RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

GROUND INVESTIGATION FACTUAL REPORT

LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

KILMARNOCK

AYRSHIRE

NOVEMBER 2022

Prepared by:

RAEBURN DRILLING AND GEOTECHNICAL

(NORTHERN) LIMITED

Badentoy Avenue

Badentoy Industrial Park

Portlethen

Aberdeen

SCOTLAND

AB12 4YB

Tel: 01224 782538

www.raeburndrillingnorthern.com

Contract No*:*	N3798
Client:	Noriker Power Ltd

Report type	Factual
Report issue:	Final
File number:	W:\Reports\N3798\Report
Contract number:	N3798
Issuing office:	Portlethen

Checked & approved: .....

Iain Hogg Senior Geotechnical Engineer 18 November 2022

For and on Behalf of Raeburn Drilling and Geotechnical (Northern) Limited

OPINIONS AND INTERPRETATION EXPRESSED IN THIS DOCUMENT ARE OUTSIDE THE SCOPE OF UKAS ACCREDITATION

TABLE OF CONTENTS

GROUND INVESTIGATION FACTUAL REPORT

LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

KILMARNOCK
AYRSHIRE

1.0 INTRODUCTION

It is proposed to develop a battery site and associated infrastructure within the site located approximately four miles east south-east of Kilmarnock, Ayrshire. On the instructions of the Client, Noriker Power Ltd, Raeburn Drilling & Geotechnical (Northern) Limited undertook intrusive ground investigation works at the site. The works were undertaken to determine ground and groundwater conditions present across the site, in order to assess any potential engineering constraints to the proposed development, and to determine sufficient geotechnical information to inform foundation design.

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, groundwater 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 (Northern) Limited.

The recommendations of this report are based on an interpretation of legislation, Codes of Practice, guidance notes and current research opinion. Revision of such, particularly in environmental matters, is developing rapidly. Although this report endeavours to anticipate any such changes that may arise within the foreseeable future, changes are liable to occur which may cause the report to inadequately

address the position at that time. Further, the situation may be subject to varied interpretation by statutory authorities and others, for which Raeburn Drilling & Geotechnical (Northern) Limited cannot be responsible.

2.0 OBJECTIVES

2.1 Ground Investigation

The main objectives of the works were to:

- To undertake trial pit excavations to determine topsoil depths;
- To extend trial pits deeper to access ground conditions (stability and groundwater);
- To undertake California Bearing Ratio (CBR) tests at the underside of the topsoil to assist in future road pavement design;
- To extend boreholes to a suitable depth to cater for all design requirements that may include piling / ground improvement treatment;
- To undertake drilling works to enable standard penetration tests (SPTs) and coring of bedrock to determine underlying rock strength;
- To install gas/groundwater monitoring standpipes to enable gas/groundwater monitoring and sampling;
- To undertake soil sampling to enable determination of the suitability for re-use;
- To provide comment on any existing land drainage;
- To undertake peat probing to determine the extent of any peat evident across the site;

3.0 LOCATION & DESCRIPTION OF THE SITE

The site, which is an irregular shape is centred at approximate National Grid Reference (NGR) 245100, 623560, and is located a little over four miles to the east south-east of the town of Kilmarnock, Ayrshire.

The site is classed as ‘Poor semi-improved grassland’ and is currently used as agricultural grazing land in the north, and for the production of winter barley in the south.

The site slopes relatively gently towards the north-east and east, and is split into smaller enclosures by hedgerows. Pylon supported electricity cables are present on the western portion of the site.

The site is surrounded by agricultural land with many farmsteads present in the area.

3.0 ENVIRONMENTAL SETTING OF SITE

3.1 General

A Desk Study Constraints Report (Ref. 1) was completed by David R Murray and Associates, and provided to Raeburn Drilling & Geotechnical (Northern) Ltd by the Client. Reference should be made to the full report for detailed information.

3.2 Geology of Site

Information provided by the Desk Study Constraints Report (Ref. 1) and British Geological Survey Maps (Ref. 5) indicates that there is no record of made ground within the site boundary. Natural soils, underlying any topsoil, are likely to comprise glacial till of firm to stiff silty or sandy clays with bands of sand and gravel. Weaker alluvial soils of more variable composition overlie the glacial soils on the south-eastern portion of the site. Weak and peaty materials may therefore be present in this area.

Bedrock underlying the site is likely to comprise sedimentary rock cycles of the Limestone Coal Formation, and may include coal seams.

4.0 SITE WORK

4.1 Introduction

Site works were carried out in general accordance with the guidelines laid down in BS EN 1997-2:2007 (Ref. 2), and BS10175:2011+A2:2017 (Ref. 3).

The intrusive investigation was undertaken between the 7th and 14th November 2022, and comprised the following works:

- Excavation of borehole hand inspection pits.
- Drilling of 3no. boreholes (BH01, BH02, and BH03) using dynamic sampling, rotary open hole, and rotary coring techniques.
- Collection of geotechnical and geochemical soil samples.
- Installation of 50mm gas and groundwater monitoring standpipes.
- Groundwater monitoring of installed standpipes (during fieldwork period).
- Mechanical excavation of 3no. trial pits (TP01 to TP03).
- Hand excavation of 2no. trial pits (TP04 and TP05).
- Hand Vane Testing.
- Hand Penetrometer Tests.
- Peat Probe at 15nr. locations.
- Reinstatement of exploratory hole positions.
- Surveying of Exploratory Hole Positions.

An exploratory hole location plan is presented as Figure A2 in Appendix A of this report. Full survey details are also presented in Appendix A. The following subsections describe the investigation in additional detail.

4.2 Exploratory Hole Information

4.2.1 Hand inspection pits

Hand inspections pits were used to extend all boreholes from ground level to a maximum of 1.20m depth, in order to minimise the risk of damage to underground services.

4.2.2 Boreholes

Three boreholes, namely BH01, BH02, and BH03, were drilled to depths of between 5.80mbGL (BH01) and 7.70mbGL (BH03) using a Comacchio Geo 205 drilling rig. This equipment is capable of recovering soil samples using dynamic sampling methods, but can also be used for rotary drilling techniques (open hole or coring) in the event that bedrock or coarse obstructions are encountered.

Drilling was undertaken using either 152mm diameter PW casing, or 140mm diameter ODEX casing. An air or air/mist flushing medium was used throughout rotary drilling works.

Details of the depths achieved at each borehole location are given in Table 4.2.2.

Table 4.2.2 - Summary of Borehole Drilling Methods and Depths Achieved:

Location	Hand Inspection Pit (Depth Achieved) (mbGL)	Windowless Sampling (Depth Achieved) (mbGL)	Rotary Open Hole (Depth Achieved) (mbGL)	Rotary Coring (Depth Achieved) (mbGL)	Final Depth of Borehole (mbGL)	Reason for Termination
BH01	1.20	--	1.50	5.80	5.80	Bedrock proven
BH02	1.20	2.20	2.50	6.50	6.50	Bedrock proven
BH03	1.20	3.70	3.85	7.70	7.70	Bedrock proven

Standard (split-barrel sampler) penetration tests (Ref. 6) were made to assess the relative density, the consistency or the hardness 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 reference 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 (BS5930:2015 Ref. 4). In some of the tests the penetration tool may have been impeded by a cobble, boulder or bedrock. Caution must therefore be taken in the

application of these results. Testing was undertaken using hammer 'AB1' as detailed in the 'Remarks' section of the logs.

4.2.3 Gas / groundwater monitoring installations

All boreholes were installed with gas and groundwater monitoring standpipes, filter packs, geosock, surface and annual seals, gas taps and raised covers to enable monitoring of groundwater conditions across the site.

Boreholes were installed with 50mm diameter standpipes as detailed on the logs.

4.2.4 Groundwater Monitoring (during fieldwork period)

Groundwater inflows were recorded during the drilling of boreholes and excavation of trial pits across the site. In addition groundwater levels within installed monitoring standpipes were monitored at the end of the fieldwork period.

The following groundwater data was obtained:

Table 4.2.4 – Groundwater Inflows / levels:

Exploratory Hole ID	Groundwater Inflow (mbGL) / Comment	Groundwater Level within monitoring standpipe (mbGL)	
		11/11/22	14/11/22
BH01	Slow seepage at 1.20m. Groundwater strike observed at 4.00m.	-0.10 (above ground level)	-0.10 (above ground level)
BH02	Groundwater strike observed at 2.26m - rising to 0.64m in 20mins.	0.80	0.65
BH03	Slow seepage at 1.20m. Groundwater strike observed at 4.00m - rising to 2.74m in 20mins.	0.97	0.72
TP01	Dry to completion depth (4.00m).	--	--
TP02	Dry to completion depth (4.00m).	--	--
TP03	Inflowing water observed at 3.30m – slow seepage.	--	--
TP04	Dry to completion depth (1.20m).	--	--
TP05	Dry to completion depth (1.20m).	--	--

Details of the groundwater levels recorded are presented in Appendix B of this report.

4.2.5 Trial pitting

Three (3no.) trial pits, namely TP01 to TP03, were mechanically excavated using a 14t tracked excavator. A further two (2no.) trial pits (TP04 and TP05) were excavated using hand tools as the positions could not be accessed using mechanical plant (without resulting in significant ground disturbance and crop damage). Trial pits extended to depths of between 1.20mbGL (TP04 and TP05) and 4.00mbGL (TP01 and TP02) as detailed below in Table 4.2.5.

Table 4.2.5 - Summary of the Final Depths of Trial Pits:

Location	Final Depth (maximum achieved) (mbGL)	Reason for Termination
TP01	4.00	Reached scheduled depth.
TP02	4.00	Reached scheduled depth.
TP03	3.60	Boulder obstruction.
TP04	1.20	Maximum depth that could be excavated using hand tools.
TP05	1.20	Maximum depth that could be excavated using hand tools.

4.2.6 Reinstatement

Track mats were utilised during site works to minimise ground disturbance along both the access track, and field entrance. Additional mechanical plant (tracked dumper and tracked excavator) was also mobilised to site to further reduce ground disturbance.

All trial pits were backfilled to ground level with arisings, and topped with topsoil.

All boreholes were installed with gas/groundwater monitoring standpipes and upstanding covers. All spoil/excess arisings from the drilling process were removed from site and suitably disposed of.

4.2.7 Photographic Record

A photographic record of the works was maintained throughout the project. This included borehole hand inspection pit photographs, dynamic sample tube photographs, rock core photographs, trial pit photographs, and peat probe photographs.

Photographs of the hand inspection pits, dynamic sample tubes, rock core, reinstatement, trial pits, and peat probe locations are presented in Appendix C of this report.

4.2.8 Hand Vane Testing

Hand vane tests were undertaken to provide a preliminary estimate of undrained shear strength of the soils tested (Ref. 12). Hand vane tests were undertaken in close proximity with the reported shear strength and remoulded shear strengths the average of three results. Test results are detailed in the exploratory logs presented in Appendix B, and full results tabulated for reference also in Appendix B. The calibration certificates for the hand vanes used are presented in Appendix D.

4.2.9 Hand Penetrometer Testing

Hand penetrometer tests were undertaken to provide an estimate of equivalent unconfined compressive strength of the soils tested. Hand penetrometer tests were undertaken in close proximity with the reported values the average of three results. Test results are detailed in the exploratory logs presented in Appendix B, and full results tabulated for reference also in Appendix B.

4.2.10 Peat Probe Testing

The peat depth survey was undertaken according to the Peatland Survey 2017 Guidance (Ref. 13). This involves the establishment of a grid with a depth probe taken at each intersect, for development of a peat-depth model. Its aim is to identify areas of deep peat that should be considered during design and construction.

Peat probes were undertaken on a 100m grid across the site. No evidence of peat was identified during the site works. Peat probe test results are tabulated for reference in Appendix B of this report.

4.3 Soil Sampling

The guidelines in BS10175:2011+A2:2017 (Ref. 3) were followed. During sampling all reasonable effort was maintained to prevent cross-contamination or general failure of the sampling strategy.

Soil samples from the hand inspection pits and trial pits were collected directly by the Supervising Engineer or Site Engineer, as appropriate. Soil samples from window sampling were collected in new clean 1m-length plastic liners, which were opened and sub-sampled by the Supervising Engineer. Tub samples were collected from the split-spoon sampler after the completion of standard penetration tests within boreholes.

4.4 Surveying of Exploratory Hole Positions

The ground levels and co-ordinates of all exploratory hole positions, given on the exploratory hole records, were determined using a Trimble R10 and are related to metres above Ordnance Datum (mAOD) and National Grid co-ordinates, respectively.

Full survey details are also presented for reference in Appendix A of this report.

4.5 Records of Fieldwork

Detailed records of the exploratory holes have been produced in accordance with BS EN ISO 14688-1:2018 (Ref.9), BS EN ISO 14688-2:2018 (Ref. 10), BS EN ISO 14689:2018 (Ref. 11) and in conjunction with BS5930:2015 (Ref. 4), and are included in Appendix B. Details of the samples collected, standard penetration test (SPT) results, groundwater inflows, and borehole installations are given on the respective logs. The Hammer Energy Test Report is presented in Appendix D.

Photographs of the samples, trial pits and arisings, and exploratory hole reinstatements, are included in Appendix C.

A schematic exploratory hole location plan and full survey data is presented in Appendix A of this report.

5.0 GROUND CONDITIONS ENCOUNTERED

5.1 General

The boreholes and trial pits encountered between 1.50m and >4.00m of superficial deposits, generally overlying sedimentary claystone bedrock.

Trial pits TP01 to TP05 were completed in superficial deposits at depths of between 1.20m and 4.00m. Boreholes were completed in bedrock at final depths of between 5.80m (BH01) and 7.70m (BH03); and were extended by rotary coring of up to 4.30m.

Groundwater strikes indicate the presence of a confined aquifer and artesian / semi-artesian groundwater conditions.

5.2 Topsoil

Topsoil was encountered during site works as detailed below in Table 5.2.1.

Table 5.2.1 - Summary of Topsoil depth identified:

Exploratory Hole ID.	Depth of Topsoil (m)
BH01	0.30
BH02	0.30
BH03	0.30
TP01	0.40
TP02	0.40
TP03	0.70
TP04	0.30
TP05	0.45

5.3 Made Ground

Made ground was not encountered during site works.

5.4 Peat

Peat was not encountered during site works.

5.5 Superficial Deposits

Superficial deposits were generally consistent across the site and comprised stiff, or stiff to very stiff, sandy slightly gravelly or gravelly CLAY. These deposits are consistent with the anticipated glacial till. Estimated undrained shear strengths of between 91kPa and 202kPa (mean. 157kPa) were recorded within the glacial deposits. Standard penetration tests (SPTs) undertaken with the glacial till generally determined 'N' values of between 10 and 18 (mean N = 14) confirming the tested materials as stiff. Cobble and boulder content was generally low within the superficial deposits.

The exception to the above was within TP03 where gravelly very clayey SAND with medium cobble content and low boulder content was evident beneath a depth of 0.70m, and to a maximum proven depth of 3.60mbGL. It should be recognised that comparatively small changes in clay, sand and gravel fractions can result in the soil passing from cohesive to granular, and vice-versa, when described strictly in accordance with BS5930 (Ref. 4).

Boulders up to 800mm in size were recorded beneath a depth of 3.30m within TP03, which resulted in termination of the trial pit at 3.60mbGL.

5.6 Bedrock

Bedrock was encountered within all boreholes at depths of 1.50m (101.05mAOD) in BH01, 2.20m (100.87mAOD) in BH02, and 3.85m (106.43mAOD). As such bedrock is noted to be shallower towards the north-east of the site.

Bedrock was found to comprise very weak to medium strong CLAYSTONE and was noted to be moderately weathered with localised fresher core also evident. The claystone was highly fractured with fracture index of >20 fractures per metre generally recorded. The claystone was also locally recorded as non-intact with close to very close spaced discontinuities noted.

In terms of core recovery: total core recovery (TCR) ranged from 53% to 100%; solid core recovery (SCR) ranged from 8% to 86%; rock quality designation (RQD) ranged from 0% to 57%.

Bedrock was not evident during trial pitting activities.

5.7 Groundwater

Groundwater inflows during site works were largely limited to localised slow seepages within the glacial till. However, where boreholes progressed beyond rockhead and into the underlying bedrock, groundwater strikes were observed. In the case of borehole BH02, the groundwater rose during from a strike at 2.26m (approximate rockhead) to a depth of 0.64m.

It should be noted that a confining cover (in this case glacial till) can cause the groundwater to be under pressure, and subsequently when the confining layer is punctured (such as by a borehole), groundwater will rise until it reaches the same level as the water table.

Groundwater monitoring of the installed standpipes all recorded high groundwater levels <1mbGL, even above ground level within BH01. These groundwater levels indicate the presence of a confined aquifer and artesian / semi-artesian groundwater conditions.

6. COMMENTS ON THE RESULTS OF THE INVESTIGATION

6.1 Foundation Design and Construction

Foundation options are dependent upon the final development proposals.

The underlying natural soils comprised glacial till of sandy slightly gravelly or gravelly clay. In terms of consistency these glacial deposits were stiff or very stiff. As such, dependent upon final loadings, these deposits would be expected to provide sufficient bearing capacities necessary to support lightly loading structures. Where proposed loadings are higher, consideration should be made to taking the foundation loadings deeper to the underlying bedrock.

Although the trial pit sidewalls stood unsupported for a short period, it is considered that support will be required to the walls of vertically sided excavations more than about 1.2m deep. Care should be taken to ensure that adequate support is provided where vibratory compaction plant is used in the base of an excavation.

6.2 Earthworks

At the time of reporting, final development plans were not available, as such the scale of earthworks required is unknown, however it is likely some earthworks will be required to create development platforms. As such, it is recommended a series of geotechnical laboratory tests are undertaken to determine the suitability of the materials encountered for re-use in accordance with the Specification for Highway Works.

It is also worth noted that the soils may be susceptible to small changes in moisture content and that soils which are acceptable may quickly become unacceptable when exposed to rainwater. Accordingly, any stockpiles should be shaped to promote run-off and the surfaces should be lightly compacted.

6.3 Roads Pavements

All topsoil, softened or rutted material should be stripped prior to construction. The road subgrade will likely be within the stiff glacial till.

Samples have been obtained during the current ground investigation to enable California Bearing Ratio (CBR) tests to be undertaken of the materials underlying the topsoil. It is recommended that these tests are completed to enable CBR values to be defined and preliminary road construction design to commence.

6.4 Groundwater

Groundwater monitoring standpipes have identified artesian / semi-artesian groundwater conditions underlying areas of the site. As such groundwater conditions may impact upon on proposed construction methods and should be considered further when finalising construction plans and foundation designs.

It is recommended that further monitoring of the standpipes is undertaken.

6.5 Chemical Attack on Buried Concrete

BRE Special Digest 1: 2005 (Ref. 14) recommends precautionary measures with respect to sulphate attack on concrete for a range of concentrations, for both ‘Greenfield’ and ‘Brownfield’ locations. BRE Special Digest 1 also requires consideration be given to the risk of acid attack on concrete.

As such, it is recommended that geochemical testing is undertaken to determine the risk to buried concrete via sulphate and acid attack.

6.6 Borehole Decommissioning

Borehole decommissioning should comply with SEPA guidance “Good practise for decommissioning redundant boreholes and wells”.

For artesian boreholes, the decommissioning process should aim to confine the groundwater to the aquifer from which it came.

6.7 Existing Land Drainage

Anecdotal evidence provided by the landowner indicated a number of field drains spaced approximately every 5-7m are present within the northern field boundary. Unfortunately no records of the field drain locations were provided / are available.

Iain Hogg BSc (Hons)

Senior Geotechnical Engineer

For and on Behalf of Raeburn Drilling and Geotechnical (Northern) Limited

Ground Investigation Department

Portlethen, Aberdeen

REFERENCES

All works were performed in general accordance with the following documents:

1. David R Murray & Associates, Desk Study Constraints Report, E12480 ER/NJH, August 2021.
2. BS EN 1997-2: 2007. Eurocode 7 – Geotechnical Design. Part 2 – Ground investigation and testing.
3. BS10175: Code of Practice for the Investigation of Potentially Contaminated Sites, British Standards Institution, 2011+A2:2017.
4. BS 5930:2015. Code of practice for ground investigations.
5. British Geological Survey Maps, Solid and Drift Deposits 1:50,000 via Geoindex.
6. BS EN ISO 22476-3: Geotechnical investigation and testing. Field testing. Standard penetration test, 2005.
7. HSE Guidance Notes HSG47 - Avoiding Danger from Underground Services, 2000.
8. HSE Guidance Notes GS6 – 'Avoidance of danger from overhead electrical power lines.'
9. BS EN ISO 14688-1:2018. Geotechnical Investigation and testing. Identification and classification of soil – Part 1.
10. BS EN ISO 14688-2:2018. Geotechnical Investigation and testing. Identification and classification of soil – Part 2.
11. BS EN ISO 14689:2018. Geotechnical Investigation and testing - Identification, description and classification of rock.
12. New Zealand Geotechnical Society Inc. Guideline for hand held shear vane test. New Zealand: New Zealand Geotechnical Society, 2001.
13. Scottish Government, Scottish Natural Heritage & SEPA 2017, Peatland Survey. Guidance of Developments on Peatland.
14. BRE Special Digest 1. Concrete in Aggressive Ground. Building Research Establishment. 2005.
15. ICE UK Specifications for Ground Investigation, 2012.
16. Raeburn Drilling & Geotechnical (Northern) Limited Health and Safety Policy, 2008.
17. Raeburn Drilling & Geotechnical (Northern) Limited Environmental Quality Manual, 2008.

APPENDIX A

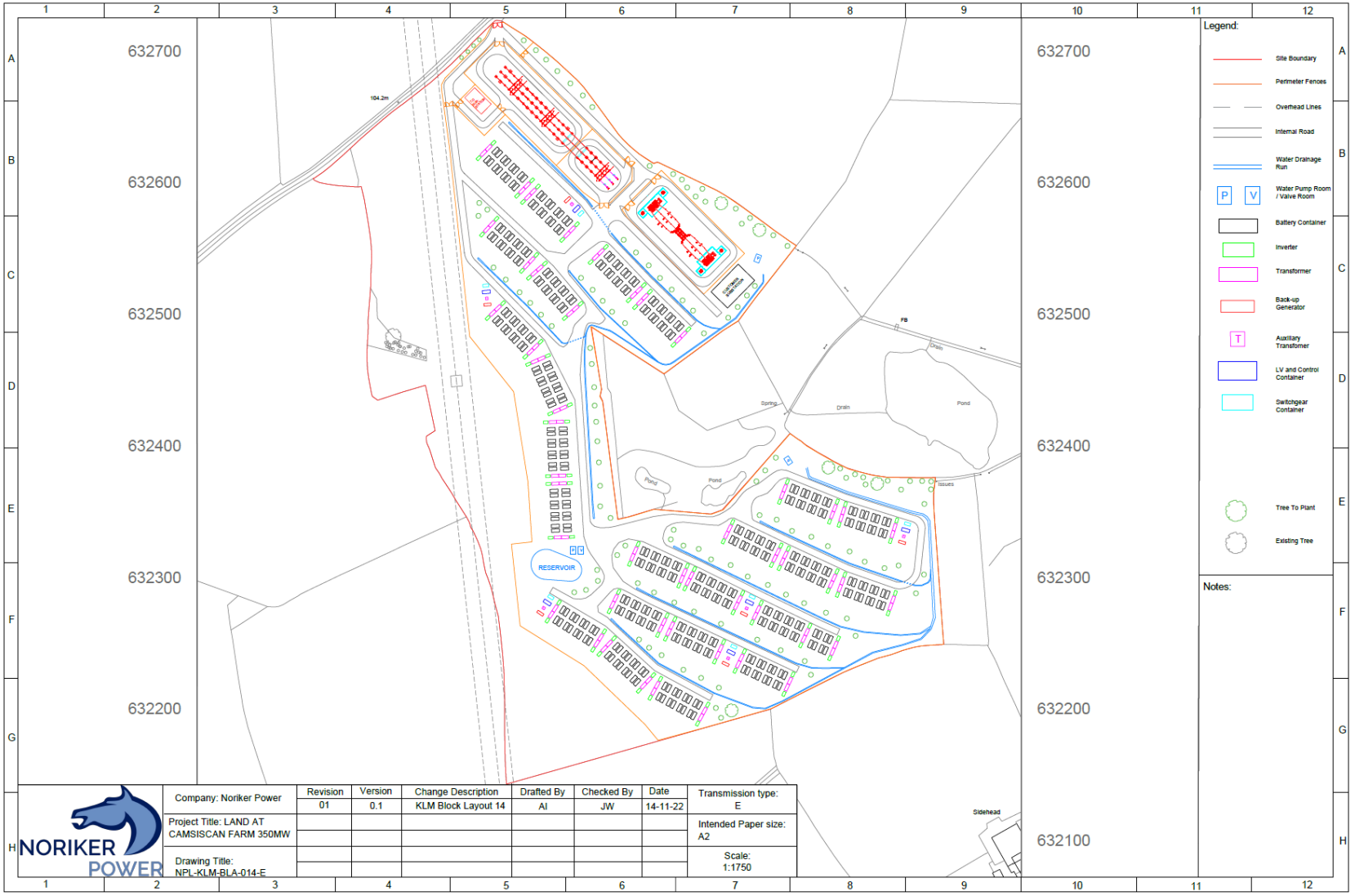
SITE PLANS / SURVEY DATA

Proposed Site Development Plan

Exploratory Hole Location Plan

Survey Data

FIGURE A1 – PROPOSED SITE DEVELOPMENT

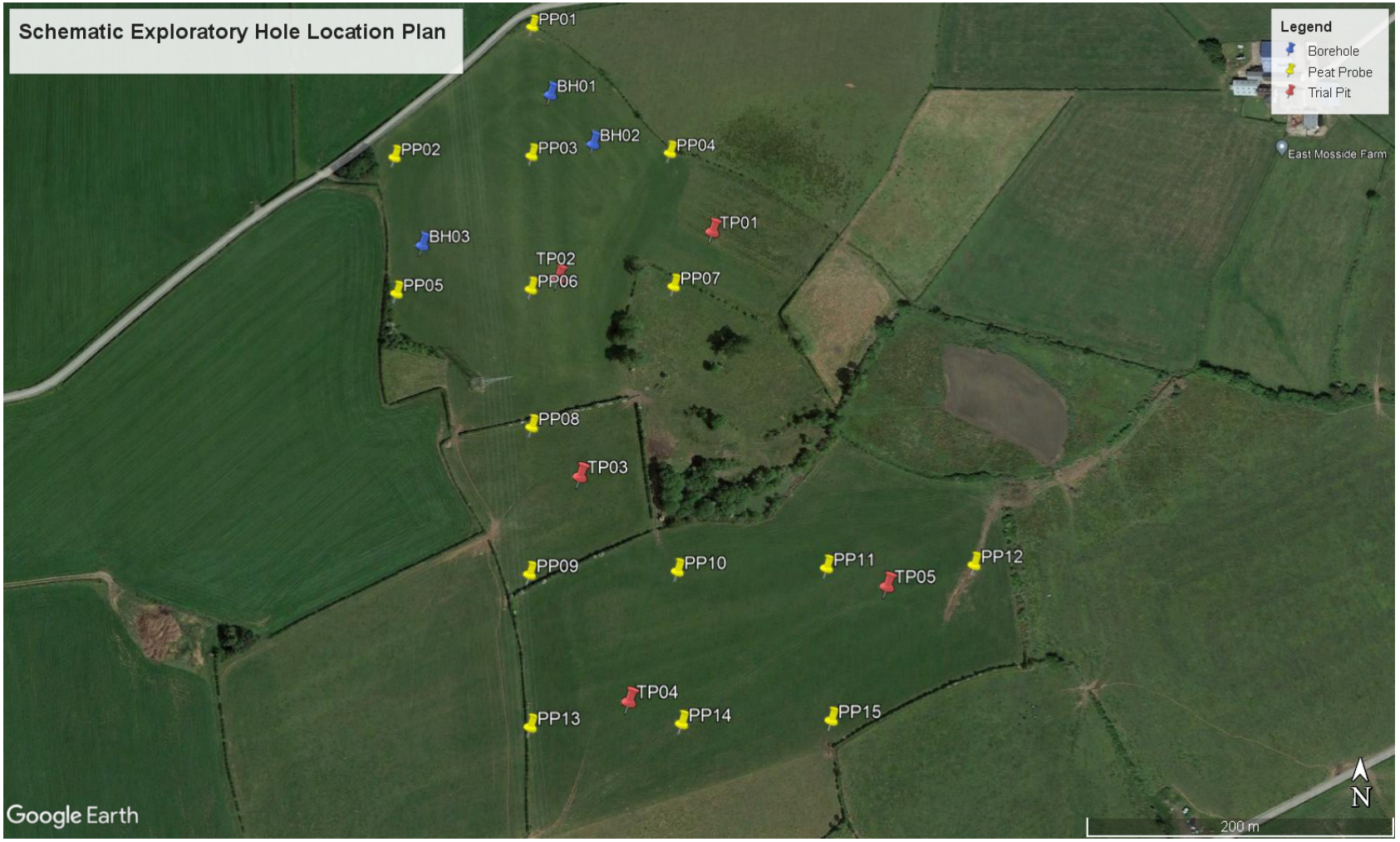


APPENDIX A

Client:	Noriker Power
Project:	Land at Camiscan Farm, Craigie, Kilmarnock South
Title:	Proposed Site Development
Date:	November 2022

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

FIGURE A2 – EXPLORATORY HOLE LOCATION PLAN



APPENDIX A

N

Client:	Noriker Power Ltd
Project:	Land at Camiscan Farm, Craigie, Kilmarnock South
Title:	Exploratory Hole Locations
Date:	November 2022

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

Survey Data Report[(6)]

Contract: N3798

Site: Land at Camiscan Farm, Craigie, Kilmarnock South

ID_Code	OS Easting	OS Northing	Level
BH01	245091.897	632658.893	102.55
BH02	245122.835	632619.175	103.07
BH03	245000.425	632545.563	110.28
TP01	245207.448	632551.051	100.48
TP02	245097.926	632519.214	108.67
TP03	245112.923	632377.439	109.60
TP04	245144.052	632226.403	114.42
TP05	245319.356	632298.729	106.01
PP01	245078.631	632713.392	102.66
PP02	244979.664	632613.218	106.21
PP03	245078.514	632612.835	104.69
PP04	245178.660	632612.963	100.31
PP05	244983.464	632511.480	109.73
PP06	245078.951	632512.833	110.27
PP07	245179.007	632512.954	103.81
PP08	245079.040	632413.052	112.90
PP09	245078.964	632312.965	112.84
PP10	245178.578	632312.511	108.26
PP11	245279.118	632312.613	106.54
PP12	245379.259	632312.679	103.15
PP13	245079.602	632212.930	117.37
PP14	245179.024	632212.534	112.93
PP15	245278.714	632212.487	110.41

Raeburn Drilling & Geotechnical (Northern) Ltd.
Badentoy Avenue,
Portlethen,
Aberdeen
AB12 4YB
01224 782 538

(6) - Not a UKAS Accredited Test :
Approved signatories :
MB, AS, IH, TJM, AGS

Originator	Checked & Approved
ADP/SB	IH
Site Engineer	Senior Geotechnical Engineer

APPENDIX B

SITE WORK

Borehole Logs

Trial Pit Logs

Hand Vane Test Results

Hand Penetrometer Test Results

Peat Probe Test Results

Groundwater Monitoring (during fieldwork period)

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

BH01

Inspection Pit to 1.20m
Rotary Open Hole to 1.50m
Rotary Core Drilling to 5.80m

Location: E 245091.9 N 632658.9

Orientation: Vertical

Equipment: Hand tools, Comacchio Geo 205

Progress	Samples Depth	Samples Type	Tests Depth	Tests Result	Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
						102.55						
10/11/2022	0.00-0.30	B, D				102.25	0.30	TOPSOIL: Brown/ dark brown slightly organic slightly gravelly very clayey fine to medium sand with occasional roots. Gravel is sub-angular, fine to medium and of granite, quartzite, and schist.				
	0.40-0.80 0.80-0.50	B, D HP (147kPa)		V - P=107-R=36kPa				Stiff brown sandy slightly gravelly to gravelly CLAY with low cobble content, and occasional roots. Sand is fine to medium. Gravel is sub-angular to rounded, fine to coarse and of granite, quartzite, and schist. Cobbles are sub-rounded to rounded, up to 130mm and of pelite.				0.50
	0.90-1.20	B, D				101.65	0.90					1.00
	1.20-1.20	D	1.20	SPT>50 5,13 /70.30 (100) TCR SCR RQD FI				Very stiff grey sandy slightly gravelly to gravelly CLAY with low to medium cobble content. Sand is fine to medium. Gravel is angular to rounded, fine to coarse and of various lithologies including granite, quartzite, and sandstone. Cobbles are angular to sub-angular, up to 120mm and of sandstone, and mudstone.		▼		
	1.50-2.50	C	1.50	60 25 14 NI 7		101.05	1.50	Very weak to medium strong grey light grey and light brown CLAYSTONE. Rock is moderately weathered (locally highly weathered) and highly fractured. Fractures are: predominantly 0-90 degrees: discordant; close to very close spaced; rough to smooth; planar (locally stepped); surface deposit of grey sandy clay noted along fracture surfaces. ....between 1.50m and 2.50m depth - occasional quartzite veins (4mm thick). Orientation ranging from 0-45 degrees.				
	2.50-2.80	C	2.50	100 86 36 >20								
	2.80-4.30	C	2.80	53 33 19 >20						▼		
	4.30-5.80	C	4.30	76 43 8 >20								
						96.75	5.80					5.80
								END OF BOREHOLE				

Remarks:

Borehole completed at 5.80mbGL. Penetration test undertaken using hammer 'AB1'. Hand vane tests undertaken using equipment no. RN1160. Hand penetrometer tests undertaken using Equipment no. RN1948. Inflowing groundwater was observed at 1.20mbGL - slow seepage. Inflowing groundwater was observed at 4.00mbGL. Borehole installed upon completion: 0.00-0.50m - solid pipe in concrete; 0.50-1.00m - solid pipe in bentonite; 1.00-5.80m - slotted pipe in gravel surround c/w geosock. Borehole topped with upstanding cover, gas bung & gas valve.

Hole Diam.	To Depth Boring	To Depth Casing
300	1.20	1.50
150	1.50	
104	5.80	

Driller	Originator
LS/JC	ADP
Chk & App	Status
IH	**FINAL**

Ground-water Struck	Rose To	Time(min)	Cut Off
1.20	1.20		
4.00	4.00		

Water Added From	To

Chiselling From	To	hh:mm

Flush Returns	Type	From (m)	To (m)
100	Air	1.20	1.50
40	AirWM	1.50	5.80

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

BH02

Location: E 245122.8 N 632619.2

Orientation: Vertical

Equipment: Hand tools, Comacchio Geo 205

Inspection Pit to 1.20m
Window Sampler to 2.20m
Rotary Open Hole to 2.50m
Rotary Core Drilling to 6.50m

Progress	Samples Depth	Samples Type	Tests Depth	Tests Result	Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
						103.07						
11/11/2022	0.00-0.30	B, D				102.77	0.30	TOPSOIL: Brown/ dark brown slightly organic slightly gravelly very clayey fine to medium sand with occasional roots. Gravel is sub-angular, fine to medium and of granite, quartzite, and schist.				
	0.40-0.80 0.50	B, D HP (147kPa)		V - P=109-R=39kPa				Stiff brown grey sandy slightly gravelly to gravelly CLAY with lenses of light brown light orange silty fine sand. Sand is fine to medium. Gravel is sub-angular to sub-rounded, fine to coarse and of granite, quartzite, and schist.				0.50
	0.90-1.20	B, D										1.00
	1.20-1.40	B, D, Tube	1.20	SPT=14 1.2 /3.4.3.4		101.67	1.40					
	1.20-2.20 1.20 1.40-2.20 1.50	B HP (196kPa)						Stiff to very stiff grey sandy slightly gravelly to gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is sub-angular to sub-rounded, fine to coarse and of granite, schist, quartzite, and slate. Cobbles are angular, up to 90mm and of sandstone.				
	2.20	D	2.20	SPT=59 10.10 /13.15.15.16		100.87	2.20					
				TCR / SCR / RQD / FI				Very weak to medium strong grey and light brown CLAYSTONE. Rock is moderately weathered (locally highly weathered) and highly fractured. Fractures are: predominantly 0-90 degrees: discordant; close to very close spaced; rough to smooth; planar (locally stepped); surface deposit of grey sandy clay noted along fracture surfaces.				
	2.50-3.50	C	2.50	90 / 43 / 0 / >20								
				NI				....between 2.50m and 3.50m depth - occasional quartzite veins (4mm thick). Orientation ranging from 0-45 degrees.				
				>20								
	3.50-5.00	C	3.50	100 / 38 / 26 / >20				....between 3.50m and 6.50m depth - thinly laminated (2-4mm).				
				NI								
				12								
	5.00-6.50	C	5.00	100 / 51 / 40 / NI								
				5								
				NI								
				5								
				NI								
				6		96.57	6.50					6.50
								END OF BOREHOLE				

Remarks:

Borehole completed at 6.50mbGL. Penetration test undertaken using hammer 'AB1'. Hand vane tests undertaken using equipment no. RN1160. Hand penetrometer tests undertaken using Equipment no. RN1948. Inflowing groundwater was observed at 2.26mbGL - rising to 0.64m in 20mins. Borehole installed upon completion: 0.00-0.50m - solid pipe in concrete; 0.50-1.00m - solid pipe in bentonite; 1.00-6.50m - slotted pipe in gravel surround c/w geosock. Borehole topped with upstanding cover, gas bung & gas valve.

Hole Diam.	To Depth Boring	To Depth Casing
300	1.20	2.50
150	2.50	
104	6.50	

Driller	Originator
LS / JC	ADP
Chk & App	Status
IH	**FINAL**

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)
2.26	0.64	20.00							85	AirWM	2.50	6.50

Fig No:

Sheet 1 of 1

Scale 1:50

Style: BOREHOLE NEW File: W:\GINT\PROJECTS\N3798 - KILMARNOCK SOUTH.GPJ Printed: 17/11/2022 16:59:21 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

BH03

Location: E 245000.4 N 632545.6

Orientation: Vertical

Equipment: Hand tools, Comacchio Geo 205

Inspection Pit to 1.20m
Window Sampler to 3.70m
Rotary Open Hole to 3.85m
Rotary Core Drilling to 7.70m

Progress	Samples Depth	Samples Type	Tests Depth	Tests Result	Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
						110.28						
8/11 2022	0.00-0.30	B, D				109.98	0.30	TOPSOIL: Brown slightly organic slightly gravelly very clayey fine to medium sand with occasional roots. Gravel is sub-angular, fine to coarse of pelite, schist, and granite.				
	0.30-0.60	B, D		V - P=91-R=43kPa				Stiff brown light brown and grey sandy slightly gravelly CLAY with low cobble content, and occasional roots. Sand is fine to medium. Gravel is sub-angular to rounded, fine to coarse and of granite, psammite, quartzite, and pelite. Cobbles are angular to sub-angular, up to 70mm and of sandstone.				0.50
	0.40	HP (147kPa)										
	0.70-1.00	C, D,		V - P=136-R=44kPa								
	0.70	HP (204kPa)										
	1.20-2.20	B, D, D, Tube	1.20	SPT=10 5,5 /3,2,3,2		108.88	1.40					
	1.20							Stiff grey sandy gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is sub-angular to sub-rounded (locally rounded), fine to coarse and of schist, quartzite, and claystone.				1.50
	1.50	HP (245kPa)										
	2.20-2.65	B, D, D, Tube	2.20	SPT=18 4,4 /4,4,5,5	2.20							
	2.20-3.20							....between 2.65m and 3.20m depth - low recovery noted. Recovered as brown grey very sandy very clayey gravel. Sand is fine to coarse. Gravel is angular to sub-angular, and of quartzite, schist, and claystone.				
	2.20	HP (294kPa)										
	2.50	B										
	2.65-3.20											
	3.20-3.70	B, D, D, Tube	3.20	SPT=14 2,3 /3,3,4,4	3.20							
	3.20											
	3.50	HP (294kPa)	3.70	SPT>50 25 (75)/70,30 (95)								3.70
	3.70	D		TCR SCR RQD FI	3.70	106.43	3.85					3.80
	3.85-4.85	C	3.85	70 26 0 >20				Very weak to medium strong grey and light grey CLAYSTONE. Rock is moderately weathered and highly fractured. Fractures are: predominantly 0-90 degrees: discordant; close to very close spaced; rough to smooth; planar (locally stepped); surface deposit of grey sandy clay noted along fracture surfaces. ....between 3.85m and 4.85m depth - occasional quartzite veins (4mm thick). Orientation ranging from 0-45 degrees.				
	4.85-6.35	C	4.85	100 66 57 8				....between 5.40m and 5.50m depth - occasional quartzite veins (5mm thick). Orientation ranging from 0-30 degrees.				
				NI								
				4								
	6.35-7.70	C	6.35	63 8 0 NI								
				NI								
						102.58	7.70					7.70
								END OF BOREHOLE				

Remarks:

Borehole completed at 7.70mbGL. Penetration test undertaken using hammer 'AB1'. Hand vane tests undertaken using equipment no. RN1160. Hand penetrometer tests undertaken using Equipment no. RN1948. Inflowing groundwater was observed at 1.20mbGL - slow seepage. Inflowing groundwater was observed at 4.00mbGL - rising to 2.74m in 20mins. Borehole installed upon completion: 0.00-0.50m - solid pipe in concrete; 0.50-1.50m - solid pipe in bentonite; 1.50-3.70m - slotted pipe in gravel surround c/w geosock; 3.70-3.80m - gravel only; 3.80-7.70m - bentonite only. Borehole topped with upstanding cover, gas bung & gas valve.

Hole Diam.	To Depth Boring	To Depth Casing
300	1.20	3.85
127	3.85	
104	7.70	

Driller	Originator
LS/JC	ADP
Chk & App	Status
IH	**FINAL**

Ground-water Struck	Rose To	Time(min)	Cut Off
1.20	1.20		
4.00	2.74	20.00	

Water Added From	To

Chiselling From	To	hh:mm

Flush Returns	Type	From (m)	To (m)
100	Air	0.00	7.70

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No. TP01

Trial Pit to 4.00m

Location: E 245207.4 N 632551.1

Orientation: Vertical

Equipment: 14t tracked excavator

Width - 0.70m Length - 3.90m

Progress	Sample Depth	Samples and Tests Type	Samples and Tests Result	Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
				100.48						
11/11/2022	0.30	D		100.08	0.40	TOPSOIL: Brown slightly organic slightly gravelly clayey fine to coarse sand with occasional rootlets. Gravel is sub-angular to sub-rounded, fine to coarse and of psammite, and sandstone.				
	0.50	B, D, HP (229kPa)	Hand Vane @ 0.50m = 157 kPa			Stiff to very stiff grey slightly sandy gravelly CLAY with low cobble content and low boulder content. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse and of sandstone, and psammite. Cobbles are sub-angular to sub-rounded, up to 200mm and of sandstone, and psammite. Boulders are sub-rounded, up to 300mm and of sandstone.				
	1.00 1.00	HP (237kPa)	Hand Vane @ 1.00m = 189 kPa							
	1.50	D, HP (253kPa), LB	Hand Vane @ 1.50m = 192 kPa							
	2.00 2.00	HP (221kPa)	Hand Vane @ 2.00m = 193 kPa							
	2.50	B, D, HP (213kPa)	Hand Vane @ 2.50m = 151 kPa							
	3.00 3.00	HP (229kPa)	Hand Vane @ 3.00m = 189 kPa							
	3.50	B, D, HP (237kPa)	Hand Vane @ 3.50m = 185 kPa							
11/11				96.48	4.00	END OF TRIAL PIT				

Remarks:

Trial pit completed at 4.00mbGL (scheduled depth). Inflowing groundwater was not observed. Hand vane tests undertaken using equipment no. RN1685. Hand penetrometer tests undertaken using Equipment no. RN1948. Sidewalls remained stable throughout excavation. Trial pit was backfilled with arisings.

Driller	Originator	Ground-water Struck	Rose To	Time(mins)	Cut Off
SB	SB				
Chk & App: IH	Status: **FINAL**				

RAEBURN

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No. TP02

Trial Pit to 4.00m

Location: E 245097.9 N 632519.2

Orientation: Vertical

Equipment: 14t tracked excavator

Width - 0.70m Length - 3.70m

Progress	Sample Depth	Samples and Tests Type	Samples and Tests Result	Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
				108.67						
11/11/2022	0.30	D		108.27	0.40	TOPSOIL: Brown slightly organic slightly gravelly clayey fine to coarse sand with occasional rootlets. Gravel is sub-angular to sub-rounded, fine to coarse and of psammite, and sandstone.				
	0.50	B, D, HP (180kPa)	Hand Vane @ 0.50m = 92 kPa			Stiff to very stiff brown grey and red slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse and of sandstone, and psammite.				
	1.00 1.00	HP (368kPa)	Hand Vane @ 1.00m = 202 kPa							
				107.27	1.40					
	1.50	D, HP (360kPa), LB	Hand Vane @ 1.50m = 201 kPa			Stiff to very stiff grey slightly sandy gravelly CLAY with low cobble content and low boulder content. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse and of sandstone, and psammite. Cobbles are sub-angular to sub-rounded, up to 200mm and of sandstone, and psammite. Boulders are sub-rounded, up to 350mm and of sandstone.				
	2.00 2.00	HP (343kPa)	Hand Vane @ 2.00m = 194 kPa							
	2.50	B, D, HP (302kPa)	Hand Vane @ 2.50m = 184 kPa							
	3.00 3.00	HP (302kPa)	Hand Vane @ 3.00m = 189 kPa							
	3.50	B, D, HP (384kPa)	Hand Vane @ 3.50m = 202 kPa							
11/11				104.67	4.00	END OF TRIAL PIT				

Remarks:

Trial pit completed at 4.00mbGL (scheduled depth). Inflowing groundwater was not observed. Hand vane tests undertaken using equipment no. RN1685. Hand penetrometer tests undertaken using Equipment no. RN1948. Sidewalls remained stable throughout excavation. Trial pit was backfilled with arisings.

Driller	Originator	Ground-water Struck	Rose To	Time(mins)	Cut Off
SB	SB				
Chk & App: IH	Status: **FINAL**				

RAEBURN

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No. TP03

Trial Pit to 3.60m

Location: E 245112.9 N 632377.4

Orientation: Vertical

Equipment: 14t tracked excavator

Width - 0.70m Length - 4.20m

Progress	Sample Depth	Samples and Tests Type	Result	Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
				109.60						
11/11/2022	0.50	B, D		108.90	0.70	TOPSOIL: Brown slightly organic slightly gravelly clayey fine to coarse sand with occasional rootlets. Gravel is sub-angular to sub-rounded, fine to coarse and of psammite, and sandstone.				
	1.50	D, LB				White grey and brown gravelly very clayey fine to coarse SAND with medium cobble content and low boulder content. Gravel is angular to sub-rounded, fine to coarse and of sandstone. Cobbles are angular to sub-rounded, up to 200mm and of sandstone. Boulders are sub-angular to sub-rounded, up to 400mm and of sandstone. ....beneath 0.80m depth - soils noted as damp.				
	2.50	B, D				....beneath 3.30m depth - boulders up to 800mm in size noted.		▼		
11/11	3.50	B, D		106.00	3.60	[BOULDER OBSTRUCTION] END OF TRIAL PIT				

Remarks:

Trial pit terminated at 3.60mbGL due to encountering a boulder obstruction. Inflowing groundwater was observed 3.30mbGL - slow seepage. Sidewalls noted as slightly unstable when excavating beneath 2.60mbGL. Trial pit was backfilled with arisings.

Driller	Originator
SB	SB
Chk & App	Status
IH	**FINAL**

Ground-water			
Struck	Rose To	Time(mins)	Cut Off
3.30	3.30		

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No. TP04

Trial Pit to 1.20m

Location: E 245144.1 N 632226.4

Orientation: Vertical

Equipment: Hand tools

Width - 0.40m Length - 0.40m

Progress	Sample Depth	Samples and Tests Type	Samples and Tests Result	Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
				114.42						
14/11/2022	0.20	D		114.12	0.30	TOPSOIL: Brown/ dark brown slightly organic slightly gravelly very clayey fine to medium sand with occasional roots. Gravel is fine to medium, sub-angular and of grey granite, white quartzite, and grey schist.				
	0.40	B, D, HP (196kPa) Hand Vane @ 0.40m = 122 kPa				Stiff brown light brown sandy slightly gravelly to gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is angular to sub-angular, fine to coarse and of sandstone, and quartzite. Cobbles are angular, up to 80mm and of sandstone.				
	0.70	B, D, HP (188kPa) Hand Vane @ 0.70m = 137 kPa				....beneath 0.60m depth - becoming brown.				
14/11				113.22	1.20	END OF TRIAL PIT				

Remarks:

Trial pit completed at 1.20mbGL due to reaching the maximum depth excavatable by hand digging methods. Trial pit position undertaken by hand excavation methods due to soft ground conditions excluding the use of mechanical plant. Inflowing groundwater was not observed. Hand vane tests undertaken using equipment no. RN1160. Hand penetrometer tests undertaken using RN1948. Sidewalls remained stable throughout excavation. Trial pit was backfilled with arisings.

Driller	Originator	Ground-water Struck	Rose To	Time(mins)	Cut Off
ADP/SB	ADP				
Chk & App	Status				
IH	**FINAL**				

RAEBURN

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No. TP05

Trial Pit to 1.20m

Location: E 245319.4 N 632298.7

Orientation: Vertical

Equipment: Hand tools

Width - 0.40m Length - 0.40m

Progress	Sample Depth	Samples and Tests Type	Samples and Tests Result	Level (m)	Depth	Description of Strata	Legend	Water Depth	Backfill Symbol	Backfill Depth
				106.01						
11/11/2022	0.20	D		105.56	0.45	TOPSOIL: Brown/ dark brown slightly organic slightly gravelly very clayey fine to medium sand with occasional roots. Gravel is fine to medium, sub-angular and of grey granite, white quartzite, and grey schist.				
	0.50	B, D, HP (172kPa) Hand Vane @ 0.50m = 120 kPa				Stiff brown orange sandy slightly gravelly CLAY with low cobble content. Sand is fine to medium. Gravel is angular to sub-angular, fine to coarse and of sandstone, quartzite, and schist. Cobbles are angular, up to 90mm and of sandstone.				
	0.70	B, D, HP (196kPa) Hand Vane @ 0.70m = 120 kPa				....beneath 0.60m depth - becoming grey brown.				
11/11				104.81	1.20	END OF TRIAL PIT				

Remarks:

Trial pit completed at 1.20mbGL due to reaching the maximum depth excavatable by hand digging methods. Trial pit position undertaken by hand excavation methods due to soft ground conditions excluding the use of mechanical plant. Inflowing groundwater was not observed. Hand vane tests undertaken using equipment no. RN1160. Hand penetrometer tests undertaken using RN1948. Sidewalls remained stable throughout excavation. Trial pit was backfilled with arisings.

Driller	Originator	Ground-water			
		Struck	Rose To	Time(mins)	Cut Off
ADP/DB	ADP				
Chk & App	Status				
IH	**FINAL**				

RAEBURN

Fig No:

Sheet 1 of 1

Scale 1:50

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

Hand Vane Test Report[6]

Contract: N3798

Site: Land at Camiscan Farm, Craigie, Kilmarnock South

Exploratory Hole No.	Date	Depth (mbGL)	Equipment No.	Undrained Shear Strength (kPa)				Remoulded Shear Strength (kPa)			
				Test 1	Test 2	Test 3	Average	Test 1	Test 2	Test 3	Average
BH01	10/11/22	0.50	RN1160	108	105	108	107	40	31	37	36
BH02	11/11/22	0.50	RN1160	108	108	111	109	37	40	40	39
BH03	8/11/22	0.40	RN1160	92	92	89	91	46	43	40	43
BH03	8/11/22	0.70	RN1160	138	138	131	136	46	49	37	44
TP01	11/11/22	0.50	RN1685	149	162	159	157	17	20	20	19
TP01	11/11/22	1.00	RN1685	190	182	195	189	26	20	26	24
TP01	11/11/22	1.50	RN1685	192	185	198	192	30	23	33	29
TP01	11/11/22	2.00	RN1685	182	202	195	193	17	30	30	26
TP01	11/11/22	2.50	RN1685	141	149	164	151	17	20	23	20
TP01	11/11/22	3.00	RN1685	192	193	182	189	28	28	25	27
TP01	11/11/22	3.50	RN1685	180	187	188	185	18	23	23	21
TP02	11/11/22	0.50	RN1685	86	99	91	92	17	17	18	17
TP02	11/11/22	1.00	RN1685	198	207	200	202	33	38	31	34
TP02	11/11/22	1.50	RN1685	195	205	203	201	25	33	33	30
TP02	11/11/22	2.00	RN1685	190	198	195	194	23	30	28	27
TP02	11/11/22	2.50	RN1685	182	180	190	184	17	17	21	18
TP02	11/11/22	3.00	RN1685	188	188	192	189	23	26	26	25
TP02	11/11/22	3.50	RN1685	207	198	202	202	38	36	38	37

Raeburn Drilling & Geotechnical (Northern) Ltd.
Badentoy Avenue,
Badentoy Industrial Park,
Portlethen,
Aberdeen
AB12 4YB
01224 782 538

(6) - Not a UKAS Accredited Test :
Approved signatories :
MB, AS, IH, TJM, AGS

Originator	Checked & Approved
ADP	IH
Site Engineer	Senior Geotechnical Engineer

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

Hand Vane Test Report[6]

Contract: N3798

Site: Land at Camiscan Farm, Craigie, Kilmarnock South

Exploratory Hole No.	Date	Depth (mbGL)	Equipment No.	Undrained Shear Strength (kPa)				Remoulded Shear Strength (kPa)			
				Test 1	Test 2	Test 3	Average	Test 1	Test 2	Test 3	Average
TP04	14/11/22	0.40	RN1160	123	123	120	122	46	46	40	44
TP04	14/11/22	0.70	RN1160	138	135	137	137	46	40	37	41
TP05	11/11/22	0.50	RN1160	123	123	115	120	38	40	31	36
TP05	11/11/22	0.70	RN1160	123	123	115	120	46	43	37	42

Raeburn Drilling & Geotechnical (Northern) Ltd.
Badentoy Avenue,
Badentoy Industrial Park,
Portlethen,
Aberdeen
AB12 4YB
01224 782 538

(6) - Not a UKAS Accredited Test :
Approved signatories :
MB, AS, IH, TJM, AGS

Originator	Checked & Approved
ADP	IH
Site Engineer	Senior Geotechnical Engineer

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

Hand Penetrometer Test Report(6)

Contract: N3798

Site: Land at Camiscan Farm, Craigie, Kilmarnock South

Exploratory Hole Location	Date	Depth (mbGL)	Equipment No.	Equivalent Unconfined Compressive Strength (kPa)			
				Test 1	Test 2	Test 3	Average
BH01	10/11/2022	0.50	RN1948	147	147	147	147
BH02	11/11/2022	0.50	RN1948	147	147	147	147
BH02	11/11/2022	1.50	RN1948	196	196	196	196
BH03	08/11/2022	0.40	RN1948	147	147	147	147
BH03	08/11/2022	0.70	RN1948	196	220	196	204
BH03	08/11/2022	1.50	RN1948	245	245	245	245
BH03	09/11/2022	2.50	RN1948	294	294	294	294
BH03	09/11/2022	3.50	RN1948	294	294	294	294
TP01	11/11/2022	0.50	RN1948	221	221	245	229
TP01	11/11/2022	1.00	RN1948	245	245	221	237
TP01	11/11/2022	1.50	RN1948	221	270	270	253
TP01	11/11/2022	2.00	RN1948	196	245	221	221
TP01	11/11/2022	2.50	RN1948	196	221	221	213
TP01	11/11/2022	3.00	RN1948	221	245	221	229
TP01	11/11/2022	3.50	RN1948	196	245	270	237
TP02	11/11/2022	0.50	RN1948	172	172	196	180
TP02	11/11/2022	1.00	RN1948	368	343	392	368
TP02	11/11/2022	1.50	RN1948	343	343	392	360
TP02	11/11/2022	2.00	RN1948	319	368	343	343
TP02	11/11/2022	2.50	RN1948	270	319	319	302
TP02	11/11/2022	3.00	RN1948	294	319	294	302
TP02	11/11/2022	3.50	RN1948	368	392	392	384
TP04	14/11/2022	0.40	RN1948	196	196	196	196
TP04	14/11/2022	0.70	RN1948	172	196	196	188
TP05	11/11/2022	0.50	RN1948	172	172	172	172
TP05	11/11/2022	0.70	RN1948	196	196	196	196

Raeburn Drilling & Geotechnical (Northern) Ltd.
Badentoy Avenue
Badentoy Industrial Park
Portlethen,
Aberdeen
AB12 4YB
01224 782 538

(6) - Not a UKAS Accredited Test :
Approved signatories :
MB, IH, TJM, AGS

Originator	Checked & Approved
SB/ADP	IH
Site Engineer	Senior Geotechnical Engineer

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

Peat Probe Report(6)

Contract: N3798

Site: Land at Camiscan Farm, Craigie, Kilmarnock South

Peat Probe Location	Date	Easting	Northing	Equipment No.	Total Depth Probed (mbGL)	Was Peat Evident?
PP01	10/11/2022	245078.63	632713.39	RN1947	0.80	No
PP02	10/11/2022	244979.66	632613.22	RN1947	0.90	No
PP03	10/11/2022	245078.51	632612.84	RN1947	0.80	No
PP04	10/11/2022	245178.66	632612.96	RN1947	0.60	No
PP05	10/11/2022	244983.46	632511.48	RN1947	0.60	No
PP06	10/11/2022	245078.95	632512.83	RN1947	0.57	No
PP07	11/11/2022	245179.01	632512.95	RN1947	0.10	No
PP08	11/11/2022	245079.04	632413.05	RN1947	0.10	No
PP09	11/11/2022	245078.96	632312.97	RN1947	0.08	No
PP10	11/11/2022	245178.58	632312.51	RN1947	0.30	No
PP11	11/11/2022	245279.12	632312.61	RN1947	1.05	No
PP12	11/11/2022	245379.26	632312.68	RN1947	0.75	No
PP13	10/11/2022	245079.60	632212.93	RN1947	0.30	No
PP14	10/11/2022	245179.02	632212.53	RN1947	0.65	No
PP15	11/11/2022	245278.71	632212.49	RN1947	0.25	No

Raeburn Drilling & Geotechnical (Northern) Ltd.
Badentoy Avenue
Badentoy Industrial Park
Portlethen,
Aberdeen
AB12 4YB
01224 782 538

(6) - Not a UKAS Accredited Test :
Approved signatories :
MB, IH, TJM, AGS

Originator	Checked & Approved
SB	IH
Site Engineer	Senior Geotechnical Engineer

RAEBURN
DRILLING & GEOTECHNICAL (NORTHERN) LTD

Groundwater Monitoring (during fieldwork period) Report[6]

Contract: N3798

Site: Land at Camiscan Farm, Craigie, Kilmarnock South

Date	Groundwater Level (mbGL) / Inflow comments		
	BH01	**BH02**	**BH03**
08/11/2022	--	--	Slow seepage at 1.20m at base of hand inspection pit.
09/11/2022	--	--	Groundwater strike observed at 4.00mbGL - rising to 2.74m in 20mins.
10/11/2022	Slow seepage at 1.20m at base of hand inspection pit.	--	--
	Groundwater strike observed at 4.00mbGL.	--	--
11/11/2022	Water level within groundwater monitoring standpipe dipped at 0.10maGL (above ground level).	Groundwater strike observed at 2.26mbGL - rising to 0.64m in 20mins.	Water level within groundwater monitoring standpipe dipped at 0.97mbGL prior to leaving site.
		Water level within groundwater monitoring standpipe dipped at 0.80mbGL prior to leaving site.	
14/11/2022	Water level within groundwater monitoring standpipe dipped at 0.10maGL (above ground level).	Water level within groundwater monitoring standpipe dipped at 0.65mbGL.	Water level within groundwater monitoring standpipe dipped at 0.72mbGL.

Raeburn Drilling & Geotechnical (Northern) Ltd.
Badentoy Avenue,
Badentoy Industrial Park
Portlethen,
Aberdeen
AB12 4YB
01224 782 538

(6) Not a UKAS Accredited Test :
Approved signatories :
MB, IH, TJM, AGS

Originator	Checked & Approved
ADP	IH
Site Engineer	Senior Geotechnical Engineer

APPENDIX C

PHOTOGRAPHS

Borehole Hand Inspection Pit Photographs

Dynamic Sample Photographs

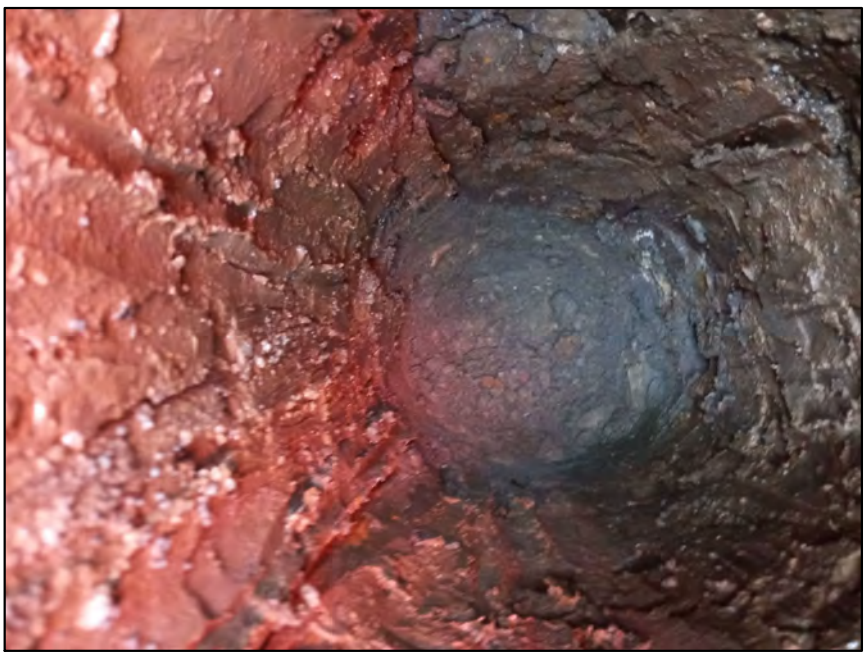
Rock Core Photographs

Trial Pit Photographs

Peat Probe Photographs

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **BH01**

Hand inspection pit



Hand pit view

	Originator: SB	Title: BOREHOLE HAND INSPECTION PIT PHOTOGRAPHS	RAEBURN	Fig No:
	Chk & App: IH	Status: Final		

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **BH02**

Hand inspection pit

Hand pit view

	Originator: SB	Title: BOREHOLE HAND INSPECTION PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **BH03**

Hand inspection pit

Hand pit view

	Originator: SB	Title: BOREHOLE HAND INSPECTION PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **BH02**

BH02: 1.20m-2.20m

	Originator: SB	Title: DYNAMIC SAMPLE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **BH03**

BH03: 1.20-2.20m

BH03: 2.20m-3.20m

	Originator SB	Title: DYNAMIC SAMPLE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **BH03**

BH03: 3.20m-3.70m

	Originator: SB	Title: DYNAMIC SAMPLE PHOTOGRAPHS	Fig No:
Chk & App: IH	Status: Final		

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Borehole No.
BH01

BH01: 1.50m-2.50m; 2.50m-2.80m; 2.80m-4.30m

BH01: 4.30m-5.80m

	Originator	Title:		Fig No:
	SB	ROCK CORE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Borehole No.** **BH02**

BH02: 2.50m-3.50m; 3.50m-5.00m

BH02: 5.00m-6.50m

	Originator: SB	Title: ROCK CORE PHOTOGRAPHS	Fig No:
Chk & App: IH	Status: Final		

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Borehole No.
BH03

BH03: 3.85m-6.35m

BH03: 6.35m-7.70m

	Originator	Title:		Fig No:
	SB	ROCK CORE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No.
TP01

General view of trial pit

Sidewall view

	Originator	Title:		Fig No:
	SB	TRIAL PIT PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No.
TP01

Sidewall view

Sidewall view

	Originator	Title:		Fig No:
	SB	TRIAL PIT PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **TP01**

Arisings

Reinstatement

	Originator SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **TP02**

General view of trial pit

Sidewall view

	Originator SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP02**

Sidewall view

Sidewall view

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	Fig No:
Chk & App: IH	Status: Final		

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP02**

Arisings

Reinstatement

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP03**

General view of trial pit

Sidewall view

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP03**

Sidewall view

Sidewall view

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	Fig No:
Chk & App: IH	Status: Final		

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP03**

Arisings

Reinstatement

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	Fig No:
Chk & App: IH	Status: Final		

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **TP04**

General view of hand excavated trial pit

Hand pit view

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP04**

Hand pit view

Arisings

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No.
TP04

Reinstatement

	Originator	Title:		Fig No:
	SB	TRIAL PIT PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **TP05**

General view of hand excavated trial pit

Hand pit view

	Originator: SB	Title: TRIAL PIT PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App: IH	Status: Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No.
TP05

Hand pit view

Arisings

	Originator	Title:		Fig No:
	SB	TRIAL PIT PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD

Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH

Client: Noriker Power Ltd

Engineer:

Contract No: N3798

Trial Pit No.
TP05

Reinstatement

	Originator	Title:		Fig No:
	SB	TRIAL PIT PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **PP01**

Peat Probe Location PP01 (marked by blue flag)

Peat Probe Location PP01 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP02**

Peat Probe Location PP02 (marked by blue flag)

Peat Probe Location PP02 (marked by blue flag)

	Originator	Title:	RAEBURN	Fig No:
	SB	PEAT PROBE PHOTOGRAPHS		
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP03**

Peat Probe Location PP03 (marked by blue flag)

Peat Probe Location PP03 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP04**

Peat Probe Location PP04 (marked by blue flag)

Peat Probe Location PP04 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP05**

Peat Probe Location PP05 (marked by blue flag)

Peat Probe Location PP05 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **PP06**

Peat Probe Location PP06 (marked by blue flag)

Peat Probe Location PP06 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP07**

Peat Probe Location PP07 (marked by blue flag)

Peat Probe Location PP07 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP08**

Peat Probe Location PP08 (marked by blue flag)

Peat Probe Location PP08 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP09**

Peat Probe Location PP09 (marked by blue flag)

Peat Probe Location PP09 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH	Contract No: N3798
	Client: Noriker Power Ltd	Trial Pit No. PP10
	Engineer:	

Peat Probe Location PP10 (marked by blue flag)

Peat Probe Location PP10 (marked by blue flag)

	Originator	Title:		Fig No:
	SB	PEAT PROBE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP11**

Peat Probe Location PP11 (marked by blue flag)

Peat Probe Location PP11 (marked by blue flag)

	Originator	Title:		Fig No:
	SB	PEAT PROBE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP12**

Peat Probe Location PP12 (marked by blue flag)

Peat Probe Location PP12 (marked by blue flag)

	Originator	Title:		Fig No:
	SB	PEAT PROBE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 Trial Pit No. **PP13**

Peat Probe Location PP13 (marked by blue flag)

Peat Probe Location PP13 (marked by blue flag)

	Originator SB	Title: PEAT PROBE PHOTOGRAPHS	RAEBURN	Fig No:
Chk & App IH	Status Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP14**

Peat Probe Location PP14 (marked by blue flag)

Peat Probe Location PP14 (marked by blue flag)

	Originator	Title:		Fig No:
	SB	PEAT PROBE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

RAEBURN DRILLING & GEOTECHNICAL (NORTHERN) LTD	Site: LAND AT CAMISCAN FARM, CRAIGIE, KILMARNOCK SOUTH Client: Noriker Power Ltd Engineer:	Contract No: N3798 **Trial Pit No.** **PP15**

Peat Probe Location PP15 (marked by blue flag)

Peat Probe Location PP15 (marked by blue flag)

	Originator	Title:		Fig No:
	SB	PEAT PROBE PHOTOGRAPHS	RAEBURN	
Chk & App	Status			
IH	Final			

APPENDIX D

CERTIFICATION

SPT Hammer Energy Test Report

Hand Vane Calibration Records

RAEBURN
DRILLING & GEOTECHNICAL LTD

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Raeburn Drilling & Geotechnical
Whistleberry road
Hamilton
ML3 0HP

SPT Hammer Ref:	AB1 2022
Test Date:	29/08/2022
Report Date:	29/08/2022
File Name:	AB1 2022.spt
Test Operator:	K.STEELE

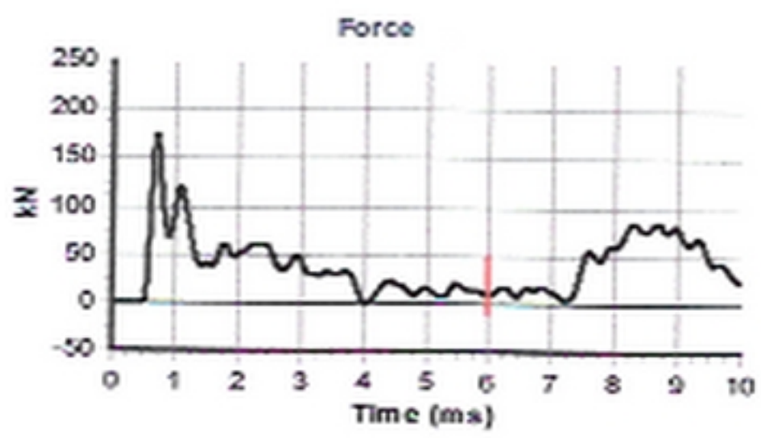
Instrumented Rod Data

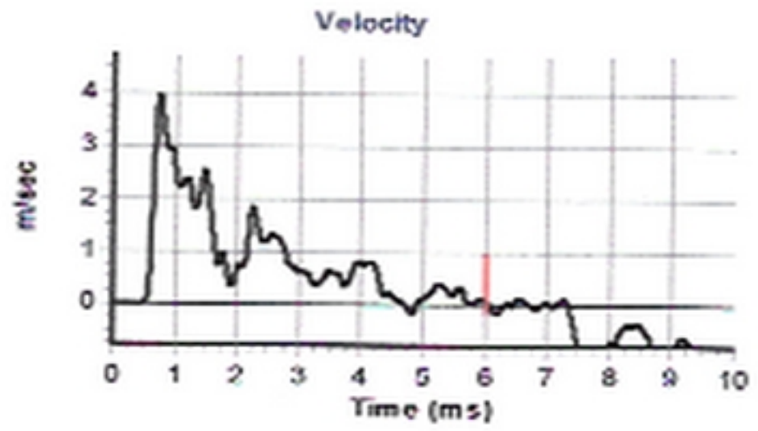
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.9
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	69559
Accelerometer No.2:	69560

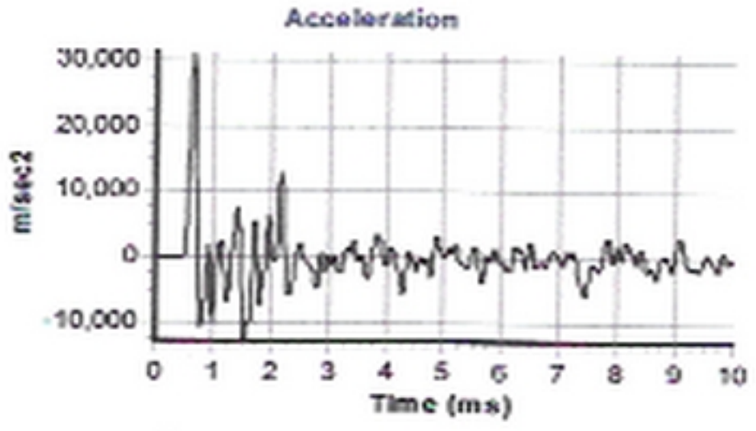
SPT Hammer Information

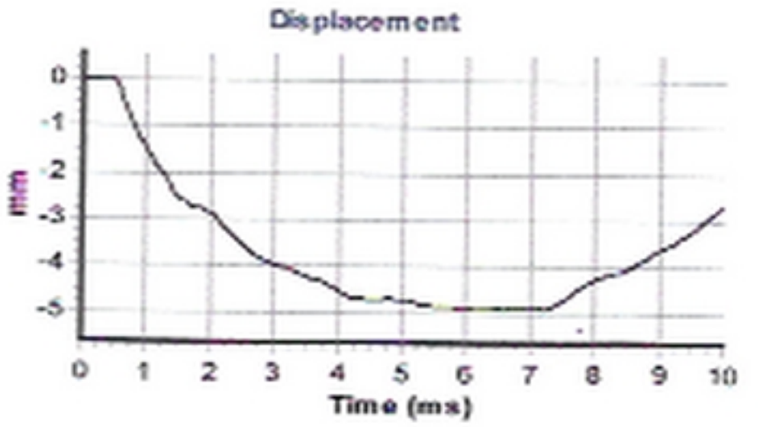
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.5

Comments / Location









Calculations

Area of Rod A (mm2):	1021
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	347

Energy Ratio E_r (%): **73**

The recommended calibration interval is 12 months

Signed: Kevin Steele
Title: Head Storeman

Universal Instrument Services
14 Rose Way, Blaby,
Leicester LE8 4BY
Tel: 0116 275 0123
www.uiscal.com
e-mail: sales@uiscal.co.uk

CERTIFICATE OF CALIBRATION

Date of Calibration: 2nd August 2022		Certificate	
Date of issue:	2nd August 2022	Number: 00358786	Page 1 of 3

Acc No	RAE001	**Manufacturer**	IMPACT TEST EQUIPMENT
Customer	Raeburn Drilling & Geotech Ltd	**Description**	Hand Vane Tester
	Badentoy Industrial Estate	**Model**	SL810
	Portlethen	**Serial No**	821
Engineer	W.Kendall	**Asset No**	RN1160
Our Ref	454916	**Order No**	

CONDITION OF INSTRUMENT	YES/NO
The instrument was adjusted	N
The instrument was repaired	N

ADDITIONAL COMMENTS

STABILITY
The readings only apply to the equipment detailed above and are the results at the time of calibration, they do not carry any implication regarding the long term stability of the unit under test.

ACCREDITATIONS
This calibration is based on our accreditations to the BMS of BS EN ISO 9001:2015 and BS EN ISO/IEC 17025:2017.

PROCEDURE
UIS procedure CP7.7.10

ENVIRONMENT
The ambient conditions throughout the test were 20 °C ± 2 °C, 45 %rh ± 20 %rh.

TRACEABILITY
The test equipment used is traceable to National Standards. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95%.

TEST EQUIPMENT USED

Asset No.	Description	Certificate No.	Expiry date
ID347	ETS 10Nm	261522	17/AUG/2022
ID1123	Digital Calliper	66400	30/JUN/2024

CERTIFICATE OF CALIBRATION

Date of Calibration: 2nd August 2022 | Certificate
Date of issue: 2nd August 2022 | Number: 00358786 |

Calculated for the 33mm blades as per BS 1377.

Div	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
kPa	0	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	8	8	8	9	9	9	9	10
Div	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
kPa	10	10	10	11	11	11	12	12	12	12	13	13	13	14	14	14	14	15	15	15	15	16	16	16	17	17	17	17	18	18	18	18	19	19	19
Div	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
kPa	20	20	20	20	21	21	21	22	22	22	22	23	23	23	23	24	24	24	25	25	25	25	26	26	26	26	27	27	27	28	28	28	28	29	29
Div	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
kPa	29	30	30	30	30	31	31	31	31	32	32	32	33	33	33	33	34	34	34	34	35	35	35	36	36	36	36	37	37	37	37	38	38	38	39

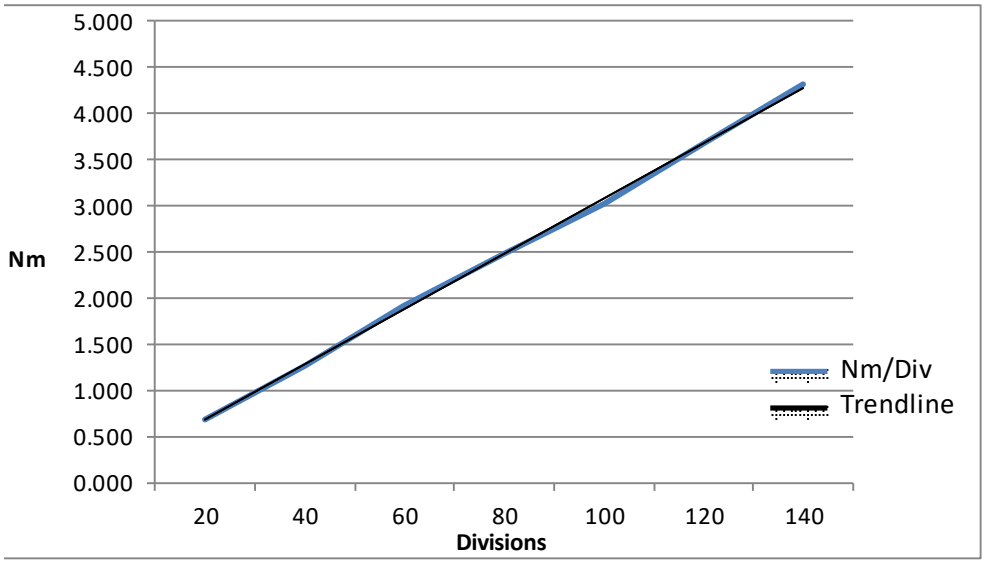
Calculated for the 19mm blades as per BS 1377.

Div	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
kPa	2	3	5	6	8	9	11	12	14	15	17	18	20	22	23	25	26	28	29	31	32	34	35	37	38	40	42	43	45	46	48	49	51	52	54
Div	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
kPa	55	57	58	60	62	63	65	66	68	69	71	72	74	75	77	78	80	82	83	85	86	88	89	91	92	94	95	97	98	100	102	103	105	106	108
Div	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
kPa	109	111	112	114	115	117	118	120	122	123	125	126	128	129	131	132	134	135	137	138	140	142	143	145	146	148	149	151	152	154	155	157	158	160	162
Div	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
kPa	163	165	166	168	169	171	172	174	175	177	178	180	182	183	185	186	188	189	191	192	194	195	197	199	200	202	203	205	206	208	209	211	212	214	215

CERTIFICATE OF CALIBRATION

Date of Calibration: 2nd August 2022 | Certificate
Date of issue: 2nd August 2022 | Number: 00358786 |

Vane Divisions	Mean Measured Torque(N·m)	Torque Uncertainty	Confidence Level
20	0.683	± 0.05 N·m	k=2.00
40	1.272	± 0.05 N·m	k=2.00
60	1.906	± 0.06 N·m	k=2.00
80	2.473	± 0.06 N·m	k=2.00
100	3.010	± 0.05 N·m	k=2.00
120	3.662	± 0.06 N·m	k=2.00
140	4.312	± 0.05 N·m	k=2.00



Shear strength constant (kPa/Div): 33mm blade 0.28
19 mm blade 1.54

Method of test

The vane was rotated in a clockwise direction until the pointer was aligned with the calibration value. The applied force was then recorded. This was repeated 5 times and the mean of the readings calculated at each calibration point. The resolution is the N.m equivalent to the readability of the vane scale.

Uncertainties

The uncertainties must also be taken into account when determining compliance with specifications.

Dimensional uncertainties +/- 0.1mm

Calibrated by .....
Universal Instrument Services Ltd.

Universal Instrument Services
14 Rose Way, Blaby,
Leicester LE8 4BY
Tel: 0116 275 0123
www.uiscal.com
e-mail: sales@uiscal.co.uk

CERTIFICATE OF CALIBRATION

Date of Calibration: 20th July 2022		Certificate	
Date of issue:	20th July 2022	Number: 00358378	Page 1 of 3

Acc No	RAE001	**Manufacturer**	IMPACT TEST EQUIPMENT
Customer	Raeburn Drilling & Geotech Ltd	**Description**	Hand Vane Tester
	Badentoy Industrial Estate	**Model**	SL810
	Portlethen	**Serial No**	1635
Engineer	W.Kendall	**Asset No**	RN1685
Our Ref	454411	**Order No**	

CONDITION OF INSTRUMENT	YES/NO
The instrument was adjusted	N
The instrument was repaired	N

Reported results lie within the stated limits "P" or outside the stated limits "F"

ADDITIONAL COMMENTS

STABILITY
The readings only apply to the equipment detailed above and are the results at the time of calibration, they do not carry any implication regarding the long term stability of the unit under test.

ACCREDITATIONS
This calibration is based on our accreditations to the BMS of BS EN ISO 9001:2015 and BS EN ISO/IEC 17025:2017.

PROCEDURE
UIS procedure CP7.7.10

ENVIRONMENT
The ambient conditions throughout the test were 18 °C to 28 °C, humidity <85%rh.

TRACEABILITY
The test equipment used is traceable to National Standards. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95%.

TEST EQUIPMENT USED

Asset No.	Description	Certificate No.	Expiry date
ID347	ETS 10Nm	261522	17/AUG/2022
ID1123	Digital Calliper	66400	30/JUN/2024

CERTIFICATE OF CALIBRATION

Date of Calibration: 20th July 2022
Date of issue: 20th July 2022

Certificate Number: 00358378

Calculated for the 33mm blades as per BS 1377.

Div	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
kPa	0	1	1	1	2	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	7	8	8	8	9	9	9	10	10	10	11	11
Div	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
kPa	11	12	12	12	12	13	13	13	14	14	14	15	15	15	16	16	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	21	22
Div	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
kPa	22	22	23	23	23	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	29	29	29	30	30	30	30	31	31	31	32	32	32	33
Div	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
kPa	33	33	34	34	34	35	35	35	35	36	36	36	37	37	37	38	38	38	39	39	39	40	40	40	40	41	41	41	42	42	42	43	43	43	44

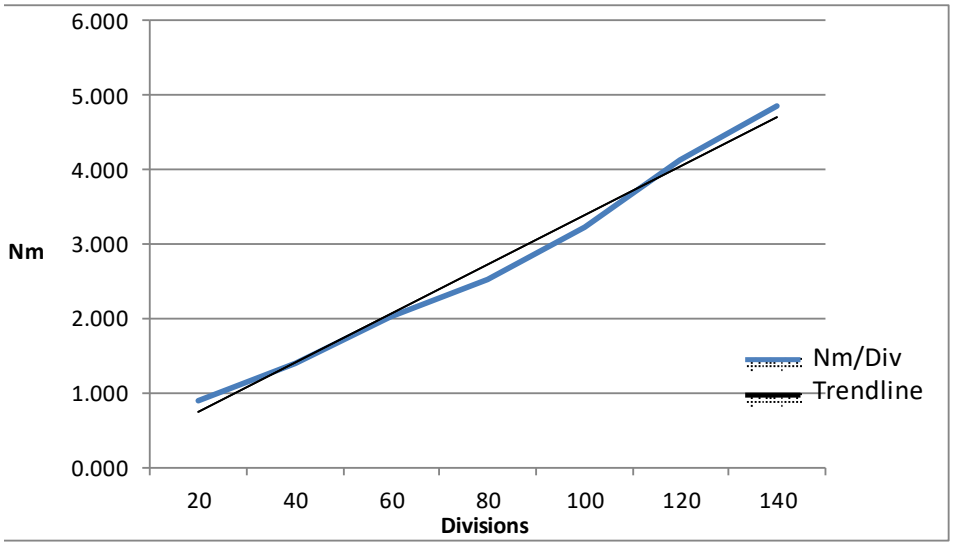
Calculated for the 19mm blades as per BS 1377.

Div	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
kPa	2	3	5	7	8	10	12	13	15	17	18	20	21	23	25	26	28	30	31	33	35	36	38	40	41	43	45	46	48	50	51	53	55	56	58
Div	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
kPa	60	61	63	64	66	68	69	71	73	74	76	78	79	81	83	84	86	88	89	91	93	94	96	98	99	101	103	104	106	107	109	111	112	114	116
Div	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
kPa	117	119	121	122	124	126	127	129	131	132	134	136	137	139	141	142	144	146	147	149	150	152	154	155	157	159	160	162	164	165	167	169	170	172	174
Div	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
kPa	175	177	179	180	182	184	185	187	188	190	192	193	195	197	198	200	202	203	205	207	208	210	212	213	215	217	218	220	222	223	225	227	228	230	231

CERTIFICATE OF CALIBRATION

Date of Calibration: 20th July 2022 | Certificate
Date of issue: 20th July 2022 | Number: 00358378 |

Vane Divisions	Mean Measured Torque(N·m)	Torque Uncertainty	Confidence Level
20	0.898	± 0.06 N·m	k=2.00
40	1.396	± 0.05 N·m	k=2.00
60	2.010	± 0.06 N·m	k=2.00
80	2.512	± 0.06 N·m	k=2.00
100	3.216	± 0.06 N·m	k=2.00
120	4.136	± 0.07 N·m	k=2.10
140	4.856	± 0.07 N·m	k=2.00



Shear strength constant (kPa/Div):	33mm blade	0.31
	19 mm blade	1.65

Method of test

The vane was rotated in a clockwise direction until the pointer was aligned with the calibration value. The applied force was then recorded. This was repeated 5 times and the mean of the readings calculated at each calibration point. The resolution is the N.m equivalent to the readability of the vane scale.

Uncertainties

The uncertainties must also be taken into account when determining compliance with specifications.

Dimensional uncertainties +/- 0.1mm

Calibrated by .....
Universal Instrument Services Ltd.