Dissolved)		U	1455	µg/l	5.00	160	24	150	68	72	86	84
Beryllium (Dissolved)		U	1455	µg/l	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	< 0.50	1.3	< 0.50	< 0.50	< 0.50	1.1	1.2
Copper (Dissolved)		U	1455	µg/l	0.50	2.5	1.9	2.2	2.4	1.1	3.7	3.6
Iron (Dissolved)		N	1455	µg/l	5.0	6.9	11	< 5.0	< 5.0	< 5.0	< 5.0	5.4
Manganese (Dissolved)		U	1455	µg/l	0.50	310	9.5	160	0.55	20	150	170
Nickel (Dissolved)		U	1455	µg/l	0.50	4.0	0.97	3.7	1.6	1.2	2.1	1.9
Lead (Dissolved)		U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	0.71	< 0.50	0.54	< 0.50	< 0.50	0.57	< 0.50
Vanadium (Dissolved)		U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	15	9.2	< 2.5	2.6	3.1	13	10
Mercury Low Level		U	1460	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Low-Level Chromium (Hexavalent)		U	1495	µg/l	0.10	< 0.10	0.83	< 0.10	< 0.10	< 0.10	0.31	0.38
Chromium (Trivalent) LL		N	1455	µg/l	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Organic Carbon		U	1610	mg/l	2.0	5.7	3.9	5.4	3.9	3.6	5.8	5.9

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Quotation No.:					**Chemtest Sample ID.:**	1766356	1766357	1766358	1766359	1766360	1766361	1766362
					Sample Location:	SBH2	SBH7	SBH9	SBH12	SBH16	SBH19	SBH20
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Sample Sub Type:	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Date Sampled:	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Aliphatic TPH >C5-C6	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_2D_AL_#1	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	EH_2D_AR_#1	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	EH_2D_Total_#1	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane		U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

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Quotation No.:		**Chemtest Sample ID.:**				1766356	1766357	1766358	1766359	1766360	1766361	1766362
		Sample Location:				SBH2	SBH7	SBH9	SBH12	SBH16	SBH19	SBH20
		Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Sample Sub Type:				Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
		Date Sampled:				12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
cis-1,3-Dichloropropene		N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene		N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane		U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane		U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane		N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane		U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Surfactants as MBAS		N	1770	mg/l	0.020	< 0.020	0.062	0.10	0.029	0.069	0.10	< 0.020
Naphthalene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

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					Sample Location:	SBH2	SBH7	SBH9	SBH12	SBH16	SBH19	SBH20
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Sample Sub Type:	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
					Date Sampled:	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Phenanthrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's		U	1800	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols		U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Water

Project: 23-0092

Client: Northwest Geotech					**Chemtest Job No.:**	24-04393	24-04393	24-04393
Quotation No.:					**Chemtest Sample ID.:**	1766363	1766364	1766365
					Sample Location:	SBH22	SBH24	SBH25
					Sample Type:	WATER	WATER	WATER
					Sample Sub Type:	Ground Water	Ground Water	Ground Water
					Date Sampled:	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
pH at 20C		U	1010		4.0	10.2	7.8	9.5
Electrical Conductivity at 25C		U	1020	µS/cm	1.0	850	360	820
Total Dissolved Solids		N	1020	mg/l	1.0	550	230	530
Colour		N	1050	Hazen unit	1.0	170	< 1.0	16
Odour		N	1070		N/A	None	None	None
Biochemical Oxygen Demand		N	1090	mg O2/l	4.0	[B] 19	[B] < 4.0	[B] 16
Chemical Oxygen Demand		U	1100	mg O2/l	10	200	< 10	150
Alkalinity (Total)		U	1220	mg/l	10	220	160	220
Chloride		U	1220	mg/l	1.0	30	25	30
Ammoniacal Nitrogen		U	1220	mg/l	0.050	0.86	0.49	0.86
Nitrite as NO2		U	1220	mg/l	0.020	0.26	0.060	0.85
Nitrate as NO3		U	1220	mg/l	0.50	< 0.50	< 0.50	3.0
Phosphate		U	1220	mg/l	0.200	0.26	< 0.20	< 0.20
Sulphate		U	1220	mg/l	1.0	240	16	230
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Calcium (Dissolved)		U	1455	mg/l	2.00	36	59	29
Potassium (Dissolved)		U	1455	mg/l	0.50	14	1.9	13
Magnesium (Dissolved)		U	1455	mg/l	0.20	< 0.20	8.3	0.28
Sodium (Dissolved)		U	1455	mg/l	1.50	160	5.9	160
Total Hardness as CaCO3		U	1270	mg/l	15	91	180	73
Arsenic (Dissolved)		U	1455	µg/l	0.20	5.1	0.29	4.7
Boron (Dissolved)		U	1455	µg/l	10.0	13	< 10	16
Barium (Dissolved)		U	1455	µg/l	5.00	17	24	13
Beryllium (Dissolved)		U	1455	µg/l	1.00	< 1.0	< 1.0	< 1.0
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	7.4	1.5	5.0
Copper (Dissolved)		U	1455	µg/l	0.50	74	2.2	54
Iron (Dissolved)		N	1455	µg/l	5.0	300	16	280
Manganese (Dissolved)		U	1455	µg/l	0.50	6.9	4.4	7.2
Nickel (Dissolved)		U	1455	µg/l	0.50	37	1.0	29
Lead (Dissolved)		U	1455	µg/l	0.50	0.61	< 0.50	0.69
Selenium (Dissolved)		U	1455	µg/l	0.50	3.5	< 0.50	3.0
Vanadium (Dissolved)		U	1455	µg/l	0.50	49	< 0.50	40
Zinc (Dissolved)		U	1455	µg/l	2.5	23	9.7	23
Mercury Low Level		U	1460	µg/l	0.010	0.025	< 0.010	0.042
Low-Level Chromium (Hexavalent)		U	1495	µg/l	0.10	< 0.10	0.68	< 0.10
Chromium (Trivalent) LL		N	1455	µg/l	1.00	7.4	< 1.0	5.0
Total Organic Carbon		U	1610	mg/l	2.0	92	4.0	85

Results - Water

Project: 23-0092

Client: Northwest Geotech				**Chemtest Job No.:**		24-04393	24-04393	24-04393
Quotation No.:				**Chemtest Sample ID.:**		1766363	1766364	1766365
				Sample Location:		SBH22	SBH24	SBH25
				Sample Type:		WATER	WATER	WATER
				Sample Sub Type:		Ground Water	Ground Water	Ground Water
				Date Sampled:		12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
Aliphatic TPH >C5-C6	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_2D_AL_#1	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	EH_2D_AR_#1	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	EH_2D_Total_#1	N	1675	µg/l	10	< 10	< 10	< 10
Dichlorodifluoromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Chloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromomethane		U	1760	µg/l	5	< 5	< 5	< 5
Chloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane		U	1760	µg/l	5	< 5	< 5	< 5
Trichloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Benzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane		U	1760	µg/l	10	< 10	< 10	< 10
Bromodichloromethane		U	1760	µg/l	5	< 5	< 5	< 5

Results - Water

Project: 23-0092

Client: Northwest Geotech					**Chemtest Job No.:**	24-04393	24-04393	24-04393
Quotation No.:					**Chemtest Sample ID.:**	1766363	1766364	1766365
					Sample Location:	SBH22	SBH24	SBH25
					Sample Type:	WATER	WATER	WATER
					Sample Sub Type:	Ground Water	Ground Water	Ground Water
					Date Sampled:	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
cis-1,3-Dichloropropene		N	1760	µg/l	10	< 10	< 10	< 10
Toluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene		N	1760	µg/l	10	< 10	< 10	< 10
1,1,2-Trichloroethane		U	1760	µg/l	10	< 10	< 10	< 10
Tetrachloroethene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane		U	1760	µg/l	10	< 10	< 10	< 10
1,2-Dibromoethane		U	1760	µg/l	5	< 5	< 5	< 5
Chlorobenzene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Styrene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane		N	1760	µg/l	50	< 50	< 50	< 50
N-Propylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane		U	1760	µg/l	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene		U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Surfactants as MBAS		N	1770	mg/l	0.020	0.13	0.028	< 0.020
Naphthalene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: 23-0092

Client: Northwest Geotech					**Chemtest Job No.:**	24-04393	24-04393	24-04393
Quotation No.:					**Chemtest Sample ID.:**	1766363	1766364	1766365
					Sample Location:	SBH22	SBH24	SBH25
					Sample Type:	WATER	WATER	WATER
					Sample Sub Type:	Ground Water	Ground Water	Ground Water
					Date Sampled:	12-Feb-2024	12-Feb-2024	12-Feb-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
Phenanthrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's		U	1800	µg/l	2.0	< 2.0	< 2.0	< 2.0
Total Phenols		U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1766356			SBH2	12-Feb-2024	B	Coloured Winchester 1000ml
1766356			SBH2	12-Feb-2024	B	EPA Vial 40ml
1766356			SBH2	12-Feb-2024	B	Plastic Bottle 1000ml
1766357			SBH7	12-Feb-2024	B	Coloured Winchester 1000ml
1766357			SBH7	12-Feb-2024	B	EPA Vial 40ml
1766357			SBH7	12-Feb-2024	B	Plastic Bottle 1000ml
1766358			SBH9	12-Feb-2024	B	Coloured Winchester 1000ml
1766358			SBH9	12-Feb-2024	B	EPA Vial 40ml
1766358			SBH9	12-Feb-2024	B	Plastic Bottle 1000ml
1766359			SBH12	12-Feb-2024	B	Coloured Winchester 1000ml
1766359			SBH12	12-Feb-2024	B	EPA Vial 40ml
1766359			SBH12	12-Feb-2024	B	Plastic Bottle 1000ml
1766360			SBH16	12-Feb-2024	B	Coloured Winchester 1000ml
1766360			SBH16	12-Feb-2024	B	EPA Vial 40ml
1766360			SBH16	12-Feb-2024	B	Plastic Bottle 1000ml
1766361			SBH19	12-Feb-2024	B	Coloured Winchester 1000ml
1766361			SBH19	12-Feb-2024	B	EPA Vial 40ml
1766361			SBH19	12-Feb-2024	B	Plastic Bottle 1000ml
1766362			SBH20	12-Feb-2024	B	Coloured Winchester 1000ml
1766362			SBH20	12-Feb-2024	B	EPA Vial 40ml
1766362			SBH20	12-Feb-2024	B	Plastic Bottle 1000ml

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1766363			SBH22	12-Feb-2024	B	Coloured Winchester 1000ml
1766363			SBH22	12-Feb-2024	B	EPA Vial 40ml
1766363			SBH22	12-Feb-2024	B	Plastic Bottle 1000ml
1766364			SBH24	12-Feb-2024	B	Coloured Winchester 1000ml
1766364			SBH24	12-Feb-2024	B	EPA Vial 40ml
1766364			SBH24	12-Feb-2024	B	Plastic Bottle 1000ml
1766365			SBH25	12-Feb-2024	B	Coloured Winchester 1000ml
1766365			SBH25	12-Feb-2024	B	EPA Vial 40ml
1766365			SBH25	12-Feb-2024	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	TE TS PL LE SW GW
1050	Colour	Colour	Spetctrophotometry	
1070	Odour	Odour	Olfactory examination	
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.	
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].	TE TS PL LE GW
1140	Calorific Value	Calorific Value	Bomb Calorimeter	
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using ‘Aquakem 600’ Discrete Analyser.	RE PW PL LE DW GW
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.	RE PW PL SW DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.	PL GW
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.	GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1770	MBAS	MBAS	Spectrophotometry	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	PL GW
1900	Phenols in Waters by GC-MS	Approximately 24 substituted Phenols, including Chlorophenols	Solvent extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	

Report Information

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water

Report Information

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

Clean Up Codes

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

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