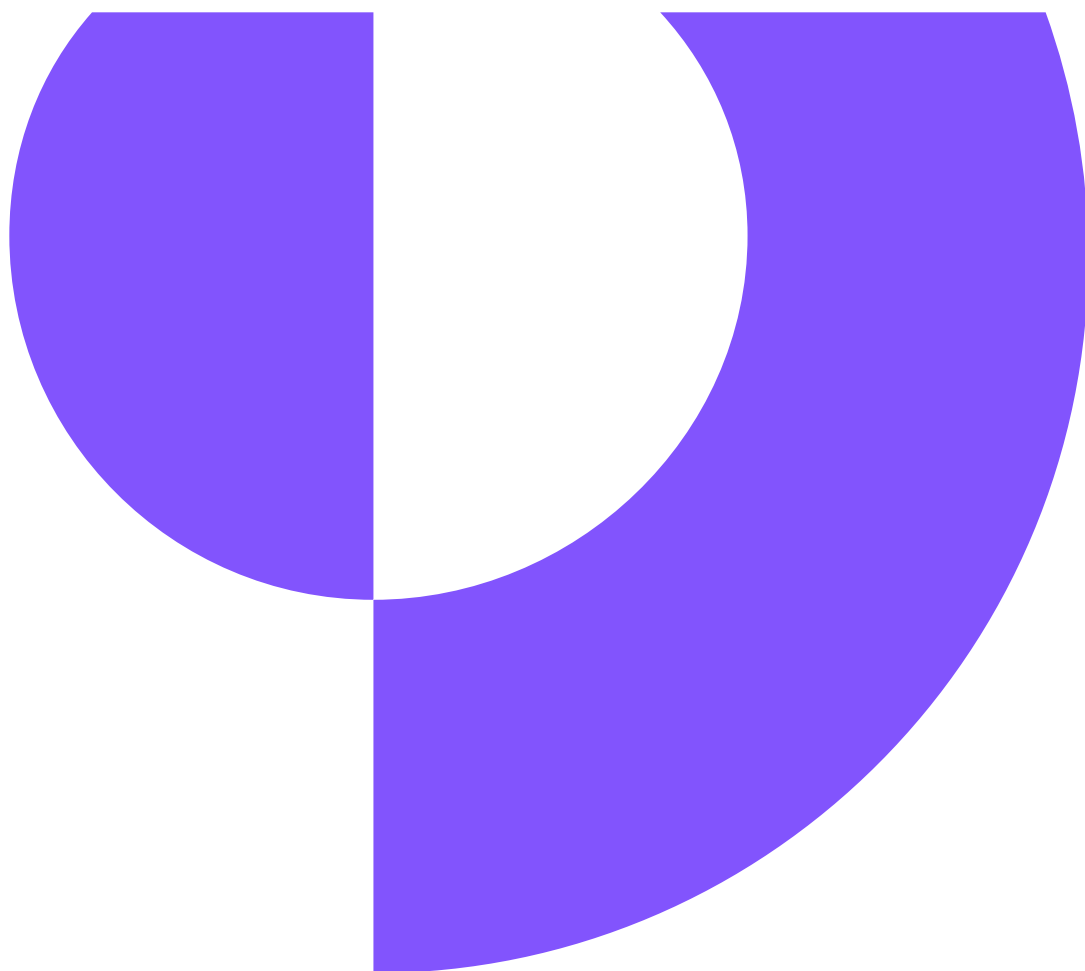




Eastern Green Link 4 - HVDC Converter Station

Generic Quantitative Risk Assessment Report

April 2025

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Generic Quantitative Risk Assessment Report

April 2025

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1 Introduction

1.1 Scope and objectives of the report

Mott MacDonald (MM) has been commissioned by Scottish Power Transmission (SPEN) to provide geo-environmental support on the Eastern Green Link (EGL) 4 project with the objective of assisting in de-risking the project and programme. The project aims to increase the capability of the electricity transmission network between Scotland and England via marine and terrestrial cable routes.

A new HVDC Converter Station is proposed to be constructed adjacent to the existing Westfield 275kV Substation in Fife, Scotland. IGNE conducted a ground investigation scoped and designed by SPEN from 17th July 2024 until completion on 23rd August 2024. Mott MacDonald has been commissioned to provide a preliminary generic quantitative risk assessment (GQRA) report based on the findings of this ground investigation which involves characterising the ground conditions, assessing data gaps, providing recommendations for further investigation of geo-environmental conditions and providing a preliminary assessment of the risk posed to sensitive receptors at the proposed converter station from existing ground investigation (herein referred to as the site).

1.2 Description of the project

The site is located adjacent to the existing Westfield 275kV Substation in Fife, Scotland, approximately 1.5km east of Ballingry, Fife, situated within five agricultural fields immediately northeast of North Pitkinny Farm. The existing Westfield Transforming Station is located along the northwest boundary, with the northern boundary formed by the B9097. The surrounding areas to the east, west and south are occupied by agricultural land while the area to the north of the B9097 is comprised of partially restored land from historical use as the Westfield Opencast Coal Mine and Gasification Plant. A site location plan is shown below in Figure 1.1.

Figure 1.1: Site Plan



Source: Mott MacDonald 2025 from ArcGIS Pro

The proposed development comprises a converter station platform with associated building and site carpark connected by a primary access road from the B9097 for construction and operation. An area for a temporary construction compound is proposed for use by the cabling contractor, who will be working on the connection for the HVDC cable from the landfall site near Kinghorn to the Converter station, and the 400kV AC cable from the converter station to the adjacent Westfield Substation. A potential secondary access road from the B9097 is proposed for use in the construction phase. Further details can be found with the proposed development drawings provided in Appendix A.1.

This GQRA assesses the risk posed to sensitive receptors for the converter station development only and does not assess any risks associated with the cable route.

The development proposal for the site at the time of writing this report is summarised as follows:

- Site clearance
- Converter station platform:
 - Max dimensions 350m X 250m.
- Permanent Site Access Road from Public Highway (B9097).
- Provision of Sustainable Drainage Systems (SuDs) features; attenuation and as required to allow an approximate discharge of 250l/s from the converter stations.
- Temporary Contractors compound/Establishment Area.
- Temporary Access Roads from permanent site access to the Contractors compound and Converter station platform.
- Design and construction of platform perimeter drainage and drainage system considering terrain and temporary construction compound.

- Design and construction of temporary 500kVA LV supply and temporary water supply adjacent to the Contractors Compound for the contractor to connect to.
- Design and construction of property perimeter fence.

At the time of writing, detailed design of the converter station has not yet been completed.

1.3 Purpose and Objectives

The purpose of this preliminary Generic Quantitative Risk Assessment (GQRA) is to provide a desk study review of existing information and interpret the findings from a ground investigation undertaken on the site between July and August 2024 by IGNE and provide recommendations for further works.

The key objectives of the GQRA are as follows:

- Summarise the readily available ground-related information for this site and the proposed development.
- Summarise the findings from the ground investigation and produce a site-specific ground model for general characterisation of the underlying ground and groundwater conditions
- Provide a preliminary Contaminated Land Risk Assessment and Conceptual Site Model for the site in accordance with methodology and standards outlined below
- Provide recommendations or mitigation measures for the proposed development and
- Provide recommendations of further assessment / investigations required.

Geotechnical assessment is outside the scope of this report.

Following review of the information gained in the ground investigation it is recommended that further ground investigation is carried out prior to construction to sufficiently characterise the risk to sensitive receptors.

This GQRA report has been produced in accordance with the following industry guidance:

- BS 10175 'Investigation of Potentially Contaminated Sites, Code of Practice' [1]
- Environment Agency, 'Land Contamination Risk Management (LCRM (2023))' guidance [2]
- 'CIRIA C552, Contaminated Land Risk Assessment – A Guide to Good Practice' [3]
- BS 8485 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' [4]
- BS 8576 'Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs)' [5]

1.4 Report limitations

This document is issued to the party which commissioned it and for specific purposes connected with the above-described project only. It should not be relied upon by any other party or used for any other purpose. Mott MacDonald Limited accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

To the extent that this document is informed by information obtained in previous or recent ground investigations, persons using or relying on it should recognise that any such investigation can examine only a fraction of the subsurface conditions. In any ground investigation there remains a risk that pockets or "hotspots" of contamination or other ground hazards may not be identified, because investigations are necessarily based on sampling at

localised points. Certain indicators or evidence of hazardous substances or conditions may have been outside the portion of the subsurface investigated or monitored, and thus may not have been identified or their full significance appreciated.

This document is based upon information obtained from a ground investigation scoped by SPEN.

This report is based on the development proposals described in Section 1.2. Should the development proposals change during design development or new information become available, then the recommendations and conclusions of this report should be re-assessed.

Assessment of the risk posed by Asbestos Containing Materials (ACMs) potentially present on site is outside the scope of this report. Should advice be required in relation to asbestos then a suitably qualified asbestos specialist should be consulted / appointed.

Geotechnical assessment is outside the scope of this report and the ground model presented within this report should not be used for geotechnical design purposes.

A review of potential impacts from climate change on controlled waters at the proposed development has been undertaken in accordance with current best practice in brownfield risk assessment. The review intends to identify where significant changes to the current site condition may result in a change in identified risks or introduce new risks, with comment on where further consideration may be required. The climate projections on which the review are based are not predictions or forecasts but simulations of potential scenarios of future climate under a range of hypothetical emissions scenarios and assumptions. The results therefore cannot be treated as exact or factual, but instead as projection options.

Mott MacDonald have not undertaken any climate modelling and rely solely on freely available data on climate projections, nor has independently verified the observational or projection data and does not accept responsibility or liability for any inaccuracies or shortcomings in this information. The degree of uncertainty associated with all climate change projections increases for projections further into the future. Therefore, the outcomes and recommendations of the assessment should be taken with due consideration of the uncertainty in the data used.

The review does not comprise a detailed climate change assessment prepared by climate change specialists or an assessment into additional risks to human health (for which we consider there to be insufficient guidance at the time of writing). It should only be used to highlight where further consideration of climate change should be undertaken as the project progresses. The warranty of the document is not affected by the timeframe provided for the assessment. There is currently significant research and development with respect to further understanding the impacts of future climate change on land contamination risk assessment, therefore the climate change assessment contained within this report should be relied upon only during the time which the guidance and sources used in the assessment are still current.

A coal mining risk assessment is outside the scope of this report.

2 Desk Study

As part of the early project development for the Westfield Converter Station, a High Level Desktop Geotechnical Assessment [6] was produced by SPEN for the site, to inform the scope of the Ground Investigation (GI).

The section below provides a summary of the key desk-based information reviewed by SPEN and additional information reviewed by Mott MacDonald in order to develop a preliminary conceptual site model.

2.1 Site location and description

The location for the proposed site is approximately 1.5km east of Ballingry, Fife, situated within five agricultural fields separated by hedgerows immediately northeast of North Pitkinny Farm (KY5 0HG), the ordnance survey (OS) grid reference for the approximate centre of the site is NT 19893 97228. The location of the site is shown in both Figure 1.1 and Figure 2.1. There are existing overhead electrical cables and telephone poles that transect the site in an approximate ESE to WNW direction leading to the Westfield substation.

Figure 2.1: Aerial Plan of the Site



Source: Mott MacDonald 2025 from ArcGIS Pro

The site is bounded by the B9097 to the north and east, Torres Lane to the south and unnamed tracks to the east and west. The surrounding areas to the east, west and south are occupied by agricultural land while the area to the north of the B9097 is comprised of partially restored land

from historical use as the Westfield Opencast Coal Mine and Gasification Plant which includes a man-made pond. To the northwest is the existing Westfield Transforming Station.

The site is approximately 52.7 hectares in area, with the proposed converter station having maximum dimensions of 350m x 250m. The topography of the site ranges between approximately 85m OD to 110m OD, with the topography generally sloping from the south down to the north.

Coal mining is known to have occurred within the site, at the time of writing a mining risk assessment was being completed.

2.2 Site history

The site history has been summarised from historical maps [7], and aerial photography [8, 9, 10, 11].

Table 2.1: Site History

Year	On-Site	Off-site
1856	Site used as agricultural land, farms include North Pitkinny, Charleston and South Bogside. Field drains present orientated WSW-ENE, NWN-SES and N-S. A road called Torry's Loan (now Torres Loan) runs along the southern boundary of the site connecting North Pitkinny to Charleston.	Surrounding land predominantly farmland. South Bogside farm is located approximately 100m northeast. South Pitkinny located approximately 200m southwest of the site. Colliery houses are marked approximately 60m north of the site boundary associated with Capledrae Colliery which is approximately 640m northwest of the site, adjacent to the structures is a pump. Lochty Burn runs east to west 290m north of the site, the land immediately south of Lochty Burn is known as Bog Lochty.
1896	No significant changes noted.	A row of houses 100m to the east of the site (known as Westfield Row). Capledrae Colliery is now noted as disused. New coal pits have appeared 1.1km west of the site at Rosewell Colliery, 660m north of the site at Kirkness Colliery (disused), 500m northeast of the site known as (Old Colliery) and 1.8km northeast of the site at Kinninmonth upper and lower collieries. Three old shafts are now mapped associated with the Old Colliery, at 150m northeast, 500m northeast and 600m east of the site boundary. A railway line (labelled Lochore Branch) is now present which connects the collieries at Rosewell, Capledrae, Kirkness and the Old Colliery.
1897	No significant changes noted.	A railway line is shown to continue from the Old Colliery to the Kinninmonth Collieries. A second old shaft is present 160m east of the site.
1913	No significant changes noted.	The railway line extends further to east towards Kinglassie
1956	Charleston farm in the southeast corner of the site is now noted as "(In Ruins)", a well is noted adjacent to the farm. A new track is present running WSW to ENE through the middle of the site from North Pitkinny to the track joining the South Bogside and Charleston Farms.	Westfield Opencast Coal Mine opened in 1955 on the site of the former Kirkness Colliery, with production commencing in 1956. Kinninmonth Colliery is now disused, with "Opencast Mining" noted in the area between the Kinninmonth Colliery and North Bogside farm. The Old Colliery is now absent from the map, with only the closest old shaft to the site remaining. The railway line leading to the Kirkness Colliery is now absent.

Year	On-Site	Off-site
1962 - 1968	A conveyer belt is shown running NWN to SES from Westfield Opencast Mine along the eastern edge of the site, switching to a WSW to ESE orientation outside of the site boundary parallel to Torres Loan. The track running through the middle of the site from North Pitkinny has now disappeared. An overhead line running West to East crosses the north of the site to connect to a "Works" site immediately adjacent to the Northwest corner of the site	An experimental Lurgi gasification plant opened nearby in 1960 at Westfield Opencast. Significant expansion of the Westfield Opencast mine, with the works expanding southwards to only 300m northwest of the site boundary. A large works compound connected by rail is located 500m north of the site boundary, including the gasification plant. A large 550x600m settling pond associated with the opencast is located approximately 1.3km northeast of the site. A small 90x120m works compound is now situated immediately outside the northwestern corner of the site, where overhead lines on electric pylons now run into from the east. Additional power lines then run from this compound. Westfield row appears to have been largely demolished, with one small building remaining called Westfield Cottage. A conveyer belt runs from the opencast southwards through the eastern edge of the site and makes a sharp turn southwest parallel to the southern site boundary at an approximate 60m offset.
1977 [8]	The northeast section of the site has a stepped excavation, with steeper excavations in the east of the site with water at the base.	Excavations extend east and north of the site, extent of opencast mine workings is to the north of the railway line with processing occurring to the north of the site. A conveyer belt connects the processing plant to the railway.
1982 [12]	Fife Council website records a sewage feature to the north of the site dated 1982.	-
1985 [9]	The site appears to be an extension of the Westfield Opencast mine (unknown exactly when expansion occurred).	Opencast mine extends further south into the site boundary.
1994 [10].	Site restored to current arrangement.	No significant changes.
2006	Site restored to current arrangement, consisting of five fields separated by hedgerows with overhead power lines and telephone poles crossing the north of the site. A new road running along the northeast edge of the site boundary. A junction off this road leads to a side road which runs west along the perimeter of the site round to North Pitkinny. The ruins of Charleston Farm are now absent. An approximately 40m wide strip of woodland is present in the eastern edge of the site. A pile of unknown material is present approximately 50m east of North Pitkinny.	B9097 in its current location, with opencast ground to the north. South Bogside and Westfield farms are no longer present, being engulfed by the opencast. The northern section of the opencast mine is partially filled with water. A 170x190m extension to the small works compound immediately adjacent to the northwest corner of the site (now confirmed to be a substation) has also been constructed.
2011	No significant changes.	The extended opencast section of land north of the B9097 has been filled in with water.
2021	The pile has been removed with grass slowly restoring in the area until the present day.	Opencast land partially restored with grass returning.

2.3 Published geology

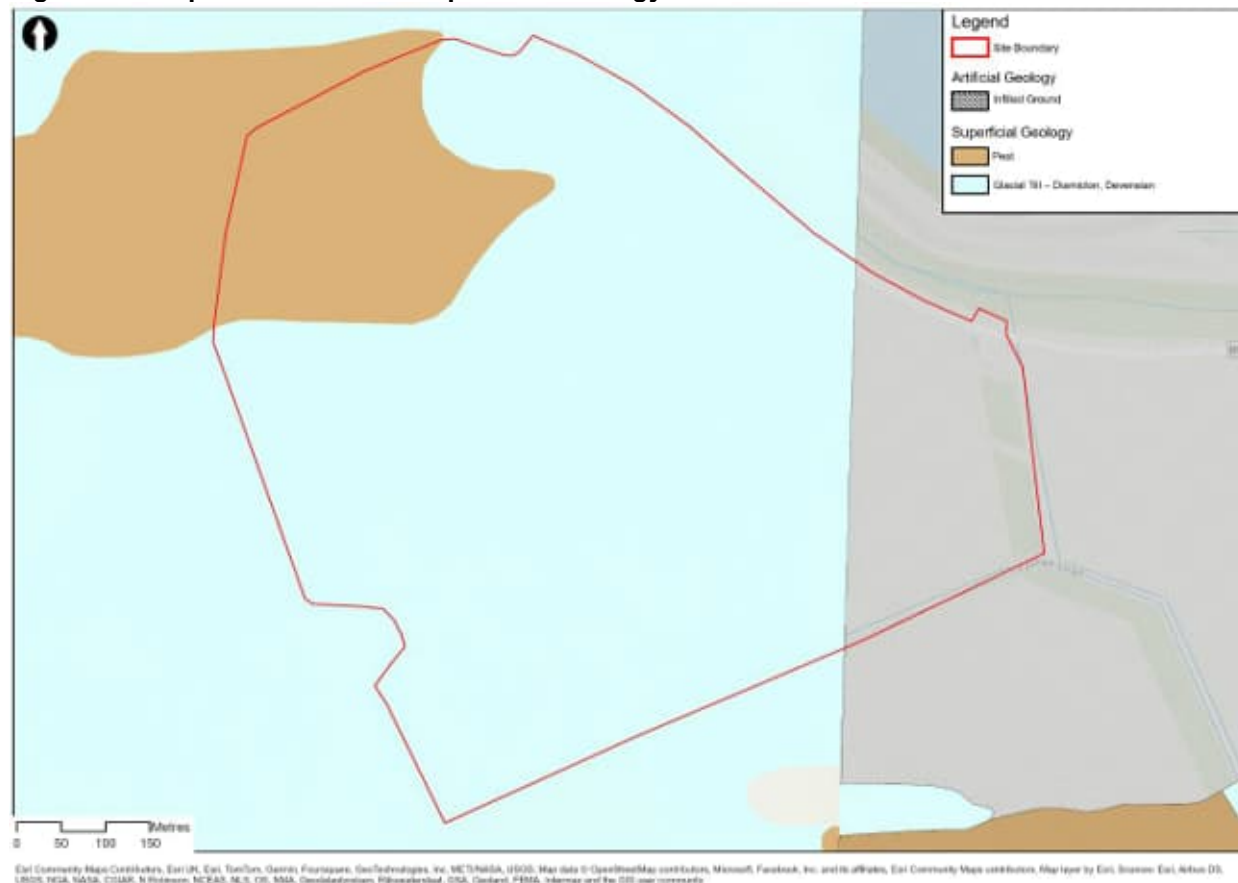
The following information has been summarised from the BGS GeoIndex [13] and Geological maps available on the BGS map portal [14].

2.3.1 Artificial ground

BGS GeoIndex Onshore Mapping [13] indicates the presence of Infilled Ground in the southeast corner of the site. The mapped boundary of this deposit cuts through the site in a north-south direction which coincides with the western boundary of geological map NT 29 NW [15]. The depth and composition of this Made Ground is unknown and it is likely to be present across the remainder of the site associated with the historical Westfield Opencast Coal Mine development.

A map of the Made Ground deposits can be found in Figure 2.2.

Figure 2.2: Map of Artificial and Superficial Geology on site



Source: Mott MacDonald, 2025.

2.3.2 Superficial geology

Geological mapping shows the majority of the site is covered by Glacial Till of Devensian Age. An area of peat is also mapped in the northwest corner of the site which extends approximately 300m southeast into the site boundaries.

Superficial deposits are not mapped in the southeast corner of the site on BGS GeoIndex Onshore Mapping [16] which instead indicates the presence of Infilled Ground on the site. It is inferred from mapping that this is the extent that superficial deposits were removed from the area during mining. A map of the Superficial deposits can be found in Figure 2.2.

2.3.3 Bedrock geology

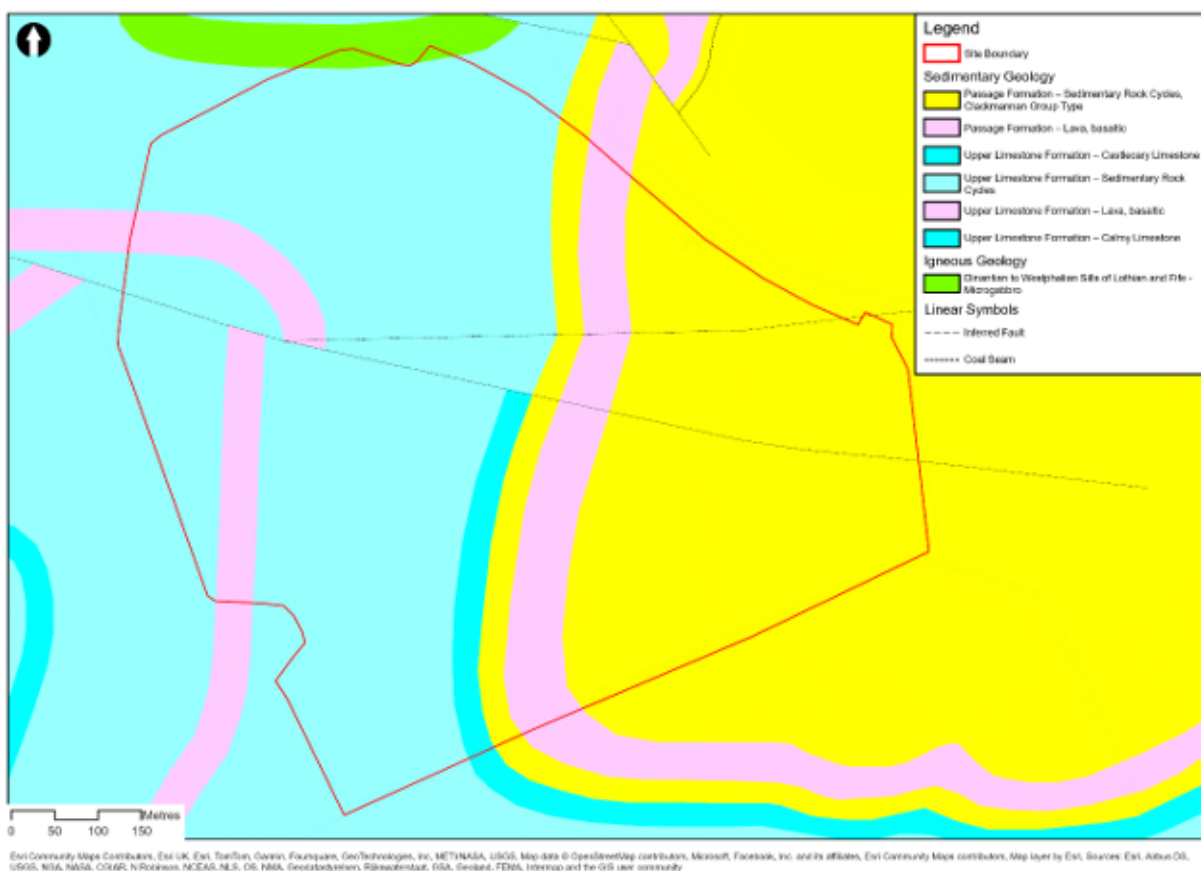
Solid geology beneath the site consists of two parts of the Clackmannan Group: the overlying younger Passage Formation in the eastern half and the underlying older Upper Limestone Formation in the western half.

The Passage formation typically comprises cyclic sequences of sandstones, mudstones, coal seams, marine beds and seatearths. A basaltic lava bed is mapped near the base of the Passage Formation which crosses the site in a north-south orientation. The Westfield Shale coal seam was formerly located above the lava bed beneath the southeast of the site, dipping east-southeast, but has been removed by opencast mining.

The Upper Limestone Formation typically comprises sedimentary rock cycles of mudstone, siltstone, sandstone and deltaic and marine limestones. Coal seams and marine beds are common. A basaltic lava bed is mapped near in the western half of the site in a north-south orientation until a fault changes its direction.

A map of the bedrock geology is shown in Figure 2.3

Figure 2.3: Bedrock Geology on site



Source: Mott MacDonald, 2025

2.3.4 Structural geology

Two faults cut across the site, orientated WNW and ESE.

The 1:63,360 scale geological map [17] indicates that the site is in a syncline trending northeast. A dip of 7 degrees is recorded in the southeast of the site dipping to the southeast.

2.3.5 Encountered geology

The BGS GeoIndex records eleven historical boreholes drilled onsite were available to view:

- NT29NW180 drilled in 1925
- NT19NE266 and NT29NW182 drilled in 1927

- NT29NW265, NT29NW266/1,2,3,4,6 and 7 drilled in 1944
- NT29NW498 drilled in 1974

A map displaying their locations within the site boundaries is shown in Figure 2.4.

Additionally, there are three historical boreholes from 1988 (NT19NE11196/32, NT19NE11196/33 and NT19NE11196/32). However, these records are confidential.

It is considered that all of the boreholes available for review were drilled prior to any excavation/infilling of the site. The confidential boreholes were drilled following the extension of the Westfield Opencast Mine.

Figure 2.4: Historical Borehole Locations



Source: Mott MacDonald, 2025 from ArcGIS Pro

Ground Conditions

The boreholes recorded superficial deposits comprising 1.14m to 7.44m of sands and clays with occasional boulders. Superficial coverage is significantly thicker in NT29NW265 and NT29NW266/1 with 7.44m and 5.41m, while further west the thickness varies between 1.14m to 3.05m. Bedrock mainly consists of alternating layers of sandstone, coal and fireclay, with localised areas of whinstone (basalt) found in NT29NW266/4 and NT29NW266/6. Coal is found at various depths within the boreholes listed in Table 2.2 below.

Table 2.2: Recorded Coal Depths

Borehole	Depth range (m bgl)	Thickness
NT19NE266	1.15 – 2.2	1.05
NT29NW266/3	6.4 – 9.0	2.6

Borehole	Depth range (m bgl)	Thickness
NT29NW266/2	12.3 – 14.6	2.3
	4.9 – 5.0	0.1
	7.8 – 9.5	1.7
	14.1 – 14.5	0.4
	15.0 – 16.8	1.8
NT29NW180	2.6 – 3.4	0.8
	6.6 – 6.8	0.2
	7.6 – 8.1	0.5
	10.0 – 10.3	0.3
	11.1 – 11.2	0.1
	13.3 – 13.4	0.1
	18.0 – 18.6	0.6
	20.2 – 20.65	0.45
	21.3 – 22.9	1.6
	26.2 – 28.8	2.6
	29.0 – 29.3	0.3
NT29NW182	5.25 – 5.7	0.45
	7.4 – 7.7	0.3
	8.3 – 9.8	1.5
NT28NW498	6.0 - 7.5	1.5
	8.5 – 9.0	0.5
	9.5 – 10.0	0.5
	11.5 – 13.0	1.5
	13.5 – 14.5	1.0
	15.0 – 15.5	0.5
NT29NW266/1	6.0 – 6.9	0.9
	7.1 – 7.5	0.4
	7.7 – 8.4	0.7
	8.6 – 9.0	0.4
NT29NW265	10.2 – 10.5	0.3
	11.8 – 12.6	0.8
	12.65 – 12.9	0.25
	13.1 – 13.4	0.3
	13.7 – 14.8	1.1

There are no historical ground investigation reports available which relate to the site.

2.4 Hydrology and hydrogeology

2.4.1 Hydrology

Drainage ditches are present around the perimeter of the site, notably in the northwest corner of the site [18]. Visual observations of the site and surroundings indicate that the land in the north corner is particularly soft and boggy, with site photos indicating that the area is prone to surface water flooding during periods of high rainfall.

A large man-made pond associated with the Westfield Opencast mine is located approximately 135m northeast of the site boundary, as well as additional man-made ponds to the northwest. A watercourse named Lochty Burn is approximately 290m north of the site running E-W.

SEPA Flood Maps indicated the northern and southwestern edges of the site, with a localised section in the centre, to have a 0.1% to 10% chance of surface water flooding each year [19].

2.4.2 Hydrogeology

The site area lies above the Clackmannan Group which is a moderately productive, multi-layered aquifer with low yields except where disturbed by mining. The Passage Formation has moderate yields up to 10L/s [20, 21]. The flow of groundwater is virtually all through fractures and other discontinuities.

SEPA classifies the groundwater body beneath the site as the Dunfermline and Kirkcaldy groundwater body which in 2023 was given a poor status [22].

2.5 Mining and Quarrying

2.5.1 Coal Mining

A coal mining risk assessment has been undertaken by Mott MacDonald [23], this report should be reviewed for more detail regarding risks associated with coal mining. A summary of coal workings has been included below.

The site is located within a Mining Remediation Authority Coal Mining Reporting Area and Development High Risk Area, which is defined as a *'coal mining reporting area which contains one or more recorded coal mining related feature which have the potential for instability or a degree of risk to the surface from legacy coal mining operations. New development in this defined area needs to demonstrate that the development will be safe and stable taking full account of former coal mining activities'*.

The site and surroundings have historically been mined for coal in various instances with pits, adits and the large Westfield Opencast Mine. The extents of these features is shown in Figure 2.5, which shows probable shallow coal mine workings within the site boundary.

Historical geological maps show a single coal seam (Westfield Shale Coal) mapped within the site boundaries. This runs north to south in the east of the site and dips to the east so therefore is likely to be present under a small area of the site. It is anticipated that this seam was partially or fully removed by the workings associated with Westfield Opencast mine.

The large Westfield Opencast mine to the north of the site primarily targeted the Boglochty Beds, which are a group of abnormally thick beds of coal within the Passage Formation. The Boglochty Beds comprise of:

- Bogside Thick Coal (Thickness 0.6-16.0m)
- Bogside Main Coal (Thickness 0-10.0m)
- Unnamed Coal (Thickness 0-6.0m)
- Westfield Thick Coal (Thickness 0-13.0m)
- Westfield Shale Coal (Thickness 0-7.5m)
- Unnamed Coal (Thickness 0-5.0m)

The Mining Remediation Authority [24] does not record any mine entries within the site area, however 13 shafts are recorded within 1km of the site and 6 adits are recorded within 1km of

the site. Probable shallow coal mine workings are anticipated in the east of the site, with the site lying within an area of past surface mining.

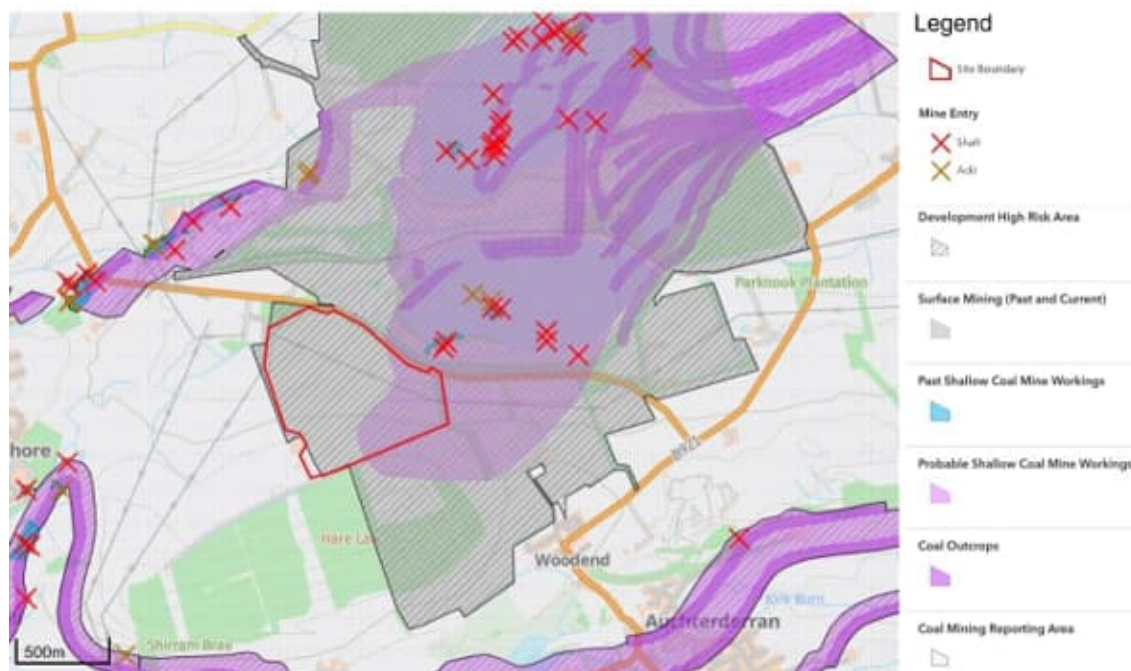
Figure 2.5 shows the Mining Remediation Authority data in relation to the site.

A number of coal seams are indicated to have been worked at depths between 146m and 852m from 1887 to 1966 beneath the site as detailed in a consultants Coal Mining Report, presented in Appendix B. Extraction thicknesses range from 61cm to 312cm in the surroundings and from 91cm to 260cm beneath the site. The shallowest recorded worked of these coals beneath the site is the Capledrae Parrot Coal at 146m bgl with extraction thickness of 94cm dipping 13.7 degrees northeast. This was worked by the Capledrae Colliery in 1900. The Westfield Shale Coal which runs beneath the site is recorded to have been worked at a depth of 57m bgl with an extraction thickness of 91cm, however this was recorded north of the site area in an unnamed colliery.

No spine roadways are recorded at shallow depths, however probable unrecorded shallow workings are expected. No remediation sites are recorded within 50m of the site, with no mine gas or mine water treatment schemes recorded within 500m of the site. The Mining Remediation Authority has not recorded any coal mining subsidence within 50m of the site since 31 October 1994.

For the history of coal mining in this area see Section 2.2.

Figure 2.5: Mining Remediation Authority data



Source: Mott MacDonald, 2025. Contains OS data © Crown Copyright and database right 2023. Contains data from OS Zoomstack. Esri Maps.

Note: approximate extent of opencast mine workings are shown within Figure 2.5 labelled 'Probable Shallow Coal Mine Workings'

2.5.2 Non-Coal Mining

No quarries or non-coal mining sites have been identified in the site area, however an old basalt quarry was noted to be approximately 50m north of the site in the geological map of Fifeshire and Kinross-shire Sheet XXVII SW [25] published in 1933. It is believed that evidence of this

basalt quarry would have been removed by the subsequent Westfield Opencast Mine works. No other quarries are found within 1km of the site.

2.6 Sensitive land uses

There are no reported protected areas within 1km of the site according to the NatureScot website [26] or DEFRA's Magic Map [18]. Additionally there are no known Invasive or protected flora or fauna within the site boundary or surrounding areas.

2.7 Unexploded ordnance

The Zetica Unexploded Bomb Risk Map for the area indicates that there is a low risk of unexploded bombs. A PDSA was commissioned from Zetica and is included in Appendix C and summarised below:

- No significant military activity affecting the Site has been identified. During WWII, 1No. Prisoner of War (PoW) camp was established at Capledrae, approximately 0.1km north of the Site. After WWII, the camp was closed and removed.
- The only potential WWI bombing target within 5km is Transport infrastructure and public utilities, no readily available records have been found to indicate the site was bombed.
- The site was located in Fife Landward Area (LA), near Kinross LA during WWII. During WWII the Fife LA officially recorded 293No. High Explosive (HE) bombs, with a density of 1.0 bombs per 405 hectares (ha). Kinross LA officially recorded 28No. HE bombs, with a density of 0.5 bombs per 405ha. Potential WWII bombing targets within approximately 5km of the Site include transport infrastructure and public utilities and Military establishments and training areas.
- No readily available records have been found indicating that the Site was bombed.
- No Bombing Decoys were identified within 5km of the site.

The Zetica PDSA concluded a detailed desk study is not considered essential in this instance.

2.8 Radon

Radon mapping, reported in the UK radon mapping [27], indicates that the site is located in an area where <1% of homes are at or above the action level of 200Bqm⁻². No further action is considered necessary to assess the risk posed by radon to the development.

3 Preliminary Conceptual Site Model

3.1 Introduction

A preliminary conceptual site model and risk assessment has been completed based on the desk study review and in accordance with planning framework and methodology described in Appendix E.

3.2 Preliminary Conceptual Site Model (CSM)

A preliminary CSM and risk assessment has been developed for the site utilising the Desk Study information and relevant historical GI information. The CSM (Table 3.1) details potential contaminant sources, transport pathways and possible receptors that may be present across the site area and the nearby surrounding areas.

Mine gas from deep mine workings (146m – 852m bgl) beneath the site are excluded from the risk assessment following review of CL:AIRE guidance [28]. As these workings are anticipated to be at depths that are considered to be flooded, recorded mine entries are more than 50m from the site and there are no records of links to shallower mine workings that could act as gas pathways as such there is not anticipated to be a viable pollutant linkage.

Sources, Pathways and Receptors are described as follows:

- **Sources (S):** a potential or known contaminant source.
- **Pathway (P):** a route or means by which a receptor can be exposed to, or affected by, a contaminant, e.g. dermal contact.
- **Receptor (R):** something that can be adversely affected by a contaminant, such as people, an ecosystem, property or controlled waters.

Table 3.1: Preliminary Conceptual Site Model

Source	Pathway	Receptor
S1a: Infilled ground associated with backfill of the opencast mine in the southeast of the site.	P1: Human uptake pathway (including ingestion, dermal contact and inhalation of dusts/vapours);	R1: Construction workers and maintenance workers
S1b: Made ground associated with mining operations and sewage works	P2: Migration of wind-blown dusts during construction	R2: Site end users
S2: Contaminated soil and groundwater associated with operation of the coal workings, collieries and converter station in the vicinity	P3: Direct contact	R3: Contact with proposed built environment (e.g. buried foundations, water supply pipes)
	P4: Horizontal and downward migration in the unsaturated zone	R4a: Surface waters (drainage ditches and man-made ponds)
	P5: Horizontal and vertical migration in the saturated zone	R4b: Groundwater in the Dunfermline and Kirkcaldy Groundwater body
	P6: Migration through preferential pathways (excavations, services, Sustainable drainage systems (SuDS)).	
S3: Ground gas associated with infilled opencast and made ground deposits	P7: Migration of ground gas	R2: Site end users

The Lochty Burn has been discounted as a receptor due to its distance from the site. This preliminary conceptual site model will be reviewed and refined in Section 6, taking into account the results of the ground investigation.

3.3 Contaminants of Concern

Table 3.2 provides a summary of the contaminants of concern associated with the potential sources of contamination identified and has been informed by the Department of Environment 'Industry Profiles' [29]. It should be noted that this is by no means intended to provide an exhaustive list of contaminants for analysis during ground investigation on the site, as selection of contaminants for analysis should be based on the objectives of the investigation, the CSM and the ground conditions encountered on site.

Table 3.2: Potential Contaminants of Concern

Source	Contaminants of Concern
S1a: Infilled ground associated with backfill of the opencast mine in the east of the site.	Metals, hydrocarbons, polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), asbestos, ash.
S1b: Made ground associated with mining operations and sewage works	Metals, hydrocarbons, polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), asbestos, ash, organics.
S2: Contaminated soil and groundwater associated with operation of the coal workings, collieries and converter station in the vicinity	Metals, hydrocarbons, PAHs, VOCs, SVOCs, asbestos, polychlorinated biphenyls (PCB).
S3: Ground gas associated with infilled opencast and made ground deposits	Methane, carbon dioxide, hydrogen sulphide, carbon monoxide.

4 Ground Investigation

4.1 Programme

To support the detailed design of the proposed converter station, an intrusive ground investigation (GI) was designed and scoped by the client to provide information on the site-specific ground conditions. Details on the proposed scope are provided in the SPEN Specification [30]. SPEN acted as the Principal Contractor, managed the GI and scheduled laboratory testing.

The GI was undertaken by Raeburn Drilling and Geotechnical Limited (trading as IGNE) [31] between 17th July and 23rd August 2024. The IGNE Factual Report for this ground investigation is included in Appendix D.

This section provides a factual account of the GI fieldwork and Laboratory testing undertaken by IGNE.

4.2 Exploratory works

The Ground investigation comprised of the following:

- Twenty-three boreholes to a maximum depth of 43.2m bgl (BH01 to BH20 including BH07A, BH07B and BH10A) were drilled by the following methods:
 - Cable percussion
 - Sonic boring
 - Rotary open hole and rotary core
- Forty-six machine excavated trial pits to a maximum depth of 4.5m bgl (TP04 to TP36 including TP13A TP13B, TP17A, TP17B, TP22A, TP23A, TP23B, TP28A, TP29A, TP29B, TP29C, TP35A and TP35B)
- Twenty-one trial pits also underwent trenching to try to delineate the edge of a former opencast mine (TP13, TP13A, TP13B, TP17, TP17A, TP17B, TP22, TP22A, TP23, TP23A, TP23B, TP28, TP28A, TP29, TP29A, TP29B, TP29C, TP35, TP35A, TP35B)
- Geotechnical and geochemical samples were taken
- Three soakaway tests were undertaken in three trial pits (TP05, TP14 and TP22)
- In-situ geotechnical tests were undertaken (hand-vane and SPT)
- Nine ground gas standpipes were installed for the undertaking of ground gas and groundwater monitoring and sampling
- Groundwater was sampled on one return sampling visit using a bailer
- Ground gas was monitored weekly on six occasions

A location plan of the exploratory hole locations is included in A.2.

It is worth noting that some of the exploratory locations are located outside of the site boundary, adjacent to the northwest and west (these positions are BH03, BH11, TP08, TP11 and TP21).

4.2.1 Geo-environmental Components of the ground investigation

4.2.1.1 Geo-environmental testing suites

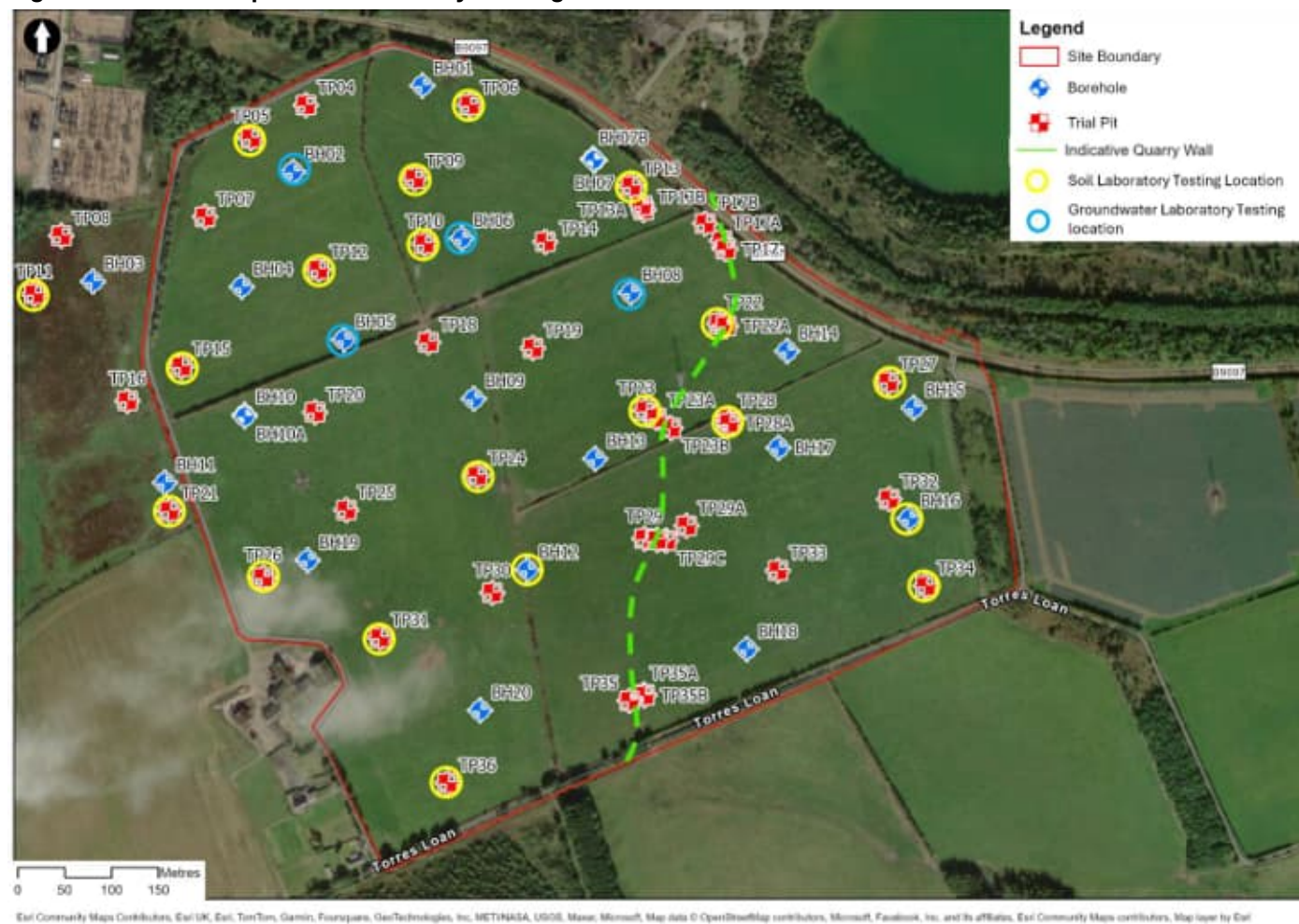
Table 4.1 summarises the geo-environmental analyses completed as part of the ground investigation.

Table 4.1: Geo-environmental testing suites

Analytical Suite	Determinants	No. of Samples Analysed
Soil suite	Metals (Arsenic, Boron, Cadmium, Chromium, Hexavalent Chromium, Copper, Lead, Mercury, Nickel and Zinc), pH and Sulphate, Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Volatile Organic Compounds (VOC), total petroleum hydrocarbons criteria working group (TPHCWG) Aliphatic/Aromatic Split, Polyaromatic Hydrocarbons (PAH) (USEPA 16), Polychlorinated biphenyl (PCB) 7 congeners, Total Organic Carbon, Asbestos Screen / Identification, Phenol,	20
Groundwater suite	Metals (Arsenic, Boron, Cadmium, Chromium, Hexavalent Chromium, Copper, Lead, Mercury, Nickel and Zinc), pH, Sulphate, cyanide, BTEX, Polyaromatic Hydrocarbons (PAH) (USEPA 16), Phenol, ammoniacal Nitrogen as NH ₄ , Nitrate, PCB 7 congeners, TPHCWG Aliphatic/Aromatic Split	4
Waste Acceptance Criteria (WAC) Testing	WAC suite	2

An illustrative diagram of the locations that laboratory testing was carried out is shown in Figure 4.1.

Figure 4.1: Location plan of Laboratory Testing



Source: Mott MacDonald from ArcGIS Pro

4.2.1.2 Post fieldwork monitoring

Nine monitoring standpipes were installed, the installation details are summarised in Table 4.2. A programme of post fieldwork groundwater and ground gas monitoring was completed on the site.

Groundwater samples were taken for laboratory testing from four boreholes underlying or adjacent to the proposed converter station on one monitoring occasion (16th November 2024). As shown in Table 4.2, the groundwater monitoring wells straddled multiple strata.

Ground gas was monitored over six return visits, reflecting a low sensitivity of development and moderate potential ground gas source, as according to BS 8576 [32]. The monitoring visits took place on 11th September, 16th September, 27th September, 4th October, 10th October, 18th October.

All of the boreholes with standpipes underwent six rounds of ground gas monitoring (apart from BH16 which underwent five rounds of monitoring).

Table 4.2: Installation monitoring summary

Exploratory Hole ID	Monitored Strata	Depth of Response Zone (m AOD) [mbgl]	Groundwater Level Range Monitoring (m AOD) [mbgl]
BH02	Made Ground and Dolerite	79.22 - 83.22 [1 - 5]	81.33 - 82.44 [1.78 - 2.89]
BH05	Made Ground, Glacial Till, Mudstone and Sandstone	77.3 - 87.3 [1 - 11]	85.39 - 85.68 [2.62 - 2.91]
BH06	Made Ground and Glacial Till	80.44 - 85.94 [1 - 6.5]	84.19 - 85.05 [1.89 - 2.75]
BH08	Made Ground, Glacial Till and Mudstone	82.86 - 86.86 [1 - 5]	84.92 - 85.38 [2.48 - 2.94]
BH12	Glacial Till and Sandstone	84.6 - 99.5 [1 - 15.9]	84.73 - 100.5 [0 - 15.77]*
BH13	Made Ground and Sandstone	84.56 - 92.46 [1 - 8.9]	84.73 - 84.82 [8.64 - 8.73]*
BH14	Made Ground (opencast backfill)	79.06 - 88.06 [1 - 10]	80.13 - 80.95 [8.11 - 8.93]
BH16	Made Ground (opencast backfill)	85.21 - 94.21 [1 - 10]	95.21 [0]^
BH17	Made Ground (opencast backfill)	77.87 - 83.87 [9 - 15]	77.26 - 77.75 [15.12 - 15.61]*

Note: * Location recorded dry well for two weeks

^ Location recorded dry well for three weeks

4.2.2 Deviating Samples

Two samples collected by IGNE exceeded their specific holding times resulting in deviating results. The deviating samples are shown in Table 4.3. Due to the relatively low levels of contamination encountered in exploratory holes relevant to the development and the similarities in concentrations between the non-deviating and deviating samples, all of the results have been reviewed as part of this assessment.

Table 4.3: Deviating Samples

Exploratory Location & Depth	Exceeding holding times deviations	Inappropriate container for tests
TP11 at 0.20m bgl	BTEX, GRO CWG (C5-C10) Ali/Aro split, Boron, Sulphate as SO ₄ , 16 PAHs, pH, Cyanide, TPHCWG Aliphatic/Aromatic, VOCs, Soil organic matter	-
TP21 at 1.00m bgl		-

In addition to deviating samples, there are instances where laboratory analysis were unable to achieve an accredited test, the tests and samples affected are shown in Appendix G, Table G.1.

4.2.3 Limitations of the Ground Investigation

There are some limitations to the data gathered in the ground investigation that should be noted.

There are some gaps in soil testing data which means that the investigation is not sufficient for a 'detailed' ground investigation as specified in BS10175 [1].

In some cases, monitoring standpipes straddle multiple strata, therefore the assessment of groundwater conditions cannot differentiate between conditions in these strata.

Groundwater samples were taken on one occasion from monitoring wells adjacent to and beneath the proposed converter station platform only, additional targeted samples and samples across the wider site area would provide a more reliable assessment of the groundwater quality beneath the site. Additionally groundwater samples were taken using a bailing technique which may cause loss of more volatile contaminants.

No leachate testing was carried out other than that carried out for Waste Acceptance Criteria (WAC) testing, therefore an assessment of the leaching potential of soils cannot be completed at this time.

Queries have been raised regarding the ground gas monitoring readings provided in the factual report, at the time of writing no response has been provided. The ground gas monitoring values in question include the oxygen readings, carbon dioxide concentrations recorded and the measuring technique to obtain peak and steady state gas concentrations. An updated ground gas risk assessment should be carried out following receipt of answers to queries.

5 Ground model

5.1 Introduction

This section describes the ground and groundwater conditions encountered by the site-specific GI. A more detailed assessment of the ground model is included within the Ground Investigation Report [33].

The historical GI, as detailed in Section 2 has not been considered within the presented ground models, and they were undertaken prior to the opencast operations on the site and are therefore not considered to present representative information on the current ground conditions on the site.

The exploratory hole logs and results of the in-situ and laboratory tests of the recent ground investigation are presented in the IGNE Factual Report (Appendix D). An exploratory hole location plan is presented in Appendix A.

Typical geological sections through the site are presented in Appendix A.3.

5.2 Ground Conditions

The thickness of Made Ground is variable across the site associated with areas of former opencast mining. A general summary of the ground conditions on site is summarised below and two ground models are presented, one for the area of former opencast workings and another for the area outside of the workings, presented in Table 5.1 and Table 5.2 respectively.

- **Topsoil:** Present across the site.
- **Made Ground:** Encountered across the majority of the site. Ranging between >43.2m in the southeast of the site in the area of former opencast workings to thicknesses of between 0.6m to 6.3m over the remainder of the site. Variable in composition ranging from cohesive to granular across site.
 - Brick was noted in the gravel in BH14, rare black plastic was recorded in TP14. Clay pipe was noted in TP22, TP23, TP23A, TP25, TP27, TP29, TP29A and TP31, glass was noted in TP27 and TP29.
- **Organic Clay:** Clay with abundant relict plant material. Locally encountered in the northwest of the site likely associated with the mapped area of Peat in this area or former buried topsoil. Present as a 0.2m to 2m layer encountered beneath the Made Ground deposits.
- **Glacial Till:** Encountered beneath Made Ground deposits over the centre and northern areas of the site. Absent within area of former opencast. Typically, present beneath Made Ground but locally present at beneath Topsoil or Organic Clay deposits. Predominantly cohesive in nature with localised deposits of granular material. Variable in thickness.
- **Passage Formation:** Encountered at rockhead in the southeast of the site. Comprising a sandstone, mudstone and siltstone with localised basaltic lavas
- **Upper Limestone Formation:** Underlies the Passage Formation present from rockhead in the centre and north of the site. Comprises Limestone, sandstone, mudstone and siltstone with localised dolerite dyke intrusions.

Peat was not encountered within the site however it was encountered locally in TP08 and TP1, adjacent to the northwest boundary of the site from surface with a thickness of 0.3m to 1.4m off-site to the northwest.

Table 5.1: Ground Model 1 – Southeast of site (Location of Former Opencast workings)

Strata ID	Depth to top of strata (m bgl)	Elevation (m OD)	Thickness (m)	Typical Description
Topsoil	0.0	89.42 – 103.80	0.2 – 0.4	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)
Made Ground ¹)	0.00 – 0.40	89.02 – 103.8	2.9 – >43.2	Very soft to firm (occasionally stiff) dark greyish brown slightly gravelly sandy CLAY with cobbles. OR Medium dense to dense light to dark brown and grey silty clayey fine to coarse SAND and fine to coarse angular to subrounded GRAVEL of mudstone, sandstone and coal.
Passage Formation	11.7 - >43.2	<52.01 - 80.3	1.5 – >6.1	Extremely weak to moderately weak thinly laminated MUDSTONE and SILTSTONE/ fine and medium grained SANDSTONE. Occasional layers of very weak thickly banded vitreous or dull COAL.

¹Made Ground has been deposited in a disordered fashion, where cohesive and granular materials are interspersed at various nonuniform thicknesses. Considered to comprise backfill to the former opencast mine.

Table 5.2: Ground Model 2 – Northwest of site (Outside of area of former opencast).

Strata ID	Depth to top of strata (m bgl)	Elevation (m OD)	Thickness (m)	Typical Description
Topsoil	0.0	82.94 – 109.55	0.2 – 0.5	Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse OR MADE GROUND (Brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)
Made Ground	0.00 – 4.00	80.53 – 106.9	0.2 – 4.75	Firm to Stiff dark brown and grey slightly gravelly sandy CLAY and SILT of low to intermediate plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and rare black plastic. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal. OR Medium dense to very dense dark grey very sandy clayey fine to coarse angular to subrounded GRAVEL of various lithologies including sandstone, mudstone and coal with cobbles. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal.
Organic Clay	0.00 – 6.25	82.05 – 85.78	0.15 – 2.20	Soft mottled orange brown or stiff brown slightly gravelly sandy CLAY of low plasticity with relict plant material and cobbles. Organic odour <i>Locally present in the north of the site at surface and underlying Made Ground, likely comprising relict topsoil or relict peat deposits.</i>
Glacial Till (Cohesive)	0.3 – 5.5	79.59 – 109.15	0.4 – 2.8	Firm to stiff mottled greyish brown and orange slightly gravelly sandy CLAY with low to intermediate plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone, siltstone, basalt and coal. Cobbles are subangular and subrounded of predominantly sandstone and mudstone with

Strata ID	Depth to top of strata (m bgl)	Elevation (m OD)	Thickness (m)	Typical Description
				occasional siltstone and basalt. <i>Locally absent</i>
Glacial Till (Granular)	0.5 – 5.4	79.64 – 107.37	0.2 – 2.9	Medium dense to dense greyish brown very clayey fine to coarse SAND and fine to coarse subangular and subrounded GRAVEL of various lithologies including sandstone, mudstone and coal with medium cobble content and low boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subrounded of sandstone (up to 800mm). <i>Only locally present</i>
Passage Formation	1.8 – 3.5	82.94 – 96.21	0.3 - >1.0	Weak weathered dark brown and grey MUDSTONE. Weak weathered light brown fine to coarse SANDSTONE Moderately weak to medium strong dark grey BASALT (Lava flow). <i>Locally encountered at shallow depths in the east of the site.</i>
Upper Limestone Formation	0.9 – 7.3	78.44 – 107.75	0.1 - >12.4	Extremely weak to weak dark grey MUDSTONE. Weak to moderately weak laminated grey sandy SILTSTONE. Extremely weak to medium strong grey and off-white fine and medium grained SANDSTONE. Orange brown to dark grey LIMESTONE. Dark grey BASALT. (Lava flow in west of the site). Medium strong dark grey DOLERITE with phenocrysts. (Intrusion in north of the site).

5.3 Obstructions

A number of obstructions were noted during the GI works either resulting in the termination of the borehole or the requirement for chiselling to progress past the obstruction. The majority of the obstructions were related to encountering rockhead, however, obstructions were also encountered in the Made Ground (BH02, BH04, BH05, BH06, & BH10) and Glacial Till (BH04 & BH07A) and considered to be cobbles or boulders within these deposits.

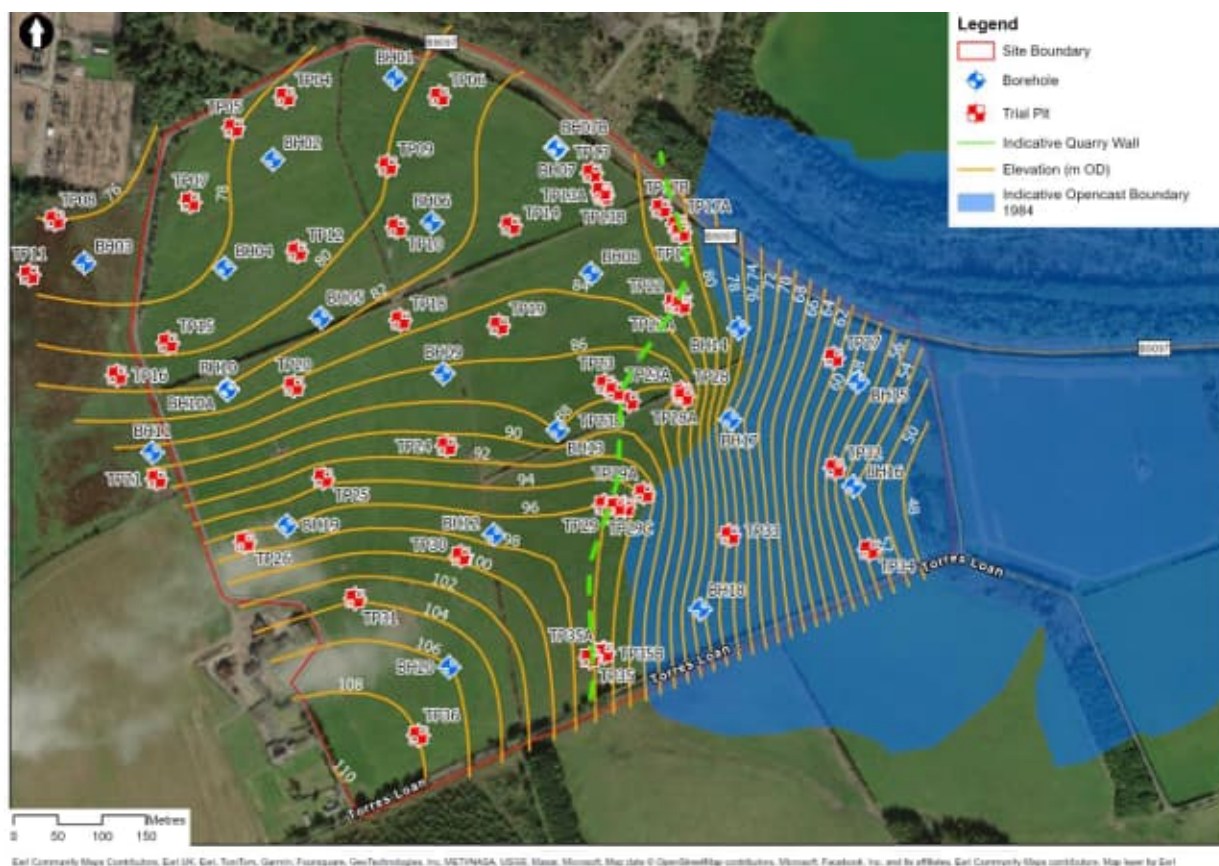
In addition, trial pitting recorded frequent cobbles and boulders in the Made Ground and Glacial Deposits and frequently terminated due to hard digging which was likely a result of encountering rockhead or hard ground.

No artificial obstructions were encountered.

5.4 Rockhead

Rockhead levels are indicated to vary greatly across the site associated with the differing topography and the former opencast coal mine in the southeast of the site that has artificially lowered rockhead in this area. As illustrated in Figure 5.1 rockhead levels in the centre and northwest of the site typically reduce from a maximum elevation of 110m OD in the southern corner of the site and reduce a minimum of 76m OD in the north, following topography. In the southeast of the site however rockhead levels rapidly reduce to 48m OD in the area of former workings.

Figure 5.1: Rockhead Contours across site



Source: Mott MacDonald, 2025.

Based on available historical data and the rockhead profiles identified in the boreholes on site the edge of former opencast workings has been tentatively identified as illustrated in Figure 5.1. However uncertainty as to the exact location of the edge of the opencast remains.

5.5 Groundwater

5.5.1 Strikes

Groundwater strikes were encountered within boreholes and trial pits during the ground investigation works as summarised in Table 5-3. The groundwater strikes were predominantly recorded at depths of between 1m and 4m depth in the Made Ground and Glacial Till, with a further five groundwater strikes encountered on rockhead of the Upper Limestone Formation. Groundwater was noted to rise within three boreholes: BH01, BH05 and BH06.

It is important to note that many water strikes may have been masked by use of water flush during the rotary coring and sonic boring drilling techniques.

Table 5-3: Summary of Groundwater Strikes

Hole ID	Depth of Strike (m bgl / mOD)	Depth after 20 minutes (m bgl / mOD)	Strata
BH01	3.0 / 80.55	2.8 / 80.75	Glacial Till
BH02	2.0 / 82.22	-	Made Ground
BH03	0.9 / 81.83	-	Made Ground

Hole ID	Depth of Strike (m bgl / mOD)	Depth after 20 minutes (m bgl / mOD)	Strata
BH05	2.9 / 85.4	2.55 / 85.75	Made Ground
BH06	6.5 / 80.44	4.95 / 81.99	Glacial Till
BH16	2.7 / 92.51	-	Made Ground
TP04	1.7 / 81.43	-	Made Ground
TP05	2.1 / 80.84	-	Made Ground
TP06	1.9 / 81.86	-	Glacial Till
TP08	2.9 / 79.64	-	Glacial Till
TP09	3.4 / 82.2	-	Glacial Till
TP10	2.1 / 84.95	-	Made Ground
TP13	2.8 / 82.94	-	Mudstone
TP13A	2.7 / 83.36	-	Sandstone
TP13B	4.0 / 82.16	-	Basalt
TP15	2.3 / 82.48	-	Made Ground
TP16	3.7 / 81.25	-	Mudstone
TP17A	2.5 / 84.26	-	Made Ground
TP17B	2.1 / 84.2	-	Made Ground
TP18	3.4 / 85.54	-	Made Ground
TP19	4 / 85.42	-	Made Ground
TP20	3.8 / 85.88	-	Made Ground
TP21	1.8 / 91.49	-	Limestone
TP22	4.0 / 84.2	-	Glacial Till

5.5.2 Monitoring

Groundwater monitoring wells were installed in nine boreholes where six weeks of groundwater monitoring was undertaken in all boreholes except BH16 which only received five weeks of groundwater monitoring. The range of groundwater depths in each borehole are shown in Table 5.4.

Table 5.4: Groundwater Monitoring Results

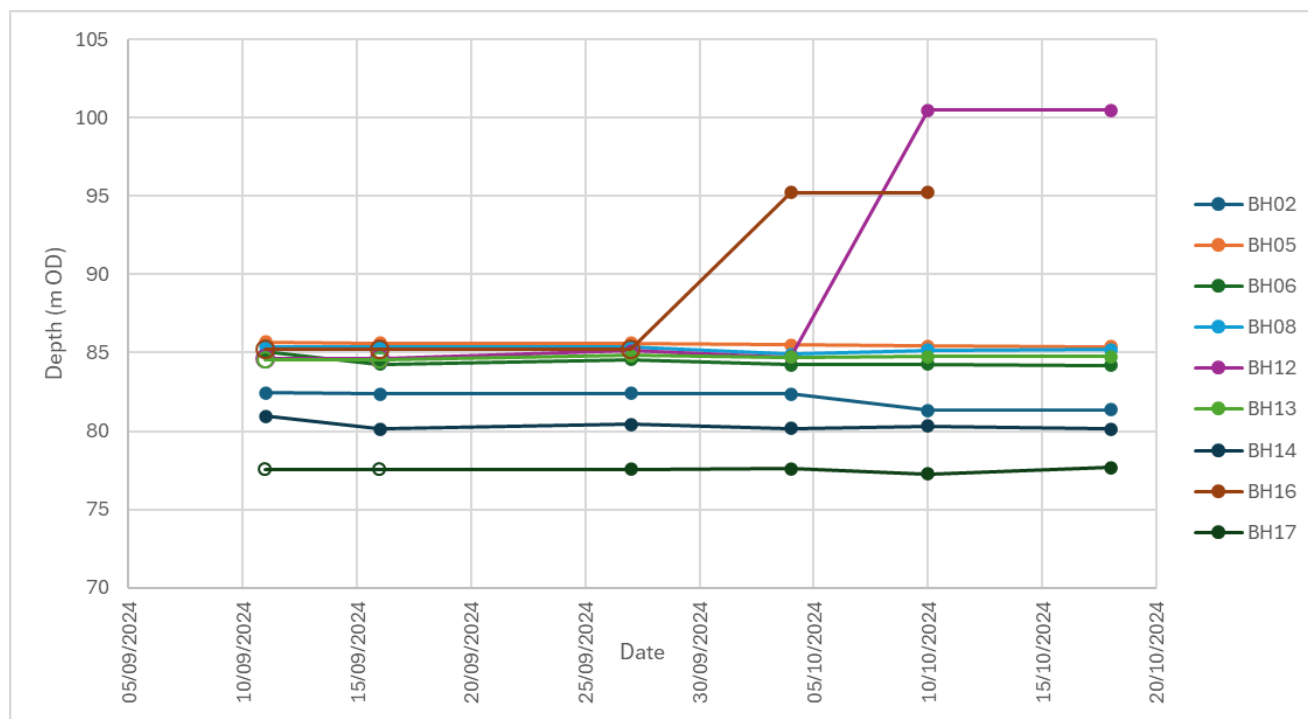
Location ID	Groundwater depth (m bgl)	Groundwater Elevation (m OD)	Response Zone Strata
BH02	1.78 – 2.89	81.33 – 82.44	Made Ground & dolerite
BH05	2.62 – 2.91	85.39 – 85.68	Made Ground, organic clay, mudstone & sandstone
BH06	1.89 – 2.75	84.19 – 85.05	Made Ground, Glacial soils
BH08	2.48 – 2.94	84.92 – 85.38	Made Ground, organic clay, glacial soils & mudstone
BH12	0.00 – >16.0 (Dry for two weeks)	<84.6 – 100.5	glacial soils & sandstone
BH13	8.64 – >8.9 (Dry for two weeks)	<84.56 – 84.73	Made Ground & Sandstone
BH14	8.11 – 8.93	80.13 – 80.95	Made Ground (backfill)
BH16	0.00 – >10.00 (Dry for three weeks)	<85.21 – 95.21	Made Ground (backfill)

Location ID	Groundwater depth (m bgl)	Groundwater Elevation (m OD)	Response Zone Strata
BH17	15.12 – 15.61 (Dry for two weeks)	<77.87 – 77.75	Made Ground (backfill)

The monitoring indicates that the groundwater levels on site typically vary between 80m and 85m OD, generally reducing to the southeast towards the area of former opencast where groundwater levels are indicated to be around 78m OD in BH17. The levels in the northwest of the site generally range between 2-3m bgl, deepening to 8-9m bgl in the centre, of the site and reducing to 15-16m bgl in the southeast.

As the groundwater response zones typically cross multiple strata boundaries there is uncertainty in regard to the groundwater conditions in the differing strata units across the site. For instance, it is unknown if a perched groundwater body is present in the granular Made Ground Deposits. In addition, the reliability of the groundwater levels in BH12 and BH16 are uncertain. The groundwater levels in these standpipes are shown to be close to or below the base of monitoring standpipes (10m-15.9m) in the first two to three monitoring visits, but then to be at surface in the following two to three monitoring visits. The readings are not considered to be representative and should not be relied on. Further monitoring is required to confirm the groundwater levels in these boreholes.

Figure 5.2: Groundwater readings against elevation



Note: Symbols with no fill denote a “dry” reading, i.e. groundwater level below base of standpipe

5.6 Visual and/or olfactory evidence of potential contamination

Thicknesses of Made Ground ranged between 0.3m and 43.2m. The greatest thicknesses of Made Ground was encountered in the east of the site associated with infilling of the former

opencast mine. Any observed visual and/or olfactory evidence of potential contamination are summarised in Table 5.5.

Table 5.5: Visual and/or Olfactory Evidence of Potential Contamination

Exploratory hole	Depth (mbgl)	Description of visual/ olfactory contamination
TP08	0.4-1.4m	Organic odours accompanied by presence of plant materials. TP08 and TP11 are located in areas where Peat was present at surface.
TP11	0.3-1.4	
TP13	1.3-2.8	
TP16	1.7-3.7	
TP17	2.10-2.50	Orange brown oxidation staining in the Made Ground
TP17A	2.10-2.50	
TP20	2.3	
TP26	1.40-1.90	
TP29C	2.50-2.90	Oily film was noted on groundwater in the Made Ground
TP04, TP05 and TP10	1.70-2.10	

6 Generic Quantitative Risk Assessment

6.1 Introduction

A preliminary generic quantitative risk assessment has been undertaken following the legislative context, planning framework and methodology summarised in Appendix E.

This preliminary GQRA refines the preliminary conceptual model and risk assessment using the findings of a site specific ground investigation. Where the results of this revised risk assessment indicate that areas of land contamination are present that constitute unacceptable risks, consideration may then be given to the most appropriate means to minimise and manage these risks.

The potential contamination sources identified from the desk-based review are summarised above in section 3.

The GQRA considers site contamination data against generic risk-based thresholds. The thresholds used are described in detail within Appendix E.

6.2 Human Health Risk Assessment

Generic assessment criteria (GAC) protective of human health for a commercial end use have been selected as the most appropriate for the proposed development. Where criteria vary depending on soil organic matter (SOM), a SOM of 2.5% has been used based on site specific testing. In the absence of published criteria for a specific contaminant we have reverted to the laboratory limits of detection (LOD).

6.2.1 Soil screening

Soil laboratory testing has been undertaken, as detailed in Section 4.2 and the results compared to the GACs as previously described. Screening of the test results is presented in Appendix G.1.

Laboratory soil analysis was carried out on twenty soil samples¹ of which thirteen were in Made Ground (the deepest of which was at 6.52m bgl), seven were in natural deposits of which one was in Peat, five were in Glacial Till and one in weathered bedrock. Two samples were tested for PCBs below the proposed converter station.

The soil analysis indicated that the determinants were all below their respective GAC. No obvious visual or olfactory sources of contamination were noted in the borehole logs. Where an oily film was noted in the groundwater in trial pits soil samples have been taken and tested at shallow depths in TP05 and TP10. The following points have been noted from review of the laboratory results:

- The pH values of the soil samples ranged between 3.0 and 8.1, with five samples measuring a pH below 6, all five samples were within the Made Ground containing coal fragments, except the sample in TP23 which was within Made Ground but no coal fragments were noted in the logs.
- Samples generally contained low concentrations of PAHs. Where they were detectable above laboratory detection limits the concentrations were significantly below the applied screening criteria.

¹ It should be noted that two of the samples tested are off-site adjacent to the northwest of the site.

- Concentrations of VOCs (excluding BTEX) were generally below laboratory detection limits. VOCs were identified in four of the twenty samples tested, of which three were in Made Ground and one was within Peat. Where detected the VOC determinants were chloroform and benzene group determinants all at concentrations below the GAC.
- BTEX was detected above the limit of detection in seven of the twenty samples tested, at concentrations well below their respective GAC. Where detected, six of the samples were in Made Ground and one was within a sample of Peat.
- TPH Aliphatics and Aromatics were detected in eight samples out of 20 measuring concentrations above the detection limit. The maximum total TPH concentration was recorded in TP22 at 1m bgl (Made Ground) with a concentration of 533.6mg/kg, the highest single fraction of TPH recorded was Aromatics >C21-35 in TP22 at 1m bgl with a concentration of 256mg/kg, none of the values recorded exceeded the relevant GACs.
- Concentrations of PCBs within the two samples tested were below the laboratory limit of detection.

6.2.1.1 Asbestos Identification

Table 6.1 summarises the locations, depths, and quantities of asbestos noted in the ground investigation.

Table 6.1: Summary of Asbestos Quantification

Location, depth (m bgl) [strata]	Asbestos type	Quantification and notes
TP31 (0.2) [Made Ground]	Chrysotile	0.002%(Free Fibres)

The positive identification of asbestos was located north of an area historically used for stockpiling material.

6.2.2 Human Health Risk Assessment – Interpretation (excluding Asbestos)

The soil data does not indicate the presence of a significant contamination source. The risk to human health from soils based on the sites future use as a commercial development is assessed as low.

Low pH was recorded in Made Ground in trial pits to the east of the site, the logs note that coal was included in the composition of the Made Ground, and the samples were taken above the water table. It is proposed that the source of the low pH and elevated metals in soils is a result of weathering of metal sulphides within the Made Ground [34]. Metal sulphides are likely to be present in made ground as a result of the material being produced from adjacent collieries/ open cast workings. The risk to construction workers and maintenance workers from soils with low pH should be managed through contractor's risk assessments and management plans.

6.3 Water Environment Risk Assessment

Groundwater samples were screened against freshwater environmental quality standards (EQS) protective of surface waters due to the presence of field drains on and adjacent to the site that flow into the nearby Lochty Burn (380m north) as well as man-made ponds 150m to the northeast.

Groundwater samples were additionally screened against Resource Protection Values (RPV) and Drinking Water Standards (DWS) in consideration of the underlying bedrock geology (Dunfermline and Kirkcaldy Groundwater body).

In the absence of published guidelines we have reverted to the laboratory limits of detection (LOD).

6.3.1 Groundwater screening

Groundwater samples were taken from four boreholes during one monitoring round undertaken on 16 September 2024 (BH02, BH05, BH06, BH08). The samples were taken from standpipes with response zones which generally encompassed both Made Ground and Natural Deposits. The groundwater samples were taken from locations underlying and adjacent to the proposed converter station.

Exceedances of GACs for metals were recorded in all four samples, for determinants cadmium, copper, lead, nickel and zinc. The values of exceedances are shown in Table 6.2. Exceedances were also recorded for sulphate as SO₄.

Phenols, BTEX and PCBs was recorded below the LOD. PAH was recorded above the limit of detection in one sample from BH08 with a concentration of 0.00016mg/l, which is below the individual fractions GAC.

The maximum detected concentration of TPH was 0.1mg/l in BH08.

Table 6.2: Groundwater Exceedances of GACs

Determinant	Location	Strata	Concentration Measured (mg/l)	EQS (Freshwater) (mg/l)	RPV (mg/l)	DWS
Cadmium	BH08	MG, GT and MDST	0.00271	0.00025	0.005	0.005
Copper	BH08	MG, GT and MDST	0.00400	0.001	-	2
Lead	BH08	MG, GT and MDST	0.00470	0.0012	0.01	0.01
Nickel	BH02	MG and DOL	0.07900	0.004	0.02	0.02
	BH05	MG, GT, MDST and SST	0.00900			
	BH06	MG and GT	0.01600			
	BH08	MG, GT and MDST	2.51000			
Zinc	BH02	MG and DOL	0.03500	0.0109	-	5
	BH08	MG, GT and MDST	0.71900			
Sulphate as SO ₄	BH02	MG and DOL	817	400	-	250
	BH05	MG, GT, MDST and SST	926			
	BH08	MG, GT and MDST	2460			

Note: MG = Made Ground, GT = Glacial Till, DOL = Dolerite, MDST= Mudstone, SST = Sandstone

6.3.2 Water Environment Risk Assessment – Interpretation

Groundwater samples recorded minor exceedances of GACs for metals and moderate exceedances of sulphates within the groundwater on site. It is not clear if this is originating from on-site Made Ground or from off-site lithologies of a similar nature. The likelihood is that it may be a combination of both these; the Made Ground is comprised of excavated and crushed rocks extracted from the open cast mine and then replaced. It is worth noting that high concentrations of metals are recorded in soil samples from the site. Leachate testing would be required to confirm if metals and sulphates present in on-site soils are mobile. The exceedances are not unexpected given the industrial history of the site and surrounding area and are not considered to pose a significant risk to surface waters or groundwater. However, there may be implications

if any dewatering is required during construction as the abstracted water may not be appropriate for direct disposal to surface or groundwater.

Observations during the GI recorded visual evidence of oil sheens within groundwater entering trial pits in the north of the site. The groundwater analysis has not recorded hydrocarbons above the laboratory limit of detection.

The risk to the water environment from site soils cannot be assessed due to the absence of soil leachate testing.

6.3.3 Climate change considerations for controlled waters

Following a review of available climate change data (as presented in Appendix F), a high-level qualitative assessment of the impact from climate change on sources, pathways and receptors, and resultant impacts on the contaminant linkages in the CSM, has been undertaken for controlled waters. This assessment has been undertaken in a manner proportionate to the aim of the risk assessment, to understand potential impacts that may be realised at the site as a result of climate change.

Due to the complexities and interdependence of environmental factors that are varied through climate change which can impact site processes², in addition to the temporal variation of factors through different seasons, it can be difficult to present a meaningful holistic qualitative assessment of climate change. Factors considered important at this site (including; proximity to surface water, groundwater recharge, increased precipitation, sea level rise) have therefore been assessed in the greatest detail. This assessment should be updated as further guidance on climate change and brownfield risk assessment, and relevant data for the site, become available.

A design life of 120 years³ has been assumed for the proposed development, to consider potential impacts in the later stages of the designed operational lifetime of the development.

Overall, risks at the site as a result of climate change are not considered to change significantly from the current situation. Therefore no recommendations are made for specific investigation or assessment to further assess the potential impacts associated with climate change in relation to the proposed development.

6.4 Ground Gas Risk Assessment

6.4.1 Ground gas monitoring

A summary of the ground gas monitoring is included in Appendix G.4 and the raw data is included in the factual report in Appendix D.

Non-targeted ground gas monitoring was conducted to assess ground gas risk from potential on-site sources including the Made Ground and historical mining. The aim was to determine if ground gas protection measures are required at the site in accordance with guidance presented in BS8485:2015 (A1:2019) and CIRIA C665. [35, 36]

² For example average air temperature is an important component of climate change which has the potential to affect the chemical, physical (e.g. viscosity) and biochemical (e.g. microbial degradation rates) behaviour of contaminants within soils and shallow groundwater. Soil thermal dynamics are influenced by many factors (soil composition, moisture content, ground cover etc) and can vary greatly between seasons as well as over a short distance and with depth through the soil profile.

³ This timeframe has been used to identify a suitable 30-year period on which to base the climate change assessment. As it is in the far future, please note report limitations especially in relation to reliance on model results.

A total of six weekly post-fieldwork monitoring visits were completed between 11th September and 18th October to record groundwater levels and ground gas concentrations within borehole response zones (note BH16 only underwent 5 monitoring visits). Two wells (BH12c and BH16) were recorded as flooded during two monitoring visits.

Initial review of the monitoring data raised some queries which have been passed to IGNE for comment, a response was awaited at the time of writing. The queries related to the quality of the monitoring results as a number of results recorded oxygen concentrations as zero, elevated concentrations of CO₂ have been recorded as concentrations similar to those expected for oxygen, therefore there is some concern that there may be some recording errors. In addition, the peak and steady gas concentrations are recorded as the same value and there are some very high flow rates. In the absence of confirmation of the validity of the results, the results provided have been used in this assessment. It is recommended that this is reviewed following confirmation and/ or additional monitoring.

In the shallow monitoring wells (BH02, BH05, BH06, BH08) the groundwater level during monitoring rounds was within the Made Ground indicating the natural deposits were flooded and ground gas readings were taken from the overlying Made Ground.

Table 6.3 summarises the worst-case gas monitoring data across the six monitoring rounds.

Table 6.3: Ground gas monitoring summary

BH ID	Flow (L/hr)		CH ₄ (% v/v)		CO ₂ (% v/v)		O ₂ (% vol)	Peak CO (ppm)	Peak H ₂ S (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady	Minimum		
BH02	0.4	0.4	0	0	13.4	13.4	0	0	0
BH05	0	0	0	0	8.8	8.8	6.1	0	0
BH06	0	0	0	0	4.9	4.9	10.8	0	4
BH08	2.7	2.7	0	0	13	13	0	0	0
BH12	14.8^	12.9^	0	0	1.8	1.8	16.3	17	0
BH13	7.8^	7.8^	0	0	11.1	11.1	2.7	0	0
BH14	-1.5	-1.5	0	0	9.5	9.5	12	17	0
BH16	-4.3	-4.3	0	0	20.1	20.1	17.2	11	0
BH17	-0.4	0.1	0	0	16.7	16.3	0	16.2	0

Note: CH₄ – methane; CO₂ – carbon dioxide; O₂ – oxygen; CO – carbon monoxide; H₂S – hydrogen sulphide

^ A higher negative flow rate was recorded

Two of the six monitoring rounds were undertaken at falling atmospheric pressures⁴, and four of the six monitoring rounds were undertaken at atmospheric pressures lower than 1000mB. Barometric pressure is a major influencing factor on ground gas emission and migration [35]. Atmospheric pressure ranged between 991mB and 1023mB.

When response zones were flooded during monitoring visits, the results are not considered representative of the ground gas regime. The results are therefore not included in Table 6.3 and are discounted from the risk assessment discussed further below in Section 6.4.2. The following observations have been made:

- The maximum carbon dioxide (CO₂) emission rates of 20.1% v/v⁵ exceed the short- and long-term Occupational Exposure Limits (OEL; 1.5% and 0.5% v/v respectively [37]).

⁴ Falling pressure is assumed from assessment of historical atmospheric reports available at on the Weather Spark website, the atmospheric pressure information was taken from the nearby Edinburgh Airport.

⁵ The maximum emission rate of 20.1% v/v CO₂ is not anticipated to represent the CO₂ concentrations present on-site, it is thought that some of the CO₂ concentrations are oxygen concentrations mis recorded. In the absence of clarification of ground gas queries, an assessment cannot be made regarding the typical CO₂ concentration.

- Methane was not detected above the detection limit during monitoring and values reported were 0.0%v/v. The lower explosive limit (LEL) of methane is 5% v/v in normal concentrations of oxygen (~20.9% v/v oxygen). Therefore, at below the limit of detection the explosive risk from methane is evaluated to be low.
- The maximum positive peak gas flow rate was 14.8l/hr, and the range of positive steady state gas flow rates ranged from 0l/hr – 12.9l/hr, 12.9l/hr has been taken forward as a representative gas flow rate. Negative peak gas flow rates were recorded in five of the nine monitoring wells, with the maximum recorded negative peak gas flow rate of -25 l/hr recorded in BH12. Negative flow rates have been discounted from the subsequent assessment as they are not considered representative of the ground gas regime.
- The maximum recorded concentrations of H₂S is 4ppm and of CO is 17 ppm. H₂S was recorded above the limit of detection on one occasion, CO was recorded above the limit of detection on three occasions.
- Oxygen below 18% is considered to be depleted. The oxygen concentration was recorded below this concentration within every monitoring well on at least one occasion. It is considered unlikely that oxygen concentrations recorded as 0% are correct.

Gas monitoring data has been used to calculate a hazardous gas flow rate (Q_{hg}) for each monitoring occasion following guidance presented in BS8485:2015+A1:2019 [36]. The maximum Q_{hg} calculated for the site for unflooded boreholes and steady state flow rate is 0.8658 l/hr which equates to Characteristic Situation (CS) 3. A summary of the ground gas monitoring is included in Appendix G.4.

A 'worst-case check' has also been completed for the proposed development using a representative maximum positive gas flow rate of 12.9l/hr and the maximum carbon dioxide concentration measured to give a Q_{hg} of 2.593 %vol which equates to CS3. It should be noted that the maximum negative flow rate was higher than 12.9l/hr and would equate to CS4 if used in the worst case check, however the positive flow rate has been used as a more realistic value of the upwards migration of ground gas.

6.4.2 Ground Gas Discussion

6.4.2.1 Ground gas sources

Made Ground

The desk study review identified potential sources of ground gas associated with infilled ground (maximum recorded thickness of Made Ground beneath the converter station is 6.25m and to the east of the proposed converter station is greater than 43.2m). Additionally, localised organic clay/peat has been recorded underlying the Made Ground up to 2.2m in thickness during the ground investigation.

The maximum recorded total organic carbon (TOC) concentration within Made Ground is 17.2%, of the 11 samples of Made Ground tested for TOC four samples had concentrations greater than 6% TOC, the average TOC for the Made Ground is 4.6%. It is probable that the high TOC concentrations are a result of the coal within the samples.

The concentrations of volatiles detected during monitoring visits or in soils and groundwater are not indicative of significant contamination, therefore protective measures for vapours are not considered to be necessary.

Mine Workings

The desk study also identified mine workings as a potential source of gas as probable shallow coal mine workings are located in the east of the site and surface mining occurred within the

east of the site. The opencast works is anticipated to have removed Westfield Shale Coal seam from the site.

The Mining Remediation Authority [24] does not record any mine entries within the site area, however 13 shafts are recorded within 1km. A number of coal seams are indicated to have been worked at depths between 146m and 852m from 1887 to 1966 beneath the site as detailed in a consultants Coal Mining Report, presented in Appendix B, as discussed in Section 3.2 risk from deep mine

Coal seams were encountered at shallow depths within boreholes BH15 (at 31.2m bgl, 10cm thick, overlain by Made Ground) and BH17 (at 23.7, 20cm thick, overlain by Made Ground) and 26m bgl (35cm thick).

Monitoring wells in the west of the site recorded groundwater levels between 1.78-2.94m bgl, the monitoring wells had response zones to a maximum depth of 6.5m bgl.

The boreholes to the east of the site typically recorded deeper groundwater, however on two occasions BH12 and BH16 were flooded. Boreholes to the east of the site, in what is interpreted to be the surface mining were recorded to be dry on multiple occasions so it cannot be assumed any potential mine workings are flooded.

The geology across the site is variable, the Made Ground is variable in composition, from granular to cohesive. The glacial deposits are locally present across the site, with variable thicknesses and composition, as such would not be considered to provide a significant impermeable barrier to ground gas migration. The bedrock is fractured which could act as conduits to ground gas.

6.4.2.2 Conclusion

The development is considered low sensitivity and, as such, six rounds of monitoring were undertaken based on the requirements of CIRIA C665. Although there is uncertainty around the ground gas monitoring results, a CS3 (moderate risk) has been assessed for the site. This corresponds to a moderate risk typically associated with old landfill, inert waste and flooded mine workings based on CIRIA C665 which would appear consistent with the desk study findings.

The assessed risk from ground gas could be more robustly characterised through review of the monitoring data by IGNE to resolve queries regarding monitoring approach and values or through additional ground gas monitoring within targeted strata. Any additional monitoring should aim to better characterise the ground gas flow rate and CO₂ concentrations.

The site does not fit into guidance provided in RB17 [38], as such an evaluation following the procedures laid out in that document cannot be followed.

In the absence of additional review of the ground gas regime, gas protection measures will be required in new buildings based on British Standard (BS8485:2015), it is likely that any buildings included in the development would be classified as either Type C or Type D building (commercial ownership with either small to large rooms or Large industrial/retail park style respectively). To be conservative it has been assumed that the development will be Type C, at detailed design stage this assessment should be reviewed. To achieve protection for a CS3 site, new buildings will need a minimum gas protection value of 3 (from BS8485:2015) incorporated into the design. This could be achieved by using a number of options including a low permeability barrier (including the structural ground slab) and higher permeability venting pathways such as a passive relief layer.

6.5 Revised Conceptual Site Model

6.5.1 Introduction

The preliminary conceptual site model (CSM) in Section 3.4 has been reviewed in light of the ground investigation results. The risk assessment process is detailed in Appendix E.

Note that the CSM solely assesses risk from non-asbestos contamination, refer to Section 1.4.

6.5.2 Assumptions

The following assumptions have been made for the geo-environmental risk assessment of the proposed development:

- The assessment assumed that no new sources of contamination will be introduced during the development – i.e., construction materials will be non-hazardous and inert.
- It is assumed that a robust Construction Environmental Management Plan (CEMP) will be adopted during the works and, as a result, no contamination will occur from leaks and spills during construction.
- The assessment only applies to the development proposals detailed within this report
- The risk assessment does not consider asbestos or radiological contamination.
- It has been recommended that additional ground investigation is carried out to further characterise the site.
- Due to the distance of the Lochty Burn from the site, it is not considered within the CSM.

6.5.3 Revised CSM

Figure 6.1: Conceptual Site Model

Sources:

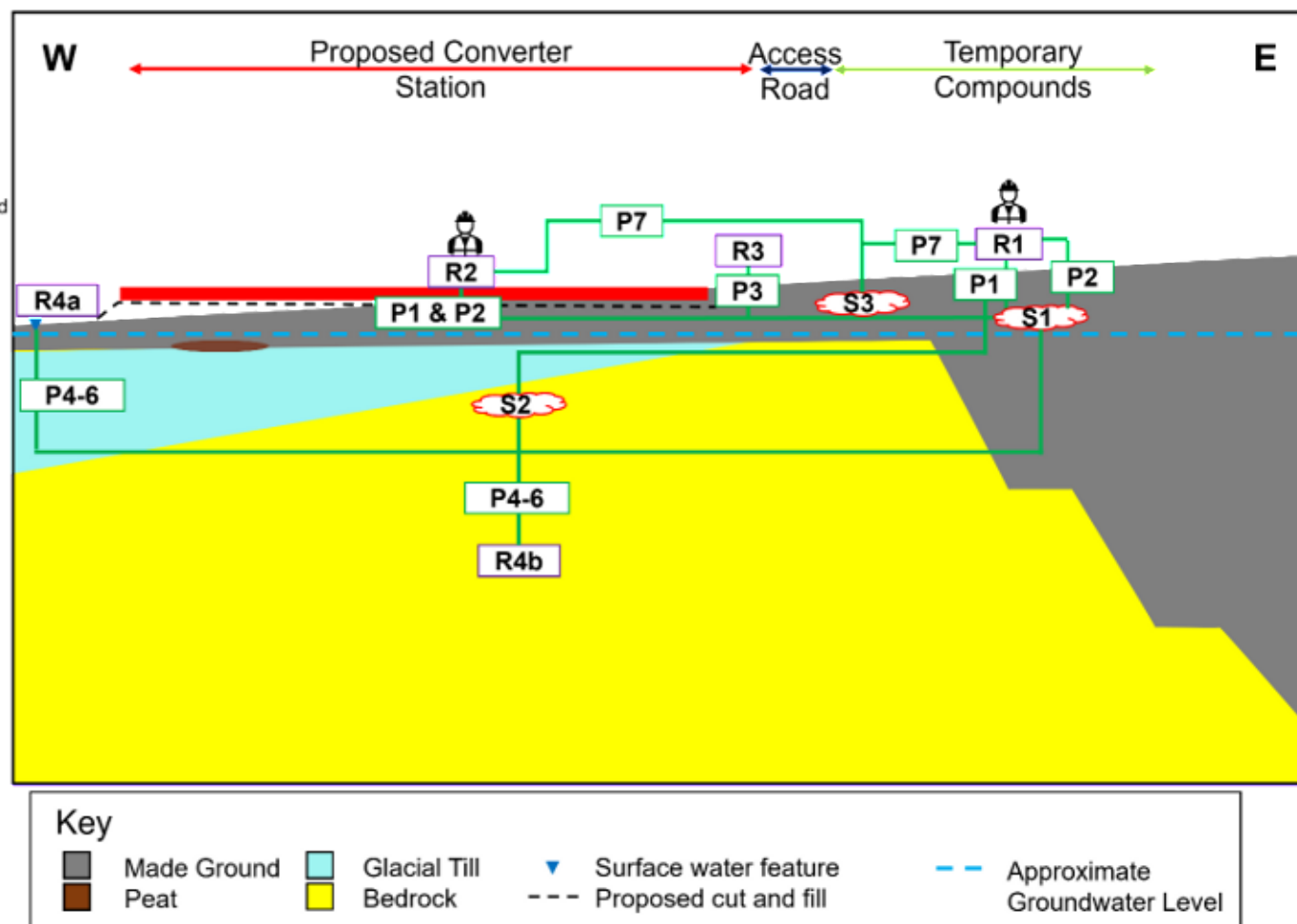
- S1:** Made Ground/ infilled ground associated with the former development of the site;
- S2:** Contaminated groundwater associated with operation of the coal workings and converter station in the vicinity;
- S3:** Ground Gas associated with the Made Ground and shallow coal workings.

Pathways:

- P1:** Human uptake pathway;
- P2:** Migration of wind-blown dusts during construction;
- P3:** Direct contact;
- P4:** Horizontal and downward migration in the unsaturated zone;
- P5:** Horizontal and vertical migration in the saturated zone;
- P6:** Migration through preferential pathways;
- P7:** Migration of ground gas

Receptors:

- R1:** Construction workers and maintenance workers;
- R2:** Site end users (operational workers)
- R3:** Contact with proposed built environment;
- R4a:** Surface waters (drainage ditches and man-made ponds);
- R4b:** Groundwater in the Clackmannan Group (moderately productive aquifer)



Source: Mott MacDonald 2025

Table 6.4: Revised Conceptual Site Model and Risk Assessment

Source	Pathway	Receptor	Probability	Consequence	Risk Rating	Comments
S1: Made Ground/ infilled ground associated with the former development of the site. Soil testing has not identified any significant risk to human health, however there is the potential to encounter contamination in un-investigated areas.	P1: Human uptake pathway (including ingestion, dermal contact and inhalation of dusts/vapours); P2: Migration of wind-blown dusts during construction;	R1: Construction workers and maintenance workers	Low	Mild	Low Risk	1. Made Ground of variable thickness has been identified across the site. No exceedances of commercial GACs were recorded in the soils. Soils with low pH were measured during the ground investigation. Additionally Elevated concentration of metals are recorded in the metals (below the commercial GAC), To mitigate this risk construction and maintenance works should use site specific risk assessments and method statements and, where necessary, the use of personal protective equipment (PPE).
		R2: Site end users	Unlikely	Mild	Very Low Risk	2. Future site users are unlikely to be in contact with soils, there are no recorded exceedances in the soils, the converter station is likely to comprise of hard standing which would sever the pathway between a potential source and end user.
	P3: Direct contact	R3: Contact with proposed built environment (e.g. buried foundations, water supply pipes)	Low	Mild	Low Risk	3. The risk to buried concrete will be assessed in accordance with the guidance presented in BRE Special Digest: 2005. Assessment of BRE tests will be reported in the project Geotechnical Ground Investigation Report.
	P4: Horizontal and downward migration in the unsaturated zone P5: Horizontal and vertical migration in the saturated zone P6: Migration through preferential pathways	R4a: Surface waters (drainage ditches and man-made ponds)	Low	Medium	Moderate/ Low Risk	4. No exceedance of determinants were measured within the soils underlying the site, suggesting the soils are unlikely to leach a significant concentrations of contaminants into the surface waters, however this should be validated by soil leachate testing. The surface waters on site are drainage ditches which flow into Lochty Burn, 380m to the north. The finished development is currently proposed to involve hardstanding which would reduce the risk of leaching of any undiscovered hotspots of contamination. At the time of writing the location of sustainable urban drainage/ attenuation ponds is still being optioneered. Due to the thicknesses of Made Ground it is possible that SuDS ponds may not be located in natural deposits, therefore it is recommended that leachate testing is carried out to better characterise the risk to the water environment.

Source	Pathway	Receptor	Probability	Consequence	Risk Rating	Comments
	(excavation, services, SuDS).	R4b: Groundwater in the Dunfermline and Kirkcaldy Groundwater body	Low	Medium	Moderate/ Low Risk	5. No exceedance of determinants were measured within the soils underlying the site, suggesting the soils are unlikely to leach a significant concentrations of contaminants into the groundwaters, however this should be validated through soil leachate testing. The finished development is currently proposed to involve hardstanding which would reduce the risk of leaching of any undiscovered hotspots of contamination. The proposed foundations are shallow, which are not anticipated to impact on groundwater quality/ The superficial geology across the site is locally variable and variably present as such it is not anticipated to provide an impermeable layer above the bedrock aquifer. At the time of writing the location of sustainable urban drainage/ attenuation ponds is still being optioneered. Due to the thicknesses of Made Ground it is possible that SuDS ponds may not be located in natural deposits, therefore it is recommended that leachate testing is carried out to better characterise the risk to the water environment. If dewatering is required then abstracted of water should checked for suitability for discharge.
S2: Contaminated groundwater associated with operation of the coal workings and converter station in the vicinity. Presence of elevated metals and sulphate identified in groundwater samples.	P1: Human uptake pathway (including ingestion, dermal contact and inhalation of dusts/vapours).	R1: Construction workers and maintenance workers	Low	Mild	Low Risk	6. There is a possibility that construction workers may encounter heavy metals and sulphate in the groundwater. To mitigate this risk construction and maintenance works should use site specific risk assessments and method statements and, where necessary, the use of personal protective equipment (PPE).
	P4: Horizontal and downward migration in the unsaturated zone P5: Horizontal and vertical migration in the saturated zone	R4a: Surface waters (drainage ditches and man-made ponds)	Low	Medium	Moderate/ Low Risk	7. Exceedances of heavy metal and sulphate EQS were noted in the groundwater underlying the site. No exceedance of the corresponding metals were measured within the soils underlying the site, suggesting the soils are unlikely to leach a significant concentrations of contaminants into the surface waters, however this should be confirmed with soil leachate testing. Additionally see comment 4.
	P6: Migration through preferential pathways (excavation, services, SuDS).	R4b: Groundwater in the Dunfermline and Kirkcaldy Groundwater body	Low	Medium	Moderate/ Low Risk	8. Exceedances of heavy metal and sulphate DWS were noted in the groundwater underlying the site. No exceedance of the corresponding metals were measured within the soils underlying the site, suggesting the soils are unlikely to leach a significant concentrations of contaminants into the surface waters, however this should be confirmed with soil leachate testing. Additionally see comment 5.

Source	Pathway	Receptor	Probability	Consequence	Risk Rating	Comments
S3: Ground gas associated with Made Ground and shallow coal workings. Currently assessed as CS3 based on existing data.	P7: Migration of ground gas	R2: Site end users	Likely	Medium	Moderate Risk	9. The investigation and post fieldwork monitoring recorded elevated carbon dioxide and flow rates. Using current ground gas risk assessment guidance (CIRIA C665) the site has been classified as CS3 and as such any buildings should be built with a minimum gas protection score of 3 points as detailed in BS8485:2015(+A1:2019), in order to reduce the ground gas risk to negligible. It is recommended that additional ground gas monitoring is undertaken to more robustly assess the ground gas risk.
Note: The risks identified above have currently been assessed based on existing information however there are some data gaps, therefore the risk should be reviewed following additional GI.						

7 Waste Soil Categorisation

7.1 Waste categorisation for soils

7.1.1 HazWasteOnline™ results

Waste classification is a two-stage process, with the first step comprising a hazard assessment of the soil quality data in line with the guidance set out in the Environment Agency waste classification technical guidance WM3 document. Once the hazardous properties of the materials are known, the second stage is to assess the potential performance of the materials in a landfill; this is undertaken by considering the results of waste acceptance criteria (WAC) testing.

Generally, wastes that are classified as hazardous will need to be deposited in a hazardous waste landfill or within a stable non-reactive hazardous waste cell in a non-hazardous waste landfill (depending on the WAC test results). Wastes that are shown to be non-hazardous may either be deposited in a non-hazardous waste landfill (for which no WAC tests are required) or as inert waste (which would require confirmation of suitability for this waste stream through WAC testing).

Two WAC tests were undertaken during the IGNE ground investigation. Therefore, both steps of the waste classification process are summarised in this Section.

7.2 HazWasteOnline™ summary

Soil quality data from the investigation was entered into a hazard assessment tool, HazWasteOnline™. The tool uses the current WM3 technical guidance document to determine whether the substances contained in the soils tested exceed any risk phrases that would render the materials as 'hazardous' waste.

The tool includes a number of options for using the different valences (chemical species) or compounds that may be present. Where options were available these were generally set at the default (worst case assessment) for the model in accordance with the guidance set out in WM3.

It should be noted that hexavalent chromium (chromium VI) concentrations were found below laboratory detection limits within all samples, therefore, for the purposes of this assessment, it has been assumed that no chromic compounds are present.

It should be noted that a number of soil samples exceeded their holding time for volatile organic compounds (VOC), therefore the assessment may have underrepresented any volatiles within the material.

The results of the HazWasteOnline™ summary are presented in Appendix H. Of the twenty samples, two returned a hazardous result (BH12 at 3m in Glacial Till; TP34 at 1.5m in Made Ground) due to elevated concentrations of copper and zinc. The remaining eighteen returned a non-hazardous result. The samples that were classified as Hazardous are located to the south and west of the proposed platform location.

7.3 Waste Acceptance Criteria

Two WAC tests were completed, one in natural deposits (TP24 at 2.8m bgl) and one in Made Ground (TP10 at 0.3m bgl). Based on the hazard assessment above and the results of the WAC

testing, it is likely that the majority of the samples would be suitable for disposal in an inert or non-hazardous landfill with the exception of:

- BH12 at 3m; TP34 at 1.5m due to elevated concentrations of copper and zinc.

It is recommended that a waste contractor is contacted to discuss options for disposal if construction works require removal of soils from site. Additional analysis may be required on specific soils.

8 Conclusions and recommendations

Conclusions and recommendations for the EGL4 Converter station based on the findings of the 2024 ground investigation are presented below.

8.1 Conclusions

There are no exceedances of GACs protective of human health for a commercial end use at the proposed converter station site. Asbestos was positively identified in one sample.

Groundwater samples identified minor exceedances of heavy metals and moderate exceedance of sulphate in the groundwater beneath the site. These did not correlate with elevated concentrations within nearby soil testing suggesting a wider regional source of groundwater contamination.

The GQRA has assessed the identified pollutant linkages at the site as presenting a Very Low to Moderate Risk.

The risk to human health from soils and groundwater has been assessed as very low to Low. Any residual risks to construction workers can be mitigated through site specific method statements which minimise manual handling of soils.

The risk to the water environment is assessed as Moderate/Low.

The risk to the built environment is assessed as Low, this is to be mitigated through design.

The risk from ground gas is assessed as moderate as a CS3 has been calculated based on available data. Therefore, any new buildings should include sufficient gas protection measures.

The soils on site were evaluated for waste classification using HazWasteOnline software and WAC testing, it is evaluated that any waste produced on site would be suitable for disposal in inert or non-hazardous landfill with the exception of localised hotspots due to concentrations of copper and zinc.

8.2 Recommendations

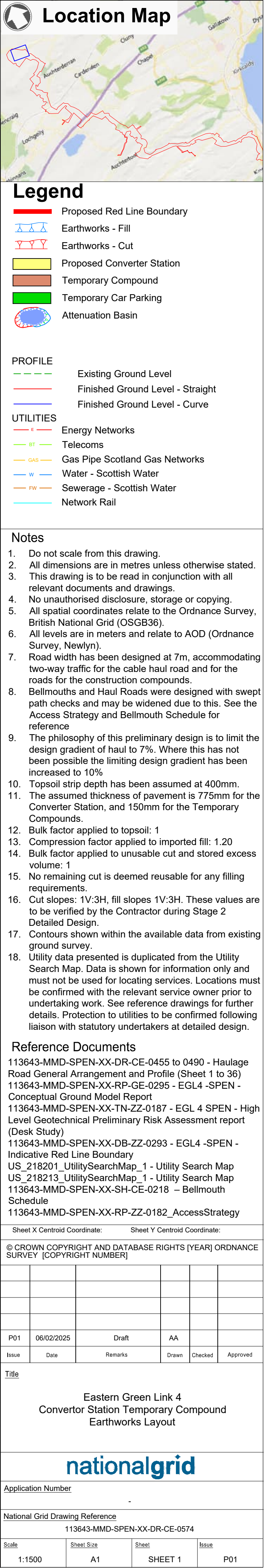
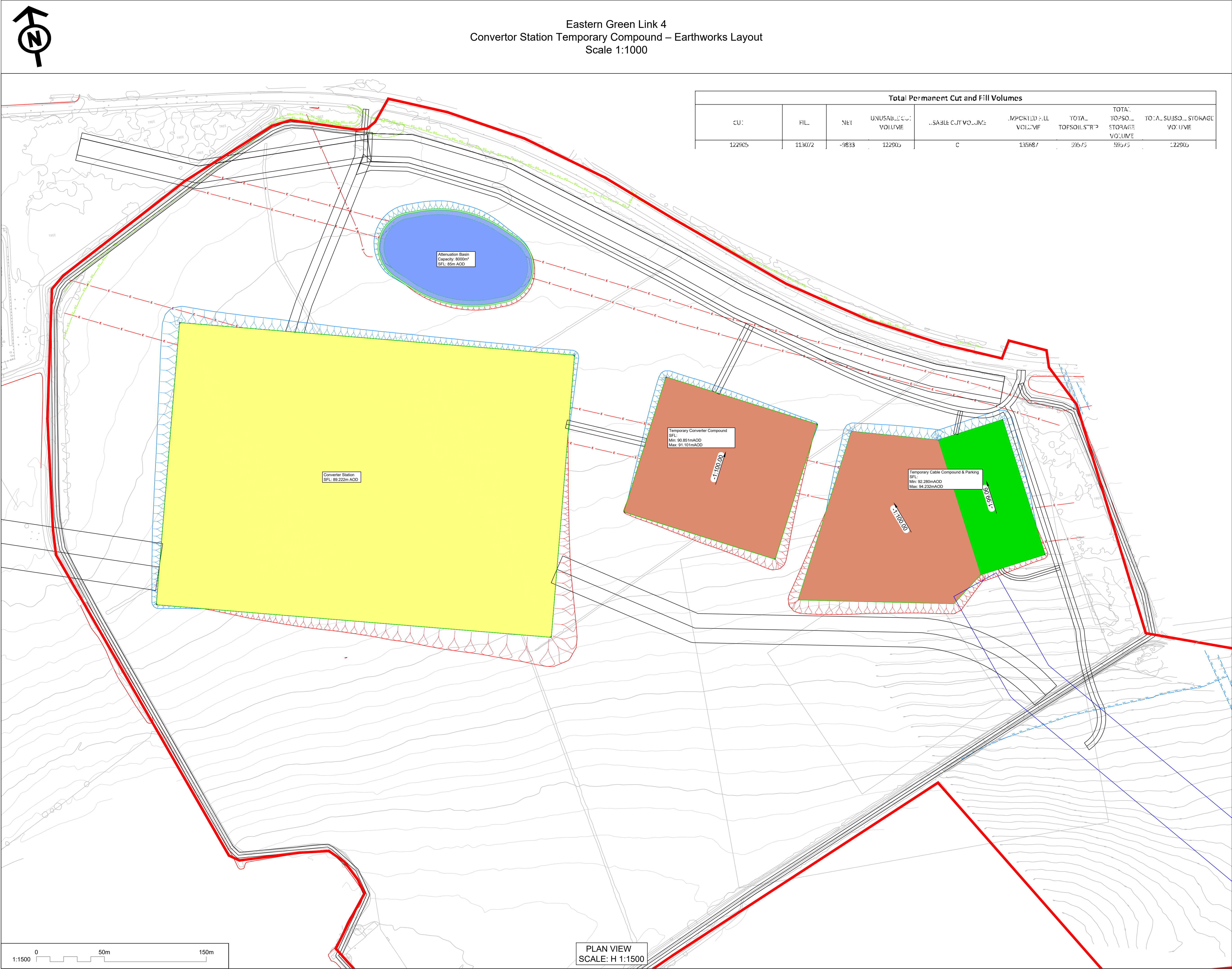
The following recommendations are provided to conclude this GQRA report:

- It is recommended that soil leachate testing should be completed to better characterise the risk to groundwater from soils on site and also to inform materials reuse assessment in proposed areas of cut and fill. Leachate testing is also recommended in areas proposed for infiltration drainage to assess suitability of this technique.
- The ground gas regime is currently assessed as a CS3 and therefore it is recommended that ground gas protection measures should be designed to meet these requirements as set out in BS8485:2015. The ground gas risk assessment should be revisited following confirmation on the reliability of the data from IGNE or further monitoring data being collected.
- The groundwater regime has not been fully characterised due to the installation of the monitoring wells crossing a number of different strata and a limited number of groundwater samples being tested. Whilst this is not considered a significant risk to the project, it would be recommended to obtain some additional data to inform groundwater levels across the site and any dewatering operations, if required.
- An asbestos specialist should be consulted prior to construction to advise on asbestos risks.

- A Construction Environmental Management Plan should be in place to mitigate risks to receptors during construction.
- There is the potential for undiscovered contamination to be encountered during the development works. An unexpected contamination protocol should be produced and adhered to throughout the development works.
- If any excavated soils are proposed for reuse on site during construction, additional risk assessment, which may include detailed modelling, may be required to define site specific criteria for re-use of material that will ensure hazardous substances are not introduced to the groundwater at unacceptable concentrations as per SEPA Land Remediation and waste management guidelines [39].
- Construction and maintenance workers should use site specific risk assessments and method statements and, where necessary, the use of personal protective equipment (PPE).
- Waste classification using HazWasteOnline™ indicates most of the soils would be non-hazardous, four of the samples were classified as hazardous due to their metal concentrations. Discussions with a waste contractor should be undertaken to advise on off-site disposal.
- Although not anticipated, if dewatering is required for the construction works then removed groundwater may not be suitable for direct discharge back to ground or surface water due to presence of contaminants. Water may need to be treated before discharge or taken off site for disposal, discussions should be held with SEPA, if required.
- A licenced waste contractor should be consulted if removal of soils is required during the site redevelopment.

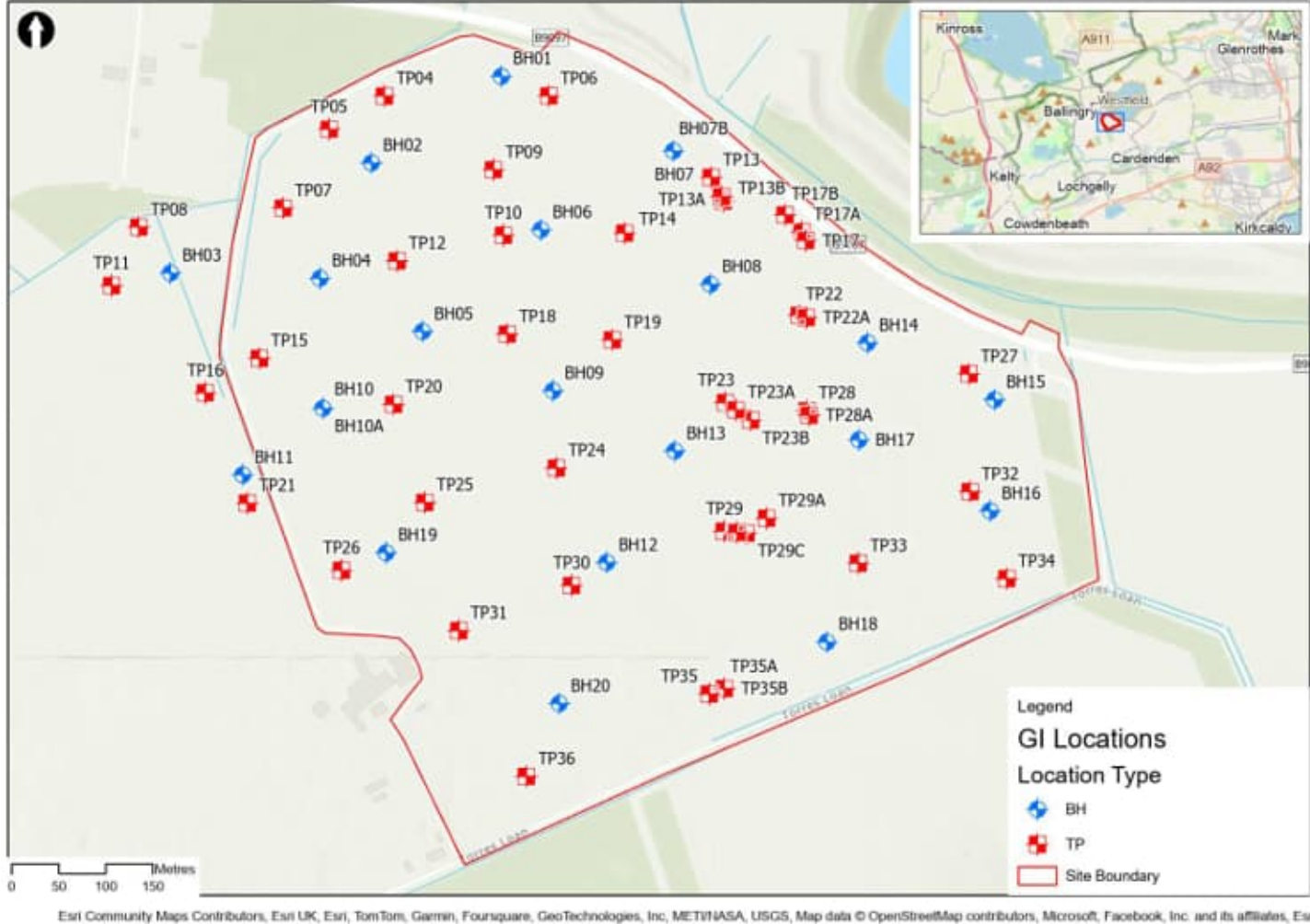
A. Supporting Figures

A.1 Proposed Development Plans



A.2 Borehole location plan

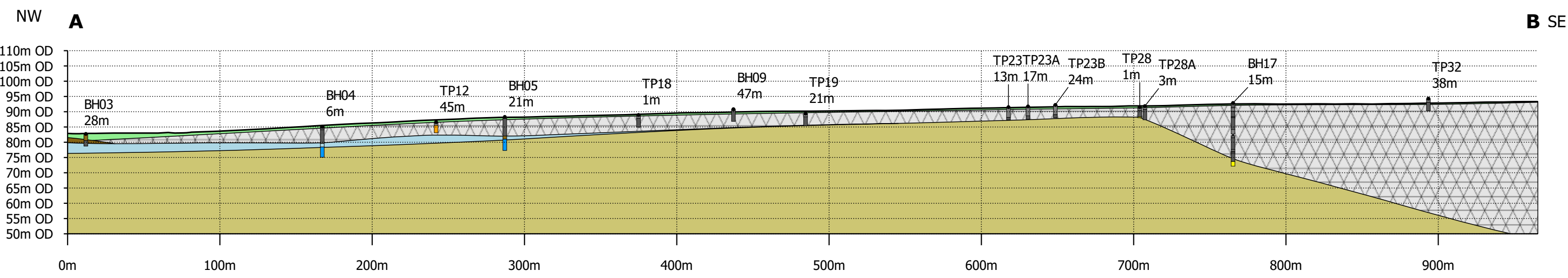
Figure A.1: As-Built Borehole Location Plan



Source: Mott MacDonald 2025 from ArcGIS Pro

A.3 Geological Sections

A.3.1 Geological Sections Through Site



B SE

- Legend
- Detailed Geology
- TOPSOIL
 - MGC
 - MGG
 - ORGC
 - TILLDC
 - TILLDG
 - PGP
 - ULGS

- Ground Model
- TOPSOIL
 - Made Ground Deposits
 - Organic Clay
 - Glacial Deposits
 - Bedrock

- Surfaces
- Topography

Location

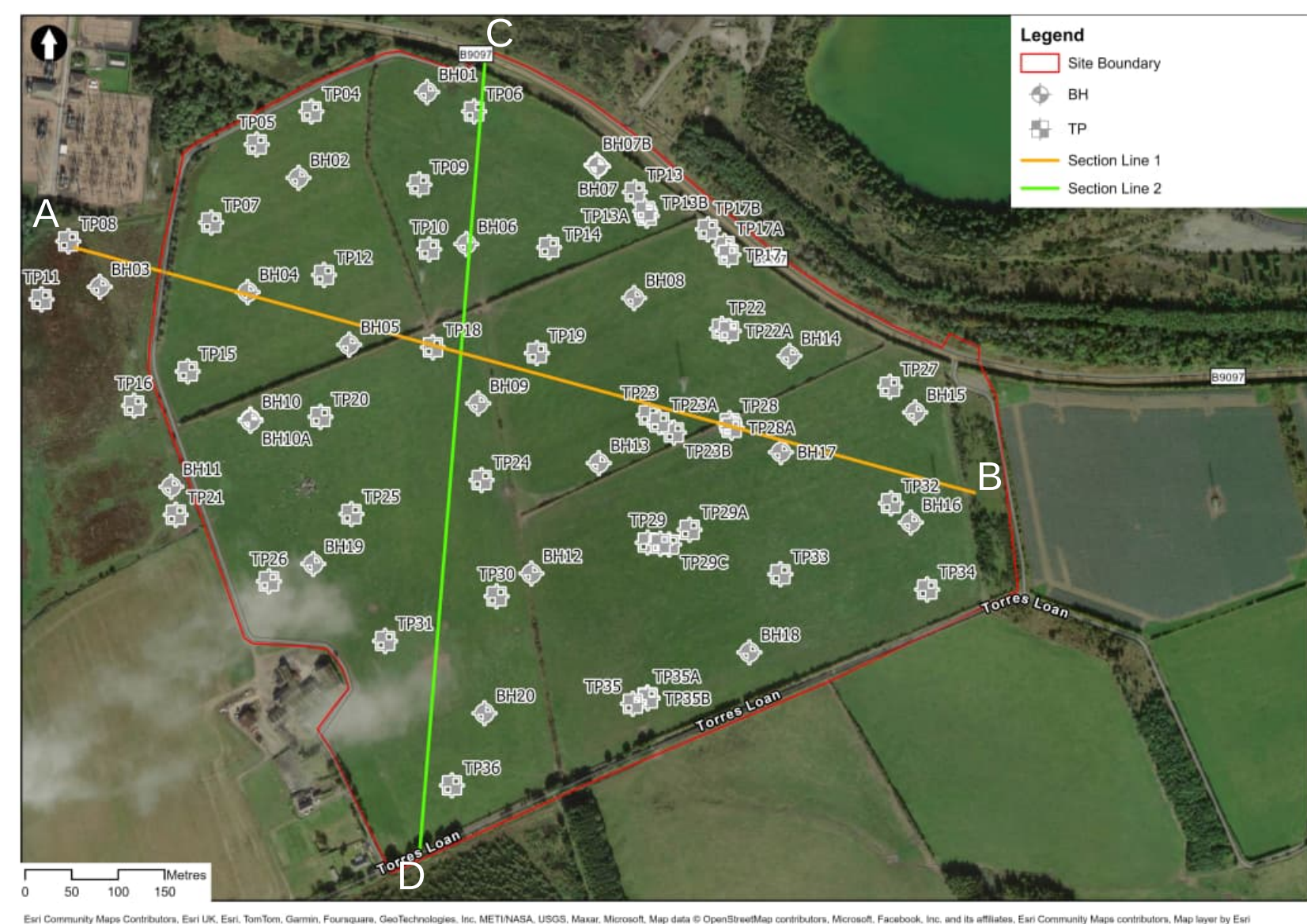
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Vertical exaggeration: 2x

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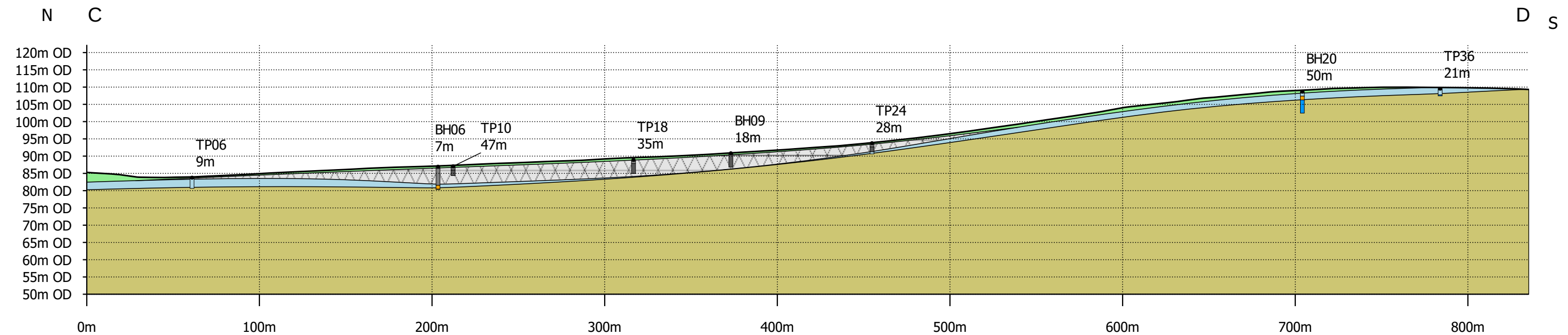
50

100

150

Metres

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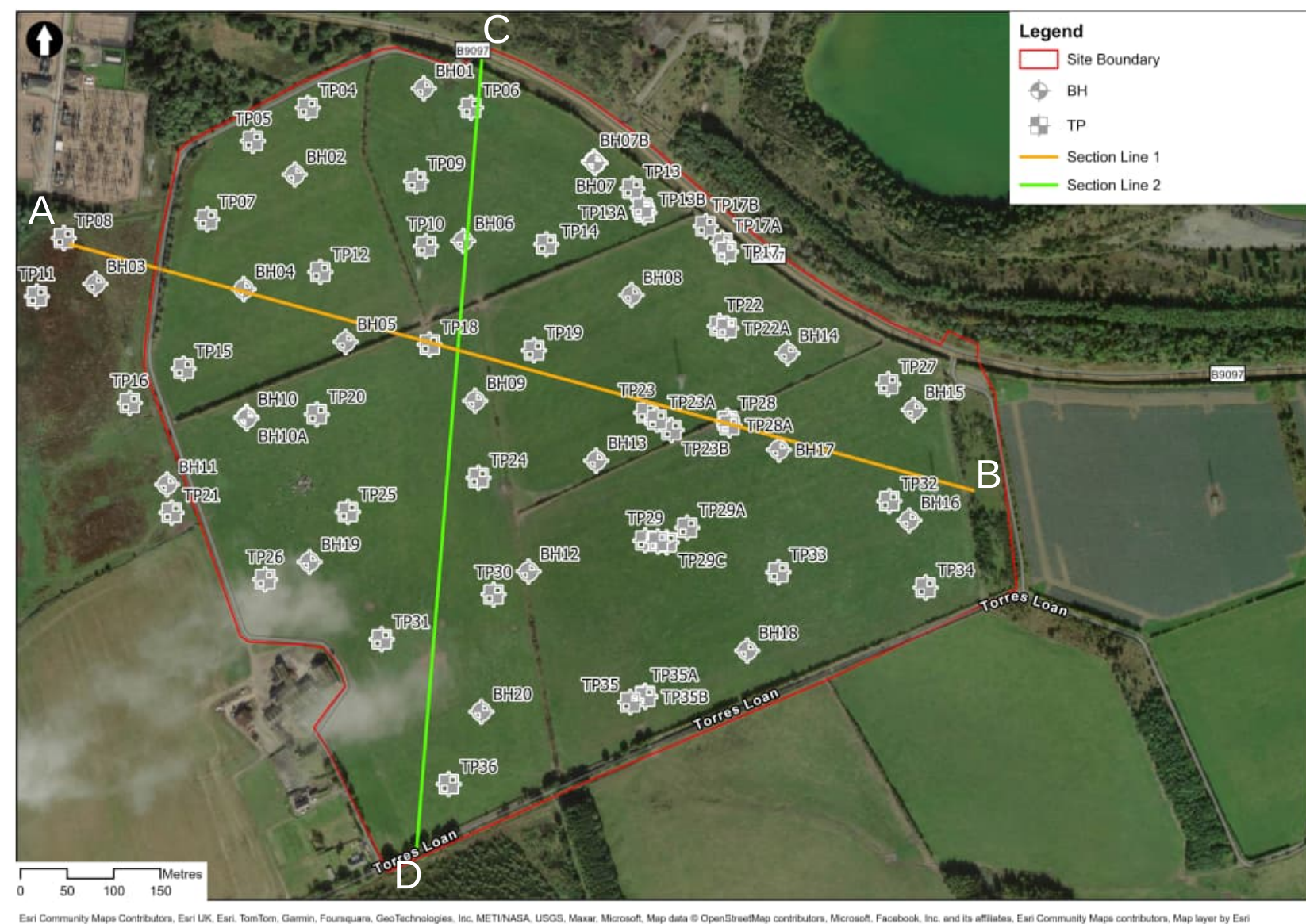
- Legend**
- Detailed Geology**
- TOPSOIL
 - MGC
 - MGG
 - ORGC
 - TILLDC
 - TILLDG
 - PGP
 - ULGS
- Ground Model**
- TOPSOIL
 - Made Ground Deposits
 - Glacial Deposits
 - Bedrock
- Surfaces**
- Topography

Location

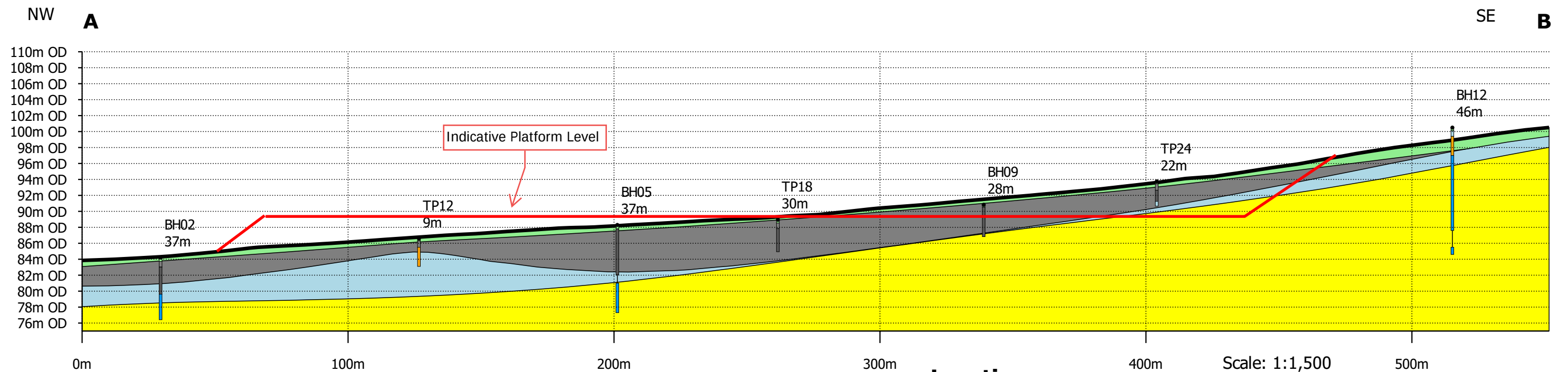
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Vertical exaggeration: 2x

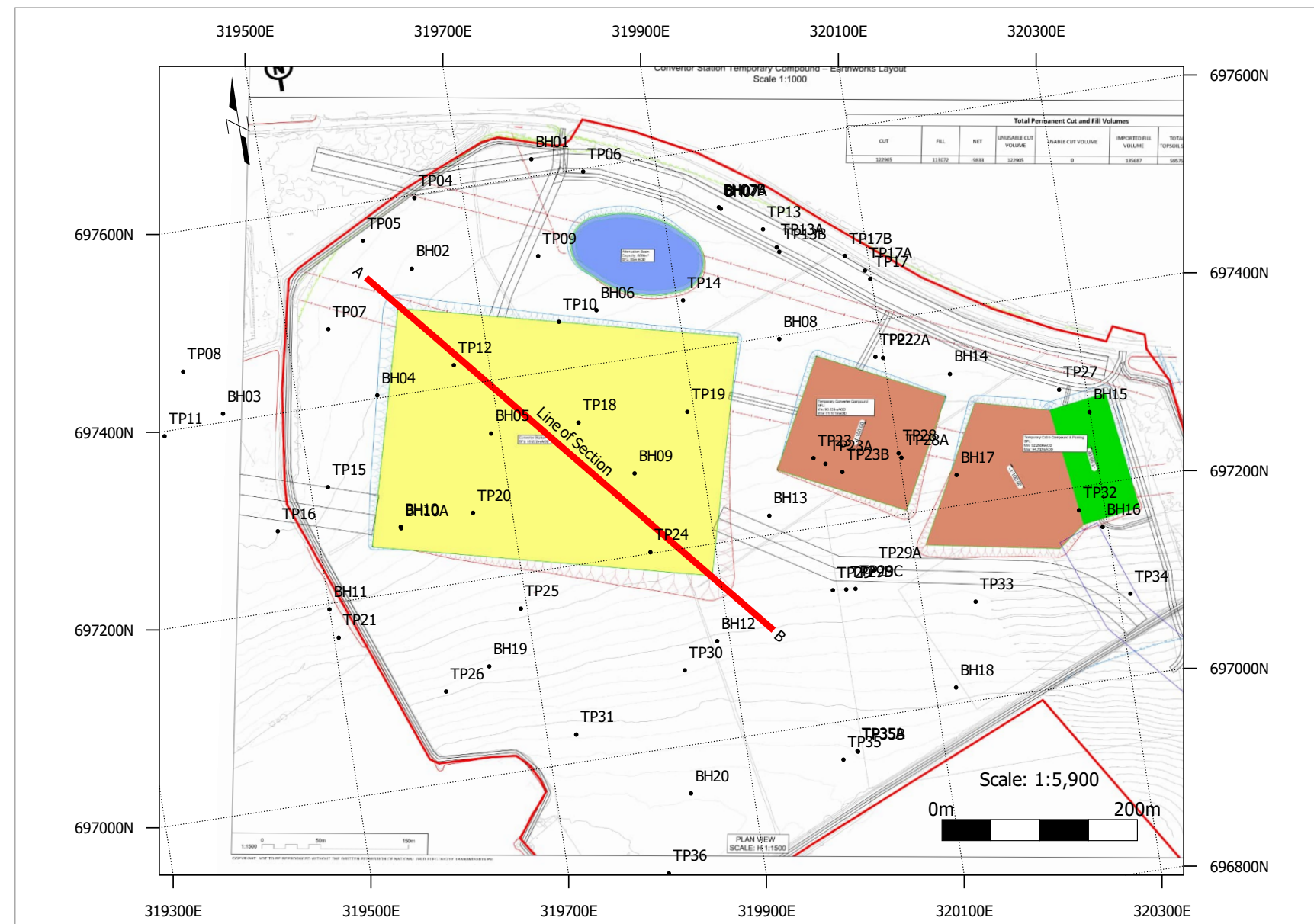
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A.3.2 Geological Section Through Converter Station



Distance of GI location from line of section shown on section.



A.3.3 Geological Section Through Converter Station Temporary Works Platform

Legend

Detailed Geology

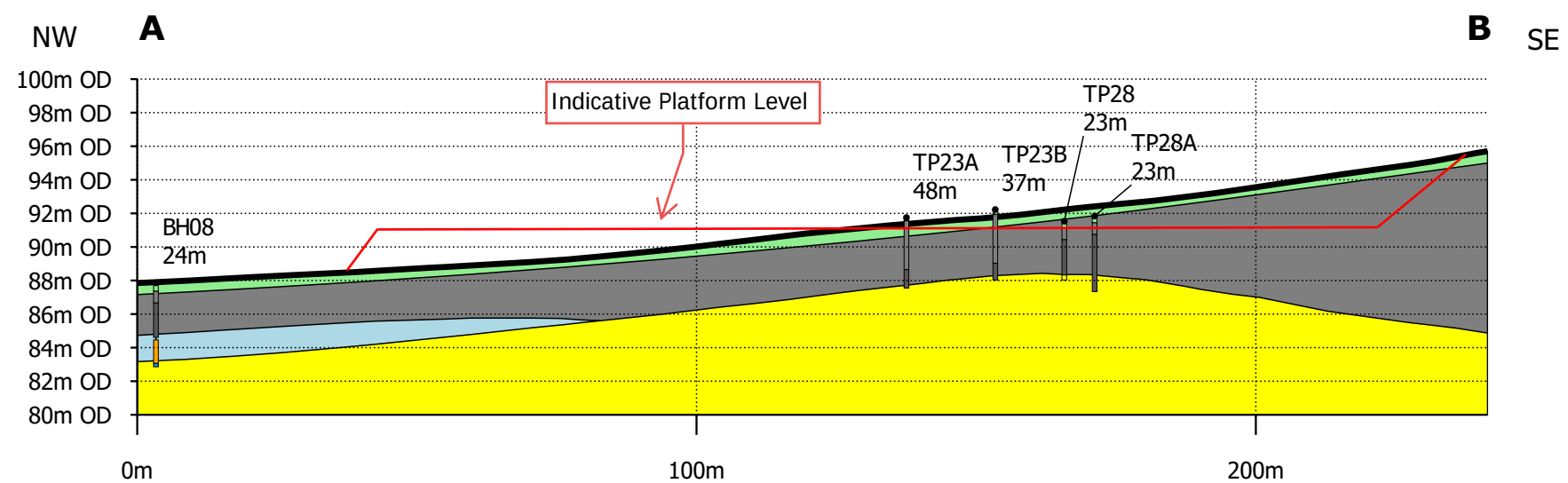
- TOPSOIL
- MGC
- MGG
- TILLDC
- TILLDG
- PGP
- ULGS

Ground Model

- TOPSOIL
- Made Ground
- Glacial
- Rock

Surfaces

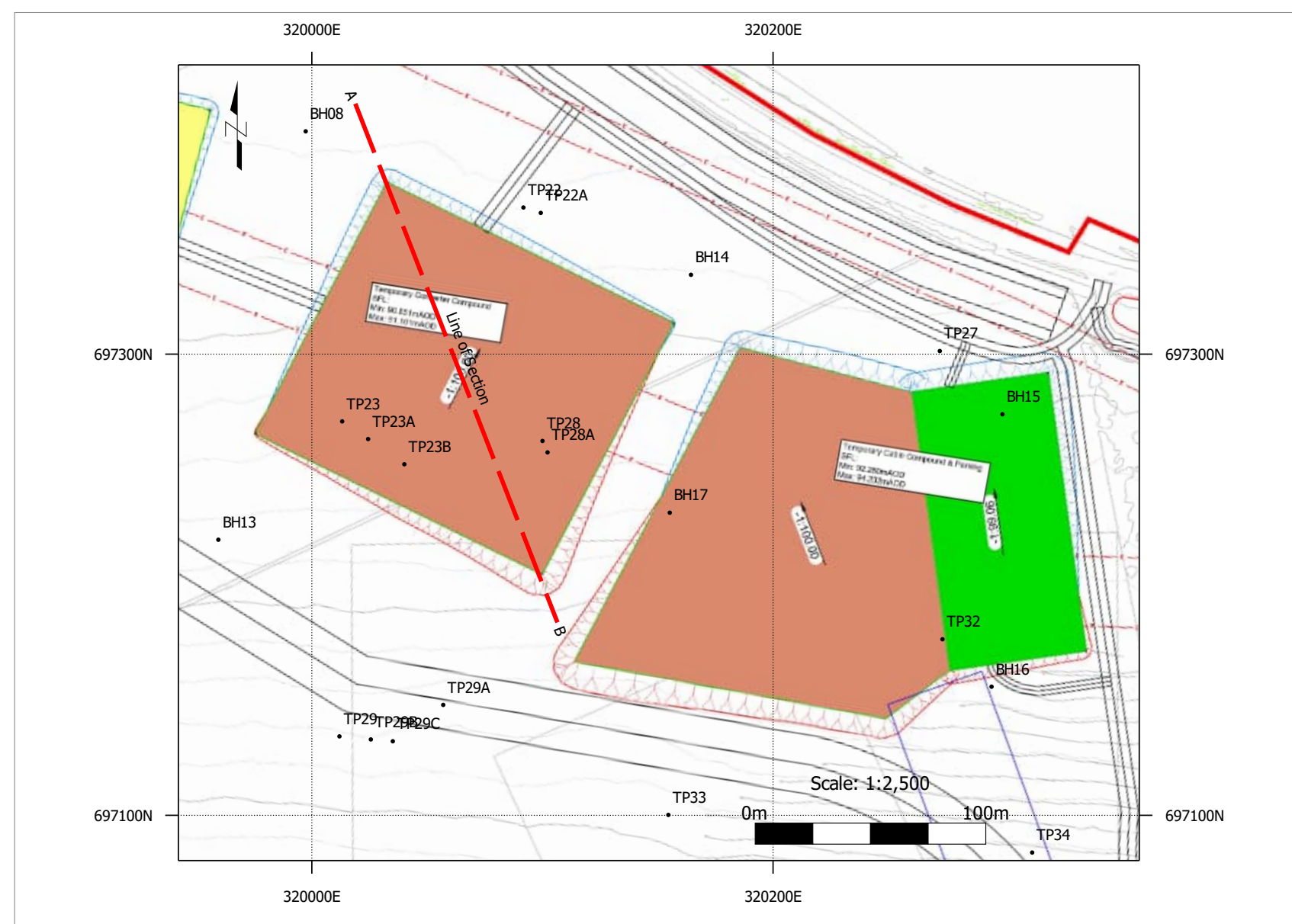
- Topography



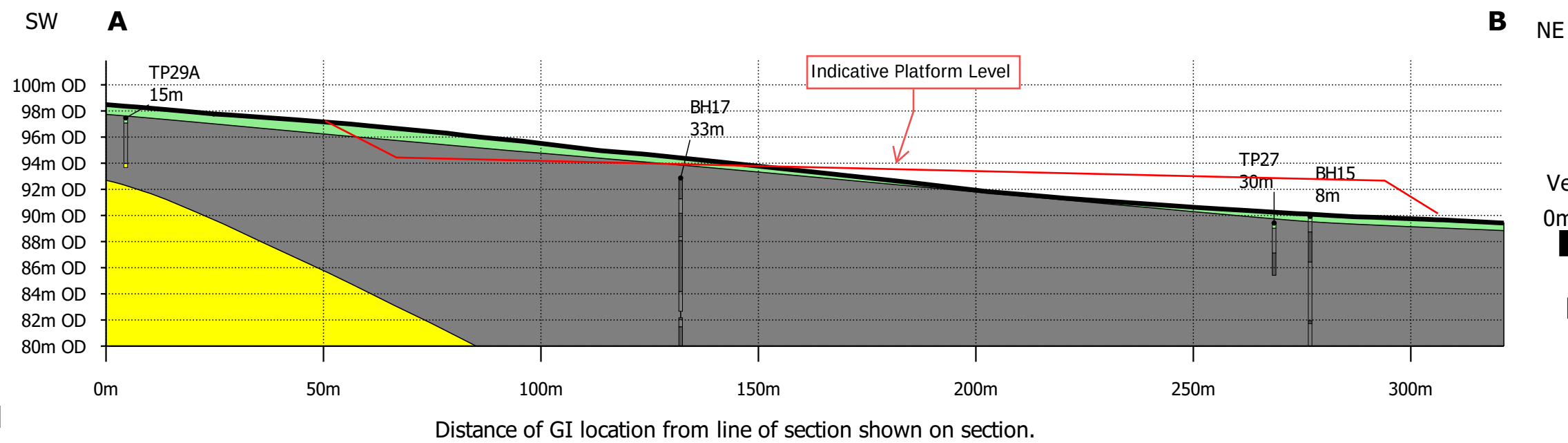
Location

A: 320019, 697409
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Distance of GI location from line of section shown on section.



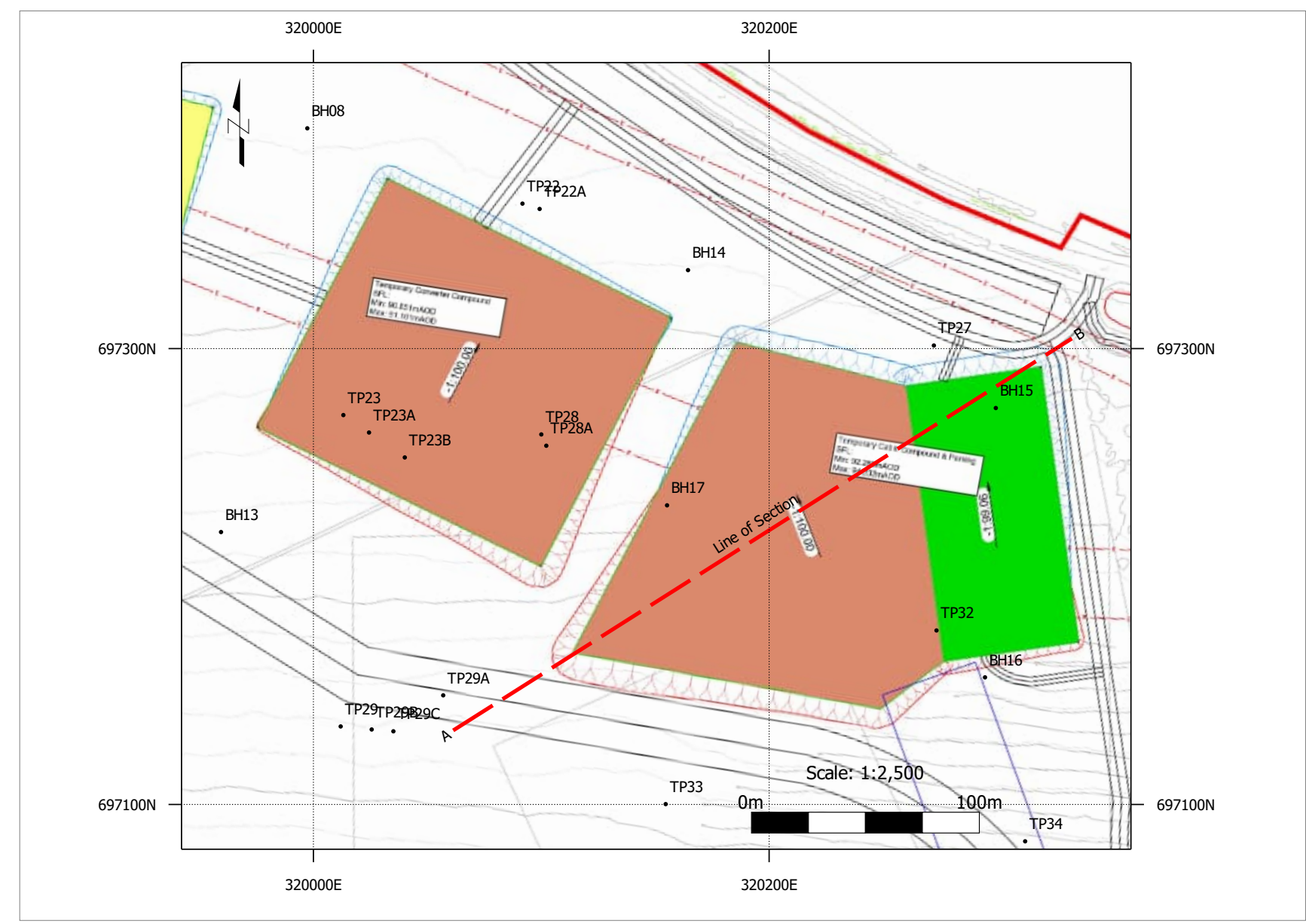
A.3.4 Geological Section Through Cable Route Temporary Works Compound and Car Park



- Legend**
- Detailed Geology**
- TOPSOIL
 - MGC
 - MGG
 - TILLDC
 - TILLDG
 - PGP
 - ULGS

- Ground Model**
- TOPSOIL
 - Made Ground
 - Rock

- Surfaces**
- Topography



B. Consultants Coal Mining Report



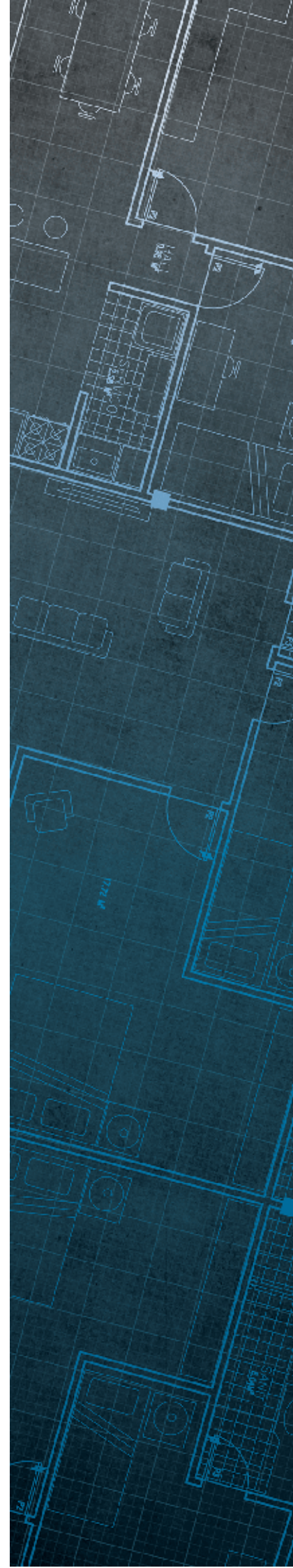
The Coal
Authority

Consultants Coal Mining Report

North Pitkinny Farm, B9097 From
Fife Boundary To B921, Westfield,
Cardenden
Fife
KY5 0HG

Date of enquiry:	18 September 2023
Date enquiry received:	18 September 2023
Issue date:	18 September 2023

Our reference:	51003378685001
Your reference:	GS-AXU-TMW-5WR-2UX



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

North Pitkinny Farm, B9097 From Fife Boundary To
B921, Westfield, Cardenden
Fife
KY5 0HG

How to contact us

0345 762 6848 (UK)
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200 Lichfield Lane
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Nottinghamshire
NG18 4RG

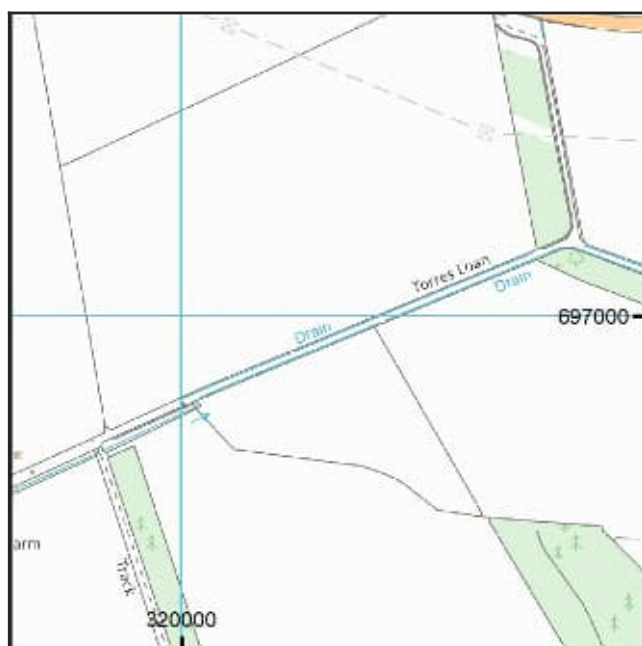
www.groundstability.com

 @coalauthority

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Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	WESTFIELD SHALE	Coal	6OWZ	57	North	3.4	North	91	1886
CAPEL HALL	CAPLEDRAE PARROT	Coal	73J6	144	North-West	28.7	North	66	1885
CAPLEDRAE	CAPLEDRAE PARROT	Coal	6OXL	146	Beneath Property	13.7	North-East	94	1900
CAPEL HALL	CAPLEDRAE PARROT	Coal	6OX3	207	Beneath Property	17.8	North-East	94	1887
BOW HILL	UPP CARDENDE N SMITHY	Coal	73S7	299	South-East	16.9	North-West	102	1929
BOW HILL	LITTLE SPLINT	Coal	73SO	300	South-East	15.8	North-West	100	1932
GLANCRAIG	BLAIRHALL MAIN	Coal	73JP	302	South	9.7	North	89	1959
GLANCRAIG	UPP CARDENDE N SMITHY	Ironstone	73JM	310	Beneath Property	15.9	East	112	1958
GLANCRAIG	BLAIRHALL MAIN	Coal	73JQ	316	South-West	5.0	East	91	1940
GLANCRAIG	BLAIRHALL MAIN	Coal	6OXM	321	South	18.0	North	89	1959
GLANCRAIG	UPP CARDENDE N SMITHY	Ironstone	73JN	332	South	14.3	North	112	1958
GLANCRAIG	LITTLE SPLINT	Coal	73LH	342	West	14.6	East	107	1947
GLANCRAIG	SEVEN FOOT	Coal	73K5	349	South-West	16.1	East	94	1943
GLANCRAIG	LITTLE SPLINT	Coal	73LI	354	South	9.6	North-East	107	1947
BOW HILL	UPP CARDENDE N SMITHY	Coal	73S5	355	Beneath Property	16.9	North-West	102	1961
GLANCRAIG	UPP CARDENDE N SMITHY	Ironstone	6OXS	363	South	14.4	North	107	1957
GLANCRAIG	KELTY MAIN	Coal	73LV	363	South-West	20.3	East	152	1936
MARY	UPPER JERSEY	Coal	B0GI	368	South-West			132	1911
BOW HILL	LITTLE SPLINT	Coal	73SI	387	Beneath Property	15.8	North-West	91	1964
BOW HILL	UPP CARDENDE N SMITHY	Ironstone	73RC	390	North-East	14.8	North-West	76	1952

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
GLANCRAIG	KELTY MAIN UPPER	Coal	73KD	390	West	15.9	North	104	1938
GLANCRAIG	KELTY MAIN UPPER	Coal	73KE	398	West	15.8	North	104	1939
GLENCRAIG	UPPER JERSEY	Coal	B0GJ	399	West			132	1935
BOW HILL	UPP CARDENDEN SMITHY	Ironstone	60XP	403	Beneath Property	13.0	North	112	1946
GLANCRAIG	KELTY MAIN	Coal	73LU	411	South-West	28.7	East	152	1932
BOW HILL	GLASSEE	Coal	73T8	412	South-East	11.6	North-West	100	1946
BOW HILL	LOCHGELLY SPLINT	Coal	73SW	416	North-East	8.2	North-West	127	1910
GLANCRAIG	KELTY MAIN	Coal	73LY	418	West	19.7	East	152	1936
BOW HILL	LITTLE SPLINT	Coal	60XU	419	South	14.3	North	102	1944
MINTO	SWALLOWD RUM	Coal	60YI	422	South-East	17.5	North	122	1958
GLENCRAIG	UPPER JERSEY	Coal	B0GL	422	South-West			132	1935
GLANCRAIG	SWALLOWD RUM	Coal	73M9	422	South	16.2	North	260	1931
GLANCRAIG	KELTY MAIN	Coal	73LZ	423	West	19.4	East	152	1936
BOW HILL	LITTLE SPLINT	Coal	73SJ	427	Beneath Property	15.8	North-West	91	1953
BOW HILL	UPPER JERSEY	Coal	73SS	427	Beneath Property	15.7	North-West	178	1939
GLANCRAIG	SWALLOWD RUM	Coal	73MA	428	South-West	13.8	East	260	1931
GLENCRAIG	UPPER JERSEY	Coal	B0GN	429	West			132	1939
GLANCRAIG	SWALLOWD RUM	Coal	73MC	429	West	13.8	East	260	1931
GLANCRAIG	KELTY MAIN	Coal	73LX	429	West	19.6	East	152	1926
GLENCRAIG	UPPER JERSEY	Coal	A0JW	430	West			132	1939
MINTO	UPPER JERSEY	Coal	60YA	434	Beneath Property	3.7	North	203	1962
GLANCRAIG	SWALLOWD RUM	Coal	73MB	436	Beneath Property	13.7	East	260	1963
BOW HILL	LITTLE SPLINT	Coal	60XW	438	South-West	14.1	North-West	97	1944
MINTO	UPPER JERSEY	Coal	60Y9	439	South	18.1	North	178	1963
MINTO	SWALLOWD RUM	Coal	60YK	446	Beneath Property	15.6	East	122	1964

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
GLANCRAIG	KELTY MAIN	Coal	73LW	448	Beneath Property	20.1	East	152	1961
BOW HILL	LOCHGELLY SPLINT	Coal	73SU	450	Beneath Property	14.6	North-West	127	1905
MINTO	KELTY MAIN UPPER	Coal	6OY3	457	South-East	18.1	North-West	76	1939
BOW HILL	DUNFERMLINE SPLINT	Coal	73TF	459	South-East	11.0	North-West	122	1927
BOW HILL	FIVE FOOT	Coal	73S3	468	North-East	10.8	North-West	107	1923
BOW HILL	LOW LOCHGELLY SPLINT	Coal	73T3	470	South	0.0	East	64	1940
BOW HILL	UPPER JERSEY	Coal	73RH	471	North-East	15.9	North-West	168	1939
BOW HILL	UPPER JERSEY	Coal	6OY4	473	Beneath Property	16.5	North	203	1960
MINTO	UPPER JERSEY	Coal	6OY7	480	Beneath Property	14.8	North	203	1940
BOW HILL	SWALLOWD RUM	Coal	6OYC	486	South-East	22.9	North	122	1939
MINTO	LOCHGELLY SPLINT	Coal	6OYV	492	Beneath Property	15.1	North-East	137	1956
MINTO	LOCHGELLY SPLINT	Coal	73L1	492	Beneath Property	7.4	North-East	157	1956
BOW HILL	UPPER JERSEY	Coal	73RG	496	Beneath Property	15.8	North-West	168	1941
MINTO	LOCHGELLY SPLINT	Coal	6OYU	497	South-East	15.8	North	137	1951
BOW HILL	LOCHGELLY SPLINT	Coal	6OYL	500	Beneath Property	17.9	North	132	1950
BOW HILL	LOCHGELLY SPLINT	Coal	73RL	500	Beneath Property	58.1	West	137	1943
GLANCRAIG	GLASSEE	Coal	73KS	505	West	12.1	East	147	1936
BOW HILL	FIVE FOOT	Coal	73TB	510	Beneath Property	13.8	North-West	122	1923
BOW HILL	UPP CARDENDE N SMITHY	Coal	6OXQ	512	Beneath Property	22.6	North	102	1959
GLANCRAIG	SWALLOWD RUM	Coal	73M8	517	West	27.5	North-West	260	1909
GLANCRAIG	MYNHEER	Coal	73NJ	527	South-West	12.0	North-East	140	1921
MINTO	SWALLOWD RUM	Coal	6OYG	530	South-East	17.5	North	122	1943
BOW HILL	UPPER JERSEY	Coal	73RF	532	Beneath Property	23.1	West	168	1947
MINTO	MYNHEER	Coal	6OZ4	532	South-East	29.1	North	76	1929
BOW HILL	FIVE FOOT	Coal	73S2	534	Beneath Property	18.4	North-West	107	1941

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
MINTO	SWALLOWD RUM	Coal	5OYJ	541	South-East	17.5	North	122	1943
GLANCRAIG	DUNFERMLINE SPLINT	Coal	74O6	541	South	7.4	North-East	122	1930
BOW HILL	LOCHGELLY SPLINT	Coal	73RK	542	Beneath Property	58.1	West	137	1943
GLANCRAIG	GLASSEE	Coal	73KT	546	South	15.3	North	147	1935
MARY	UPPER JERSEY	Coal	B0GB	549	West			132	1955
MINTO	DUNFERMLINE SPLINT	Coal	6OZR	549	South-East	14.0	North	94	1934
BOW HILL	GLASSEE	Coal	6OZ0	550	South-West	21.3	North-West	117	1930
BOW HILL	DUNFERMLINE SPLINT	Coal	6OZK	556	South-East	16.9	North	127	1929
BOW HILL	FIVE FOOT	Coal	6OZ7	557	South-West	13.9	North-West	135	1919
BOW HILL	FIVE FOOT	Coal	6OZ9	561	Beneath Property	15.6	North-West	135	1919
MARY	LITTLE SPLINT	Coal	73LB	564	West	8.7	South-East	155	1961
GLANCRAIG	FIVE FOOT	Coal	73NV	565	West	11.8	North-East	114	1910
BOW HILL	LOW LOCHGELLY SPLINT	Coal	6OYX	565	South	0.0	East	102	1923
MINTO	LOCHGELLY SPLINT	Coal	6OYP	566	South-West	15.8	North	132	1948
MINTO	LOCHGELLY SPLINT	Coal	6OYN	567	South	17.9	North	132	1944
BOW HILL	UPPER JERSEY	Coal	6OY5	570	South	14.8	North	203	1940
MINTO	FIVE FOOT	Coal	6OZI	575	Beneath Property	16.7	East	112	1933
BOW HILL	DUNFERMLINE SPLINT	Coal	6OZN	575	South-West	15.6	North-West	127	1930
BOW HILL	UPPER JERSEY	Coal	6OXA	576	Beneath Property	25.9	North-West	188	1961
BOW HILL	DUNFERMLINE SPLINT	Coal	6OZL	589	South-East	16.9	North-West	127	1931
MINTO	FIVE FOOT	Coal	73NW	590	South	11.7	North-East	114	1929
MINTO	FIVE FOOT	Coal	73NX	596	Beneath Property	11.8	North-East	114	1933
BOW HILL	MYNHEER	Coal	6OZ6	597	South-East	17.7	North-West	61	1935
BOW HILL	UPPER JERSEY	Coal	6OY6	600	Beneath Property	14.8	North	203	1958
MINTO	DUNFERMLINE SPLINT	Coal	6OZW	603	Beneath Property	16.8	East	102	1936

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
BOW HILL	LOCHGELLY SPLINT	Coal	6OXB	605	Beneath Property	26.4	North-West	127	1961
BOW HILL	FIVE FOOT	Coal	6OZ8	611	Beneath Property	13.9	North-West	135	1938
MINTO	DUNFERMLINE SPLINT	Coal	74O7	613	Beneath Property	2.7	North-West	102	1934
MINTO	FIVE FOOT	Coal	6OZF	614	South-East	18.4	North	127	1932
BOW HILL	GLASSEE	Coal	6OZ1	633	South-East	18.9	North-West	142	1946
MINTO	LOCHGELLY SPLINT	Coal	6OYQ	644	Beneath Property	15.8	North	132	1964
BOW HILL	LITTLE SPLINT	Coal	6OX6	647	Beneath Property	15.0	West	122	1966
MINTO	FIVE FOOT	Coal	6OZB	651	Beneath Property	12.3	North	127	1942
BOW HILL	FIVE FOOT	Coal	6OZA	652	Beneath Property	27.8	North-West	135	1923
MARY	KELTY MAIN	Coal	73LT	653	West	13.0	South-East	312	1937
BOW HILL	LITTLE SPLINT	Coal	6OX5	655	Beneath Property	20.6	South-East	122	1966
MARY	SWALLOWD RUM	Coal	73M7	656	West	15.3	South-East	300	1961
MARY	UPPER JERSEY	Coal	B0Gf	656	West			132	1961
MINTO	DUNFERMLINE SPLINT	Coal	6OZV	657	Beneath Property	33.9	North-West	102	1942
BOW HILL	FIVE FOOT	Coal	6OXD	659	Beneath Property	26.2	North-West	109	1940
MINTO	DUNFERMLINE SPLINT	Coal	6OZQ	668	South-East	13.9	North	94	1939
MINTO	DUNFERMLINE SPLINT	Coal	6OZS	670	South-East	20.6	North	102	1939
BOW HILL	DUNFERMLINE SPLINT	Coal	6OZM	671	Beneath Property	16.9	North-West	127	1940
BOW HILL	UPPER JERSEY	Coal	6OX9	675	Beneath Property	15.9	East	188	1961
BOW HILL	LITTLE SPLINT	Coal	6OX7	678	Beneath Property	12.6	East	122	1965
MINTO	DUNFERMLINE SPLINT	Coal	6OZU	678	Beneath Property	48.5	South-East	102	1940
unnamed	UPPER JERSEY	Coal	6OWO	686	North-West	28.1	South-East	183	1945
unnamed	LOCHGELLY SPLINT	Coal	6OWQ	689	North-West	42.3	North-East	304	1939
MINTO	DUNFERMLINE SPLINT	Coal	6OZT	694	Beneath Property	23.9	East	102	1940
BOW HILL	LITTLE SPLINT	Coal	6OXX	695	Beneath Property	23.6	North	116	1944
MINTO	FIVE FOOT	Coal	6OZG	696	Beneath Property	18.9	North-West	127	1940

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	UPPER JERSEY	Coal	6OWP	700	North-West	11.5	North-West	157	1941
BOW HILL	LITTLE SPLINT	Coal	6OX4	709	Beneath Property	8.9	North	122	1966
MINTO	LOCHGELLY SPLINT	Coal	6OYM	711	Beneath Property	17.9	North	132	1963
MINTO	LOCHGELLY SPLINT	Coal	6OYR	712	Beneath Property	15.8	North	132	1965
BOW HILL	UPPER JERSEY	Coal	6OX8	719	Beneath Property	11.9	North-East	188	1961
GLANCRAIG	LOCHGELLY SPLINT	Coal	73L6	719	North-West	21.0	East	165	1940
GLANCRAIG	FIVE FOOT	Coal	73NT	738	West	36.5	North-West	203	1945
BOW HILL	LOCHGELLY SPLINT	Coal	6OXC	742	Beneath Property	15.1	North-East	188	1961
MARY	FIVE FOOT	Coal	73NR	745	West	25.7	East	183	1933
MINTO	FIVE FOOT	Coal	6OZH	822	Beneath Property	46.2	South-East	127	1936
BOW HILL	FIVE FOOT	Coal	6OXE	852	Beneath Property	0.0	East	137	1921
GLANCRAIG	FIVE FOOT	Coal	73NP	897	West	18.3	South-East	203	1943

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

S552	S4389	S4362
S4716	S610	3850
S4424	S579	S4379

Our records show we have more plans than those shown above which could affect the enquiry boundary.

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
CALMY LIMESTONE	Limestone	Yes	Within	N/A	156
CALMY LIMESTONE	Limestone	Yes	26.6	North-West	160
CALMY LIMESTONE	Limestone	Yes	Within	N/A	315
CALMY LIMESTONE	Limestone	Yes	Within	N/A	337

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

Status	Licence type	Distance (m)	Direction
Past	Opencast	6.0	North

See Section 4 for further information.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is in an area where notices to withdraw support were given in 1945 and 1946.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Coal mining licensing

The report has highlighted that the site is close to a Coal Authority license area for coal mining operations. Please contact us if you require further information.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

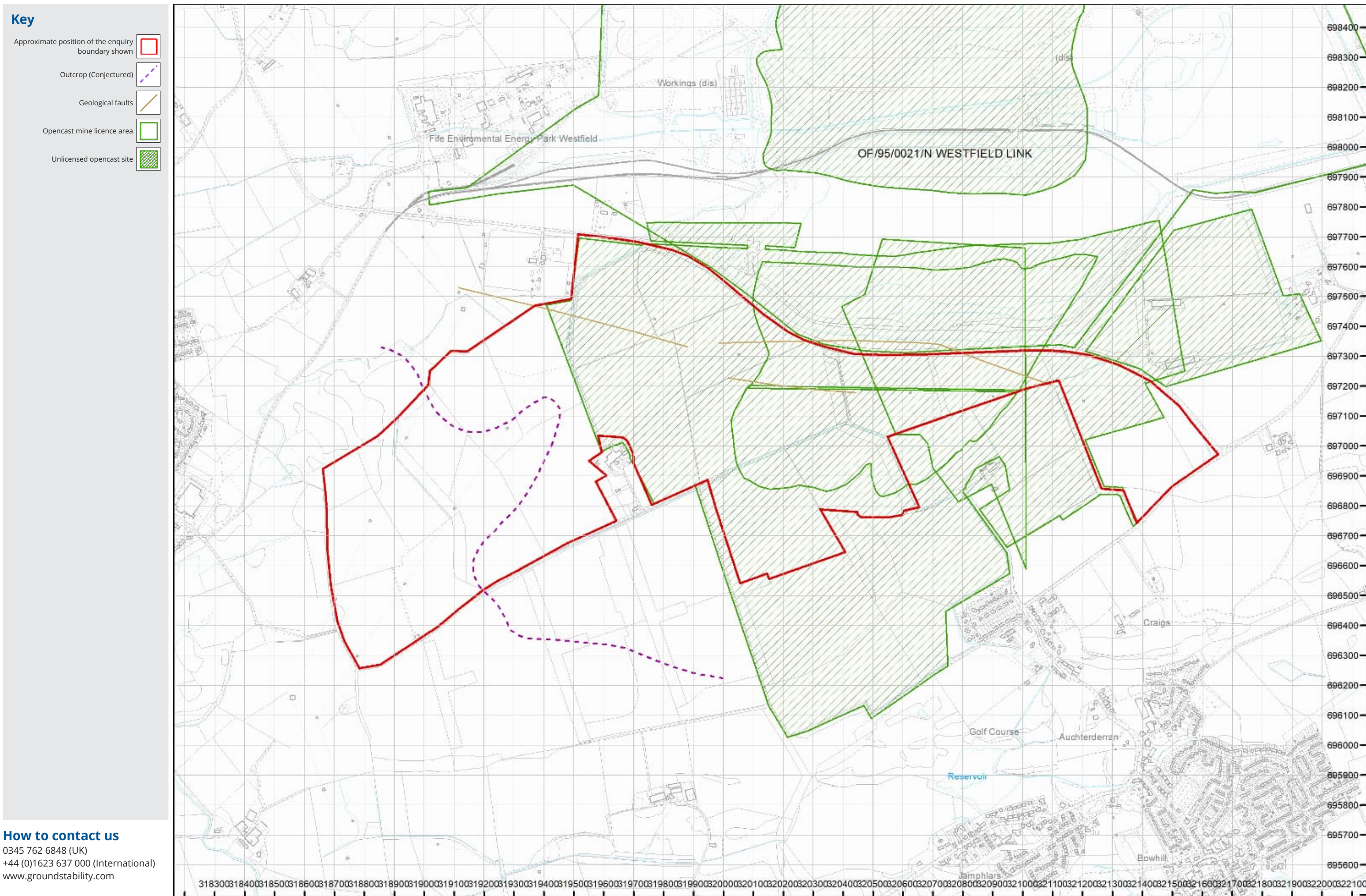
Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.



How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

C. UXO Pre-Desk Study Assessment

PA022081 — NORTH PITKINNY CS**DOCUMENT DETAILS**

Site name:	North Pitkinny CS		
Reference:	PA022081	Client:	Mott MacDonald
Date:	22 nd January 2025	Contact:	Jack Carlyle

RECOMMENDATION

While always prudent, a detailed desk study is not considered essential in this instance.

SUMMARY OF FINDINGS

Military Activity	No significant military activity affecting the Site has been identified. During WWII, 1No. Prisoner of War (PoW) camp was established at Capledrae, approximately 0.1km north of the Site. After WWII, the camp was closed and removed.
WWI Bombing	Potential targets within approximately 5km of the Site: Transport infrastructure and public utilities. No readily available records have been found indicating that the Site was bombed.
WWII Bombing	The Site was located in Fife Landward Area (LA), near Kinross LA. Fife LA officially recorded 293No. High Explosive (HE) bombs, with a density of 1.0 bombs per 405 hectares (ha). Kinross LA officially recorded 28No. HE bombs, with a density of 0.5 bombs per 405ha. Potential targets within approximately 5km of the Site: - Transport infrastructure and public utilities. - Military establishments and training areas. No readily available records have been found indicating that the Site was bombed.
Bombing Decoys	None identified within 5km of the Site.

FURTHER INFORMATION

These findings are based on a cursory review of readily available records; caution is advised if you plan to action work based on this PDSA.

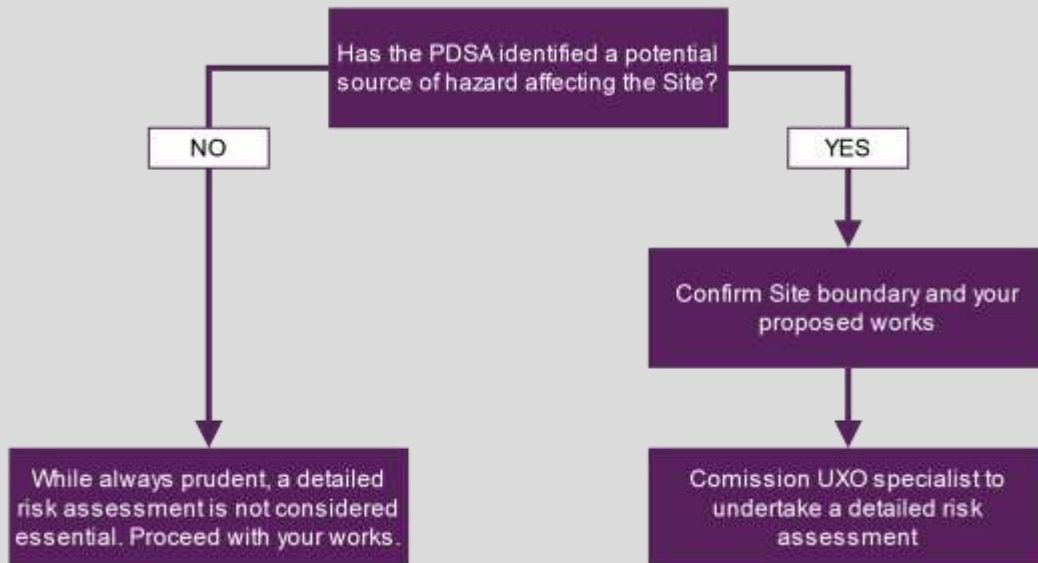
Where a potentially significant UXO hazard source has been identified on the Site, no further research has been undertaken. A detailed UXO desk study and risk assessment may identify other potential UXO hazard sources on the Site.

Visit www.zeticauxo.com to learn more about Zetica's detailed UXO desk studies and other UXO services. Click [here](#) for more information about the most common UXO hazard sources in the UK.

If you have any further queries, please don't hesitate to contact us at uxo@zetica.com or 01993 886 682.

NEXT STEPS

Follow the steps below to determine the appropriate course of action:



Potential UXO hazard identified? If the PDSA has identified a potential source of UXO hazard affecting your site, then a detailed UXO risk assessment is recommended.

No obvious source of UXO hazard? If the PDSA has not identified any obvious source of potential UXO, works can proceed.

It is good practice to raise awareness of the background UXO risk in the UK as part of a standard site induction. This will ensure that appropriate action is taken in the unlikely event that UXO is discovered.

Don't skip a stage: If you skip the detailed risk assessment stage, you could end up undertaking unnecessary work (e.g. trying to detect a UXO hazard that has already been removed).

Similarly, a detailed risk assessment might find that the UXO hazard is worse than expected and has a greater potential to cause harm, requiring a different mitigation approach than would otherwise be undertaken.

D. Factual report



SP ENERGY NETWORKS

EASTERN GREEN LINK 4 – HVDC CONVERTER STATION
AT WESTFIELD
NEAR BALLINGRY, FIFE
PROJECT CODE EGL4-201GI-ST-SPTEC-0001

REPORT ON GROUND INVESTIGATION

Client:

SP Energy Networks

55 Fullarton Drive

Glasgow East Investment Park

Cambuslang

G32 8FA

Contract Number: 26612

Date of Issue: 06 November 2024

Report Issue: Draft

Report Type: Factual



Raeburn Drilling & Geotechnical Limited trading as Igne.
Whistleberry Road, Hamilton ML3 0HP
Registered in Scotland No. 00094320

EASTERN GREEN LINK 4 – PROPOSED HVDC CONVERTER STATION
AT WESTFIELD
NEAR BALLINGRY, FIFE

Report Type :	Factual
Report Issue :	Draft
File Number :	P:\26667\26667 EGL4 factual v1.docx
Contract Number :	26667
Issuing Office :	Hamilton

Originator:

FM Raeburn

.....
Chief Engineer

06 November
2024

Checked & Approved:

CJ Husbands

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Principal Geochemist

06 November
2024

For and on Behalf of Raeburn Drilling and Geotechnical Limited Trading as Igne

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APPENDIX C: GEOTECHNICAL LABORATORY TESTING

Notes on Laboratory Procedures
Laboratory Test Results

APPENDIX D: GEOCHEMICAL LABORATORY TESTING

Socotec Report References: 24073605, 24073967, 24080008, 24080009, 24080198, 24080466, 24081091, 24081432 and 24092278



SCOTTISH POWER ENERGY NETWORKS

EASTERN GREEN LINK 4 – PROPOSED HVDC CONVERTER STATION AT WESTFIELD NEAR BALLINGRY, FIFE

REPORT ON GROUND INVESTIGATION

Contract No. 26667

06 November 2024

1. INTRODUCTION

It is proposed to construct a new HVDC Converter Station at the site called Eastern Green Link 4, in Westfield, near Ballingry, Fife. On the instructions of Scottish Power Energy Networks, Principal Contractors for the works and to their specification, an investigation was carried out to provide information on the ground conditions for design and construction of the proposed works and in relation to the mineral stability of the site and any geochemical contamination of the site. A factual report has been requested to proceed the interpretative report. These purposes were the significant factors in determining the scope of the investigation. No responsibility can be taken for specific design proposals not detailed or advised at the time of compilation of this report. A Phase 1 Geoenvironmental Site Assessment was carried out by Raeburn Drilling & Geotechnical t/a Igne under the same contract number.

The comments given in this report and any opinions expressed therein are based on the ground conditions encountered during the site work, on the results of any in-situ or laboratory testing and any professional third party input. Whilst every effort has been made to ensure the accuracy of the data supplied and any analysis or interpretation derived from it, the possibility exists of variations in the ground, ground-water and ground gas conditions around, below and between the extent of the exploratory positions. No liability can be accepted for any such variations in these conditions. Furthermore, any recommendations are specific to the development as detailed in this Report and no liability will be accepted should they be used for the design of alternative schemes, by third parties, without prior consultation with Raeburn Drilling & Geotechnical Limited trading as Igne.



2. LOCATION OF SITE

The site is located immediately north-east of North Pitkinny Farm, approximately 1.5km east of Ballingry in Fife. The existing Westfield Transforming Station is located immediately to the north-west boundary. The northern boundary is formed by the B9097 and there is agricultural land to the east, south and west. The approximate National Grid Reference of the centre of the site is NT198972.

A plan showing the approximate location of the site is given in Figure A1 in Appendix A.

3. GROUND INVESTIGATION

3.1 Site Work

The site work was carried out during the period 17th July 2024 to 23rd August 2024, in accordance with the guidelines laid down in EN1997-2:2007 (Ref. 1), BS5930 (Ref. 2), BS10175 (Ref. 3) and in-house procedures. The results of the site work are given in Appendix B. A schedule of the site works is presented as Figure B0.

Twenty-three boreholes (Nos. BH01 to BH20 including BH07A, BH07B and BH10A) were sunk by cable percussion, sonic boring, rotary open-hole and core drilling methods. Details of which methods were used in each position are shown on logs and summarised in Figure B0. Forty-six trial pits (Nos. TP04 to TP36 including TP13A TP13B, TP17A, TP17B, TP22A, TP23A, TP23B, TP28A, TP29A, TP29B, TP29C, TP35A and TP35B) were excavated by mechanical means, at the positions shown on the site plan (Fig. A2 in Appendix A). The depths of the boreholes and trial pits, the descriptions of the strata encountered and comments on the ground-water conditions are given in the borehole and trial pit records (Figs. B1 to B69). In this connection, some trial pit (TP13, TP17, TP22, TP23, TP28, TP29 and TP35), were carried out as part of a trenching exercise to try to delineate the edge of a former quarry. The trenches were split into separate logs and have been presented as such with the denotation A, B and C. These are detailed in Figure B0 and the locations shown on the Site Plan, Figure A2. Some of the boreholes were stopped short of the scheduled depth due to obstructions and additional boreholes were put down at adjacent positions. The positions and depths of the boreholes and trial pits were determined by the Principal Contractor and were set out on site by Raeburn Drilling & Geotechnical Limited trading as Igne in conjunction with them.



Disturbed and 100mm diameter tube samples were taken at the depths shown on the borehole and trial pit records and were despatched, together with the rock cores, to the depot at Hamilton for examination and storage. Geochemical soil samples were taken directly into tubs. Samples for volatiles analysis were taken into vials, filling the container completely such that no voids were present. Geochemical samples were stored on site and transported to the laboratory in coolboxes. Each sample was uniquely identified, and a transmittal note system used throughout sample transfer.

Photographs were taken of the rock core and a copy is presented as Figures B70 to B82

Photographs were taken of the trial pits and associated spoil heaps and a copy is presented as Figures B83 to B123.

Soakaway tests (Ref. 4) were undertaken in three trial pits (see Fig. B0). The results are given as Figures B124 to B126 in Appendix B.

Standard (split-barrel sampler) penetration tests (Ref. 5) were made to assess the relative density of the materials encountered. The values of penetration resistance, given in the borehole records, are not corrected for energy ratio, or in any other way. The references to relative density under the heading "Description of Strata" in the borehole records are based on the field values of penetration resistance uncorrected for the effects of overburden pressure. Two sets of equipment were used for the tests and the Hammer Energy Test Reports are presented as Figures B127 and B128. Which set was used in each borehole is noted in the "Remarks" section of the borehole record.

To assess the shear strength of the soils, hand vane tests (Ref. 6) were carried out within the trial pits. The depth of the tests and the results are given on the trial pit records. However, it should be recognised that the theory behind the evaluation of vane test results assumes a smooth cylindrical failure surface. Due to the presence of gravel and indeed sand, this was not the case with most of these tests. As such, many of the results are likely to be erroneously high. A large amount of the soil was unsuitable for hand vane tests, due to the presence of gravel.

A nominal 50mm diameter perforated standpipe was installed in nine boreholes detailed in Figure B0, details of which are given on the relevant records. Tests were subsequently carried out to determine the methane, carbon dioxide, carbon monoxide, hydrogen sulphide and oxygen contents of the gas in the standpipes. In addition, water level readings were taken in the instruments. The results of the monitoring are given in Figure B130.



During the monitoring visit on 16th November 2024, the standpipes in boreholes BH02, BH05, BH06 and BH08 were purged of three well volumes. Thereafter, water samples were taken by bailer transferred to one litre glass and plastic bottles. The water samples were delivered to the laboratory in coolboxes.

The ground levels and co-ordinates at the borehole and trial pit positions, given on the records, were determined using a Global Positioning System and are related to Ordnance Datum and the National Grid, respectively.

3.2 Laboratory Testing

A test schedule was submitted to and approved by the Principal Contractor. The laboratory testing was carried out by Terra Tek Limited (trading as Igne) who hold UKAS Accreditation for the scheduled tests.

The geotechnical laboratory testing was carried out in accordance with the referenced testing procedures given below. The results are given in Appendix C and comprised the following:

Description of Test	Figures	Ref
Moisture Content Tests	C1	7
Bulk Density	C2	7
Liquid and Plastic Limit Tests	C3 to C95	7
Particle Size Distribution	C96 to C184	7
Moisture Content/Dry Density Relationship Tests	C185 to C195	8
Moisture Condition Value Tests	C196 to C206	8
California Bearing Ratio Tests	C207 to C230	9
One-dimensional Consolidation Tests	C231	7
Shear Strength by Direct Shear (small shear box)	C232 to C327	9
Unconsolidated Undrained Triaxial Compression Tests	C328	9
Determination of Porosity/Density	C329	10
Rebound Hammer Test	To follow	10
Point Load Index Tests	To follow	11
Uniaxial Compressive Strength	To follow	12



In addition, chemical contamination testing was carried out on samples of made ground and natural soil from across the site. This testing was carried out by Socotec, who hold UKAS accreditation for the testing carried out. The results are given in the Socotec report references 24073605, 24073967, 24080008, 24080009, 24080198, 24080466, 24081091 and 24081432 and are presented in Appendix D. The testing comprised the following suite:

Description of Test

Metals (Arsenic, Boron, Cadmium, Chromium, Hexavalent Chromium, Copper, Lead, Mercury, Nickel and Zinc)

pH and Sulphate

Total Organic Carbon

TPHCWG Aliphatic/Aromatic Split

Polyaromatic Hydrocarbons (PAH) (USEPA 16)

Asbestos Screen / Identification

Phenol

Volatile Organic Compounds

Finally, chemical contamination testing was carried out on four samples of ground-water. The results also are given in Appendix D as Socotec report reference 24092278 and comprised the following:

Description of Test

Metals (Arsenic, Boron, Cadmium, Chromium, Hexavalent Chromium, Copper, Lead, Mercury, Nickel and Zinc)

pH and Sulphate

Total Organic Carbon

TPHCWG Aliphatic/Aromatic Split

Polyaromatic Hydrocarbons (PAH) (USEPA 16)

Asbestos Screen / Identification

Phenols

Volatile Organic Compounds



Chief Engineer

Principal Geochemist

**For and on Behalf of Raeburn Drilling and Geotechnical Limited Trading as Igne
Ground Investigation Department
Hamilton**

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REFERENCES

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- (2) BS5930:2015+A1:2020: Code of Practice for Ground Investigations, British Standards Institution, 2020.
- (3) BS10175: Code of Practice for the Investigation of Potentially Contaminated Sites, British Standards Institution, 2011 + A1:2013.
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- (7) BS EN ISO 17892: Geotechnical investigation and testing. Laboratory testing of soil. Parts 1 to 12. 2014 - 2018.
- (8) BS1377-2:2022: Methods of test for soils for Civil Engineering purposes – Classification tests and determination of geotechnical properties. British Standards Institution, 2022
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- (11) Suggested Method for Determining Point Load Strength, International Society for Rock Mechanics, Commission on Testing Methods, Int. J Rock Mech. Min. Sci. and Geomech. Abstr., Vol. 22, 1985.
- (12) ASTM D2938-95. Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens. ASTM International 1995.



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

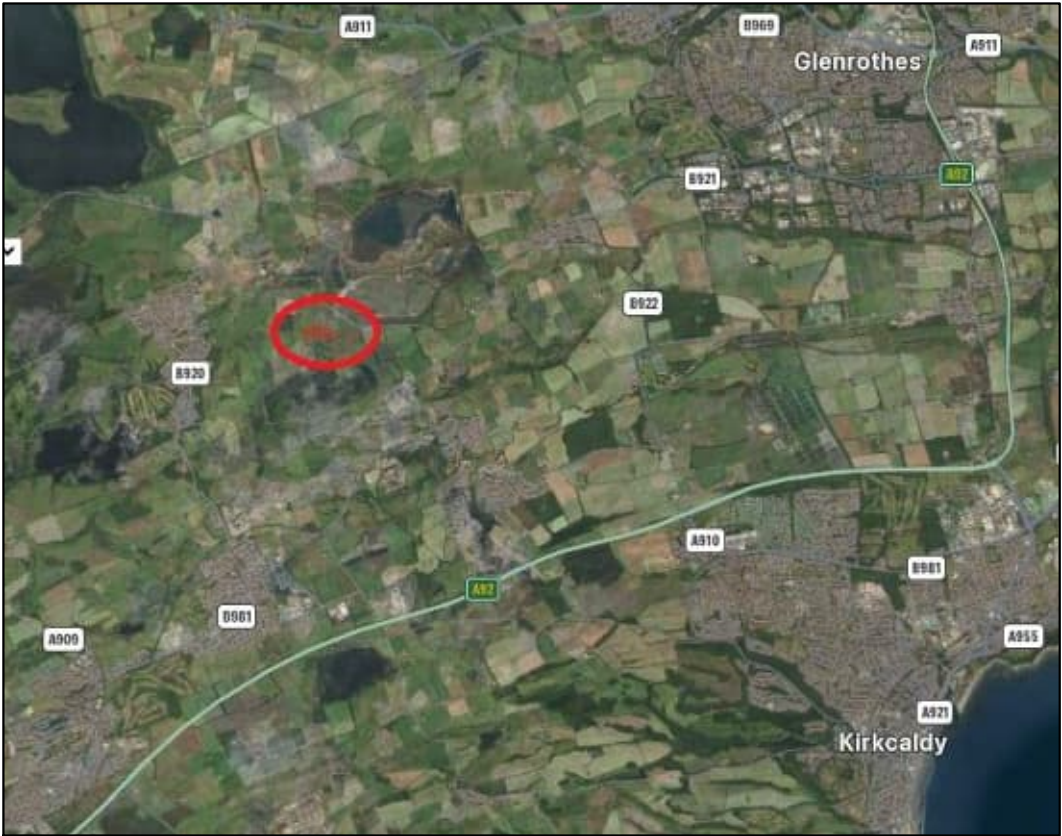
Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

APPENDIX A
PLANS







Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Contract No: 26667

APPENDIX B
SITE WORKS



Boring

The standard method of boring in soil for ground investigation is known as the cable tool method. It uses various tools worked on a wire cable, typically a shell in non-cohesive soils such as sand and gravel, and a clay cutter in cohesive soils such as clay. Very dense soils, boulders or other hard obstructions are disturbed or broken up by chiselling and the fragments removed with the shell. Where the ground conditions require, the borehole is lined with driven steel casings of such sizes that the bottom of the borehole is not less than 125mm diameter.

Where there are constraints upon access, alternative methods of soft ground boring are available. However, each has limitations that need to be taken into account when assessing their suitability and the ground conditions inferred from their results.

Rotary Drilling

Rotary drilling is employed to extend ground investigation beyond the practical limit of cable tool boring in hard formations, commonly rock. Core drilling is used to obtain continuous intact samples of the formation and is generally undertaken with double tube swivel type core barrels fitted with tungsten or diamond bits as appropriate to formation type and hardness. Open-hole rotary drilling using tricone rock roller bits or tungsten insert drag bits, or down-the-hole hammers, is carried out where more limited information is sufficient, strata identification being made from cuttings only. Open-hole rotary drilling methods may also be employed for fast penetration of soils where detailed sampling is not required, prior to coring at depth. Air or water is the flushing medium normally used with rotary drilling methods. Where the ground conditions require, the borehole is lined with inserted or drilled-in casing. Rotary percussion allows dynamic sampling within soils.

Sonic Drilling

Sonic drilling is employed as an alternative boring method for soft ground and rock. The sonic rig operates much like any conventional top-drive rotary rig. The main difference is that a sonic drill rig has a specially designed hydraulically powered drill head or oscillator which produces adjustable high frequency vibratory forces. Sonic samples are extruded direct to plastic liner bags or semi-rigid plastic liners for rapid inspection. Bulk and small disturbed samples are then taken from the plastic liner bags.

Trial Pits

Trial pits are excavated by hand or machine for a number of purposes such as avoiding services, exposing foundations or obtaining a better view of shallow ground conditions.

Samples and In-situ Tests

Tube samples of cohesive soils are generally taken with a 100mm internal diameter open drive sampler known as a U100, with an area ratio of 30%. The sampler is driven into the soil at the bottom of the borehole by a sliding hammer. After a sample is taken, the drive head and cutting shoe are unscrewed from the sample tube and any wet or disturbed soil removed from either end. The sample tube is then sealed with wax and fitted with plastic end caps.

A range of more specialised equipment, e.g. thin walled open drive sampler (UT100), piston or foil samplers, may be used to obtain higher quality samples in conditions where conventional open drive sampling is impracticable or unsatisfactory. The UT100 sampler is specifically utilised to obtain class 1 samples of cohesive soils as required under BS EN1997-2.

Disturbed samples are taken from the boring tools or trial pits at regular intervals. The samples are sealed in airtight containers. Bulk samples are large disturbed samples from the boring tools, or from trial pits, generally where tube samples are unavailable.

The Standard Penetration Test, SPT, in accordance with BS EN ISO 22476-3, determines the resistance of soil to the penetration of a split barrel sampler. A 50mm diameter split barrel sampler is driven 450mm into the soil using a 63.5kg hammer with a 760mm drop, and the penetration resistance, the "N" value, is expressed as the number of blows required to achieve 300mm penetration below an initial penetration of 150mm, the seating drive, through any disturbed soil at the bottom of the borehole.

In coarse soils, the Cone Penetration Test (CPT) is conducted in the same manner as the SPT but using a 50mm diameter 60 degree apex solid cone point to replace the split barrel sampler.

Peat Probing

Generally, peat probing is carried out using a Mackintosh Probe. The probe is pushed through the peat until resistance is met then the depth at which this occurred is recorded.

Groundwater

Borehole water levels are recorded, together with the depths at which seepages or inflows of groundwater are detected and the observations noted on the borehole or trial pit records. These observations may not give an accurate indication of groundwater conditions, for the following reasons:

- The trial pit or borehole is rarely left standing at the relevant depth for sufficient time for the water level to reach equilibrium.
- A permeable stratum may have been sealed off by the borehole casing.
- It may have been necessary to add water to the borehole to facilitate progress.
- There may be seasonal, tidal or other effects at the site.

A more accurate record of groundwater behaviour may be obtained from standpipes or standpipe piezometers.

Gases

Determination and measurement of gases in the ground, commonly in relation to landfills, may be made directly from the ground surface, where a hole is formed by driving a solid and rigid steel spike to depths normally in the range 1.0 to 1.5m. Gas emissions are analysed using an appropriate portable analyser. However, research has shown that the small sample hole size and smearing effects can give a false negative result.

Where more accurate or longer term measurement of emissions is required, gas monitoring standpipes are installed in boreholes.

SOIL SAMPLES

U (X) General purpose tube sample; X No of blows to drive sampler
Piston Piston sample

NOTE: Tube samples are 100mm diameter unless otherwise specified in the remarks. Suffix 'a' indicates sample not recovered; suffix 'b' indicates full penetration of sampler not obtained; suffix 'c' indicates full penetration of sampler but limited recovery

D/J/T/V Small Disturbed/Jar/Tub/Vial sample

B/LB Bag/Large Bag sample

UT (X) Thin walled push in sampler (type OS-T/W); X No of blows to drive sampler

ET Sample appropriate for geochemical analyses (tub)

CORE RECOVERY AND ROCK QUALITY

C Core Sample

TCR Total Core Recovery: The total core recovered expressed as a percentage of the core run length

SCR Solid Core Recovery: The core recovered as solid cylinders expressed as a percentage of the core run length

RQD Rock Quality Designation: The core recovered as solid cylinders of length 100mm or more expressed as a percentage of core run length.

RO-S/RO-R Rotary Open Hole Drilling through Soil / Rotary Open Hole Drilling through Rock

FI Fracture Index: The number of discontinuities expressed as fractures per metre

Flush "Depth" indicates depth down to which recorded "Returns" relate

NI Non Intact

NR No Recovery (assumed)

GROUND-WATER

W Water Sample

↕ Ground-water encountered

↕ Depth to which ground-water rose

↕ Ground-water cut off by the casing

WS Water Sample from Standpipe

IN SITU AND FIELD TESTS

SPT=X a/b (pen) Standard penetration test (split barrel sampler(SPT)or cone (CPT)); X is the penetration (N) value;

or CPT=X a/b (pen) 'a' is blow/75mm for seating drive; 'b' is blows/75mm for test drive; (pen) is test drive penetration if less than 300mm.

CBR California bearing ratio test

MCV Moisture condition value test

K Permeability test

HP Hand penetrometer test

FV Field vane test

HV Hand vane test (I = Initial, R = Residual)

ID Density test

PID Photo Ionisation Detector (ppm)

LEGENDS

Material legends are in accordance with ISO 710-1 and 710-2

before a description indicates that it is based on the Driller's record.

INSTALLATIONS (BACKFILL)



Concrete



Bentonite



Spoil



Bentonite/cement grout



Sand



Solid pipe



Gravel



Slotted pipe



Porous element



Wooden plug



Asphalt

DIMENSIONS

All dimensions in metres unless otherwise stated.

ROTARY DRILLING SIZES

Letter	Nominal Diameter (mm)	
	Borehole	Core
Standard		
N	76	54
H	100	76
P	121	92
S	146	113
Non-standard		
412	108	75

Other casing and borehole diameter sizes are available and may be used where required. Details will be on the individual BH logs.

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Exploration Point	Co-ordinates		Ground Level (mO.D.)	Method	Figure No	Installation	Remarks
	Easting (m)	Northing (m)					
BH01	319774.9	697617.6	83.55	IP+CP	B1		
BH02	319636.7	697525.6	84.22	IP+CP+RC	B2	1	
BH03	319423.0	697408.6	82.73	IP+CP	B3		
BH04	319582.0	697402.9	85.09	IP+CP+RO+RC	B4		
BH05	319691.1	697346.5	88.30	IP+CP+RC	B5	1	
BH06	319817.0	697454.6	86.94	IP+CP	B6	1	
BH07	319958.7	697537.7	85.46	IP+CP+RC	B7		
BH07A	319957.9	697538.3	85.43	IP+CP	B8		
BH07B	319956.9	697539.4	85.42	IP+CP	B9		
BH08	319997.3	697396.6	87.86	IP+CP	B10	1	
BH09	319829.8	697283.5	90.83	IP+CP	B11		
BH10	319585.0	697266.4	88.06	IP+CP	B12		
BH10A	319585.2	697264.8	88.09	IP+CP	B13		
BH11	319499.9	697194.1	90.83	IP+CP	B14		
BH12	319887.0	697101.0	100.50	IP+RO+RC	B15	1	
BH13	319959.5	697219.5	93.46	IP+CP+RO+RC	B16	1	
BH14	320164.4	697334.4	89.06	IP+SB+SC	B17	1	
BH15	320299.5	697273.9	89.93	IP+SB+SC	B18		
BH16	320294.7	697155.8	95.21	IP+SB+SC	B19	1	
BH17	320155.2	697231.2	92.87	IP+SB	B20	1	
BH18	320121.2	697016.4	103.80	IP+SB+SC	B21		
BH19	319652.5	697111.3	98.99	IP+CP	B22		
BH20	319836.5	696951.1	108.67	IP+CP+RC	B23		
TP04	319650.5	697596.8	83.13	TP	B24		
TP05	319591.7	697561.4	82.94	TP	B25		Soakaway
TP06	319825.4	697596.8	83.76	TP	B26		
TP07	319542.8	697477.6	83.21	TP	B27		
TP08	319389.3	697457.5	82.54	TP	B28		
TP09	319766.5	697518.4	85.60	TP	B29		
TP10	319777.2	697448.8	87.05	TP	B30		
TP11	319360.4	697395.2	82.68	TP	B31		
TP12	319664.1	697421.4	86.60	TP	B32		
TP13	319998.2	697510.2	85.74	TP	B33		Trench
TP13A	320009.2	697489.8	86.06	TP	B34		Trench
TP13B	320011.1	697484.8	86.16	TP	B35		Trench
TP14	319906.1	697451.0	87.22	TP	B36		Soakaway
TP15	319517.6	697317.9	84.78	TP	B37		
TP16	319459.9	697281.2	84.95	TP	B38		
TP17	320098.7	697443.1	86.95	TP	B39		Trench

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	FMR			B0
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CJH	Final			



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION	Contract No: 26667
Client: Scottish Power Energy Networks	
Engineer: Scottish Power Energy Networks	

Exploration Point	Co-ordinates		Ground Level (mO.D.)	Method	Figure No	Installation	Remarks
	Easting (m)	Northing (m)					
TP17A	320094.7	697452.4	86.76	TP	B40		Trench
TP17B	320076.7	697470.4	86.30	TP	B41		Trench
TP18	319781.1	697343.7	88.94	TP	B42		
TP19	319892.9	697337.5	89.42	TP	B43		
TP20	319660.2	697269.1	89.68	TP	B44		
TP21	319504.8	697164.0	93.29	TP	B45		
TP22	320091.7	697363.6	88.20	TP	B46		Soakaway, Trench
TP22A	320099.3	697361.2	88.28	TP	B47		Trench
TP23	320013.1	697270.8	91.51	TP	B48		Trench
TP23A	320024.4	697263.2	91.75	TP	B49		Trench
TP23B	320040.1	697252.2	92.23	TP	B50		Trench
TP24	319833.4	697201.3	93.75	TP	B51		
TP25	319693.6	697164.7	94.77	TP	B52		
TP26	319604.9	697092.6	100.24	TP	B53		
TP27	320272.3	697301.3	89.42	TP	B54		
TP28	320100.0	697262.3	91.53	TP	B55		Trench
TP28A	320102.2	697257.4	91.84	TP	B56		Trench
TP29	320012.0	697134.2	98.01	TP	B57		Trench
TP29A	320057.0	697147.9	97.47	TP	B58		Trench
TP29B	320025.6	697132.9	97.94	TP	B59		Trench
TP29C	320035.1	697132.1	98.18	TP	B60		Trench
TP30	319849.6	697076.5	101.86	TP	B61		
TP31	319729.7	697028.6	106.03	TP	B62		
TP32	320273.4	697176.3	94.30	TP	B63		
TP33	320154.6	697100.2	99.26	TP	B64		
TP34	320312.4	697083.8	98.86	TP	B65		
TP35	319996.0	696961.2	107.30	TP	B66		Trench
TP35A	320011.7	696968.0	106.61	TP	B67		Trench
TP35B	320012.0	696966.9	106.65	TP	B68		Trench
TP36	319801.6	696873.7	109.55	TP	B69		

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RAEBURN DRILLING & GEOTECHNICAL LTD		Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667															
		Client: Scottish Power Energy Networks										BH02															
		Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 4.80m Rotary Core Drilling to 7.80m															
Location: E 319636.7 N 697525.6				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste ML MAX																			
Progress 8/8 2024	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill														
	Depth	Type	Depth	Result									Symbol	Depth													
08/08 09/08 13/08	0.00	WS	1.20	SPT=20	2.3/5.4.5.6			1.20	84.22																		
	0.50	B, D, ES, ET							83.72	0.50						0.50											
	1.00	ES							83.02	1.20							1.00										
	1.20	D																									
	1.70	B, D	2.20	SPT=27	4.4/5.7.7.8			2.20																			
	2.00	ES																									
	2.20	D																									
	2.70	B, D																									
	3.00	ES	3.20	SPT=24	5.6/6.5.6.7			3.20																			
	3.20	D																									
	3.70	B, D																									
	4.20	D																									
09/08	4.20	D	4.20	SPT>50	15.10/6.6.8.30 (225)			4.20																			
														TCR	SCR	RQD	FI	79.62	4.60	# Weathered DOLERITE							
																		79.42	4.80					Medium strong dark grey DOLERITE with phenocrysts (up to 2mm diameter) and three sets of pinkish white veins. No. 1: from 4.80m to 5.40m subverticle up to 12mm thick, causing subverticle fractures. No 2: widely spaced planar at 10° and up to 2mm thick. No. 3: randomly orientated up to 0.5mm thick. Partially weathered evident as loss of strength and structure along veins. Three fracture sets. No. 1: subverticle undulating and rough, with veins. No. 2: close to medium spaced 10° to 15° undulating and rough joints. No. 3: medium spaced 45° to 60° undulating and rough	2.80m		5.00
																		78.52	5.70								
13/08	6.50	100	97	0		10	4.80	77.72	6.50	Moderately weak and weak mottled dark grey with green patches in places DOLERITE with occasional polished surfaces and dark grey phenocrysts (up to 1mm diameter). Distinctly weathered with mottling and significant loss of strength. Non intact																	
								Weak and very weak dark grey mottled with green and occasional purple banded DOLERITE with dark phenocrysts (up to 1mm diameter) and occasional randomly orientated 0.5mm thick pale pinkish white veins. Distinctly weathered with significant loss of strength, structure and green and purple staining. Three fracture sets. No. 1: medium spaced 20° to 30° undulating and smooth with loss of strength and structure along edges. No. 2: medium spaced 45° rough and undulating. No. 3: Single fracture 70° to 90° undulating and rough																			
END OF BOREHOLE																											
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 2.00m. The Penetration Tests were carried out using Trip Hammer AB02. A 50mm diameter perforated standpipe was installed to a depth of 5.00m. SPT at 4.80m: SPT>50: 25(5)/50(0)												Hole Diam.	To Depth														
												200	Boring	Casing													
													7.80	4.60													
Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B2 Sheet 1 of 1 Scale 1:50											
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)													
Chk & App FMR	Status FINAL				1.85			3.95	4.20	1:00	100	AirWM	4.80	7.80													
								4.60	4.80	1:00																	

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										Borehole No. BH03			
				Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 4.00m			
Location: E 319423.0 N 697408.6				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000									
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result							Symbol	Depth					
22/8 2024	0.50	B, D, ES				82.73		MADE GROUND (dark brown to grey, slightly gravelly sandy clay of low plasticity with frequent organic matter and cobbles. Sand is fine and medium. Gravel is fine to coarse subangular mudstone and sandstone. Cobbles are subrounded sandstone)									
	1.00	ES															
	1.20	D	1.20	SPT=7 1.1/1.2,2.2	1.20												
	1.70	B, D															
	2.00	ES				80.53	2.20										
	2.20	D	2.20	SPT=10 2.2/3.2,2.2,3	2.20			MADE GROUND (grey silty fine to coarse sand and fine to coarse subangular and subrounded gravel of sandstone and mudstone with cobbles and boulders. Cobbles and boulders are subangular and angular of sandstone and mudstone)									
	2.70	B, D															
	3.00	ES															
	3.20	D	3.20	SPT=34 3.5/8.8,10.8	3.20												
22/08					3.20												
23/08					3.75	78.73	4.00	at 4.00m: OBSTRUCTION, possible rock or boulder		Dry							
			4.00	SPT>50 25 (0)/50 (0)	3.75			END OF BOREHOLE		2.90m		4.00					
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 0.90m. The Penetration Tests were carried out using Trip Hammer AB02.										Hole Diam.	To Depth						
										200	Boring	Casing					
											4.00	3.75					
Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B3 Sheet 1 of 1 Scale 1:50	
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)			
Chk & App FMR	Status FINAL	0.90		20.00	1.20			3.75	4.00	1:00							

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667					
Client: Scottish Power Energy Networks										Borehole No. BH04									
Engineer: Scottish Power Energy Networks										Inspection Pit to Cable Percussion to Rotary Core Drilling to1.20m7.00m10.00m									
Location: E 319582.0 N 697402.9				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G											
Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result									Symbol	Depth					
15/8 2024	0.50	B, D, ES	1.20	SPT=16	4.5/5.4.3.4			1.20	85.09		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	1.00	ES																	
	1.20	D																	
	1.70	B, D																	
	2.00	ES	2.20	SPT=19	2.3/3.4.6.6			2.20	84.59	0.50	MADE GROUND (brown slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)								
	2.20	D																	
	2.70	B, D																	
	3.00	ES																	
	3.20	D	3.20	SPT=41	3.3/7.8.12.14			3.20	84.09	1.00	MADE GROUND (medium dense and dense grey locally dark grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with cobbles. Cobbles are angular to subrounded of sandstone and mudstone)								
	3.70	B, D																	
	4.20	D																	
	4.70	B, D																	
	5.20	D	5.20	SPT>50	5.7/9.7.34 (150)			5.20			below 3.70m: cobbles becoming more abundant and with pockets of slightly gravelly sandy clay								
	5.70	B, D																	
	6.20	D																	
	7.00	D																	
15/08	5.70	B, D	6.20	SPT=28	3.4/4.4.5.15			6.20	79.59	5.50	Greyish brown slightly gravelly sandy CLAY of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, dolerite and mudstone. Cobbles are subangular and subrounded of sandstone and dolerite		3.70m						
	6.20	D																	
	7.00	D																	
	7.00	D																	
16/08	7.00	D	7.00	TCR	SCR	RQD	FI	6.20	78.44	6.65	Grey fine to coarse grained SANDSTONE recovered as sandy fine to coarse angular and subangular gravel		2.75m						
	7.00	D																	
	7.00	D																	
	7.00	D																	
16/08	7.00	D	7.00	100	97	0	>20	6.20	78.09	7.00	Very weak locally extremely weak dark grey MUDSTONE. Partially weathered evident as loss of structure on fracture surfaces. Three fracture sets. No.1: medium to closely spaced, 35°, stepped and rough bedding fractures. No.2: widely spaced, subhorizontal, undulose and rough joints. No.3: medium to closely spaced, 55°, stepped and smooth joints from 7.10m to 7.15m: weathered to gravel from 8.00m to 8.40m: highly fractured from 8.50m to 9.00m: weathered to clay from 9.20m to 9.25m: weathered to gravel		Dry						
	7.00	D																	
	7.00	D																	
	7.00	D																	
19/08	7.00	D	7.00	100	81	0	>20	7.00	75.09	10.00	END OF BOREHOLE		Dry	10.00					
	7.00	D																	
	7.00	D																	
	7.00	D																	
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02. SPT at 7.00m: SPT>50: 25(5)/50(10)												Hole Diam.		To Depth					
												200		7.00					
												125		10.00					
Driller DP, GMo		Originator JD/FR		Ground-water				Water Added		Chiselling			Flush			RAEBURN		Fig No: B4 Sheet 1 of 1 Scale 1:50	
				Struck				From		From			To						
				Rose To						To			To						
				Time(min)						hh:mm			Returns						
				Cut Off						Type			From (m)			To (m)			
										3.70			100						
										4.20			AirWM			7.00			
										5.50						10.00			
										6.65									
										1:00									
										1:00									
										1:00									
Chk & App FMR		Status FINAL																	

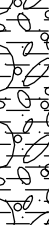
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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										BH05			
				Engineer: Scottish Power Energy Networks										Inspection Pit to Cable Percussion to Rotary Core Drilling to1.20m8.00m11.00m			
Location: E 319691.1 N 697346.5				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G									
Progress 6/8 2024	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill				
	Depth	Type	Depth	Result									Symbol	Depth			
06/08	0.00	WS					1.20	88.30		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)		Dry					
	0.50	B, D, ES					1.20	87.80	0.50	MADE GROUND (brown very gravelly very silty fine to coarse sand with cobbles and pockets of slightly gravelly sandy clay. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)						0.50	
	1.00	ES					1.20	87.10	1.20	MADE GROUND (friable dark grey slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)						1.00	
	1.20	D	1.20	SPT=30	3.6 / 7.6, 8.9			1.20									
	1.70	B, D						86.60	1.70								
	2.00	ES															
	2.20	D	2.20	SPT=23	5.4 / 5.6, 5.7			2.20									
	2.70	B, D															
	3.00	ES															
	3.20	D	3.20	SPT=10	4.5 / 4.3, 2.1			3.20									
	3.70	B, D															
	07/08	4.20	D	4.20	SPT=9	2.3 / 1.2, 3.3			4.20							at 4.20m: locally loose	
4.70		B, D															
5.20		D	5.20	SPT=13	3.4 / 5.3, 3.2			5.20		from 5.30m to 6.25m: predominantly coarse angular and subangular sandstone gravel							
5.70		B, D															
6.20		D	6.20	SPT=9	5.1 / 1.3, 2.3			6.20	82.05	6.25	Soft mottled orange brown slightly gravelly sandy CLAY of low plasticity with relict plant material and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and siltstone. Cobbles are subangular and subrounded of sandstone and mudstone	2.50m					
6.70		B, D															
7.20		D	7.20	SPT=48	6.9 / 10.10, 15.13			7.20	81.00	7.30	Extremely weak dark grey weathered MUDSTONE recovered as silty fine to coarse angular gravel						
								80.45	7.85								
								80.30	8.00	Light brown fine to coarse grained SANDSTONE recovered as sandy fine and medium angular gravel	2.55m						
								80.05	8.25	Dark grey MUDSTONE recovered destructured as firm dark grey clay. Evidence of laminations towards base.	2.50m						
										Moderately weak becoming medium strong with depth pale grey with bands with thick laminations of dark grey fine and medium grained SANDSTONE. Distinctly weathered evident as loss of strength, occasional orange discolouration at some fractures and destructuring along some fractures. Three fracture sets. No. 1: close and medium spaced 5° to 20° undulating and rough bedding fractures. No 2: medium spaced 43° to 60° undulating and rough joints with some destructuring and penetrative orange staining where joints cross bedding fractures. No. 3: widely spaced 70° undulating rough occasionally sand lined (up to 15mm thick) joints							
08/08		8.00	D					7.20									
			8.00	TCR	SCR	RQD	FI										
			100	0	0		NI										
			8.25	100	95	18											
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not encountered. The Penetration Tests were carried out using Trip Hammer AB02. A 50mm diameter perforated standpipe was installed to a depth of 11.00m. SPT at 8.00m: SPT>50: 25(5)/50(5)													Hole Diam.	To Depth			
													200	Boring	Casing		
													125	8.00	8.00		
														11.00			
Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush			RAEBURN	Fig No: B5 Sheet 1 of 2 Scale 1:50		
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)			To (m)	
		2.90	2.55	20.00				5.80	6.20	1:00	100	AirWM	8.00			11.00	
								7.85	8.00	1:00							
Chk & App FMR	Status FINAL																

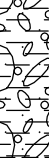
Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667.GPJ+44 (0)1698 710999 Printed: 08/11/2024 12:21:36 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667							
				Client: Scottish Power Energy Networks										Borehole No. BH06							
				Engineer: Scottish Power Energy Networks										Inspection Pit to Cable Percussion to							
Location: E 319817.0 N 697454.6				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000										1.20m 6.60m			
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill										
	Depth	Type	Depth	Result							Symbol	Depth									
16/8 2024	0.00	WS				86.94		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)													
	0.50	B, D, ES, ET				86.44	0.50	MADE GROUND (brown slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				0.50									
	1.00	ES										1.00									
	1.20	D	1.20	SPT=20 2.3 / 5.4, 5.6	1.20																
	1.70	B, D				85.34	1.60	MADE GROUND (grey locally black slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)													
	2.00	ES				84.74	2.20														
	2.20	D	2.20	SPT=20 2.4 / 5.6, 5.4	2.20																
	2.70	B, D						MADE GROUND (greyish brown slightly gravelly sandy clay of low plasticity with cobbles. Locally becoming gravelly very clayey sand. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, dolerite and coal. Cobbles are subangular and subrounded of sandstone and dolerite)													
	3.00	ES																			
	3.20	D	3.20	SPT=22 4.17 / 8.5, 4.5	3.20																
	3.70	B, D						Medium dense greyish brown very clayey fine to coarse SAND and fine to coarse subangular to rounded GRAVEL of various lithologies including sandstone, dolerite and mudstone. Cobbles are subangular and subrounded of sandstone and dolerite													
	4.20	D	4.20	SPT=30 4.5 / 6.6, 8.10	4.20																
	4.70	B, D																			
5.20	D	5.20	SPT=29 5.6 / 7.7, 7.8	5.20	81.54	5.40	Dark grey DOLERITE. Distinctly weathered recovered as fine angular gravel														
5.70	B, D																				
6.20	D	6.20	SPT>50 6.4 / 4.6, 4.0 (155)	6.20	80.44	6.50					6.50										
19/08	6.60	D	6.60	SPT>50 25 (5) / 50 (5)	6.60	80.34	6.60	END OF BOREHOLE		3.70m		6.60									
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 6.50m. The Penetration Tests were carried out using Trip Hammer AB02. A 50mm diameter perforated standpipe was installed to a depth of 6.50m.										Hole Diam.	To Depth										
										200	Boring	Casing									
											6.60	6.50									
Driller DP	Originator JD	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B6 Sheet 1 of 1 Scale 1:50					
Chk & App FMR	Status FINAL	Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)							
		6.50	4.95	20.00				3.85	4.10	1:00											

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										Borehole No. BH07A			
				Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 2.00m			
Location: E 319957.9 N 697538.3				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000									
Progress 2/8 2024	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata						Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result												Symbol	Depth
02/08						85.43		Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse									0.40
						85.03	0.40										
		1.50	D	1.50	SPT=45 3.5/10.11.10.14	1.50		Brown slightly gravelly sandy CLAY with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal									
	2.00	D, ES			2.00	83.43	2.00									at 2.00m to 2.10m: driller notes obstruction	
	2.00							END OF BOREHOLE							Dry		2.00
Remarks:														Hole Diam.		To Depth	
# Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not encountered. The Penetration Tests were carried out using Trip Hammer AB02.														200		Boring Casing 2.00 2.00	
Driller DP	Originator BA	Ground-water				Water Added		Chiselling			Flush					Fig No: B8 Sheet 1 of 1 Scale 1:50	
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)			
Chk & App FMR	Status FINAL							1.30	1.50	1:00							

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										Borehole No. BH07B			
				Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 1.50m			
Location: E 319956.9 N 697539.4				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000									
Progress 5/8 2024	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata						Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result												Symbol	Depth
						85.42		Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse									
						85.02	0.40										
								Brown slightly gravelly sandy CLAY with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and siltstone at 1.25m to 1.50m: driller notes obstruction									
05/08			1.50	SPT>50 25 (0)/50 (0)	1.50	83.92	1.50	----- END OF BOREHOLE -----							Dry		1.50
Remarks:															Hole Diam.	To Depth	
# Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not encountered. The Penetration Tests were carried out using Trip Hammer AB02.															200	Boring	Casing
																1.50	1.50
Driller DP	Originator BA	Ground-water				Water Added		Chiselling			Flush					Fig No: B9 Sheet 1 of 1 Scale 1:50	
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)			
Chk & App FMR	Status FINAL							1.25	1.50	1:00							

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667						
				Client: Scottish Power Energy Networks Engineer: Scottish Power Energy Networks						Borehole No. BH08						
										Inspection Pit to Cable Percussion to		1.20m 5.00m				
Location: E 319997.3 N 697396.6				Orientation: Vertical		Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000										
Progress 30/7/2024	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill					
	Depth	Type	Depth	Result							Symbol	Depth				
30/07	0.00	WS				87.86		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)		Dry						
	0.50	ES				87.36	0.50	MADE GROUND (brown slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)								
	0.60	B, D														
	1.00	ES				86.66	1.20	MADE GROUND (friable dark grey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with cobbles and pockets of slightly gravelly sandy clay. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	1.20	D	1.20	SPT=34 4.5 / 7.8, 10.9	1.20											
	1.70	B, D														
	2.00	ES														
	2.20	D	2.20	SPT=17 3.4 / 4.3, 5.5	2.20											
	2.70	B, D														
	3.00	ES														
3.20	D	3.20	SPT=38 3.2 / 1.12, 13.12	3.20	84.61 3.25 84.46 3.40		# Soft brown peaty CLAY									
3.70	B, D						Dark brown slightly gravelly clayey fine to coarse GRAVEL with cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, siltstone and mudstone. Cobbles are subangular and subrounded of sandstone									
4.20	D	4.20	SPT=48 5.7 / 11.12, 13.12	4.20												
31/07						83.06 4.80 82.86 5.00		Dark grey MUDSTONE, distinctly weathered recovered as fine and medium angular gravel		4.15m						
	5.00	D	5.00	SPT>50 25 (5)/50 (10)	4.70			END OF BOREHOLE								
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02. A 50mm diameter perforated standpipe was installed to a depth of 5.00m.										Hole Diam.	To Depth					
										200	Boring	Casing				
											5.00	4.80				
Driller DP/JMcC	Originator JD	Ground-water				Water Added		Chiselling			Flush			RAEBURN	Fig No: B10 Sheet 1 of 1 Scale 1:50	
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)			To (m)
								4.80	5.00	0:00						
Chk & App FMR	Status FINAL															

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667					
				Client: Scottish Power Energy Networks						Borehole No. BH09					
				Engineer: Scottish Power Energy Networks						Inspection Pit to 1.20m Cable Percussion to 4.00m					
Location: E 319829.8 N 697283.5				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000							
Progress 20/08 2024	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill				
	Depth	Type	Depth	Result							Symbol	Depth			
20/08 2024						90.83		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)							
	0.50	B, D, ES				90.53	0.30	MADE GROUND (brown very gravelly very clayey fine to coarse sand with cobbles and pockets of slightly gravelly sandy clay. Gravel is and fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)							
	1.00	ES				89.83	1.00	MADE GROUND (medium dense grey and dark grey very sandy silty fine to coarse angular to subrounded gravel of sandstone, coal and mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of mudstone and sandstone)							
	1.20	D	1.20	SPT=29 3.4 / 6.8 / 7.8	1.20										
	1.70	B, D													
	2.00	ES													
	2.20	D	2.20	SPT=26 4.6 / 5.6 / 7.8	2.20										
	2.70	B, D													
	3.00	ES													
	3.20	D	3.20	SPT=23 6.10 / 6.7 / 5.5	3.20										
20/08						87.13	3.70								
	4.00	D	4.00	SPT>50 25 (5) / 50 (10)	3.70	86.83	4.00	MADE GROUND (very dense sandy light brown fine and medium angular to subrounded sandstone. Sand is fine to coarse)		Dry		4.00			
	END OF BOREHOLE														
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02.										Hole Diam.	To Depth Boring Casing				
										200	4.00	3.70			
Driller DP	Originator JD	Ground-water Struck Rose To Time(min) Cut Off				Water Added From To		Chiselling From To hh:mm			Flush Returns Type From (m) To (m)				Fig No: B11 Sheet 1 of 1 Scale 1:50
Chk & App FMR	Status FINAL							3.70	4.00	1:00					

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667.GPJ+44 (0)1698 710999 Printed: 08/11/2024 12:22:02 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667						
				Client: Scottish Power Energy Networks						Borehole No. BH10						
				Engineer: Scottish Power Energy Networks						Inspection Pit to 1.20m Cable Percussion to 2.50m						
Location: E 319585.0 N 697266.4				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000								
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill					
	Depth	Type	Depth	Result							Symbol	Depth				
9/8 2024						88.06		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.40	B, D				87.71	0.35	MADE GROUND (brown very clayey fine to coarse sand and fine to coarse subangular to rounded gravel of various lithologies including sandstone, mudstone and coal with cobbles. Sand is fine to coarse. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)								
	0.50	ES														
	1.00	ES				86.86	1.20	MADE GROUND (dark grey and grey clayey fine to coarse sand and fine to coarse subangular to rounded gravel of various lithologies including sandstone, mudstone and coal with cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles and boulders are angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	1.20	D	1.20	SPT=27 3.6/5.7.6.9	1.20											
	1.70	B, D														
09/08	2.00	ES				85.76	2.30			Dry						
			2.20	SPT>50 7.17/50 (0)	2.20											
12/08						85.56	2.50	# OBSTRUCTION		Dry		2.50				
			2.50	SPT>50 25 (0)/50 (0)	2.30			END OF BOREHOLE								
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02.										Hole Diam.	To Depth					
										200	Boring	Casing				
											2.50	2.30				
Driller DP	Originator BA	Ground-water				Water Added		Chiselling			Flush					Fig No: B12 Sheet 1 of 1 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
Chk & App FMR	Status FINAL							2.30	2.50	1:00						

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667.GPJ+44 (0)1698 710999 Printed: 06/11/2024 12:22:10 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										Borehole No. BH11			
				Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 1.50m			
Location: E 319499.9 N 697194.1				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000									
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result							Symbol	Depth					
22/8 2024	0.50	B, D, ES						MADE GROUND (mottled orange brown slightly gravelly sandy SILT of intermediate plasticity with rare coal fragments. Sand is fine to coarse. Gravel is predominantly fine and medium of sandstone and occasional coal)									
	1.00	ES															
	1.20	D	1.20	SPT>50 3.4/50 (10)	1.20		at 1.50m: OBSTRUCTION, sandstone										
22/08	1.50	D	1.50	SPT>50 25 (5)/50 (10)	1.20	89.33	1.50	----- END OF BOREHOLE -----		Dry		1.50					
Remarks:												Hole Diam.	To Depth				
# Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02.												200	Boring	Casing			
													1.50	1.20			
Driller DP	Originator JD	Ground-water				Water Added		Chiselling			Flush					Fig No: B14 Sheet 1 of 1 Scale 1:50	
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)			
Chk & App FMR	Status FINAL							1.35	1.50	1:00							

[illegible]

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667.GPJ+44 (0)1698 710999 Printed: 06/11/2024 12:22:53 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667												
				Client: Scottish Power Energy Networks				BH15												
				Engineer: Scottish Power Energy Networks				Inspection Pit to Sonic Boring to Sonic Coring to Sonic Boring to Sonic Coring to												
Location: E 320299.5 N 697273.9				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush												
Progress		Samples		Tests		Level		Description of Strata		Legend		Water		Backfill						
Depth		Type		Depth		Result		Casing Depth		Depth		Symbol		Depth						
29/7 2024								89.93												
0.50		B, D, ES						89.53		0.40				0.50						
1.00		B, D, ES						88.73		1.20										
1.20		B, D		1.20		SPT>50 4.9/18.17.15 (220)		1.20												
1.50		D																		
2.20		B																		
2.50		D																		
2.70		D		2.70		SPT=10 3.3/2.3.2.3		2.70												
3.20		B																		
3.50		D						86.43		3.50										
4.20		B, D		4.20		SPT=10 2.2/2.2.3.3		4.20												
4.50		D																		
5.20		B																		
5.50		D																		
5.70		B, D		5.70		SPT>50 14.11 (95)/23.27 (145)		5.70												
6.50		B, D																		
				7.20		SPT>50 25 (5)/50 (0)		7.20												
8.00		D						81.93		8.00										
8.50		B, D																		
8.70		D		8.70		SPT>50 4.5/4.14.18 (164)		8.70												
9.50		B, D																		
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. Estimates of strength based on visual assessment of sonic bags only.												Hole Diam.		To Depth Boring		Casing				
												125		8.60		32.70				
												120		34.20						
Driller SMcL		Originator BA		Ground-water				Water Added		Chiselling			Flush				RAEBURN		Fig No: B18 Sheet 1 of 4 Scale 1:50	
				Struck Rose To Time(min) Cut Off				From To		From To hh:mm			Returns Type From (m) To (m)							
													100 Water 1.20 32.70							
Chk & App FMR		Status FINAL																		

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										BH15			
				Engineer: Scottish Power Energy Networks										Inspection Pit to Sonic Boring to Sonic Coring to Sonic Boring to Sonic Coring to			1.20m 7.20m 8.70m 32.70m 34.20m
Location: E 320299.5 N 697273.9				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush									
Progress	Samples		Tests		Casing Depth	Level (mOD) 89.93	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result							Symbol	Depth					
	20.70	B, D, D	20.70	SPT=32 3.6 / 7.7, 9.9	20.70												
	21.70	B, D						below 21.60m: becoming very stiff									
	22.20	D	22.20	SPT=41 4.10 / 12.12, 8.9	22.20			from 22.20m to 22.60m: locally soft									
	22.70	B, D															
	23.50	B, D				66.53	23.40	MADE GROUND (dense black sandy locally slightly clayey fine to coarse angular and subangular gravel of mudstone and coal. Sand is fine to coarse)									
	23.70	D	23.70	SPT=37 6.8 / 10.9, 9.9	23.70												
	24.50	B, D															
	25.20	D	25.20	SPT=7 1.2 / 1.2, 2.2	25.20			below 25.20m: loose									
	25.60	B, D						below 25.80m: cobbles. Cobbles are angular and subangular of mudstone and coal									
	26.60	B, D															
	26.70	D	26.70	SPT=8 2.2 / 2.3, 2.1	26.70			below 27.00m: becoming clayey									
	27.10	D															
						62.23	27.70	MADE GROUND (stiff grey and dark grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular and subangular of mudstone, sandstone and coal. Cobbles are angular and subangular of mudstone and sandstone)									
31/07	28.10	B, D															
	28.20	D	28.20	SPT>50 10.12 / 13.12, 17.8 (260)	28.20					14.10m							
	29.10	B, D								12.05m							
	29.70	D	29.70	SPT=21 4.4 / 6.6, 5.4	29.70												
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. Estimates of strength based on visual assessment of sonic bags only.										Hole Diam.	To Depth Boring	Casing					
										125	8.60	32.70					
										120	34.20						
Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush			RAEBURN	Fig No: B18 Sheet 3 of 4 Scale 1:50		
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)			To (m)	
Chk & App FMR	Status FINAL										100	Water	1.20			32.70	

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667						
				Client: Scottish Power Energy Networks						BH16						
				Engineer: Scottish Power Energy Networks						Inspection Pit to Sonic Boring to Sonic Coring to						
Location: E 320294.7 N 697155.8				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush				1.20m 35.70m 42.20m				
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill					
	Depth	Type	Depth	Result							Symbol	Depth				
7/8 2024	0.50	B, D, ES	1.20	SPT=25 6.4 / 4.6, 6.9	1.20	95.21		MADE GROUND (light brown slightly silty slightly gravelly sandy clay. Gravel is fine to coarse subangular to rounded of mudstone)				0.50				
	1.00	B, D, ES												1.00		
	1.20	D						94.01			1.20	MADE GROUND (firm dark brown very gravelly very clayey fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of mudstone and mudstone. Cobbles are angular to subrounded of mudstone)				
	1.40	D														
	1.50	B														
	2.70	D, D	2.70	SPT=2 2.2 / 1.1, 0.0	2.70	92.21	3.00	MADE GROUND (dense dark brown very clayey fine to coarse sand and fine to coarse angular to subrounded gravel of sandstone with cobbles. Cobbles are angular to subrounded of sandstone)								
	2.80	B														
	4.20	D	4.20	SPT>50 3.4 / 18.8, 4.20 (290)	4.20											
	4.50	B, D														
	5.70	D, D	5.70	SPT=37 4.4 / 6.8, 12.11	5.70											
	5.80	B														
	6.52	ES														
	6.72	D	7.20	SPT>50 3.10 / 22.19.9 (205)	7.20	88.01	7.20	MADE GROUND (soft to firm grey slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone and mudstone) at 7.80m: becoming stiff at 8.30m: becoming very stiff								
	6.80	B														
	7.20	B, D														
	7.95	B, D				86.71	8.50	MADE GROUND (dark grey slightly silty sandy fine to coarse subangular and subrounded gravel of sandstone, mudstone and brick with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of sandstone and mudstone) MADE GROUND (medium dense dark grey very gravelly very clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of coal and mudstone)								
	8.60	D	8.70	SPT=24 4.4 / 5.5, 5.9	8.70	86.51	8.70									
	8.70	B, D														
	9.45	B, D				85.36	9.85	MADE GROUND (soft to firm dark grey slightly sandy slightly gravelly				10.00				
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 2.70m. No ground-water observations are recorded below 2.70m due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. A 50mm diameter perforated standpipe was installed to a depth of 10.00m. Estimates of strength based on visual assessment of sonic bags only. SPT at 4.70m: 6.6/5.7, 7.12											Hole Diam.	To Depth Boring	To Depth Casing			
											120	35.70	41.70			
											101	43.20				
Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling		Flush				RAEBURN	Fig No: B19 Sheet 1 of 5 Scale 1:50	
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)			To (m)
					5.70						100	Water	1.20			42.20
Chk & App FMR	Status FINAL															

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667							
				Client: Scottish Power Energy Networks										BH16							
				Engineer: Scottish Power Energy Networks										Inspection Pit to Sonic Boring to Sonic Coring to				1.20m 35.70m 42.20m			
Location: E 320294.7 N 697155.8				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush													
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill										
	Depth	Type	Depth	Result							Symbol	Depth									
07/08	10.20	B	10.20	SPT=39 3.3/7.8.10.14	10.20 10.20	95.21		clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone and brick)		6.20m 6.95m											
	10.95	B, D																			
	11.70	B	11.70	SPT=42 5.9/12.15.8.7	11.70																
	12.45	B, D				83.01	12.20	MADE GROUND (medium dense grey slightly clayey slightly gravelly sand. Gravel is fine to coarse angular to subrounded of mudstone) below 12.80m: With cobbles. Cobbles are angular to subrounded of shale.													
	13.20	D	13.20	SPT=25 4.3/6.4.5.10	13.20																
	14.10	B, D																			
	14.60 14.70	D B, D, D	14.70	SPT=28 5.4/5.8.8.7	14.70	80.51	14.70	MADE GROUND (soft dark brown slightly sandy slightly gravelly clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of sandstone and mudstone) at 15.50m: firm													
	15.45	B																			
	15.80	D				79.31	15.90	MADE GROUND (soft dark brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of mudstone)													
	16.20	B, D, D	16.20	SPT=37 2.4/7.7.9.14	16.20																
	16.95	B				78.41	16.80	MADE GROUND (light grey fine to coarse sand and fine to coarse angular to subrounded gravel of sandstone and mudstone)													
	17.30	D																			
	17.70	B, D	17.70	SPT>50 13.12 (95)/50 (30)	17.70																
	19.20	B	19.20	SPT=17 3.3/3.4.4.6	19.20	76.11	19.10	MADE GROUND (medium dense dark brown slightly sandy slightly clayey fine to coarse subangular to subrounded gravel of mudstone and mudstone. Sand is fine to coarse)													
	19.60	D																			
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 2.70m. No ground-water observations are recorded below 2.70m due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. A 50mm diameter perforated standpipe was installed to a depth of 10.00m. Estimates of strength based on visual assessment of sonic bags only. SPT at 41.70m: SPT=31 6.6/5.7.7.12										Hole Diam.	To Depth										
											Boring	Casing									
										120	35.70	41.70									
										101	43.20										
Driller SMcL	Originator BA	Ground-water		Water Added		Chiselling		Flush				RAEBURN	Fig No: B19 Sheet 2 of 5 Scale 1:50								
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns				Type	From (m)	To (m)				
Chk & App FMR	Status FINAL										100				Water	1.20	42.20				

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667							
				Client: Scottish Power Energy Networks Engineer: Scottish Power Energy Networks						BH16							
Location: E 320294.7 N 697155.8				Orientation: Vertical		Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush						Inspection Pit to Sonic Boring to Sonic Coring to 1.20m 35.70m 42.20m					
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result							Symbol	Depth					
08/08	19.95	B	20.70	SPT=30 6.9 / 9.7 7.7	20.70	95.21	20.10	MADE GROUND (dark grey very clayey fine to coarse sand and fine to coarse angular to subrounded gravel of mudstone)									
	20.50	D				75.11											
	20.70	B, D				74.51	20.70						MADE GROUND (soft dark grey slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of mudstone.)				
	20.90	D															
	21.45	B				73.81	21.40										
	21.50	D	73.66	21.55	MADE GROUND (yellowish grey slightly silty fine to coarse sand)												
		22.20	B, D, D	22.20	SPT=15 3.4 / 3.3 4.5	22.20	72.91	22.30					MADE GROUND (dark reddish brown fine to coarse angular to subrounded gravel of sandstone with cobbles. Cobbles are angular and subangular of sandstone)				
		22.40	D														
	09/08	22.95	B	23.70	SPT=14 3.3 / 3.3 3.5	23.70	70.81	24.40					MADE GROUND (soft to firm dark brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of siltstone and sandstone)		4.65m 19.10m		
		23.60	D														
23.70		B															
23.80		D															
24.45		B															
		25.20	B, D, D	25.20	SPT=18 4.4 / 3.4 4.7	25.20	70.01	25.20	MADE GROUND (dark brown slightly clayey sandy fine to course angular to subrounded gravel of mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of sandstone and siltstone)								
		25.40	D														
		25.95	B	26.70	SPT=25 7.11 / 5.5 6.9	26.70	67.31	27.90	MADE GROUND (medium dense dark brown very gravelly very clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of sandstone)								
		26.10	D														
26.70		B, D															
27.45	B																
27.90	D																
09/08	28.20	B, D	28.20	SPT=19 5.8 / 6.4 4.5	28.20	66.31	28.90	MADE GROUND (medium dense bluish grey fine to coarse angular to subrounded gravel of mudstone with cobbles. Cobbles are subangular to rounded of mudstone)									
	28.90	D															
	28.95	B															
	29.35	D															
	29.70	B, D, D							29.70	SPT=16 2.3 / 5.4 3.4	29.70	65.86	29.35	MADE GROUND (stiff to very stiff sandy clay. Sand is fine to coarse)			
		65.51	29.70	MADE GROUND (bluish brown fine to coarse sand and fine to coarse subangular to subrounded gravel of mudstone and sandstone with cobbles. Cobbles are angular to subrounded of mudstone)													
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 2.70m. No ground-water observations are recorded below 2.70m due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. A 50mm diameter perforated standpipe was installed to a depth of 10.00m. Estimates of strength based on visual assessment of sonic bags only. SOT at 41.70m - SPT 31 = 6.6 / 5.7 7.12										Hole Diam.	To Depth						
										120	Boring						
										101	43.20	41.70					
Driller	Originator	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B19 Sheet 3 of 5 Scale 1:50	
SMcL	BA	Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)			
Chk & App FMR	Status FINAL																

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667															
				Client: Scottish Power Energy Networks										BH16															
				Engineer: Scottish Power Energy Networks																									
Location: E 320294.7 N 697155.8				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush										Inspection Pit to Sonic Boring to Sonic Coring to				1.20m 35.70m 42.20m							
Progress	Samples		Tests				Casing Depth	Level (mOD) 95.21	Depth	Description of Strata	Legend	Water Depth	Backfill																
	Depth	Type	Depth	Result									Symbol	Depth															
13/08	40.20	B, D	41.70	100	0	0	41.70	53.51	41.70	MADE GROUND (dense bluish black fine to coarse angular to subrounded gravel of mudstone and coal with cobbles. Cobbles are angular to subrounded of coal and mudstone)		7.80m		43.20															
	40.95	B																											
	41.70	B, D																											
	41.90	D																											
END OF BOREHOLE																													
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was encountered at a depth of 2.70m. No ground-water observations are recorded below 2.70m due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. A 50mm diameter perforated standpipe was installed to a depth of 10.00m. Estimates of strength based on visual assessment of sonic bags only. SPT at 41.70m - SPT 31: 6, 6/5, 7, 7, 12															Hole Diam.	To Depth													
															120	Boring	Casing												
															101	35.70	41.70												
																43.20													
Driller: SMcL Originator: BA															Ground-water				Water Added		Chiselling		Flush					Fig No: B19 Sheet 5 of 5 Scale 1:50	
															Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)			To (m)
																							100	Water	1.20	42.20			
Chk & App FMR		Status FINAL																											

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

BH17

Inspection Pit to	1.20m
Sonic Boring to	19.20m
Sonic Coring to	20.70m

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear
LS250 Mini Sonic; Water Flush

N 697231.2

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill					
	Depth	Type	Depth	Result							Symbol	Depth				
2/8 2024	0.50	B, D, ES	1.20	SPT=10 2.3/3.3,2.2	1.20	92.87		MADE GROUND (reddish grey gravelly very clayey fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of sandstone and mudstone with cobbles. Cobbles are angular to subrounded of mudstone and sandstone)				0.50				
	1.00	B, D, ES														
	1.20	B, D, D														
	1.60	D						91.27					1.60			
	1.95	B					MADE GROUND (soft to firm dark grey slightly gravelly sandy clay of low plasticity. Gravel is fine to coarse angular to subrounded of mudstone and sandstone. Sand is fine to coarse)									
	2.70	B, D	2.70	SPT=8 2.2/3.2,2.1	2.70	90.17	2.70	MADE GROUND (loose dark grey very sandy very clayey fine to coarse subangular to rounded gravel of mudstone and sandstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of sandstone)								
	3.45	B														
	4.20	B, D	4.20	SPT=5 4.3/2.0,0.3	4.20	88.37	4.50									
	4.50	D				88.07	4.80	MADE GROUND (soft dark grey slightly gravelly sandy clay of intermediate plasticity with cobbles. Gravel is fine to coarse subangular and subrounded of sandstone and mudstone. Sand is fine to coarse. Cobbles are subangular to rounded of mudstone)								
	4.80	D				88.02	4.85	MADE GROUND (blueish grey subrounded and rounded cobble of mudstone)								
	4.95	B						MADE GROUND (dense grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of mudstone, coal and mudstone. Cobbles are angular to subrounded of mudstone and coal)								
	5.00	D														
	5.70	B, D	5.70	SPT=48 2.4/12.15,10.11	5.70											
	6.45	B				86.27	6.60									
	6.60	D						MADE GROUND (blueish grey slightly sandy fine to coarse subangular to rounded gravel of mudstone and coal. Sand is fine to coarse)								
02/08	7.20	B, D	7.20	SPT=47 3.4/7.10,14.16	7.20	85.67	7.20									
	7.45	D				85.42	7.45	MADE GROUND (light blueish grey slightly sandy fine to coarse subangular to rounded gravel of mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of mudstone)								
	7.95	B						MADE GROUND (dense light greyish brown slightly sandy clayey fine to coarse subangular to rounded gravel of mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of mudstone)								
			8.70	SPT>50 6.6/28.22 (85)	8.70	84.17	8.70	MADE GROUND (stiff dark bluish grey slightly sandy gravelly clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal)				9.00				

Description based on Driller's log.
An inspection pit was excavated by hand to a depth of 1.20m to clear services.
No ground-water observations are recorded due to the use of water flush.
The Penetration Tests were carried out using Trip Hammer RD54.
A 50mm diameter perforated standpipe was installed to a depth of 15.00m.
Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	19.20	19.20
125	20.70	

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B20 Sheet 1 of 3 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
Chk & App FMR	Status FINAL										100	Water	1.20	19.20		

Client:	Scottish Power Energy Networks
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Engineer: Scottish Power Energy Networks

BH17

Inspection Pit to	1.20m
Sonic Boring to	19.20m
Sonic Coring to	20.70m

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear
LS250 Mini Sonic; Water Flush

[illegible]

Description based on Driller's log.
An inspection pit was excavated by hand to a depth of 1.20m to clear services.
No ground-water observations are recorded due to the use of water flush.
The Penetration Tests were carried out using Trip Hammer RD54.
A 50mm diameter perforated standpipe was installed to a depth of 15.00m.
Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	19.20	19.20
125	20.70	

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush					Fig No: B20 Sheet 2 of 3 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
Chk & App FMR	Status FINAL										100	Water	1.20	19.20		

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										BH17 Inspection Pit to Sonic Boring to Sonic Coring to 1.20m 19.20m 20.70m			
				Engineer: Scottish Power Energy Networks													
Location: E 320155.2 N 697231.2				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush									
Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill				
	Depth	Type	Depth	Result									Symbol	Depth			
06/08			19.20			>20	19.20	72.17	20.70	END OF BOREHOLE		10.90m		20.70			
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. A 50mm diameter perforated standpipe was installed to a depth of 15.00m. Estimates of strength based on visual assessment of sonic bags only.												Hole Diam.	To Depth				
												120 125	19.20 20.70	19.20			
Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush					Fig No: B20 Sheet 3 of 3 Scale 1:50	
Chk & App FMR	Status FINAL	Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)			
											100	Water	1.20	19.20			

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667					
				Client: Scottish Power Energy Networks										BH18					
				Engineer: Scottish Power Energy Networks										Inspection Pit to Sonic Boring to Sonic Coring to				1.20m 22.20m 27.70m	
Location: E 320121.2 N 697016.4				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush											
Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill								
	Depth	Type	Depth	Result							Symbol	Depth							
15/8 2024						103.80													
						103.60	0.20	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)											
	0.50	B, D, ES						MADE GROUND (brown slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and coal)				0.50							
						102.90	0.90												
	1.00	B, D, ES						MADE GROUND (medium dense dark grey locally black very clayey fine to coarse sand and fine to coarse angular and subangular gravel of mudstone and occasional coal with cobbles. Cobbles are angular and subangular of mudstone)											
	1.20	D	1.20	SPT=10 2.2 /2.3.2.3	1.20														
	1.50	D																	
	2.12	D																	
	2.20	B																	
	2.50	D	2.70	SPT=21 5.6 /6.6.5.4	2.70														
	3.20	B																	
	3.50	D																	
	3.70	B				100.20	3.60	MADE GROUND (loose grey very sandy clayey predominantly coarse angular to subrounded gravel of sandstone, mudstone and coal with cobbles. Sand is fine to coarse. Cobbles are angular and subangular of sandstone and occasional mudstone)											
	4.20	D	4.20	SPT=6 2.3 /2.1.1.2	4.20														
	4.50	D				99.30	4.50	MADE GROUND (firm locally soft grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone, mudstone and coal. Cobbles are angular to subrounded of sandstone and mudstone)											
	4.70	B																	
	5.50	D				98.10	5.70												
	5.70	D	5.70	SPT=8 1.2 /1.2.2.3	5.70			# NO RECOVERY											
	6.20	B				97.60	6.20												
	6.50	D						MADE GROUND (firm locally soft grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone, mudstone and coal. Cobbles are angular to subrounded of sandstone and mudstone)											
	7.20	B, D	7.20	SPT=14 3.4 /4.4.3.3	7.20			from 7.20m to 8.20m: locally medium dense sandy clayey gravel											
	7.50	D																	
	8.20	B						from 8.20m: becoming stiff											
	8.50	D																	
	8.70	D	8.70	SPT=24 4.4 /5.6.6.7	8.70														
	9.20	B																	
	9.50	D																	
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. Estimates of strength based on visual assessment of sonic bags only.										Hole Diam.	To Depth								
										120 101	25.20 27.70	25.20							
Driller SMcL	Originator RJB	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B21 Sheet 1 of 3 Scale 1:50			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)					
Chk & App FMR	Status FINAL										100	Water	1.20	25.20					

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667																
				Client: Scottish Power Energy Networks										BH18																
				Engineer: Scottish Power Energy Networks										Inspection Pit to Sonic Boring to Sonic Coring to				1.20m 22.20m 27.70m												
Location: E 320121.2 N 697016.4				Orientation: Vertical				Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush																						
Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata				Legend	Water Depth	Backfill														
	Depth	Type	Depth	Result												Symbol	Depth													
16/08	20.70	B, D, D	20.70	SPT>50 6.6 / 7.12.14.17 (232)	20.70				from 20.80m to 21.10m: soft																					
	21.70	B, D							82.20	21.60	MADE GROUND (grey and black slightly silty fine to coarse angular and subangular gravel of mudstone)																			
	22.20	B, D									from 22.20m to 23.70m: attempted to core thinking rockhead, however boulder with poor recovery																			
	23.50	D									80.30	23.50					Very weak black vitreous COAL													
	23.70	B, D															80.10	23.70	Extremely weak dark grey MUDSTONE recovered as gravelly slightly silty clay locally slightly silty fine to coarse angular gravel.											
	24.70	B, D																	78.60	25.20	Very weak and weak grey, becoming darker towards base thinly laminated MUDSTONE. Distinctly weathered becoming partially weathered with depth, evident as loss of strength and structure in layers. Fractures are very closely spaced subhorizontal undulating and rough									
																					77.80	26.00	Very weak becoming weak brownish grey SILTSTONE/FIRECLAY with evidence of plant remains. Destructured recovered as clay. Two fracture sets. No. 1: closely spaced subhorizontal stepped and rough. No. 2: closely spaced 45° stepped and rough							
																							77.45	26.35	below 26.65m: becoming weak and distinctly weathered evident as significant loss of strength					
																									76.95	26.85	Moderately weak locally weak grey sandy SILTSTONE. Partially weathered evident as loss of strength at fractures. Two fracture sets No 1: closely spaced subhorizontal to 10° undulating and smooth. No. 2: medium spaced 45° stepped and rough			
																											76.40	27.40	from 27.30m to 27.40m: non intact	
		76.10	27.70	Moderately weak grey fine and medium grained SANDSTONE. Partially weathered evident as orange staining becoming less with depth. Fractures are close and medium spaced 10° planar and rough																										
				END OF BOREHOLE																										
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. Estimates of strength based on visual assessment of sonic bags only.																Hole Diam.	To Depth													
																120	Boring	Casing												
																101	25.20	25.20												
Driller SMcL	Originator RJB	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B21 Sheet 3 of 3 Scale 1:50														
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)																
											100	Water	1.20	25.20																
Chk & App FMR	Status FINAL																													

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667.GPJ+44 (0)1698 710999 Printed: 06/11/2024 12:24:10 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667			
				Client: Scottish Power Energy Networks										Borehole No. BH19			
				Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 3.50m			
Location: E 319652.5 N 697111.3				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000									
Progress 21/8 2024	Samples		Tests		Casing Depth	Level (mOD) 98.99	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result							Symbol	Depth					
21/08	0.50	B, D, ES	1.20	SPT=13 2.2 / 3.3 4.3	1.20	98.49	0.50	Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse									
	1.00	ES				97.74	1.25	Mottled greyish brown and orange slightly gravelly sandy CLAY of intermediate plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular and subrounded of mudstone, sandstone and basalt									
	1.20	D															
	1.70	B, D															
	2.00	ES	2.20	SPT=33 15.9 / 8.7 8.10	2.20			Brown very clayey fine to coarse SAND and fine to coarse subangular and subrounded GRAVEL of various lithologies including sandstone, mudstone and coal									
	2.20	D															
	2.70	B, D															
	3.00	ES															
	3.20	D	3.20	95.74	3.25	from 2.20m: cobbles. Significantly weathered subangular and subrounded cobbles of sandstone, shale and basalt											
	3.50	D	3.50	95.49	3.50	Dark grey BASALT. Distinctly weathered recovered as fine and medium angular gravel											
END OF BOREHOLE																	
Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02.										Hole Diam.	To Depth Boring Casing						
										200	3.50	3.20					
Driller DP	Originator RJB	Ground-water Struck Rose To Time(min) Cut Off				Water Added From To		Chiselling From To hh:mm			Flush Returns Type From (m) To (m)			RAEBURN	Fig No: B22 Sheet 1 of 1 Scale 1:50		
Chk & App FMR	Status FINAL							3.25	3.50	1:00							

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION										Contract No: 26667					
				Client: Scottish Power Energy Networks										BH20					
				Engineer: Scottish Power Energy Networks										Inspection Pit to 1.20m Cable Percussion to 3.15m Rotary Core Drilling to 6.20m					
Location: E 319836.5 N 696951.1				Orientation: Vertical				Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste ML MAX											
Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill						
	Depth	Type	Depth	Result									Symbol	Depth					
14/8 2024	0.50	B, D, ES	1.20	SPT=15	2.3 / 3.4 4.4			1.20	108.67	0.40	Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse		Dry		0.40				
1.00	ES	108.27								Mottled orange brown and grey slightly gravelly sandy CLAY of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of sandstone									
1.20	D	107.37							1.30	Medium dense brown and pinkish brown very silty gravelly predominantly medium and coarse SAND with frequent pockets of mottled grey and red clay. Gravel is fine and medium angular and subangular of sandstone									
1.70	B, D	106.27							2.40	Weathered pinkish brown fine to coarse SANDSTONE recovered as fine to coarse angular and subangular gravel									
2.00	ES	2.20	SPT=22	4.4 / 6.7 4.5			2.20	3.00	105.47	3.20	Medium weak and moderately strong thinly bedded and thickly laminated off white with pink and yellow staining in thick laminated layers fine to coarse grained SANDSTONE. Sandstone grades in beds from coarse grained to fine and medium grained. Coarse grained is poorly cemented. Distinctly weathered evident as penetrative staining and loss of strength, destructured to sand in places. Two fracture sets. No. 1: medium spaced 15° to 45° undulating and planar and rough with bedding. No. 2: widely spaced subvertical undulating and rough from 3.75m to 3.90m: non intact from 4.02m to 4.08m: destructured to sand at fracture at 4.30m: off white sand filling fracture, up to 15mm thick from 4.70m to 4.81m: no recovery from 5.43m to 5.50m: pale orange sand filled fracture, up to 6mm thick at 5.80m: off white sand filled fracture, up to 8mm thick from 5.98m to 6.02m: off white and pale orange sand filled fracture, up to 40mm thick		Dry	6.20					
2.20	D																		
2.70	B, D																		
3.15	D																		
14/08	3.15	D	3.15	TCR	SCR	ROD	FI	3.00	105.47	3.20									
			3.20	100	100	80	8												
				3.75	100	50	0	NI											
				3.90	100	100	92	8											
				4.02	100	0	0	NI											
				4.08	100	100	66	8											
				4.70	0	0	0	NR											
				4.87	100	92	64												
								6											
15/08								3.20	102.47	6.20	END OF BOREHOLE		Dry						
Remarks:												Hole Diam.	To Depth						
# Description based on Driller's log.												200	Boring	Casing					
An inspection pit was excavated by hand to a depth of 1.20m to clear services.												125	3.15	3.20					
Ground-water was not observed to enter the borehole.													3.20						
The Penetration Tests were carried out using Trip Hammer AB02.																			
Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No:			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)					
Chk & App FMR	Status FINAL							3.00	3.15	1:00	100	AirWM	3.15	6.20	B23				
															Sheet 1 of 1				
															Scale 1:50				

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP04							
				Engineer: Scottish Power Energy Networks				Trial Pit to 2.90m							
Location: E 319650.5 N 697596.8				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 3.30m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
18/7 2024	0.50	B, D, ES		83.13			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
				82.73	0.40		MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
				82.13	1.00		MADE GROUND (dark grey locally black very gravelly very clayey fine to coarse sand with frequent pockets of stiff friable clay and high cobble and boulder content. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular and subrounded of sandstone (up to 900mm))								
	1.50														
	2.00	ES													
	2.50	B, D							2.50						
18/7				80.23	2.90		...at 2.90m: NO PROGRESS - ground-water ingress END OF TRIAL PIT								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 1.70m. - Fast inflow. Oily film on water. Trial pit terminated at a depth of 2.90m due to ground-water ingress. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B24 Sheet 1 of 1 Scale 1:50			
				Struck	Rose To	Time(mins)	Cut Off								
Chk & App FMR		Status FINAL		1.70											

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667				
				Client: Scottish Power Energy Networks					Trial Pit No. TP05				
				Engineer: Scottish Power Energy Networks					Trial Pit to 2.40m				
Location: E 319591.7 N 697561.4				Orientation: Vertical			Equipment: 14T Tracked Excavator			Width - 0.60m Length - 3.20m			
Progress 18/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
18/7	0.20	ES			82.94	0.30	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)		2.10				
	0.50	B, D			82.64		MADE GROUND (stiff dark brown reworked slightly gravelly sandy silt of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)						
	0.80	ES											
	1.00	B, D			81.84	1.10							
	2.00	B, D					MADE GROUND (dark grey locally black sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with frequent pockets of stiff friable clay and high cobble and boulder content. Sand is fine to coarse. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular and subrounded of sandstone (up to 1000mm)						
	2.20	ES											
					80.54	2.40	at 2.40m: NO PROGRESS - ground-water ingress END OF TRIAL PIT						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit collapsed throughout excavation. Ground-water was encountered at a depth of 2.10m 0- fast inflow. Oily film on water. Trial pit terminated at a depth of 2.40m due to ground-water ingress. Estimate of strength is based on field examination only.													
Driller		Originator JDUD		Ground-water								Fig No: B25 Sheet 1 of 1 Scale 1:50	
Struck		Rose To		Time(mins)		Cut Off							
Chk & App FMR		Status FINAL											

Style: TRIALPIT File: P:\GINTWP\PROJECTS\26667\GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:50:38 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP06			
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.10m			
Location: E 319825.4 N 697596.8				Orientation: Vertical				Equipment: 14T Tracked Excavator			
								Width - 0.60m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
18/7 2024	0.30	ES			83.76	0.30	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D					Firm mottled grey and orange slightly gravelly sandy CLAY of intermediate plasticity with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies including sandstone, mudstone and siltstone. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and siltstone. Boulders are subangular and subrounded of sandstone (up to 550mm)				
	0.70	ES, ET									
	1.20	ES									
	1.50	B, D									
					81.66	2.10	from 1.90m to 2.10m: cobble band on SE short face				
	2.50	B, D					Stiff friable brown slightly gravelly sandy CLAY of low plasticity with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of various lithologies including sandstone, mudstone and siltstone				
18/7	3.00	B, D			80.66	3.10	-----END OF TRIAL PIT-----		Dry		
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit spalled throughout excavation. Ground-water was encountered at a depth of 1.90m - Seepage. Trial pit terminated at a depth of 3.10m due to hard digging. Estimate of strength is based on field examination only.											
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B26 Sheet 1 of 1 Scale 1:50			
				Struck 1.90	Rose To	Time(mins)	Cut Off				
Chk & App FMR		Status FINAL									

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP07							
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.50m							
Location: E 319542.8 N 697477.6				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 3.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
17/7 2024	0.20	ES			83.21	0.30	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.50	B, D, ES				0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	1.00	B, D, ES				1.10									
	2.00	B, D					Grey very sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with medium cobble and boulder content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subrounded of sandstone (up to 500mm))								
	3.00	B, D													
17/7					79.71	3.50	... at 3.50m hard digging			Dry					
							END OF TRIAL PIT								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.50m due to hard digging. Estimate of strength is based on field examination only. At 0.80m a field drain was uncovered. Trial pit extended to avoid damage.															
Driller		Originator JDUD		Ground-water						Fig No: B27 Sheet 1 of 1 Scale 1:50					
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667			
				Client: Scottish Power Energy Networks Engineer: Scottish Power Energy Networks						Trial Pit No. TP09			
										Trial Pit to 4.00m			
Location: E 319766.5 N 697518.4				Orientation: Vertical			Equipment: 14T Tracked Excavator			Width - 0.70m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
18/7 2024	0.10	ES			85.60		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
	0.50	B, D, ES			85.20	0.40	MADE GROUND (stiff dark brown reworked slightly gravelly slightly sandy clay of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)						
	1.00	ES			84.50	1.10							
	1.50	B, D					Grey very sandy very clayey fine to coarse angular to subrounded GRAVEL of various lithologies including sandstone, mudstone and coal with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are angular to subrounded of sandstone and mudstone (up to 500mm)						
	2.50	B, D											
	3.50	B, D			82.20	3.40	Dark grey sandy silty fine to coarse angular and subangular GRAVEL of predominantly mudstone and sandstone. Sand is fine to coarse						
18/7					81.60	4.00	END OF TRIAL PIT						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 3.40m - seepage. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth Estimate of strength is based on field examination only. At 0.80m a field drain was encountered. Trial pit moved forward to avoid damage.													
Driller		Originator JDUD		Ground-water				RAEBURN				Fig No: B29 Sheet 1 of 1 Scale 1:50	
Struck 3.40		Rose To		Time(mins)		Cut Off							
Chk & App FMR		Status FINAL											

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667		
				Client: Scottish Power Energy Networks					Trial Pit No. TP10		
				Engineer: Scottish Power Energy Networks					Trial Pit to 2.70m		
Location: E 319777.2 N 697448.8				Orientation: Vertical		Equipment: 14T Tracked Excavator			Width - 0.70m Length - 3.00m		
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
18/7 2024	0.30	ES			87.05		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D			86.65	0.40	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)				
	0.80	ES									
	1.50	B, D, ES			85.95	1.10	MADE GROUND (grey and dark grey very sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with high cobble content and medium boulder content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, mudstone and coal. Boulders are subangular to rounded of sandstone (up to 1000mm))				
	2.50	B, D								▼ 2.10	
18/7					84.35	2.70	... at 2.70m: NO PROGRESS - ground-water ingress END OF TRIAL PIT				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit collapsed throughout excavation. Ground-water was encountered at a depth of 2.10m - Fast inflow. Oily film on water. Trial pit terminated at a depth of 2.70m due to fast water ingress. Estimate of strength is based on field examination only.											
Driller	Originator JDUD	Ground-water							RAEBURN	Fig No: B30 Sheet 1 of 1 Scale 1:50	
Chk & App FMR	Status FINAL	Struck	Rose To	Time(mins)	Cut Off						
		2.10									

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP11			
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.50m			
Location: E 319360.4 N 697395.2				Orientation: Vertical				Equipment: 15T Tracked Excavator			
								Width - 0.80m Length - 4.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
5/8 2024	0.20	ES			82.68		Soft dark brown fibrous PEAT with abundant rootlets				
	0.50	B, D, ES, ET		HV at 0.50m I=20 R=8kPa HV at 0.50m I=23 R=9kPa HV at 0.50m I=25 R=11kPa	82.38	0.30	Soft mottled grey and orange slightly sandy CLAY of intermediate plasticity with abundant relict plant material. Sand is fine to coarse. Organic odour				
	1.50	B, D			81.28	1.40	Soft grey slightly gravelly slightly sandy CLAY of low plasticity with low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including mudstone, basalt and limestone. Cobbles are subangular and subrounded of various lithologies including limestone, basalt and mudstone				
	2.50	B, D			80.38	2.30	Stiff friable grey slightly gravelly sandy CLAY of low plasticity with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including mudstone, basalt and limestone. Cobbles are subangular and subrounded of various lithologies including limestone, basalt and mudstone. Boulders are subangular and subrounded of basalt and mudstone (up to 650mm)				
	5/8 3.50	B, D			79.18	3.50	 at 3.50m: NO PROGRESS - hard digging END OF TRIAL PIT		Dry		
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.50m due to hard digging. Estimates of strength based on field examination only. TR test at 0.60m: 1.672W/mK											
Driller		Originator JDUD		Ground-water				RAEBURN		Fig No: B31 Sheet 1 of 1 Scale 1:50	
Struck		Rose To		Time(mins)		Cut Off					
Chk & App FMR		Status FINAL									

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667					
				Client: Scottish Power Energy Networks						Trial Pit No. TP12					
				Engineer: Scottish Power Energy Networks						Trial Pit to 3.50m					
Location: E 319664.1 N 697421.4				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 3.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
17/7 2024	0.20	ES			86.60	0.30	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.50	B, D				0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	0.70	ES													
	1.00	B, D			85.50	1.10									
	2.00	B, D					Grey very sandy very clayey fine to coarse angular to subrounded GRAVEL of various lithologies including sandstone, coal and mudstone with medium cobble and boulder content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subrounded of sandstone (up to 600mm)								
17/7	3.00	B, D													
					83.10	3.50	...at 3.50m: NO PROGRESS - hard digging END OF TRIAL PIT				Dry				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.50m due to hard digging. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water				RAEBURN				Fig No: B32 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP13			
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.20m			
Location: E 319998.2 N 697510.2				Orientation: Vertical				Equipment: 14T Tracked Excavator			
								Width - 0.60m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
19/7 2024	0.30	ES			85.74		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D			85.44	0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)				
	0.60	ES			85.14	0.60	MADE GROUND (stiff friable grey and light grey slightly gravelly sandy clay of low plasticity with frequent pockets of dark grey gravelly sand and pockets of dense rootlets. Sand is fine to coarse. Gravel is fine to coarse angular and subangular of various lithologies including mudstone, sandstone and coal)				
	1.00	B, D, ES			84.44	1.30	Stiff brown slightly gravelly sandy CLAY of low plasticity with abundant relic plant material and low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of predominantly sandstone and mudstone. Slight organic odour				
	2.00	B, D			82.94	2.80	Weak dark brown and grey MUDSTONE. Distinctly weathered recovered as fine to coarse angular and subangular gravel		2.80		
	3.00	B, D			82.54	3.20	END OF TRIAL PIT				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 2.80m - Slow flow. Trial pit terminated at a depth of 3.50m due to hard strata. Estimate of strength is based on field examination only.											
Driller	Originator JDUD	Ground-water				RAEBURN					
		Struck	Rose To	Time(mins)	Cut Off						
Chk & App FMR	Status FINAL					Fig No: B33 Sheet 1 of 1 Scale 1:50					

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP13A							
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.10m							
Location: E 320009.2 N 697489.8				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 5.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
19/7 2024					86.06		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					85.76	0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
					85.06	1.00	MADE GROUND (stiff friable grey slightly gravelly sandy clay with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and rare black plastic. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 600mm)								
					83.96	2.10	Stiff mottled greyish brown slightly gravelly sandy CLAY with low cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of sandstone and mudstone. Boulders are subangular and subrounded of sandstone (up to 450mm)								
					83.36	2.70	Weak weathered light brown fine to coarse SANDSTONE recovered as fine to coarse angular and subangular gravel								
					82.96	3.10	END OF TRIAL PIT								
10/7									3.00						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 2.70m - Slow flow. Trial pit terminated at a depth of 3.10m due to hard strata. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B34 Sheet 1 of 1 Scale 1:50			
Struck 2.70		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667				
				Client: Scottish Power Energy Networks					Trial Pit No. TP13B				
				Engineer: Scottish Power Energy Networks					Trial Pit to 4.00m				
Location: E 320011.1 N 697484.8				Orientation: Vertical			Equipment: 14T Tracked Excavator			Width - 0.60m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
19/7 2024					86.16		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
					85.86	0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)						
					85.16	1.00	MADE GROUND (stiff friable grey slightly gravelly sandy clay with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and rare black plastic. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 700mm))						
					83.56	2.60							
					82.96	3.20	Stiff mottled greyish brown slightly gravelly sandy CLAY with low cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of sandstone and mudstone. Boulders are subangular and subrounded of sandstone (up to 450mm)						
							Moderately weak and medium strong dark grey weathered BASALT recovered as fine to coarse angular and subangular gravel						
19/7					82.16	4.00	END OF TRIAL PIT		3.95				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 4.00m - Slow flow. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth. Estimate of strength is based on field examination only. At 1.50m a field drain was encountered. The trial trench was moved to avoid damage.													
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B35 Sheet 1 of 1 Scale 1:50					
				Struck 4.00	Rose To	Time(mins)	Cut Off						
Chk & App FMR		Status FINAL											

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP14							
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.20m							
Location: E 319906.1 N 697451.0				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.60m Length - 3.50m			
Progress 19/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
	0.10	ES			87.22		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.50	B, D			86.82	0.40	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	0.70	ES													
	1.50	B, D			86.12	1.10	MADE GROUND (stiff friable grey slightly gravelly sandy CLAY with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and rare black plastic. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 700mm))								
	2.50	B, D													
	3.00	B, D													
19/7					84.02	3.20	...at 3.20m: NO PROGRESS - hard digging END OF TRIAL PIT		Dry						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.20m due to hard digging. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B36 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP15			
				Engineer: Scottish Power Energy Networks				Trial Pit to 2.70m			
Location: E 319517.6 N 697317.9			Orientation: Vertical		Equipment: 14T Tracked Excavator			Width - 0.70m Length - 3.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
17/7 2024	0.30	ES		84.78			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D		84.48	0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)					
	1.00	B, D, ES		83.88	0.90	MADE GROUND (grey and dark grey very sandy very clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with medium cobble and boulder content. Sand is fine to coarse. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular and subrounded of sandstone (up to 500mm))					
	2.00	B, D									
	2.50	B, D									
17/7				82.08	2.70	...at 2.45m: NO PROGRESS - ground-water ingress END OF TRIAL PIT					
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit collapsed throughout excavation. Ground-water was encountered at a depth of 2.30m - fast inflow. Trial pit terminated at a depth of 2.70m due to fast water ingress. Estimate of strength is based on field examination only.											
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B37 Sheet 1 of 1 Scale 1:50			
				Struck 2.30	Rose To	Time(mins)	Cut Off				
Chk & App FMR		Status FINAL									

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP16							
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.20m							
Location: E 319459.9 N 697281.2				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 4.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
5/8 2024	0.50	B, D, ES		84.95	0.40	Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse									
	1.00	ES, ET				Firm mottled orange and brown slightly gravelly slightly sandy CLAY of intermediate plasticity with low cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, coal and mudstone. Cobbles are subangular and subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone (up to 450mm)									
	1.50	B, D													
	2.50	B, D		83.25	1.70	Firm grey slightly gravelly sandy CLAY of low plasticity with abundant relict plant material, medium cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including mudstone, basalt and limestone. Cobbles are subangular and subrounded of various lithologies including limestone, basalt and mudstone. Boulders are subangular and subrounded of mudstone and basalt (up to 800mm). Slight organic odour									
	3.50	B, D													
5/8				81.25	3.70	Dark grey MUDSTONE recovered as fine to coarse angular gravel									
				80.75	4.20	END OF TRIAL PIT			4.00						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 3.70m - fast inflow. Trial pit terminated at a depth of 4.20m due to reaching scheduled depth Estimate of strength is based on field examination only. TR test at 0.60m: 1.309W/mK															
Driller		Originator JDUD		Ground-water						Fig No: B38 Sheet 1 of 1 Scale 1:50					
				Struck 3.70	Rose To	Time(mins)	Cut Off								
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP17A			
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.00m			
Location: E 320094.7 N 697452.4				Orientation: Vertical				Equipment: 15T Tracked Excavator			
Width - 0.80m Length - 9.00m											
Progress 1/8 2024	Sample Depth	Samples and Tests			Level (m) 86.76	Depth	Description of Strata	Legend	Water Depth 2.80	Backfill	
		Type	Result							Symbol	Depth
					86.36	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
							MADE GROUND (dark grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with high cobble and boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 1200mm))				
					84.26	2.50	from 2.10m to 2.50m: orange brown oxidation staining				
					83.96	2.80	MADE GROUND (black slightly gravelly fine to coarse sand. Gravel is angular and subangular of predominantly mudstone and coal)				
1/8					83.76	3.00	MADE GROUND (firm brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, basalt and mudstone)				
							END OF TRIAL PIT				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 2.50m - moderate inflow. Trial pit terminated at a depth of 3.00m due to reaching scheduled depth. Unable to find boundary of quarry. Part of trenching excersise. Estimate of strength is based on field examination only.											
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B40 Sheet 1 of 1 Scale 1:50			
Struck 2.50		Rose To		Time(mins)		Cut Off					
Chk & App FMR		Status FINAL									

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP17B							
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.30m							
Location: E 320076.7 N 697470.4				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 4.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
1/8 2024					86.30		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					85.90	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
					85.40	0.90	MADE GROUND (dark grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with medium cobble content and low boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 450mm)								
					84.70	1.60	MADE GROUND (firm mottled brown orange and grey slightly gravelly sandy clay with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal. Boulders are subrounded of sandstone (up to 600mm). Evidence of material being reworked)								
					82.70	3.60	MADE GROUND (black gravelly fine to coarse sand. Gravel is fine to coarse angular and subangular of coal)								
1/8					82.00	4.30	END OF TRIAL PIT								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 2.10m - seepage. Trial pit terminated at a depth of 4.30m due to reaching scheduled depth. Unable to find boundary of quarry. Part of trenching excersise. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B41 Sheet 1 of 1 Scale 1:50			
Struck 2.10		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP18							
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.00m							
Location: E 319781.1 N 697343.7				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.60m Length - 3.20m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
22/7 2024	0.30	ES		88.94			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.50	B, D		88.54	0.40		MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	0.90	ES													
	1.00	B, D		87.84	1.10		MADE GROUND (grey and dark grey very sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with medium cobble content and low boulder content. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular and subrounded of sandstone (up to 450mm))								
	2.00	B, D													
	3.00	D, ES, LB					from 3.40m: gravel content increasing		3.50						
22/7	4.00	B, D		84.94	4.00	END OF TRIAL PIT									
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 3.40m - Fast inflow. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth. Estimate of strength is based on field examination only.															
Driller	Originator JDUD	Ground-water													
		Struck 3.40	Rose To	Time(mins)	Cut Off										
Chk & App FMR	Status FINAL														
RAEBURN								Fig No: B42 Sheet 1 of 1 Scale 1:50							

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP19			
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.00m			
Location: E 319892.9 N 697337.5				Orientation: Vertical				Equipment: 13T Tracked Excavator			
								Width - 0.70m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
24/7 2024	0.50	B, D		89.42	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)					
89.02				MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)							
88.32				1.10		MADE GROUND (grey and dark grey very sandy clayey fine to coarse angular and subangular gravel of various lithologies including sandstone, mudstone and coal with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular and subrounded of sandstone (up to 500mm))					
	1.50	B, D, ES									
	2.50	D, LB									
	3.50	B, D, ES									
24/7				85.42	4.00	----- END OF TRIAL PIT -----			▼ 4.00		
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 4.00m - Slow inflow. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth. Estimate of strength is based on field examination only.											
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B43 Sheet 1 of 1 Scale 1:50			
				Struck 4.00	Rose To	Time(mins)	Cut Off				
Chk & App FMR		Status FINAL									

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP20			
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.30m			
Location: E 319660.2 N 697269.1				Orientation: Vertical				Equipment: 14T Tracked Excavator			
								Width - 0.70m Length - 4.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
22/7 2024	0.50	B, D, ES		89.68			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
				89.28	0.40	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)					
				88.58	1.10	MADE GROUND (dark grey and grey sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with frequent pockets of stiff friable clay and high cobble and medium boulder content. Sand is fine to coarse. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular and subrounded of sandstone (up to 600mm))					
				from 2.30m: orange brown staining							
22/7	4.00	B, D, ES		85.78	3.90						
				85.38	4.30	Firm mottled orange brown and grey very sandy very clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with abundant relict plant material and low cobble content content. Sand is fine to coarse. Cobbles are subangular and subrounded of sandstone and mudstone		4.20			
							END OF TRIAL PIT				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 3.80m - moderate flow. Trial pit terminated at a depth of 4.30m due to reaching scheduled depth. Estimate of strength is based on field examination only. At 0.80m a field drain was encountered. The trial pit was extended to avoid damage.											
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B44 Sheet 1 of 1 Scale 1:50			
				Struck 3.80	Rose To	Time(mins)	Cut Off				
Chk & App FMR		Status FINAL									

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667					
				Client: Scottish Power Energy Networks				Trial Pit No. TP21					
				Engineer: Scottish Power Energy Networks				Trial Pit to 1.80m					
Location: E 319504.8 N 697164.0				Orientation: Vertical		Equipment: 15T Tracked Excavator				Width - 0.80m Length - 3.50m			
Progress 1/8 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
	0.50	B, D, ES, ET			93.29	0.30	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
	1.00	B, D, ES			92.99	0.90	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)						
	1.50	B, D			92.39		Dark grey LIMESTONE. Distinctly weathered recovered as fine to coarse angular gravel						
1/8					91.49	1.80	at 1.80m: NO PROGRESS - hard digging END OF TRIAL PIT						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 1.80m - slow flow. Trial pit terminated at a depth of 1.80m due to hard digging. Estimate of strength is based on field examination only.													
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B45 Sheet 1 of 1 Scale 1:50					
				Struck 1.80	Rose To	Time(mins)	Cut Off						
Chk & App FMR		Status FINAL											

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP22			
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.00m			
Location: E 320091.7 N 697363.6				Orientation: Vertical				Equipment: 13T Tracked Excavator			
								Width - 0.70m Length - 4.50m			
Progress	Sample Depth	Samples and Tests		Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result						Symbol	Depth	
24/7 2024	0.50	B, D		88.20	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)					
	1.00	ES				MADE GROUND (stiff locally firm friable dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and rare clay pipe)					
	1.50	B, D		87.80	1.10						
	2.00	ES				MADE GROUND (friable grey very sandy very clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal, mudstone and sandstone with medium cobble content and low boulder content. Locally becoming slightly gravelly sandy clay. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 450mm)					
	2.50	B, D		87.10							
	3.00	ES				Mottled orange brown and grey very sandy very clayey fine to coarse subangular to rounded GRAVEL of various lithologies including sandstone, mudstone and coal with medium cobble and boulder content. Sand is fine to coarse. Cobbles are subangular to rounded of various lithologies including sandstone, mudstone and siltstone. Boulders are subangular of sandstone (up to 450mm)					
	3.50	B, D		85.80	2.40						
	3.90	B, D									
24/7				84.40	3.80						
				84.20	4.00	Greenish grey clayey fine to coarse SAND and fine to coarse angular to subrounded GRAVEL of various lithologies including sandstone, mudstone and rare coal with medium cobble content and low boulder content. Cobbles are subangular and subrounded of sandstone and mudstone. Boulders are subangular and subrounded of sandstone (up to 800mm)					
						END OF TRIAL PIT					
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was encountered at a depth of 4.00m - slight seepage. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth. Estimate of strength is based on field examination only. TR test at 0.90m: 2.076W/mK											
Driller	Originator JDUD	Ground-water				RAEBURN Fig No: B46 Sheet 1 of 1 Scale 1:50					
		Struck 4.00	Rose To	Time(mins)	Cut Off						
Chk & App FMR	Status FINAL										

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667			
				Client: Scottish Power Energy Networks					Trial Pit No. TP22A			
				Engineer: Scottish Power Energy Networks					Trial Pit to 3.00m			
Location: E 320099.3 N 697361.2				Orientation: Vertical		Equipment: 15T Tracked Excavator				Width - 0.80m Length - 15.00m		
Progress 31/7 2024	Sample Depth	Samples and Tests			Level (m) 88.28	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result							Symbol	Depth	
31/7					87.88	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)					
							MADE GROUND (dark grey gravelly very clayey fine to coarse sand with medium cobble and boulder content. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of various lithologies including sandstone, mudstone and siltstone. Boulders are subrounded of sandstone (up to 600mm))					
					85.98	2.30	MADE GROUND (firm mottled orange brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and coal)					
					85.28	3.00	----- END OF TRIAL PIT -----			Dry		
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.00m due to reaching scheduled depth. Part of trench investigation for quarry boundary. Estimates of strength based on field examination only. East of trial pit boundary depths 0m to 0.40m: MADE GROUND (topsoil) 0.40m to 1.30m: MADE GROUND (gravelly very clayey sand) 1.30m to 1.50m: MADE GROUND (slightly gravelly sandy clay) West of trial pit boundary depths 0m to 0.40m: MADE GROUND (topsoil) 0.40m to 2.30m: MADE GROUND (gravelly very clayey sand) 2.3m to 3.00m: MADE GROUND (slightly gravelly sandy clay)												
Driller		Originator JDUD		Ground-water						Fig No: B47 Sheet 1 of 1 Scale 1:50		
				Struck	Rose To	Time(mins)	Cut Off					
Chk & App FMR		Status FINAL										

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667			
				Client: Scottish Power Energy Networks					Trial Pit No. TP23			
				Engineer: Scottish Power Energy Networks					Trial Pit to 4.20m			
Location: E 320013.1 N 697270.8			Orientation: Vertical			Equipment: 13T Tracked Excavator			Width - 0.70m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result							Symbol	Depth	
24/7 2024	0.20	ES		91.51	0.20	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
	0.50	B, D			MADE GROUND (stiff locally firm friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)							
	1.00	B, D										
	2.00	B, D, ES		90.31	1.20	MADE GROUND (stiff friable grey slightly gravelly sandy clay of intermediate plasticity with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and sandstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 500mm))						
	3.00	B, D										
	3.80	ES		88.11	3.40	MADE GROUND (light brown very gravelly silty fine to coarse sand with pockets of clay. Gravel is fine and medium subangular and subrounded of sandstone and broken clay pipe)						
24/7	4.00	B, D		87.31	4.20	END OF TRIAL PIT			Dry			
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 4.20m due to reaching scheduled depth. Estimate of strength is based on field examination only. Made ground variable in depth 0.20-1.20m. NW side of pit shallower in depth (0.60m).												
Driller		Originator JDUD		Ground-water						Fig No: B48 Sheet 1 of 1 Scale 1:50		
				Struck	Rose To	Time(mins)	Cut Off					
Chk & App FMR		Status FINAL										

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP23A							
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.20m							
Location: E 320024.4 N 697263.2				Orientation: Vertical				Equipment: 13T Tracked Excavator				Width - 0.70m Length - 4.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
24/7 2024					91.75	0.20	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					91.55		MADE GROUND (stiff locally firm friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
					90.65		MADE GROUND (stiff friable grey slightly gravelly sandy clay with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and sandstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 500mm))								
					88.65		MADE GROUND (light brown gravelly silty fine to coarse sand. Gravel is fine to coarse subangular and subrounded of sandstone and broken clay pipe)								
24/7					87.55	4.20	END OF TRIAL PIT		Dry						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 4.20m due to reaching scheduled depth. Estimate of strength is based on field examination only. Part of trench investigation for quarry boundary. Unable to identify base of quarry.															
Driller		Originator JDUD		Ground-water								Fig No: B49 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP24							
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.10m							
Location: E 319833.4 N 697201.3				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
22/7 2024	0.20	ES		93.75			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse).								
	0.50	B, D		93.45	0.30	MADE GROUND (stiff dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone).									
	0.80	ES													
	1.00	B, D		92.65	1.10	MADE GROUND (grey and dark grey very sandy clayey fine to coarse angular and subangular gravel of various lithologies including sandstone, coal and mudstone with high cobble content and medium boulder content. Sand is fine to coarse. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular of sandstone (up to 1200mm).									
	1.50	ES													
	2.00	D, LB		91.25	2.50	Firm mottled orange brown and grey slightly gravelly sandy CLAY of intermediate plasticity with low cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of sandstone and mudstone. Boulders are subangular and subrounded of sandstone (up to 900mm).						Dry			
	2.80	ES													
22/7	3.00	B, D		90.65	3.10	at 3.10m: NO PROGRESS - hard digging END OF TRIAL PIT									
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.10m due to hard digging. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water				RAEBURN				Fig No: B51 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667									
				Client: Scottish Power Energy Networks				Trial Pit No. TP25									
				Engineer: Scottish Power Energy Networks				Trial Pit to 1.60m									
Location: E 319693.6 N 697164.7				Orientation: Vertical				Equipment: 13T Tracked Excavator				Width - 0.70m Length - 3.50m					
Progress 23/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill							
		Type	Result							Symbol	Depth						
		0.20	ES								94.77	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
		0.50	B, D								94.37		MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and rare clay pipe)				
		0.80	ES														
23/7	1.00	B, D			93.67	1.10											
		1.50	B, D		93.17	1.60	Weak dark grey BASALT recovered as fine to coarse angular gravel and cobbles . Highly weathered with full penetrative reddish brown oxidation staining and significant loss of strength										
							END OF TRIAL PIT										
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 1.60m due to obstruction, possible rock or boulder. Estimate of strength is based on field examination only.																	
Driller		Originator JDUD		Ground-water								Fig No: B52 Sheet 1 of 1 Scale 1:50					
Struck		Rose To		Time(mins)		Cut Off											
Chk & App FMR		Status FINAL															

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667			
				Client: Scottish Power Energy Networks					Trial Pit No. TP26			
				Engineer: Scottish Power Energy Networks					Trial Pit to 3.10m			
Location: E 319604.9 N 697092.6				Orientation: Vertical		Equipment: 13T Tracked Excavator				Width - 0.70m Length - 3.20m		
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result							Symbol	Depth	
23/7 2024	0.30	ES			100.24	0.40	Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse					
	0.50	B, D			99.84		Stiff friable mottled greyish brown and orange slightly gravelly sandy CLAY of low plasticity with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular and subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone (up to 500mm)					
	1.00	ES					from 1.40m to 1.90m: significant orange brown oxidation staining					
	1.50	B, D										
	2.50	B, D										
	3.00	B, D			97.34	2.90						
23/7					97.14	3.10	Weak and moderately weak dark grey MUDSTONE recovered as fine to coarse angular and subangular gravel and cobbles		Dry			
							END OF TRIAL PIT					
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.10m due to obstruction, possible rock or boulder. Estimate of strength is based on field examination only.												
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B53 Sheet 1 of 1 Scale 1:50				
Struck		Rose To		Time(mins)		Cut Off						
Chk & App FMR		Status FINAL										

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667					
				Client: Scottish Power Energy Networks						Trial Pit No. TP27					
				Engineer: Scottish Power Energy Networks						Trial Pit to 4.00m					
Location: E 320272.3 N 697301.3				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 4.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
30/7 2024					89.42		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.50	B, D			89.02	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone, rare glass and clay pipe)								
	1.00	B, D, ES			88.32	1.10	MADE GROUND (firm locally stiff mottled orange brown and grey slightly gravelly sandy clay of low plasticity with medium cobble content and low boulder content. Locally becoming very gravelly very clayey sand. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular to rounded of various lithologies including sandstone, mudstone and basalt. Boulders are subangular of sandstone (up to 450mm))								
	2.00	B, D, ES			87.12	2.30	MADE GROUND (dark grey very sandy clayey fine to coarse angular and subangular gravel of various lithologies including sandstone, mudstone and coal with medium cobble and boulder content. Sand is fine to coarse. Cobbles are angular and subangular of various lithologies including sandstone, mudstone and coal. Boulders are subangular of sandstone (up to 450mm))								
	3.00	B, D					at 4.00m: OBSTRUCTION - hard strata								
30/7	4.00	B, D			85.42	4.00	END OF TRIAL PIT		Dry						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 4.00m due to hard strata. Estimates of strength based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B54 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP28							
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.50m							
Location: E 320100.0 N 697262.3				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 10.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
26/7 2024	0.50	B, D, ES		91.53	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)									
				91.13		MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal)									
				90.43		MADE GROUND (stiff friable dark grey very clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal, mudstone and sandstone with medium cobble content and low boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 450mm))									
	1.50	B, D		89.73	MADE GROUND (dark grey very sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with medium cobble and boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 450mm))										
				2.00	ES							88.33	Dark grey BASALT, distinctly weathered recovered as fine to coarse angular and subangular gravel and cobbles. Fully oxidised		
												88.03			
26/8	3.40	B, D			3.50	END OF TRIAL PIT		Dry							
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit collapsed throughout excavation. Pit became unstable at 1.80m. Ground-water was not encountered. Trial pit terminated at a depth of 3.50m due to obstruction, possible rock or boulder. Material not suitable for hand vane tests. Full sidewall collapsed again before photograph. Estimates of strength based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B55 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION					Contract No: 26667			
				Client: Scottish Power Energy Networks					Trial Pit No. TP28A			
				Engineer: Scottish Power Energy Networks					Trial Pit to 4.50m			
Location: E 320102.2 N 697257.4				Orientation: Vertical		Equipment: 15T Tracked Excavator				Width - 0.80m Length - 7.00m		
Progress 30/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result							Symbol	Depth	
30/7					91.84		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)					
					91.44	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)					
					90.74	1.10	MADE GROUND (dark grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with medium cobble and boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 450mm))					
					88.14	3.70						
					87.34	4.50	MADE GROUND (orange brown sandy fine to coarse angular to subangular gravel of various lithologies including sandstone, basalt and mudstone with medium cobble and low boulder content. Cobbles are angular to subrounded of various lithologies including sandstone, basalt and mudstone. Boulders are subangular and subrounded of predominantly sandstone and basalt (up to 600mm))					
							END OF TRIAL PIT		Dry			
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 4.50m due to reaching scheduled depth. Material not suitable for hand vane tests. Trench had to be backfilled as dug. Part of trench investigation. Estimates of strength based on field examination only.												
Driller		Originator JDUD		Ground-water						Fig No: B56 Sheet 1 of 1 Scale 1:50		
Struck		Rose To		Time(mins)		Cut Off						
Chk & App FMR		Status FINAL										

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP29							
				Engineer: Scottish Power Energy Networks				Trial Pit to 2.30m							
Location: E 320012.0 N 697134.2				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 3.50m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
26/7 2024	0.50	B, D, ES		98.01			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
				97.61	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone, rare glass and clay pipe)									
	96.91	1.10		MADE GROUND (firm mottled orange brown and grey slightly gravelly sandy clay with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular to rounded of various lithologies including sandstone, mudstone and basalt. Boulders are subangular of sandstone (up to 450mm)											
	96.21	1.80		MADE GROUND (firm mottled orange brown and grey slightly gravelly sandy clay with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular to rounded of various lithologies including sandstone, mudstone and basalt. Boulders are subangular of sandstone (up to 450mm)											
	95.71	2.30		Dark grey BASALT. Distinctly weathered recovered as fine to coarse angular and subangular gravel and cobbles											
26/7		B, D					END OF TRIAL PIT			Dry					
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 2.30m due to obstruction on possible rock or boulder. Estimate of strength is based on field examination only. Material not suitable for hand vane tests															
Driller		Originator JDUD		Ground-water								Fig No: B57 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667					
				Client: Scottish Power Energy Networks						Trial Pit No. TP29A					
				Engineer: Scottish Power Energy Networks						Trial Pit to 3.80m					
Location: E 320057.0 N 697147.9				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 4.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
26/7 2024					97.47		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					97.07	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and rare clay pipe)								
					96.57	0.90	MADE GROUND (stiff friable grey slightly gravelly sandy clay locally gravelly sand with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and sandstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 600mm))								
					93.97	3.50									
					93.67	3.80	Dark grey MUDSTONE. Distinctly weathered recovered as gravelly clayey fine to coarse sand (thought to be natural)								
26/7							END OF TRIAL PIT								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.80m due to obstruction, possible rock or boulder. Estimate of strength is based on field examination only. Part of trench investigation.															
Driller		Originator JDUD		Ground-water				RAEBURN				Fig No: B58 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP29B							
				Engineer: Scottish Power Energy Networks				Trial Pit to 2.80m							
Location: E 320025.6 N 697132.9				Orientation: Vertical				Equipment: 13T Tracked Excavator				Width - 0.80m Length - 9.00m			
Progress 26/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
					97.94		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					97.54	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
					97.14	0.80	MADE GROUND (stiff friable grey slightly gravelly sandy clay locally gravelly sand with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal, mudstone and sandstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 600mm))								
					96.54	1.40									
					96.14	1.80	Firm brown slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular and subrounded of predominantly sandstone and basalt								
							Dark grey BASALT. Distinctly weathered recovered as fine to coarse angular and subangular gravel and cobbles								
26/7					95.14	2.80	END OF TRIAL PIT		Dry						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 2.80m due to obstruction, possible rock or boulder. Estimate of strength is based on field examination only. Part of trench investigation. Field drain mid trench at 0.40m encountered and dug around.															
Driller		Originator JDUD		Ground-water								Fig No: B59 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP29C							
				Engineer: Scottish Power Energy Networks				Trial Pit to 4.00m							
Location: E 320035.1 N 697132.1				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 15.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
26/7 2024					98.18		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					97.78	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
					97.18	1.00									
							at 1.00m: at very start of trench made ground 1.00m to 1.60m. Weathered dark grey basalt beneath. Likely quarry boundary. MADE GROUND (stiff friable grey and dark grey slightly gravelly sandy clay locally gravelly sand with medium cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 850mm))								
					95.68	2.50	MADE GROUND (light blueish grey gravelly fine to coarse sand with low cobble and boulder content. Gravel is fine to coarse angular and subangular of predominantly sandstone. Cobbles and boulders are angular and subangular of sandstone. Boulders up to 600mm) from 2.50m to 2.90m: orange brown oxidation staining								
26/7					94.18	4.00	----- END OF TRIAL PIT			Dry					
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth. Estimate of strength is based on field examination only. Material not suitable for hand vane tests. At start of trench made ground extends to 1.60m with dark grey basalt. distinctly weathered recorded at base. Made ground shallower in depth along trench as move towards BH29.															
Driller		Originator JDUD		Ground-water								Fig No: B60 Sheet 1 of 1 Scale 1:50			
				Struck Rose To Time(mins) Cut Off											
Chk & App FMR		Status FINAL													

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				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP30							
				Engineer: Scottish Power Energy Networks				Trial Pit to 2.30m							
Location: E 319849.6 N 697076.5				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 3.20m			
Progress 22/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
	0.20	ES		101.86			Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse								
	0.50	B, D, ES		101.46	0.40		Firm locally stiff mottled orange brown and grey slightly gravelly sandy CLAY of low plasticity with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles are subangular and subrounded of various lithologies including sandstone, coal and mudstone								
	1.00	ES													
	1.50	D, LB													
	2.20	B, D		99.76	2.10										
22/7				99.66	2.20		SANDSTONE distinctly weathered to destructured recovered as predominantly firm mottled grey and red gravelly clay								
				99.56	2.30		Weak thinly laminated light brown and pink fine to coarse grained SANDSTONE recovered as fine to coarse angular and subangular gravel and cobbles		Dry						
							END OF TRIAL PIT								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 2.30m due to obstruction, possible rock or boulder. Estimate of strength is based on field examination only.															
Driller		Originator JDUD		Ground-water								Fig No: B61 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

Style: TRIALPIT File: P:\GINTWP\PROJECTS\26667 GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:51:42 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667					
				Client: Scottish Power Energy Networks				Trial Pit No. TP31					
				Engineer: Scottish Power Energy Networks				Trial Pit to 3.20m					
Location: E 319729.7 N 697028.6				Orientation: Vertical				Equipment: 13T Tracked Excavator					
								Width - 0.70m Length - 3.50m					
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
23/7 2024	0.20	ES			106.03		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
	0.50	B, D			105.63	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and rare clay pipe)						
	1.20	ES			104.93	1.10	Stiff friable mottled orange brown and grey slightly gravelly sandy CLAY of low plasticity with low cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal. Boulders are subangular of sandstone (up to 600mm)						
	1.50	B, D			104.03	2.00							
	2.50	B, D											
	3.00	B, D					Pinkish brown SANDSTONE. Distinctly weathered to destructured recovered as gravelly fine to coarse sand						
23/7					102.83	3.20	----- END OF TRIAL PIT -----				Dry		
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.20m due obstruction, possible rock or boulder. Estimate of strength is based on field examination only. TR test at 0.90m: 1.302W/mK													
Driller		Originator JDUD		Ground-water				RAEBURN				Fig No: B62 Sheet 1 of 1 Scale 1:50	
Struck		Rose To		Time(mins)		Cut Off							
Chk & App FMR		Status FINAL											

Style: TRIALPIT File: P:\GINTWP\PROJECTS\26667\GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:51:44 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667					
				Client: Scottish Power Energy Networks						Trial Pit No. TP32					
				Engineer: Scottish Power Energy Networks						Trial Pit to 4.00m					
Location: E 320273.4 N 697176.3				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 4.00m			
Progress 29/7 2024	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
	0.30	ES		94.30			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
	0.50	B, D		93.90	0.40		MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
	1.50	B, D		93.10	1.20		MADE GROUND (dark grey very sandy silty fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 500mm))								
	2.00	B, ES													
	2.50	B, D													
	3.50	B, D													
29/7				90.30	4.00		END OF TRIAL PIT		Dry						
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 4.00m due to reaching scheduled depth. TR test at 0.60m: 2.501W/mk															
Driller		Originator JDUD		Ground-water								Fig No: B63 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

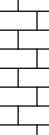
Style: TRIALPIT File: P:\GINTWPROJECTS\26667 GPJ+44 (0)\698 710999 Printed: 06/11/2024 10:51:47 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667			
				Client: Scottish Power Energy Networks Engineer: Scottish Power Energy Networks						Trial Pit No. TP34			
										Trial Pit to 3.30m			
Location: E 320312.4 N 697083.8				Orientation: Vertical		Equipment: 15T Tracked Excavator							
						Width - 0.80m Length - 4.00m							
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
29/7 2024					98.86		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
	0.50	B, D, ES		98.46	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)							
	1.00	B, D		97.76	1.10	MADE GROUND (dark grey very sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone. Boulders are subangular and subrounded of sandstone and mudstone (up to 600mm))							
	1.50	ES											
	2.00	B, D											
	3.00	B, D, ES											
29/7					95.56	3.30	 at 3.30m OBSTRUCTION; large boulder END OF TRIAL PIT		Dry				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.30m due to obstruction, large boulder. Estimates of strength based on field examination only.													
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B65 Sheet 1 of 1 Scale 1:50					
				Struck	Rose To	Time(mins)	Cut Off						
Chk & App FMR		Status FINAL											

Style: TRIALPIT File: P:\GINTWP\PROJECTS\26667\GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:51:49 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667			
				Client: Scottish Power Energy Networks Engineer: Scottish Power Energy Networks						Trial Pit No. TP35			
										Trial Pit to 2.30m			
Location: E 319996.0 N 696961.2				Orientation: Vertical		Equipment: 15T Tracked Excavator							
Width - 0.80m Length - 4.00m													
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill			
		Type	Result							Symbol	Depth		
31/7 2024	0.50	B, D, ES			107.30	0.40	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)						
	1.00	ES, ET				0.60	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)						
	1.50	B, D					Orange brown sandy fine to coarse angular and subangular gravel of LIMESTONE with medium cobble content. Cobbles are angular and subangular of limestone						
31/7	2.20	B, D			105.00	2.30	END OF TRIAL PIT		Dry				
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 2.30m due to obstruction, probable rock or boulder. Estimate of strength is based on field examination only. TR test at 0.60m: 1.062W/mK													
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B66 Sheet 1 of 1 Scale 1:50					
Struck		Rose To		Time(mins)		Cut Off							
Chk & App FMR		Status FINAL											

Style: TRIALPIT File: P:\GINTWP\PROJECTS\26667\GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:51:50 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667							
				Client: Scottish Power Energy Networks				Trial Pit No. TP35A							
				Engineer: Scottish Power Energy Networks				Trial Pit to 2.30m							
Location: E 320011.7 N 696968.0				Orientation: Vertical				Equipment: 15T Tracked Excavator				Width - 0.80m Length - 4.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
31/7 2024					106.61		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)								
					106.21	0.40	MADE GROUND (stiff friable mottled greyish brown and orange dark slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)								
					105.31	1.30									
31/8					104.31	2.30	Orange brown sandy fine to coarse angular and subangular gravel of LIMESTONE with medium cobble content. Cobbles are angular and subangular of limestone								
							----- END OF TRIAL PIT -----								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 2.30m due to obstruction, probable rock or boulder. Estimate of strength is based on field examination only. Part of trench investigation.															
Driller		Originator JDUD		Ground-water								Fig No: B67 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													

Style: TRIALPIT File: P:\GINTW\PROJECTS\26667\GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:51:52 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION				Contract No: 26667			
				Client: Scottish Power Energy Networks				Trial Pit No. TP35B			
				Engineer: Scottish Power Energy Networks				Trial Pit to 1.40m			
Location: E 320012.0 N 696966.9				Orientation: Vertical				Equipment: 15T Tracked Excavator			
								Width - 0.80m Length - 20.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
31/7 2024					106.65		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
					106.25	0.40	MADE GROUND (stiff friable dark brown reworked slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone)				
					105.65	1.00	MADE GROUND (firm mottled greyish brown sandy clay. Sand is fine to coarse)				
					105.15	1.50	...from 1.00m to 1.40m: 3m-6m from western side of pit: MADE GROUND (firm light grey locally mottled orange sandy clay. Possible boundary capping band)				
							MADE GROUND (firm mottled orange brown slightly gravelly fine to coarse sand. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, siltstone and mudstone)				
31/7					103.65	3.00	...at 3.00m: NO PROGRESS - hard digging END OF TRIAL PIT			Dry	
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 3.00m due to hard digging. Estimate of strength is based on field examination only. Part of trench investigation, no samples taken. from 1.00m to 1.40m: 3m to 6m from western end of pit: MADE GROUND (firm light grey locally mottled orange sandy clay) Possible capping material.											
Driller		Originator JDUD		Ground-water				RAEBURN Fig No: B68 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off					
Chk & App FMR		Status FINAL									

Style: TRIALPIT File: P:\GINTWP\PROJECTS\26667 GPJ+44 (0)\1698 710999 Printed: 06/11/2024 10:51:54 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL LTD				Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION						Contract No: 26667					
				Client: Scottish Power Energy Networks Engineer: Scottish Power Energy Networks						Trial Pit No. TP36					
										Trial Pit to 2.10m					
Location: E 319801.6 N 696873.7				Orientation: Vertical				Equipment: 14T Tracked Excavator				Width - 0.70m Length - 3.00m			
Progress	Sample Depth	Samples and Tests			Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill					
		Type	Result							Symbol	Depth				
22/7 2024	0.30	ES			109.55		Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse.								
	0.50	B, D			109.15	0.40	Firm locally stiff mottled orange brown and grey slightly gravelly sandy CLAY of low plasticity with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles are subangular and subrounded of various lithologies including sandstone, coal and mudstone.								
	0.80	ES													
	1.50	B, D			107.75	1.80									
22/7	2.00	D, LB			107.45	2.10	Very weak thinly laminated light brown fine to coarse grained SANDSTONE frequently interlaminated with dark grey mudstone. Partially to distinctly weathered recovered as fine to coarse angular and subangular gravel and cobbles.		Dry						
							----- END OF TRIAL PIT -----								
Remarks: Trial pit CAT scanned prior to excavation to check for services. The walls of the pit stood vertical throughout excavation. Ground-water was not encountered. Trial pit terminated at a depth of 2.10m due to obstruction, possible rock or boulder. Estimate of strength is based on field examination only. Material not suitable for HV testing.															
Driller		Originator JDUD		Ground-water				RAEBURN				Fig No: B69 Sheet 1 of 1 Scale 1:50			
Struck		Rose To		Time(mins)		Cut Off									
Chk & App FMR		Status FINAL													



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH01



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B70

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH02



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B71

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH04



Style: CORE PHOTOS File: P:\GINTWP\PROJECTS\26667 GPJ Printed: 01/11/2024 15:13:15 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Chk & App
FMR

Status
FINAL

Title:

PHOTOHGRAPHS OF BOREHOLES

Fig No:

B72



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH05



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B73

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH07



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B74

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH12



Originator

JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES

Fig No:

B75

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH13



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B76

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.

BH14



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B77
Chk & App	Status		
FMR	FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH14



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES		Fig No: B77
Chk & App	Status			
FMR	FINAL			



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH15



Originator JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B78
Chk & App FMR		
Status FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH16



Style: CORE PHOTOS File: P:\GINTWP\PROJECTS\26667 GPJ Printed: 01/11/2024 15:14:08 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator	JDUD
Chk & App	Status
FMR	FINAL

Title:

PHOTOHGRAPHS OF BOREHOLES

Fig No:



B79



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH16



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B79
Chk & App	Status		
FMR	FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.

BH16



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B79
Chk & App	Status		
FMR	FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH16



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B79
Chk & App FMR	Status FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH16



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B79
Chk & App	Status		
FMR	FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH16



Style: CORE PHOTOS File: P:\GINTWP\PROJECTS\26667\GPJ Printed: 01/11/2024 15:14:08 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES

Fig No:

B79

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH17



Originator	JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B80
Chk & App FMR	Status FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH17



Originator JDUD	Title: PHOTOHGRAPHS OF BOREHOLES	Fig No: B80
Chk & App FMR		
Status FINAL		



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH17



Originator

JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES

Fig No:

B80

Chk & App

FMR

Status

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH18



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B81

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Borehole No.
BH20



Originator
JDUD

Title:

PHOTOHGRAPHS OF BOREHOLES



Fig No:

B82

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP04



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B83

Chk & App
FMR

Status
FINAL





Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP04



Style: TP PHOTOS File: P:\GINTWP\PROJECTS\26667.GPJ Printed: 01/11/2024 15:16:30 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B83

Chk & App

FMR

Status

FINAL





Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP05



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B84

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP05



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:16:42 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B84

Chk & App

FMR

Status

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP06



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B85

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP06



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B85

Chk & App

FMR

Status

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP07



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B86

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP07



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:17:07 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

	Originator
	JDUD
Chk & App	Status
FMR	FINAL

Title:
PHOTOGRAPHS OF TRIAL PITS

Fig No:
 B86



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP08



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:

B87



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP08**



Style: TP PHOTOS File: P:\GINTWP\PROJECTS\26667.GPJ Printed: 01/11/2024 15:17:19 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:

B87



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP09



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B88



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP09



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:17:32 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B88

Chk & App

FMR

Status

FINAL





Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP10**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B89



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP10**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:17:43 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B89

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP11**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B90



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP11**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:17:56 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B90

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP12**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B91

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP12



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:18:08 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

		Originator JDUD	Title: PHOTOGRAPHS OF TRIAL PITS		Fig No: B91
Chk & App FMR	Status FINAL				



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP13



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B92

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP13**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:18:19 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B92

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP14



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B93

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP14



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:18:31 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B93

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP15**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B94

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP15**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B94



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP16



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:

B95



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP16



Style: TP PHOTOS File: P:\GINTWP\PROJECTS\26667.GPJ Printed: 01/11/2024 15:19:19 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

	Originator
	JDUD
Chk & App	Status
FMR	FINAL

Title:
PHOTOGRAPHS OF TRIAL PITS

Fig No:
B95



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP17



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B96

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP17**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:19:30 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B96

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP18**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B97



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP18**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:19:43 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B97

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP19**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B98

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP19



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:19:56 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

	Originator	Title: PHOTOGRAPHS OF TRIAL PITS
	JDUD	
Chk & App	Status	
FMR	FINAL	

Fig No:

B98



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP20**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B99

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP20



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:20:07 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

	Originator JDUD	Title: PHOTOGRAPHS OF TRIAL PITS		Fig No: B99
Chk & App FMR	Status FINAL			



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP21**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS



Fig No:

B100

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP21**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:02 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B100

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP22**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B101





Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP22**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:12 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B101

Chk & App

FMR

Status

FINAL





Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP22A



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B102

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP22A**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:34 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B102



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP22A**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:34 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B102



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP22A**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:34 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS



Fig No:

B102

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP23**



Style: TP PHOTOS File: P:\GINTWP\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:50 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B103



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP23**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:45:50 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B103

Chk & App

Status

FMR

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.
TP23A



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS



Fig No:

B104

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP23A**



Style: TP PHOTOS File: P:\GINTWP\PROJECTS\26667.GPJ Printed: 01/11/2024 15:46:01 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:



B104

Chk & App
FMR

Status
FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP23B**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:

B105



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP23B**



Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B105

Chk & App

FMR

Status

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP24**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:

B106



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

Trial Pit No.

TP24



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:46:27 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B106

Chk & App

FMR

Status

FINAL



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP25**



Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B107



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP25**



Style: TP PHOTOS File: P:\GINTW\PROJECTS\26667.GPJ Printed: 01/11/2024 15:46:38 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator

JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Fig No:

B107

Chk & App

FMR

Status

FINAL





Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

**Trial Pit No.
TP26**



Style: TP PHOTOS File: P:\GINTWP\PROJECTS\26667.GPJ Printed: 01/11/2024 15:48:00 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator
JDUD

Title:

PHOTOGRAPHS OF TRIAL PITS

Chk & App
FMR

Status
FINAL

Fig No:



B108