

Proposed Gas Engine Power Plant

At Protos,
Ince Marshes,
near Ellesmere Port,
Cheshire.

Ground Investigation
Phase 2 Geoenvironmental

Client: Forsa Energy Gas Holdings Limited
Reference: E5601-1326
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1 INTRODUCTION

It is proposed to construct a 50MW gas engine power plant on land at Protos Energy Park, Ince Marshes, near Ellesmere Port, Cheshire. On the instructions of Forsa Energy Gas Holdings Limited, a desk study (Phase 1 Geoenvironmental including a Conceptual Site Model) was initially undertaken to provide preliminary information on the ground conditions at the site for foundation design of the proposed works, to assess any likely geochemical contamination of the site and to assess the likely stability of the site with respect to past mining. The results of that work were given in report 5601_Protos_GCRrepDS, dated May 2023.

The current report presents the results of the ground investigation that was considered necessary by that desk study and draws conclusions based on the information contained within both documents.

The comments given in this report and the opinions expressed are based on the information available. There may be, however, conditions pertaining to the site which have not been disclosed by the investigation and which therefore could not be taken into account.

The recommendations of this report are based on an interpretation of legislation, Codes of Practice, guidance notes and current research opinion. Such guidance, 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 inadequately to address the position at that time. Further, the situation may be subject to varied interpretation by statutory authorities and others, for which Green Cat Geotechnical cannot be responsible.

No responsibility can be taken for specific design proposals not detailed or advised at the time of compilation of this report. The report has been designed for the specific proposed developments.

2 LOCATION OF SITE

The proposed gas energy generating station lies on land south of Protos Energy Park and north of Perimeter Road, some 1km north-east of Elton and around 7km east of Ellesmere Port, Cheshire. The M56 motorway lies around 1.3km to the south of the site.

The site, which is roughly rectangular but with a proposed access track branching northwards from its north-western corner, extends to an area of around 1.22ha. It is centred on approximate National Grid reference SJ465761.

Plans showing the approximate location of the site are given in Annex C, Figure C1.

3 PROJECT DETAILS

It is understood that the proposed gas engine power plant will comprise eleven gas engine units, transformers, switchgear, a gas pressure reducing station, an office and welfare building and other related infrastructure.

It will be accessed along a newly constructed access track, which will have site entrances on both Perimeter Road to the south and Grinsome Road to the north.

4 SUMMARY OF DESK STUDY

It is not proposed to repeat the findings of the desk study. Rather, the two documents should be read in conjunction with one another. However, the following summarises the conclusions of the report and the information used to determine the scope of the present ground investigation.

The site of the proposed development comprises a roughly rectangular area of open, boggy, grazing land, which lies within two wider fields. The ground level is generally flat across the area. The fields in which the site lies are bounded by a post and wire fence on all sides, which was often in poor condition and was flanked by trees and shrubs on the western and northern site boundaries.

The fields are bounded on the south by a rough gravel track (an internal road within Protos), beyond which there is a haulage yard. There is an area of derelict land to the west, further grazing land to the east and three substations in the field to the north.

The geological maps for the area indicate that the site is underlain by tidal flat deposits, so likely soft clays, silts and sands. With depth, the shallow tidal soils will be underlain by glacial till (“diamicton” – so likely “boulder clay”). The geological maps do not show the presence of any made ground or peat on or near to the site.

Bedrock is indicated to belong to the Kinnerton Sandstone Formation, of early Triassic age, and would be expected to comprise predominantly fine to medium grained aeolian sandstones.

No underground mining would be expected beneath the site and the risks to the site from past mining/quarrying are considered to be negligible.

The site itself would appear never to have been developed and only ever have comprised farmland. The use of the site as farmland is not considered to be contaminative.

The site lies reasonably close to a number of industrial sites, both past and present, including a fertiliser factory, a glass factory and two former power stations. However, none are considered likely to have given rise to any significant contamination on the site itself.

Essentially, the desk study identified the only source of potential contamination on the site would be from any made ground that had been deposited on the site during construction of the road to the south or a railway siding (now dismantled) to the east. The nature of any such contamination would depend on the source of the soils, but could include contamination by metals, hydrocarbons (including PAHs), acids and alkalis and potentially asbestos. Although unlikely given the topography of the site, if any made ground was of significant thickness, then hazardous ground gases (carbon dioxide and methane) could also be generated. Hazardous ground gases could also be generated by the natural soils beneath the site.

Overall, the geoenvironmental risks for the proposed development were assessed generally as low, or low to moderate if some made ground was found at the site.

5 GROUND INVESTIGATION

5.1 Site Work

The site work was carried out in March and April 2023, in accordance with the guidelines laid down in BS5930+A1 (2020), BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and BS10175+A2 (2017). A schedule of the site works is given in Annex A, Figure A0. The results of the site work are given in Annex A.

Three boreholes were sunk by cable percussion drilling methods, two of which were continued by rotary drilling once bedrock had been reached. A further four boreholes were sunk by rotary drilling methods only. Sixteen machine excavated trial pits and two hand excavated trial pits were also sunk across the site. The positions of all of the exploratory points were set out and recorded on site by Green Cat Geotechnical, using a hand-held GPS. The approximate locations of the exploratory points are shown on the site plans (Annex C, Figures C2 and C3).

The depths of the boreholes and trial pits, descriptions of the strata encountered and comments on the groundwater conditions are given in the borehole and trial pit records (Annex A, Figures A1 to A25).

The records provide descriptions of the materials encountered in accordance with BS EN ISO 14688-1 (2018) and 14689-1 (2018), for soils and rocks respectively, as amplified by BS 5930+A1 (2020).

Disturbed samples were taken at the depths shown on the borehole and trial pit records and were despatched, together with the rock core, to the laboratory of Green Cat Geotechnical at Livingston for examination and testing. Each sample was uniquely identified and a transmittal note system used throughout sample transfer.

In boreholes BH1R, BH02 and BH3R, where artesian groundwater was encountered, the borehole casing was raised until static groundwater conditions were met and the boreholes grouted to seal off the groundwater.

Infiltration tests were undertaken in trial pits TPINF01 and TPINF02. The results of the tests are given in Annex A, Figures A26 and A27.

The California bearing ratio (CBR) was determined by TRL Dynamic Cone Penetrometer (DCP) testing at eleven locations along the route of the proposed access track. The results of the testing are given in Annex A, Figures A28 to A38 and the approximate locations of the tests are shown on the site plans (Annex C, Figures C2 and C3).

Hand vane tests were undertaken at shallow depths in trial pits TP-R-01 to TP-R-08. The results of the testing are given in Annex A, Figure A39.

Soil resistivity testing was undertaken at two locations on the site. The results of the testing are given in Annex A, Figure A40 and the approximate locations of the tests are shown on the site plan (Annex C, Figure C2).

A nominal 50mm standpipe was installed in three of the boreholes, the details of which are given on the relevant borehole records. The results of ground gas and groundwater monitoring undertaken in the standpipes following the site work are given in Annex A, Figure A41.

Photographs of the trial pits are given in Annex A, Figures A42 to A57.

5.2 Laboratory Testing

All of the laboratory testing was carried out at UKAS accredited laboratories.

The geotechnical testing was undertaken at the laboratory of Green Cat Geotechnical in Livingston. The results of the testing are given in Annex B.

The geochemical testing (pH and sulphate) was undertaken at the UKAS accredited laboratory of i2 Analytical Limited in East Kilbride. The results of the testing are also given in Annex B.

6 GROUND CONDITIONS

Across the site, the boreholes and trial pits essentially encountered a thin (0.10m to 0.20m) surface layer of topsoil, underlain by mixed tidal flat deposits and peat to depths between 6.50m and at least 12.0m, which rested on glacial soils and in turn sandstone bedrock, at depths between 26.10m and 26.80m.

In all of the exploratory points, a band of slightly sandy clay was present beneath the topsoil, which was generally noted to be firm in consistency, but occasionally stiff, and often contained rootlets and pockets of sand. All of the shallow trial pits excavated along the route of the proposed access track (TP-R-01 to TP-R-08, HPO1 and HPO2) were terminated in this band of clay at scheduled depths between 0.40m and 0.60m for hand vane or DCP testing. In the remaining boreholes and trial pits, this shallow clay band extended to depths between 0.60m and 1.40m.

Underlying the clay, the boreholes and trial pits found a relatively thick band of fibrous peat, which often contained plant fragments, in which trial pit TP04 was terminated at a depth of 3.50m. Elsewhere, peat was encountered to depths generally between 2.70m and 3.70m, but extended to a depth of 6.20m in borehole BH03 in the east of the site.

Beneath the peat, the remaining exploratory points found very soft through soft to firm clay, in which trial pits TP01 to TP03, TP05 and TP06 were terminated at depths between 3.30m and 3.70m.

Boreholes BH1A and BH2A, both of which were sunk in order to install a standpipe for ground gas/water monitoring, were terminated either in peat, or in the underlying soft clay at a depth of 5.00m.

In boreholes BH01 and BH02, a second, deeper, band of peat was encountered within the very soft cohesive soils, some 1.00m to 1.70m thick and generally noted to contain pockets and bands of clay. This lower peat band was not found in borehole BH03, although the cohesive soils in that borehole contained occasional thin bands/pockets of peat and organic material.

In boreholes BH02 and BH03, the very soft cohesive soils graded into loose or very loose silty gravelly sand, in which borehole BH03 was terminated at a depth of 12.00m.

Underlying loose sand in borehole BH02, or directly beneath the lower band of peat in borehole BH01, the remaining cable percussion boreholes found firm becoming stiff slightly sandy slightly gravelly clay with cobbles (glacial clay). In borehole BH02, the glacial clay contained bands of granular material.

In the cable percussion borehole BH01, the stiff glacial clay was underlain by medium dense silty gravelly sand, with cobbles and occasional bands of very soft clay, in which the borehole was terminated at a depth of 20.45m.

Borehole BH02 continued to encounter the glacial soils to 25.20m, at which depth they rested on dense clayey gravelly sand. Beneath the dense sand, which was considered possibly to be completely weathered bedrock, the cable percussion part of the borehole found rockhead at a depth of 26.80m. That borehole was continued by rotary drilling.

Boreholes BH1R and BH3R, sunk by rotary drilling methods only, found sandy clay or silty gravelly sand to rockhead at depths of 26.40m and 26.10m, respectively.

Bedrock comprised generally medium strong or strong, but weathered locally to weak or very weak, sandstone, in which the remaining rotary boreholes BH1R, BH02 and BH3R were terminated at depths between 30.00m and 31.50m.

Groundwater was encountered at depths between 0.65m and 1.30m during excavation of trial pits TP01 to TP06, TPINF01 and TPINF02. However, the shallow trial pits TP-R-01 to TP-R-08 remained dry during the site works.

In borehole BH01, groundwater was encountered during drilling in the shallow soils at a depth of 1.70m, then again in the deeper glacial soils at a depth of 12.70m. In the rotary borehole BH1R, groundwater was encountered at a depth of 26.40m (rockhead) and appeared artesian as it rose to 2.35m above ground level.

In borehole BH02, groundwater was encountered overnight once the borehole had been drilled to a depth of 10.00m and rose to 6.30m. A second groundwater strike was recorded in the glacial soils at a depth of 15.50m. Once the borehole was progressed into the granular soils between around 22.00m and 24.00m depth, the groundwater rose to a depth of 0.30m above ground level, suggesting groundwater is under pressure in the soils at that depth.

In the cable percussion borehole BH03, groundwater was again struck overnight, and rose to a depth of 2.30mbgl. In the rotary borehole BH3R, the groundwater again appeared artesian as it rose above ground level once the borehole had been progressed into the deeper soils and rock.

During the monitoring undertaken following the site work (May and June 2023), the standing water level lay at depths between 0.20m and 0.60m in the standpipes across the site.

It should be noted that the artesian groundwater encountered may vary locally and could rise above the levels at which it was recorded during the ground investigation. Groundwater may also be subject to seasonal or other variations.

7 GEOTECHNICAL CONSIDERATIONS

7.1 Foundation Design and Construction

Indications from the exploratory points across the site are that, beneath the topsoil, the shallow soils are generally poor and that the poorer soils extend to fairly significant depths.

Although there is a band of firm or stiff clay immediately beneath the topsoil, the results of the boreholes and trial pits show this to be thin (between 0.60m and 1.40m) and in all locations underlain by a band of peat of fairly significant thickness, which itself is underlain by very soft cohesive or loose granular soils to depths of at least 12.0m, possibly greater.

On that basis, conventional spread footings are not considered likely to be suitable at the site. It would appear necessary to adopt an alternative foundation solution.

Consideration could be given to the improvement of the ground in-situ, through the use of vibro techniques. Using vibro, improvement of the soils is achieved by means of close spaced insertion of a heavy high frequency vibrating poker beneath the positions of the proposed foundations. Stone is fed into the holes made by the poker and compacted by means of repeated insertions and withdrawals of the unit, thus forming dense stone columns through the ground upon which conventional foundations may be constructed.

However, at the present site the shallow soils may be too thick and/or too poor for vibro improvement methods to be practicable or indeed economic. Additionally, significant thicknesses of peat were encountered, the density of which is unlikely to be improved using vibro techniques. As an alternative to stone, the use of Vibro Concrete Columns (VCCs) could be considered, whereby concrete is fed down each of the holes made by the poker rather than stone. However, the use of VCCs may be considered impracticable given the depths to which the poorer soils extend. On balance, it is considered that vibro methods are unlikely to be practicable at the site. However, the advice of specialist contractors would be worthwhile prior to making any final decision.

Should vibro improvement methods be deemed impracticable then the adoption of piled foundations may be required, with the proposed foundation loadings taken beneath the poorer soils, to the underlying stiff glacial soils or sandstone bedrock. In that regard, it should be noted that the stiff glacial soil was not of consistent thickness, was underlain by loose granular soils in borehole BH02 and does not appear to have been encountered at all in boreholes BH03/BH3R.

The carrying capacity of an individual pile comprises the end bearing resistance of the toe, together with the shaft resistance along the embedded length.

Both bored or driven piles would appear suitable in the ground conditions encountered at this site. The effects of noise and vibration associated with driven piles should be borne in mind. However, as the site lies within an open, industrial area, such effects may be less critical than in a more urban environment.

Bored and cast-in-place piles would minimise the effects of vibration and may also allow for a significant rock socket to be formed by chiselling or rotary drilling, which may significantly improve the carrying capacity of each individual pile. Furthermore, it is essential that the piles are not “hung up” on cobbles or boulders within the overburden, which is not always easy to guarantee with driven piles.

To that end, the adoption of bored and cast-in-place concrete piles would allow for examination of materials in the base of the pile holes and so they may be the most suitable option at the present site.

Lining tubes would be required with bored and cast-in-place concrete piles and care would have to be taken during concreting to avoid necking or waisting of the pile shaft when the liners are withdrawn.

Given the depths at which groundwater was encountered across the site, water is likely to be met in the pile holes. Care will require to be taken during piling to avoid the removal of excess material when forming pile shafts in any granular soils. Underwater concreting techniques will almost certainly require to be used. Significant difficulties may also be experienced when piling into the deeper soils or bedrock as a result of the artesian groundwater conditions encountered, which must be taken into account during the design of any piled foundations.

It will be appreciated that a number of suitable pile types and spacings may be designed to carry any given load. Obviously, it is impractical to assess every possible piling system at this stage. Therefore, it would be advisable to consult specialist piling contractors as to the suitability of their particular piles and equipment in the ground conditions at the site, and as to the size of pile and penetrations they would advise to support the loadings proposed and to maintain settlements within acceptable limits, as well as address any artesian conditions.

However, soil parameters which may be used in preliminary pile design are given in the table below. These parameters are based on results of the in-situ testing, together with experience of similar materials.

Soil Type	Wet Density (Mg/m ³)	Apparent Cohesion (kN/m ²)	Angle of Shearing Resistance (degrees)
Soft and very soft CLAY	1.80	20	0
Firm and stiff glacial CLAY	2.00	70	0
Loose to medium dense GRANULAR SOIL	1.80	0	28
Dense GRANULAR SOIL (probably completely weathered BEDROCK)	2.00	0	32

Depending on the thickness of any material placed to form access tracks or areas of hardstanding at the site, some settlement of the underlying peat may take place. Accordingly, it would be prudent to allow for the potential effects of negative skin friction in the pile design.

Based on the information from the boreholes, it would appear reasonable to assume an allowable end bearing resistance of 1000kN/m² and an allowable shaft resistance of 100kN/m² in sound sandstone bedrock.

Should the use of both vibro methods and piled foundations be considered impracticable, then, depending on the proposed loadings and the sensitivity of the equipment to settlement, consideration could be given to the use of raft foundations placed in the shallow soils at the site.

7.2 Other Geotechnical Aspects

The results of the ground investigation suggest that groundwater may enter foundation excavations. Normal sump pumping may cope with the quantities of groundwater which could be reasonably anticipated. If pumping operations are undertaken, care should be taken to ensure that fine material is not removed from the surrounding ground thus causing instability. However, depending on the depth and size of the excavations at the site, some form of dewatering or other groundwater control may be needed.

Close support should be provided to any vertically sided excavations where man access is required.

The results of the two infiltration tests carried out were affected by surface water running into the trial pit during the tests and therefore should not be relied upon.

The results of the Dynamic Cone Penetrometer (DCP) testing carried out suggest CBR values generally between around 2 per cent and 4 per cent in the cohesive soil immediately beneath the topsoil at the site. Based on the results of the testing it is recommended that the lower bound value of 2 per cent should be used for preliminary design purposes. However, although it does not appear to have been encountered during any of the DCP tests, the results of the boreholes and trial pits indicate peat to be present at depths as shallow as 0.60m in parts of the site. An allowance should therefore be made for the presence of peat at relatively shallow depths in the design of proposed access tracks and areas of hardstanding at the site.

8 GEOENVIRONMENTAL CONSIDERATIONS

8.1 Introduction

As anticipated based on the results of the desk study, no made ground was found on the site during the ground investigation. On that basis, it is now possible to confirm that the geoenvironmental risks at the site are limited only to those with natural sources – so sulphates, corrosives and potentially ground gases. These are discussed in the following sub sections.

8.2 Ground Gases

The British Standard and CIRIA C665 indicate that the risks with respect to soil gases should be assessed primarily on the basis of gas flux from the ground but also on the basis of its source, the concentrations of the different gases and on the sensitivity of the development. The proposals and results of the monitoring have been assessed under BS8485+A1 (2019).

Present guidance recommends that for a commercial/industrial scenario, considered to be of low sensitivity, four monitoring visits should be carried out over a period of at least one month. At least two of those visits should take place in conditions of low atmospheric pressure, those considered most likely to result in significant concentrations of hazardous ground gas. The standpipes have been read on four occasions. However, none of those monitoring visits took place in conditions of low atmospheric pressure.

Concentrations of methane reached a maximum of 5.2 per cent volume. Carbon dioxide concentrations reached a maximum of 11.4 per cent. Concentrations of hydrogen sulphide and carbon monoxide were below detection limit throughout. For the purposes of this assessment, recorded negative flows have been noted as positive, and so flow rates have ranged between less than 0.1 l/hr (the detection limit of the instrument) up to a maximum of 4.4 l/hr.

The maximum gas flux found on any occasion has therefore been 0.16 l/hr of methane and 0.34 l/hr of carbon dioxide.

Taking the highest concentration of methane or carbon dioxide on any occasion, together with the highest flow rate from any standpipe on any occasion (known as the “worst case check”) the Gas Screening Value (GSV) is calculated as 0.5 l/hr of carbon dioxide. The GSV therefore lies within Characteristic Situation CS-2, which has a lower threshold of 0.07 l/hr. Further, even if only recorded positive flow rates are used for the assessment, the GSV would only decrease to 0.34 l/hr of carbon dioxide, which would still lie within the threshold values for Characteristic Situation CS-2.

On this basis, it is recommended that the site should be regarded as exhibiting ground gas conditions consistent with Characteristic Situation CS-2, as defined in BS8485+A1 (2019). Further discussion of this is required and is given in section 8.5.

8.3 Buried Concrete and Services

The results of 2:1 water soluble sulphate testing of the soil indicate concentrations of between 5.7 mg/l and 564 mg/l, with associated pH values between 7.6 and 9.1. In these conditions, the risks to buried concrete at the site appear to be low to moderate.

8.4 Updated Qualitative Risk Assessment

The qualitative risk assessment contained within the desk study (Phase One Geoenvironmental) can therefore be updated as follows:

Source	Pathway	Receptor		Found?	Consequence of Occurrence	Risk
Sulphates and Corrosives (from natural sources)	Direct Contact	Building		Yes	Low/moderate	Low/moderate
		Humans	End User	No	Low	Low
			Construction Workers	No	Low	Low
Ground Gases (potentially from tidal flat deposits/peat)	Asphyxiation or explosion	Humans	End User	Yes	Low/moderate	Low/moderate
			Construction Workers	Yes	Low/moderate	Low/moderate
	Explosion	Building		Yes	Low/moderate	Low/moderate

Potential Risks Identified:

- Ground gas conditions at the site are consistent with Characteristic Situation CS-2.

Significant Uncertainties:

- None remaining.

8.5 Conclusions

BRE Special Digest 1 (2005) recommends precautionary measures with respect to sulphate attack on concrete for five classes of concentration. The maximum concentration found at this site lies within class DS-2. Consideration should also be given to the risk of acid attack on concrete. In the conditions at the present site, natural ground where groundwater could be mobile, an ACEC classification of AC-2 appears appropriate. Accordingly, it is recommended that the precautions for DS-2 AC-2, as defined in the Special Digest, should be followed for buried concrete at the site.

As discussed above, the ground gas conditions at the site are consistent with Characteristic Situation CS-2, for which some gas protection measures would be required.

However, it is understood that equipment similar to that proposed at the present site is often placed in containers on large monolithic concrete plinths, either directly onto the plinths or raised slightly such that there is a gap between the base of the container and the plinth itself. If the equipment proposed at this site was built in a similar fashion, the concrete plinth would act as a barrier for the potential ingress and build-up of hazardous ground gases in any enclosed spaces within the containers or other equipment and, if there was to be a space between the base of the container and the plinth, this would allow any ground gases to dissipate.

If service entries to the container units were minimal and designed such that they do not enter the containers through the concrete slabs from beneath, then there should be no means by which potentially hazardous ground gases could enter and build-up within any of the containers or equipment. Where there is no potential for the build-up of hazardous ground gases, the risk from such gases is considered to be very low. If the equipment proposed for the site was constructed in this way (ie placed on monolithic concrete plinths with no service entries from beneath), then no specific ground gas protection measures would be considered to be required.

However, should the design of the proposed development be such that the equipment will not be placed on concrete plinths but instead housed within more permanent, enclosed, buildings or structures, or if other such industrial buildings are proposed at the site where there is the potential for the build-up of ground gases within enclosed spaces, then ground gas protection measures would be required.

Such buildings would be considered "Type D" industrial buildings under BS8485+A1(2019).

Precautions with respect to ground gas for Characteristic Situation CS-2 and for a "Type D" building require a gas protection score of at least 1.5 under BS8485. The standard requires that this must be achieved using at least two of the following three elements.

1. **The structural barrier (floor and substructure):** A cast in-situ ground floor slab with nominal mesh reinforcement will likely offer a score of 0.5. However, a cast-in-situ monolithic reinforced ground bearing raft or reinforced cast-in-situ suspended floor slab with minimum service entries will likely offer a score of 1 and if this is well reinforced and with minimal penetrations cast in, could offer a score of 1.5. See table 5 of BS8485. A pre-cast segmented suspended floor has a score of 0.

2. **Ventilation:** A passive subfloor dispersal layer of "good performance" (commonly achieved by a no-fines gravel layer with or without gas drains) can normally be expected to achieve a score of 1.5, whereas a similar layer of "very good performance" (which may be achievable by a polystyrene void former blanket of sufficient thickness) may achieve a score of 2.5. A pressure relief pathway, such as by venting through the walls into an efficient no-fines gravel trench around the buildings may add 0.5 to that score. See table 6 of BS8485. Active venting is not considered to be necessary and is unlikely to be a cost-effective solution.

3. A gas-resistant membrane: This should meet all the requirements of Table 7 of BS8485 and be laid in accordance with the manufacturer's instructions. If properly laid and verified in accordance with CIRIA C735, this should provide a gas protection score of 2. However, given that a gas protection score of only 1.5 is required in total for a "Type D" building, the most cost-effective solution may be to adopt gas protection measures from the elements discussed above rather than install a gas-resistant membrane.

As an example, the following might therefore be considered to achieve the required score:

1. Cast in-situ ground floor slab with nominal mesh reinforcement (score 0.5) and
 2. A passive subfloor dispersal layer of "good performance" (no fines gravel) (score 1.5)
- (Giving a total of 2)

Or alternatively:

1. A reinforced cast-in-situ floor slab with minimal service entries (score 1) and
2. A pressure relief pathway such as venting through the walls into an efficient no fines gravel trench (score 0.5)

(Giving a total of 1.5)

Other combinations are of course available. The conditions in Tables 5 to 7 of BS8485 should be followed, whichever options are to be used.

Monitoring for hazardous ground gases is recommended in any excavations at the site where man access is required.

Should any unexpected ground conditions be encountered during the development, it is recommended that the further advice of Green Cat Geotechnical should be sought as to the implications and any precautions which might be advised.

REFERENCES

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PROTOS SITE, INCE MARSHES

ANNEX A:
SITE WORK

Contract No: **5601-1326**

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ANNEX A TABLE OF CONTENTS

Notes on Field Procedures

Key to Borehole and Trial Pit Records

Description

Figure No

Schedule of Site Works

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Borehole Records

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Trial Pit Records

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TRL Dynamic Cone Penetrometer Tests

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Trial Pit Photographs

A42 to A57

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: CONTENTS FOR ANNEX A		Fig. No.	Revisions				
SCALE:			DWN	CHK	APP		
			DL				
			DWN	CHK	APP		

Style: GCR NOTES FIELDWORKS File: \BATHGATE\GEOTECH\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:01 Green Cat Renewables Ltd, Bethany Hall, Bigger ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

Boring

The standard method of boring in soil for ground investigation is known as the cable percussion method. It uses various tools worked on a wire cable, typically a shell in non-cohesive soils, and a clay cutter in cohesive soils. Very dense soils, boulders or other hard obstructions are disturbed or broken up by chiselling and the fragments removed with the shell. To prevent the borehole falling in, the borehole is normally lined with driven steel casings of such sizes that the bottom of the borehole is not less than 150mm 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 core is not required, strata identification being made from cuttings only. Open-hole rotary drilling methods may also be employed for fast penetration of soils where sampling is not required, prior to coring at depth. Air or water is the flushing medium normally used with rotary drilling methods. The borehole is normally lined with inserted or drilled-in casing through the soils, and into the bedrock, where ground conditions require.

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. piston samplers or thin-walled tubes, may be used where the soil is suitable to obtain higher quality samples in conditions where conventional open drive sampling is unsatisfactory.

Disturbed samples are taken from the boring tools at regular intervals. The samples are sealed in airtight containers. Bulk samples are larger disturbed samples from the boring tools, or from trial pits.

The Standard Penetration Test (SPT) carried out in accordance with BS EN ISO 22476-3+A1 (2011), 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 recorded. This "N" value is expressed as the number of blows required to achieve 300mm penetration (the "test drive") 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.

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 records. These observations may not give an accurate indication of groundwater conditions, for the following reasons:

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

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

PI Statement

Certified that the above mentioned samples/parts/materials have been tested/examined in accordance with the terms of the contract/order applicable and unless otherwise stated conform fully to the standards/specifications quoted. This does not however, guarantee the balance of production from which the tested samples/parts/materials have been taken to be of equal quality.

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DRAWING TITLE: NOTES ON FIELD PROCEDURES		Fig. No.	Revisions DWN CHK APP				
SCALE:							

Style: GCR BH TP KEY File: \\BATHGATE\GEO\GINT\PROJECTS\601.GPJ Printed: 03/07/2023 10:35:02 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

SOIL SAMPLES

- U (X) General purpose tube sample; X No of blows to drive sampler
- UP Piston sample
NOTE: Tube samples are 100mm diameter, 0.45m drive (86mm diameter, 1.0m drive with Competitor rig) unless otherwise specified in the remarks.
Suffix 'a' indicates sample not recovered. Suffix 'b' indicates partial recovery.
- J/T Jar/Tub sample
- B/LB Bag/Large Bag sample
- V Volatile Vial
- E Environmental Sample Set (J, T & V)

CORE RECOVERY AND ROCK QUALITY

- 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
- If Fracture Index: The number of discontinuities expressed as fractures per metre
- Flush "Depth" indicates depth down to which recorded "Returns" relate

GROUND-WATER

- W Ground-water sample
- ↕ Ground-water encountered
- ↕ Depth to which ground-water rose
- ↕ Ground-water cut off by the casing











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;
- 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 FV Field vane test
- K Permeability test HV Hand vane test
- HP Hand penetrometer test ID Density test
- PLT Constant deformation Plate Load Testing carried out in accordance with DIN18134:2012 using referred loading sequence

LEGENDS

Material legends are in accordance with BS 5930:1999
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

ROTARY DRILLING SIZES

Designation	Nominal Diameter (mm)	
	Borehole	Core
N	76	54
H	100	76
P	121	92
S	146	113
412	108	75


DIMENSIONS

All dimensions in metres unless otherwise stated.

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DRAWING TITLE: KEY TO BOREHOLE AND TRIAL PIT RECORDS	Fig. No.	Revisions DWN CHK APP			 A trading name of Green Cat Renewables Limited Geotechnical
SCALE:					

Exploration Point	Location	Ground Level (mO.D.)	Method	Figure No	Installation	Remarks
DCP-01	-	-		NA	-	
DCP-02	-	-		NA	-	
DCP-03	-	-		NA	-	
DCP-04	-	-		NA	-	
DCP-05	-	-		NA	-	
DCP-06	-	-		NA	-	
DCP-07	-	-		NA	-	
DCP-08	-	-		NA	-	
DCP-09	-	-		NA	-	
DCP-10	-	-		NA	-	
DCP-11	-	-		NA	-	
RES-01	-	-		NA	-	
RES-02	-	-		NA	-	
BH01	-	-	CP	A1	-	
BH1R	-	-	RO,RC	A2	-	
BH1A	-	-	RO	A3	S'pipe(50mm)	
BH02	-	-	CP,RO,RC	A4	-	
BH2A	-	-	RO	A5	S'pipe(50mm)	
BH03	-	-	CP	A6	S'pipe(50mm)	
BH3R	-	-	RO,RC	A7	-	
TP01	-	-	TP	A8	-	
TP02	-	-	TP	A9	-	
TP03	-	-	TP	A10	-	
TP04	-	-	TP	A11	-	
TP05	-	-	TP	A12	-	
TP06	-	-	TP	A13	-	
TP-INF-01	-	-	TP	A14	-	
TP-INF-02	-	-	TP	A15	-	
TP-R-01	-	-	TP	A16	-	
TP-R-02	-	-	TP	A17	-	
TP-R-03	-	-	TP	A18	-	
TP-R-04	-	-	TP	A19	-	
TP-R-05	-	-	TP	A20	-	
TP-R-06	-	-	TP	A21	-	
TP-R-07	-	-	TP	A22	-	
TP-R-08	-	-	TP	A23	-	
HP01	-	-	HP	A24	-	
HP02	-	-	HP	A25	-	

CP	Cable Percussion
HP	Hand Excavated Trial Pit
RC	Rotary Core drilling
RO	Rotary Open hole
TP	Trial Pit/Trench

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DRAWING TITLE: SCHEDULE OF SITE WORKS		Fig. No. A0 Sheet 1 of 1	Revisions DWN CHK APP GGH GGH GGH	A trading name of Green Cat Renewables Limited		
SCALE:						

Style: GCR BOREHOLE File: \BATHGATE\GEO\TECH\INT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:07 Green Cat Renewables Ltd, Bethany Hall, Biggar, ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
21/3 2023	0.20	ES		1.20			TOPSOIL.				
	0.50	ES					Brownish grey slightly sandy CLAY with occasional rootlets and pockets of brown fine and medium sand.				
	0.70	B					Very soft dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.00	ES									
	1.20	SPT=1 T	0.0/0.1.0.0								
	1.70	B					Very soft bluish grey CLAY.				
	2.00	SPT=1 T	0.0/0.0.0.1								
	2.70	B					Dark greyish brown fibrous PEAT with bands/pockets of grey clay and a strong organic odour.				
	3.00	SPT=0 T	1.0/0.0.0.0								
	3.70	B					Firm reddish brown slightly sandy slightly gravelly CLAY with low cobble content and occasional pockets of brown fine and medium sand. Gravel is angular and subangular fine to coarse. Cobbles are subangular and subrounded.				
	4.00	SPT=1 T	0.0/1.0.0.0								
	4.70	B				below 9.50m: becoming stiff.				
	5.00	U (5)									
	5.50										
	5.90	B									
6.50	SPT=13 T	3.4/4.3.3.3	6.50								
7.00	B										
8.00	U (48)										
8.70	B										
9.50	SPT=16 T	3.4/4.4.4.4	9.20								

Flush		Chiselling			Water Added		Ground-water				To Depth		Location:		
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam		Boring	Casing
			10.70 17.90 19.70	11.00 18.20 20.00	0.5 0.5 1			1.70	1.50	20	6.50	150	20.45	20.00	
												Level: -			
												Orientation: Vertical			

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services.	Equipment: Driller:MK; Dando 2500	Method: Inspection Pit to 1.20m Cable Percussion to 20.45m	Borehole No: BH01
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 Geotechnical
DRAWING TITLE: BOREHOLE RECORD	Fig. No. A1 Sheet 1 of 3	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

Style: GCR BOREHOLE File: \NBATHGATE\GEO\GINT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:08 Green Cat Renewables Ltd, Bethany Hall, Biggar, ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
	10.50	B							8.40		
	11.00	U	(49)								
	12.00	B									
	12.50	SPT=15	3.4/4.3.4.4	12.50							
	13.50	B									
	14.00	U	(32)			below 14.00 m: becoming sandy.				
	14.50										
	15.00	B					Medium dense reddish brown slightly silty gravelly fine and medium SAND with low cobble content, many shell fragments and occasional bands of very soft reddish brown slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse. Cobbles are subangular and subrounded.				
	15.50	SPT=2	0.1/0.1.0.1	15.50		at 15.50m: band of very soft reddish brown slightly sandy slightly gravelly clay. Gravel is subangular and subrounded fine to coarse.				
	16.50	B									
	17.00	SPT=13	1.4/3.3.3.4	17.00							
	18.00	B									
	18.50	SPT=11	2.3/3.2.2.4	18.50							
	19.50	B									

Flush			Chiselling			Water Added		Ground-water				To Depth		Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	
			10.70 17.90 19.70	11.00 18.20 20.00	0.5 0.5 1			12.70	11.20	20		150	20.45	20.00
Level: -														
Orientation: Vertical														

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services.	Equipment: Driller:MK; Dando 2500	Method: Inspection Pit to 1.20m Cable Percussion to 20.45m	Borehole No: BH01
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DRAWING TITLE: BOREHOLE RECORD	Fig. No. A1 Sheet 2 of 3	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited
SCALE: 1:50					

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
22/3	20.00	T	SPT=28 4.6/6.8/7.7	20.00		20.45			1.20		20.45
END OF BOREHOLE											

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
			10.70 17.90 19.70	11.00 18.20 20.00	0.5 0.5 1							150	20.45	20.00	Level: - Orientation: Vertical

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services.	Equipment: Driller:MK; Dando 2500	Method: Inspection Pit to 1.20m Cable Percussion to 20.45m	Borehole No: BH01
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DRAWING TITLE: BOREHOLE RECORD	Fig. No. A1 Sheet 3 of 3	Revisions DWN CHK APP			
SCALE: 1:50					

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 Style: GCR BOREHOLE

Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
3/4 2023	0.00	RO-S				0.20	TOPSOIL.				0.50
						0.70	Brownish grey slightly sandy CLAY with occasional rootlets and pockets of brown fine and medium sand.				
						2.70	Very soft dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
						5.50	Dark greyish brown fibrous PEAT with bands/pockets of grey clay and a strong organic odour.				
						6.50	Firm reddish brown slightly sandy slightly gravelly CLAY with low cobble content and occasional pockets of brown fine and medium sand. Gravel is angular and subangular fine to coarse. Cobbles are subangular and subrounded.				
						below 9.50m: becoming stiff.				

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
80 Full	Air Air	28.50 30.00										125 120 108	27.00 28.50 30.00	27.00	

Remarks: Borehole BH1 sunk at location adjacent to borehole BH01. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 20.45m are those from the adjacent borehole BH01. # Indicates description based on Driller's log.	Equipment: Driller:RB; Fraste PL	Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 30.00m	Borehole No: <h2 style="text-align: center;">BH1R</h2>
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23 DWN CHK APP CM SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: BOREHOLE RECORD	Fig. No. A2 Sheet 1 of 3	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

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 Style: GCR BOREHOLE

Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
31/3							<p>....below 14.00m: becoming sandy.</p> <p>14.50</p> <p>Medium dense reddish brown slightly silty gravelly fine and medium SAND with low cobble content, many shell fragments and occasional bands of very soft reddish brown slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse. Cobbles are subangular and subrounded.</p> <p>....at 15.50m: band of very soft reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular and subrounded fine to coarse.</p>				

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
80 Full	Air Air	28.50 30.00										125 120 108	27.00 28.50 30.00	27.00	

Remarks: Borehole BH1 sunk at location adjacent to borehole BH01. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 20.45m are those from the adjacent borehole BH01. # Indicates description based on Driller's log.	Equipment: Driller:RB; Fraste PL	Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 30.00m	Borehole No: <h2 style="text-align: center;">BH1R</h2>
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23 DWN CHK APP CM SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: BOREHOLE RECORD	Fig. No. A2 Sheet 2 of 3	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
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Progress	Sample Depth	Samples and Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result									Symbol	Depth
							20.45	# Silty sandy CLAY with laminated bands.					
	26.40	RO-R					26.40	# Weathered SANDSTONE.					
	27.00	CORE	TCR	SCR	RQD	FI	27.00	LOW CORE RECOVERY. Core loss presumed to be more weathered material. Recovered core comprises medium strong occasionally weak and very weak red fine grained SANDSTONE with occasional bands of yellowish grey siltstone. Weathering indicated by slight orangish brown staining throughout unit and by occasional reduction in strength to very weak. Closely spaced smooth and undulating inclined joints dipping between 15 and 40 degrees.					
			33	12	8								
3/4	28.50	CORE C	40	17	0								
	28.80	C											
4/4							30.00					30.00	

Flush		Chiselling			Water Added		Ground-water				To Depth		Location:		
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam		Boring	Casing
80 Full	Air	28.50						26.40						125	27.00
	Air	30.00											120	28.50	
													108	30.00	

Remarks: Borehole BH1 sunk at location adjacent to borehole BH01. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 20.45m are those from the adjacent borehole BH01. # Indicates description based on Driller's log.	Equipment: Driller:RB; Fraste PL	Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 30.00m	Borehole No:
			BH1R

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DRAWING TITLE: BOREHOLE RECORD	Fig. No. A2 Sheet 3 of 3	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
5/4 2023						0.20	TOPSOIL.				0.20
							# Sandy CLAY.				1.00
						1.70	# PEAT.				
5/4						5.00	END OF BOREHOLE				5.00

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
												170	5.00	5.00	Orientation: Vertical

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was sunk at a location adjacent to borehole BH1 for the installation of a standpipe.						Equipment: Driller:RB; Fraste PL				Method: Inspection Pit to 1.20m Rotary Open Hole to 5.00m			Borehole No: <h2 style="text-align: center;">BH1A</h2>	
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PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553		
DRAWING TITLE: BOREHOLE RECORD		Fig. No. A3 Sheet 1 of 1		Revisions						A trading name of Green Cat Renewables Limited		
SCALE: 1:50												

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result							Symbol	Depth	
23/3 2023	0.20	ES				0.20	TOPSOIL.				0.50	
	0.50	ES					Brownish grey slightly sandy CLAY with occasional rootlets and pockets of brown fine and medium sand.					
	0.70	B										
	1.00	ES										
	1.20	SPT=1	0.0/1.0.0.0		1.20		1.20	Very soft dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.70	B						Very soft dark greyish brown fibrous PEAT with bands/pockets of grey clay and a strong organic odour.				
	2.00	SPT=1	1.0/0.0.1.0		2.00							
	2.70	B										
	3.00	SPT=2	0.1/1.1.0.0		3.00							
	3.70	B					3.70	Very soft bluish grey CLAY.				
4.00	SPT=1	0.0/1.0.0.0		4.00								
4.70	B											
5.00	SPT=1	0.0/0.0.1.0		5.00			Very soft dark greyish brown fibrous PEAT with bands/pockets of grey clay and a strong organic odour.					
5.70	B					5.70						
6.50	SPT=1	1.0/0.1.0.0		6.50			Brownish grey slightly sandy CLAY with occasional pockets of dark brown fibrous peat.					
7.50	B					7.50						
8.00	SPT=7	1.1/1.2.2.2		8.00			Loose grey slightly silty slightly gravelly fine to coarse SAND. Gravel is subangular and subrounded fine and medium.					
9.00	B					9.00						
9.50	U (42)						Firm reddish brown slightly sandy slightly gravelly CLAY with occasional pockets of brown fine and medium sand. Gravel is angular and subangular fine to coarse.					

Flush			Chiselling			Water Added		Ground-water				To Depth			Location: Level: - Orientation: Vertical
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
Full	Air	31.50	12.20 18.00 19.20 25.00 26.60	12.40 18.30 19.50 25.20 26.80	1 1 0.5 1 1							150 120 108	26.80 28.50 31.50	25.00 27.00 28.50	

Remarks:
An inspection pit was excavated by hand to a depth of 1.20m to clear services.
The cable percussion borehole was continued by rotary follow-on from a depth of 26.80m.
Indicates description based on Driller's log.
The results of the SPTs undertaken in the granular soils may have been affected by "boiling" within the casing. This may have loosened the sands and resulted in erroneously low N values and the results of the SPTs should be viewed cautiously as a result.

Equipment:
Driller:MK/RB; Dando
2500/Fraste PL

Method:
Inspection Pit to 1.20m
Cable Percussion to 26.80m
Rotary Open Hole to 28.50m
Rotary Core Drilling to 31.50m

Borehole No:
BH02

PROTOS SITE, INCE MARSHES DRAWING TITLE: BOREHOLE RECORD	Contract No: 5601-1326	Date: 03/07/23 DWN CHK APP DL SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
	Fig. No. A4 Sheet 1 of 4	Revisions DWN CHK APP				

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
	10.50	B									
	11.00	SPT=19	4.4/5.4.5.5	11.00		below 11.00m: becoming stiff.				
	12.00	B									
	12.50	U	(75)								
27/3	13.00	B							6.30		
	14.00	SPT=18	3.4/4.4.5.5	14.00					6.80		
	15.00	B									
	15.50	SPT=2	2.1/1.0.0.1	15.50		15.50	Very loose reddish brown slightly silty fine and medium SAND with many shell fragments.				
	16.50	B									
	17.00	SPT=4	1.1/1.1.1.1	17.00		17.00	Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular and subrounded fine to coarse. (Driller records cobbles).				
	17.80	B									
	18.50	U	(79)								
	19.50	B									
28/3											


Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
Full	Air	31.50	12.20 18.00 19.20 25.00 26.60	12.40 18.30 19.50 25.20 26.80	1 1 0.5 1 1			15.50	6.00	20		150 120 108	26.80 28.50 31.50	25.00 27.00 28.50	

Remarks:
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 The cable percussion borehole was continued by rotary follow-on from a depth of 26.80m.
 # Indicates description based on Driller's log.
 The results of the SPTs undertaken in the granular soils may have been affected by "boiling" within the casing. This may have loosened the sands and resulted in erroneously low N values and the results of the SPTs should be viewed cautiously as a result.

Equipment:
 Driller:MK/RB; Dando
 2500/Fraste PL

Method:
 Inspection Pit to 1.20m
 Cable Percussion to 26.80m
 Rotary Open Hole to 28.50m
 Rotary Core Drilling to 31.50m

Borehole No:
BH02

PROTOS SITE, INCE MARSHES BOREHOLE RECORD	Contract No: 5601-1326	Date: 03/07/23 DWN CHK APP DL SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited Geotechnical
	Fig. No. A4 Sheet 2 of 4	Revisions DWN CHK APP				


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Progress	Sample Depth	Samples and Tests					Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result										Symbol	Depth
	20.00	SPT=21	3.4/4.5/5.7				20.00	below 20.00m: becoming stiff.		16.30			
	20.70	B												
	21.50	U (79)												
	22.50	B						22.50	Very loose reddish brown silty gravelly fine to coarse SAND with low cobble content, occasional pockets of reddish brown clay and traces of shell fragments. Gravel is subangular and subrounded fine to coarse. Cobbles are subangular and subrounded.					
	23.00	SPT=4	2.2/1.1.1.1				23.00							
29/3	24.00	SPT=8	2.3/2.2.2.2				24.00	below 24.00m: becoming loose.		0.90			
	24.50	T												
	25.20	SPT=39	7.7/6.10.10.13				25.00		Dense grey mottled reddish brown clayey slightly gravelly fine to coarse SAND with occasional pockets of yellowish silt. Gravel is subangular and subrounded fine and medium. (Possibly completely weathered SANDSTONE).		0.50 0.00			
30/3	26.80	RO-S							# Weathered SANDSTONE (no core recovered).					
3/4	27.00	CORE		0	0	0								
4/4	28.50	CORE		63	41	9			28.50	Medium strong light grey occasionally red fine grained SANDSTONE with occasional bands of light grey siltstone. Weathering indicated by slight orangish brown staining throughout unit and by localised reduction in strength to weak. Closely and very closely spaced smooth and planar and smooth and undulating discontinuities dipping at approximately 20 degrees.				
	29.00	C							29.20	Medium strong occasionally weak red fine grained SANDSTONE. Weathering indicated by slight orangish brown staining throughout unit and by occasional clay infill on fracture surfaces. Closely and very closely spaced smooth and planar and smooth and undulating gently inclined joints dipping between 10 and 20 degrees. Medium spaced smooth and planar steeply dipping discontinuities dipping at approximately 50 degrees.				

Flush			Chiselling			Water Added		Ground-water			To Depth			Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring		Casing
Full	Air	31.50	12.20 18.00 19.20 25.00 26.60	12.40 18.30 19.50 25.20 26.80	1 1 0.5 1 1							150 120 108	26.80 28.50 31.50		25.00 27.00 28.50

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services. The cable percussion borehole was continued by rotary follow-on from a depth of 26.80m. # Indicates description based on Driller's log. The results of the SPTs undertaken in the granular soils may have been affected by "boiling" within the casing. This may have loosened the sands and resulted in erroneously low N values and the results of the SPTs should be viewed cautiously as a result.	Equipment: Driller:MK/RB; Dando 2500/Fraste PL	Method: Inspection Pit to 1.20m Cable Percussion to 26.80m Rotary Open Hole to 28.50m Rotary Core Drilling to 31.50m	Borehole No: <h2 style="text-align: center;">BH02</h2>
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PROTOS SITE, INCE MARSHES DRAWING TITLE: BOREHOLE RECORD	Contract No: 5601-1326	Date: 03/07/23 Revisions: DWN CHK APP DL SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 Geotechnical
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SCALE: 1:50

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Progress	Sample Depth	Samples and Tests					Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result										Symbol	Depth
5/4	30.00	CORE	87	80	27									
	30.20	C												
	30.50	C												
								31.50	END OF BOREHOLE					31.50


Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
Full	Air	31.50	12.20 18.00 19.20 25.00 26.60	12.40 18.30 19.50 25.20 26.80	1 1 0.5 1 1							150 120 108	26.80 28.50 31.50	25.00 27.00 28.50	

Remarks:
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 The cable percussion borehole was continued by rotary follow-on from a depth of 26.80m.
 # Indicates description based on Driller's log.
 The results of the SPTs undertaken in the granular soils may have been affected by "boiling" within the casing. This may have loosened the sands and resulted in erroneously low N values and the results of the SPTs should be viewed cautiously as a result.

Equipment:
 Driller:MK/RB; Dando
 2500/Fraste PL

Method:
 Inspection Pit to 1.20m
 Cable Percussion to 26.80m
 Rotary Open Hole to 28.50m
 Rotary Core Drilling to 31.50m

Borehole No:
BH02

PROTOS SITE, INCE MARSHES BOREHOLE RECORD	Contract No: 5601-1326	Date 03/07/23 DWN CHK APP DL SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
	Fig. No. A4 Sheet 4 of 4	Revisions DWN CHK APP				

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
5/4 2023						0.20	TOPSOIL.				0.20
							# Sandy CLAY.				1.00
						1.20	# PEAT.				
							# CLAY.				
5/4						5.00	END OF BOREHOLE				5.00

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
												170	5.00	5.00	Level: - Orientation: Vertical

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was sunk at a location 5m from borehole BH02 for the installation of a standpipe.						Equipment: Driller:RB; Fraste PL				Method: Inspection Pit to 1.20m Rotary Open Hole to 5.00m			Borehole No: <h2 style="text-align: center;">BH2A</h2>	
--	--	--	--	--	--	-------------------------------------	--	--	--	---	--	--	---	--

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553		 greencat Geotechnical
DRAWING TITLE: BOREHOLE RECORD		Fig. No. A5 Sheet 1 of 1		Revisions						A trading name of Green Cat Renewables Limited		
SCALE: 1:50												

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill		
		Type	Result							Symbol	Depth	
4/4 2023	0.20	ES		2.00		0.20	TOPSOIL.		2.40	DRY	0.20	
	0.50	ES				Firm brownish grey slightly sandy CLAY with occasional pockets of brown sand.	1.00					
	1.00	ES				Dark brown fibrous PEAT with many plant fragments.	1.40			 below 3.00m: strong organic odour.	5.00
	1.20	U (9)										
	2.00	SPT=2	0.0/1.0.0.1				6.20				Very soft grey laminated CLAY with occasional bands of dark brown fibrous peat and plant fragments.	9.30
	2.00	B, T				Very loose grey silty gravelly fine and medium SAND. Gravel is subangular and subrounded fine and medium.						
	3.00	U B	(a)								8.00	SPT=2
	4.00	SPT=1	0.0/0.0.0.1				9.50					
	4.00	B, T										
	5.00	SPT=1	0.0/0.0.0.1									
5.00	B, T											
6.50	SPT=1	0.0/0.0.0.1										
6.50	B, T											
8.00	SPT=2	0.0/1.0.0.1										
8.00	B, T											
9.50	SPT=1	0.0/0.0.0.1										
9.50	B, T											

Flush			Chiselling			Water Added		Ground-water				To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring		Casing
Full	Air	31.50						2.40				150	12.00		12.00

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services.	Equipment: Driller:TP; Dando 2500	Method: Inspection Pit to 1.20m Cable Percussion to 12.00m	Borehole No: BH03
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: BOREHOLE RECORD	Fig. No. A6 Sheet 1 of 2	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						Geotechnical

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
5/4	11.00 11.00	SPT=8 B, T	1.1/2.2.2.2	11.00							
						12.00	END OF BOREHOLE				12.00

Flush			Chiselling			Water Added		Ground-water				To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring		Casing
Full	Air	31.50										150	12.00		12.00

Remarks: An inspection pit was excavated by hand to a depth of 1.20m to clear services.	Equipment: Driller:TP; Dando 2500	Method: Inspection Pit to 1.20m Cable Percussion to 12.00m	Borehole No: <h2 style="text-align: center;">BH03</h2>
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23 DWN CHK APP CM SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: BOREHOLE RECORD	Fig. No. A6 Sheet 2 of 2	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
5/4 2023	0.00	RO-S				0.20	TOPSOIL.				0.50
						1.40	Firm brownish grey slightly sandy CLAY with occasional pockets of brown sand. Dark brown fibrous PEAT with many plant fragments. ... below 3.00m: strong organic odour.				
						6.20	Very soft grey laminated CLAY with occasional bands of dark brown fibrous peat and plant fragments.				
						9.30	Very loose grey slightly gravelly silty fine and medium SAND. Gravel is subangular and subrounded fine and medium.				

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
												170	17.40	17.40	Level: - Orientation: Vertical
												125	28.50	28.50	
												108	31.50		

Remarks: Borehole BH3 sunk at location adjacent to borehole BH03. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 12.0m are those from the adjacent borehole BH03. # Indicates description based on Driller's log.						Equipment: Driller:RB; Fraste PL				Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 31.50m				Borehole No: <h2 style="text-align: center;">BH3R</h2>	
--	--	--	--	--	--	-------------------------------------	--	--	--	--	--	--	--	---	--


PROJECT TITLE: PROTOS SITE, INCE MARSHES			Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553		 Geotechnical
DRAWING TITLE: BOREHOLE RECORD			Fig. No. A7 Sheet 1 of 4		Revisions						A trading name of Green Cat Renewables Limited		
SCALE: 1:50													

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Progress	Sample Depth	Samples and Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result							Symbol	Depth
						12.00	# Silty SAND with occasional bands of clay and gravel.				

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
												170	17.40	17.40	
												125	28.50	28.50	
												108	31.50		

Remarks: Borehole BH3 sunk at location adjacent to borehole BH03. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 12.0m are those from the adjacent borehole BH03. # Indicates description based on Driller's log.						Equipment: Driller:RB; Fraste PL				Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 31.50m				Borehole No: <h2 style="text-align: center;">BH3R</h2>	
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PROJECT TITLE: PROTOS SITE, INCE MARSHES			Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd			Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553			
DRAWING TITLE: BOREHOLE RECORD			Fig. No. A7 Sheet 2 of 4		Revisions							A trading name of Green Cat Renewables Limited			
SCALE: 1:50					DWN CHK APP										

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Progress	Sample Depth	Samples and Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result									Symbol	Depth
	26.10	RO-R											
	27.00	CORE C	TCR 40	SCR 31	RQD 23	FI							
	28.40 28.50	C CORE	27	23	15								
								LOW CORE RECOVERY, lost core presumed to be more weathered material. Recovered core comprises strong, occasionally medium strong red very fine grained SANDSTONE with occasional bands of light grey siltstone. Weathered to weak and very weak between 31.00m and 31.50m and by occasional clay infill on fracture surfaces. Closely and very closely spaced smooth and undulating discontinuities dipping generally between 15 and 30 degrees. Closely spaced smooth and planar steeply dipping discontinuities dipping between 50 and 70 degrees. at 28.00m: band of light grey mottled red siltstone.					

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
												170	17.40	17.40	Level: - Orientation: Vertical
												125	28.50	28.50	
												108	31.50		

Remarks: Borehole BH3 sunk at location adjacent to borehole BH03. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 12.0m are those from the adjacent borehole BH03. # Indicates description based on Driller's log.						Equipment: Driller:RB; Fraste PL			Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 31.50m			Borehole No: <h2 style="text-align: center;">BH3R</h2>		
---	--	--	--	--	--	-------------------------------------	--	--	--	--	--	---	--	--


PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553		 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: BOREHOLE RECORD		Fig. No. A7 Sheet 3 of 4		Revisions									
SCALE: 1:50													

Style: GCR BOREHOLE File: \BATHGATE\GEOTECH\INT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:21 Green Cat Renewables Ltd, Bethany Hall, Biggar, ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

Progress	Sample Depth	Samples and Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result									Symbol	Depth
	30.00	CORE	80	24	15								
	31.00	C											
5/4	31.30	C					31.50	END OF BOREHOLE				31.50	

Flush			Chiselling			Water Added		Ground-water				To Depth			Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off	Diam	Boring	Casing	
												170	17.40	17.40	Level: - Orientation: Vertical
												125	28.50	28.50	
												108	31.50		

Remarks: Borehole BH3 sunk at location adjacent to borehole BH03. An inspection pit was excavated by hand to a depth of 1.20m to clear services. The borehole was progressed by open hole drilling to a depth of 27.00m. The descriptions given on the log of the soils between ground level and 12.0m are those from the adjacent borehole BH03. # Indicates description based on Driller's log.						Equipment: Driller:RB; Fraste PL				Method: Inspection Pit to 1.20m Rotary Open Hole to 27.00m Rotary Core Drilling to 31.50m				Borehole No: <h2 style="text-align: center;">BH3R</h2>	
---	--	--	--	--	--	-------------------------------------	--	--	--	--	--	--	--	---	--

PROJECT TITLE: PROTOS SITE, INCE MARSHES			Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd			Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553			 Geotechnical
DRAWING TITLE: BOREHOLE RECORD			Fig. No. A7 Sheet 4 of 4		Revisions							A trading name of Green Cat Renewables Limited			
SCALE: 1:50															

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
22/3 2023	0.20	ES			0.15	TOPSOIL.				
	0.50	B, ES			0.70	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.				
	0.70	B								
	1.00	ES			3.20	Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.40	B								
	2.00	T								
	3.00	B, T								
	22/3					3.50	Soft to firm bluish grey laminated CLAY.			
						END OF TRIAL PIT				

Remarks:
 A seepage of groundwater was encountered at a depth of 1.00m.
 The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
1.00				Level: -
Method: Trial Pit to			3.50m	Trial Pit No: TP01
Equipment: 8t Tracked Excavator				
Dimensions: 1 x 3				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A8 Sheet 1 of 1	Revisions DWN CHK APP DL SO SO			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
22/3 2023	0.20	ES			0.15	TOPSOIL.				
	0.50	B, ES				Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
	0.80	B			0.70	Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.00	ES								
	2.00	B								
	3.00	B								
	3.50	B, T				3.40	Soft to firm bluish grey laminated CLAY.			
22/3					3.70	END OF TRIAL PIT				3.70

Remarks:
 A seepage of groundwater was encountered at a depth of 0.70m.
 The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
0.70				Level: -
Method: Trial Pit to 3.70m				Trial Pit No: TP02
Equipment: 8t Tracked Excavator				
Dimensions: 1 x 3				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A9 Sheet 1 of 1	Revisions DWN CHK APP DL SO SO			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
22/3 2023	0.20	ES			0.15	TOPSOIL				
	0.50	ES			0.65	Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
	0.80	B				Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.00	ES								
	2.00	B								
	3.00	B			3.10	Soft to firm bluish grey laminated CLAY.				
22/3	3.30	B, T			3.50	END OF TRIAL PIT				3.50

Remarks:
A seepage of groundwater was encountered at a depth of 0.65m. The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
0.65				Level: -
Method: Trial Pit to			3.50m	Trial Pit No: TP03
Equipment: 8t Tracked Excavator				
Dimensions: 1 x 3				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A10 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
22/3 2023	0.20	ES			0.20	TOPSOIL.				
	0.50	B, ES				Firm grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
	1.00	ES								
	1.50	B, T			1.30	Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	2.50	B								
	3.30	B			3.50					
22/3					3.50	----- END OF TRIAL PIT				3.50

Remarks:
 A seepage of groundwater was encountered at a depth of 1.30m.
 The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
1.30				Level: -
Method: Trial Pit to			3.50m	Trial Pit No: TP04
Equipment: 8t Tracked Excavator				
Dimensions: 1 x 3				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 03/07/23 DWN CHK APP DL SO SO	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A11 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
22/3 2023	0.20	ES			0.15	TOPSOIL				
	0.50	ES				Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
	1.00	ES			0.70	Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.50	B								
	2.50	B								
22/3	3.20	B, T			3.00	Soft to firm bluish grey laminated CLAY.				
					3.30	END OF TRIAL PIT				3.30

Remarks:
 A seepage of groundwater was encountered at a depth of 0.70m.
 The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
0.70				Level: -
Method: Trial Pit to			3.30m	Trial Pit No: TP05
Equipment: 8t Tracked Excavator				
Dimensions: 1 x 3				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23 Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A12 Sheet 1 of 1	Revisions DWN CHK APP DL SO SO	A trading name of Green Cat Renewables Limited		

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
22/3 2023	0.20	ES			0.10	TOPSOIL Firm grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
	0.50	B, ES			0.60	Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				
	1.00	ES								
	1.50	B								
	2.50	B								
	3.00	B, T			2.80	Soft to firm bluish grey laminated CLAY.				
22/3					3.30	END OF TRIAL PIT				3.30

Remarks:
 A seepage of groundwater was encountered at a depth of 0.70m.
 The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
0.70				Level: -
Method: Trial Pit to			3.30m	Trial Pit No: TP06
Equipment: 8t Tracked Excavator				
Dimensions: 1 x 3				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A13 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023	0.50	B			0.10	TOPSOIL. Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
0.80					Dark brown fibrous PEAT with many plant fragments and a strong organic odour.					
23/2	1.50	B			1.50	END OF TRIAL PIT				1.50

Remarks:
 A seepage of groundwater was encountered at a depth of 0.80m.
 The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
0.80				Level: -
Method: Trial Pit to			1.50m	Trial Pit No: TP-INF-01
Equipment: 8t Tracked Excavator				
Dimensions: 0.75 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited
DRAWING TITLE: TRIAL PIT RECORD		Fig. No. A14 Sheet 1 of 1	Revisions				
SCALE: 1:50			DWN	CHK	APP		



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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023	0.50	B			0.15	TOPSOIL.				
					0.70	Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.				
23/2	1.50	B			1.50	Dark brown fibrous PEAT with many plant fragments and a strong organic odour.				1.50
					----- END OF TRIAL PIT -----					

Remarks:
A seepage of groundwater was encountered at a depth of 0.70m.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
0.70				Level: -
Method: Trial Pit to			1.50m	Trial Pit No: TP-INF-02
Equipment: 8t Tracked Excavator				
Dimensions: 0.75 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: TRIAL PIT RECORD		Fig. No. A15 Sheet 1 of 1	Revisions				
SCALE: 1:50			DWN	CHK	APP	Geotechnical	

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.15	TOPSOIL.				
					0.50	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.				
						END OF TRIAL PIT		DRY		0.50

HV=66kN/m²
HV=64kN/m²

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.50m	Trial Pit No: TP-R-01
Equipment: 8t Tracked Excavator				
Dimensions: 0.7 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A16 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.20	TOPSOIL.				
					0.50	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.		DRY		0.50
			HV=56kN/m ² HV=54kN/m ² HV=64kN/m ²			END OF TRIAL PIT				

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.50m	Trial Pit No: TP-R-02
Equipment: 8t Tracked Excavator				
Dimensions: 0.7 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A17 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.20	TOPSOIL.				
23/3			HV=43kN/m ² HV=32kN/m ² HV=40kN/m ²		0.50	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.		DRY		0.50
						END OF TRIAL PIT				

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.50m	Trial Pit No: TP-R-03
Equipment: 8t Tracked Excavator				
Dimensions: 0.7 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A18 Sheet 1 of 1	Revisions DWN CHK APP				A trading name of Green Cat Renewables Limited		
SCALE: 1:50								


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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.15	TOPSOIL.				
					0.50	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.				
						END OF TRIAL PIT		DRY		0.50

HV=51kN/m²
HV=53kN/m²

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.50m	Trial Pit No: TP-R-04
Equipment: 8t Tracked Excavator				
Dimensions: 0.7 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A19 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.10	TOPSOIL.				
			HV=65kN/m ² HV=64kN/m ²		0.60	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.				
23/3						END OF TRIAL PIT		DRY		0.60

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -

Method: Trial Pit to	0.60m	Trial Pit No: TP-R-05
Equipment: 8t Tracked Excavator		
Dimensions: 0.7 x 1.5		

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A20 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.15	TOPSOIL.				
					0.50	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.		DRY		0.50
						END OF TRIAL PIT				

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.50m	Trial Pit No: TP-R-06
Equipment: 8t Tracked Excavator				
Dimensions: 0.7 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A21 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	

SCALE: 1:50

Style: GOR TRIALPIT File: \\BATHGATE\GEO\GINT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:34 Green Cat Renewables Ltd. Biggar ML12 6DA trading as Green Cat Renewables.co.uk Tel: 01899-309100

Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.20	TOPSOIL.				
23/3			HV=37kN/m ² HV=40kN/m ² HV=45kN/m ²		0.50	Firm brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.		DRY		0.50
						END OF TRIAL PIT				

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.50m	Trial Pit No: TP-R-07
Equipment: 8t Tracked Excavator				
Dimensions: 0.7 x 1.5				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A22 Sheet 1 of 1	Revisions DWN CHK APP				A trading name of Green Cat Renewables Limited		
SCALE: 1:50								

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
23/3 2023					0.15	TOPSOIL.				
					0.55	Stiff brownish grey slightly sandy CLAY with occasional pockets of fine and medium brown sand.				
23/3			HV=77kN/m ² HV=80kN/m ² HV=82kN/m ²			END OF TRIAL PIT		DRY		0.55

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -

Method: Trial Pit to	0.55m	Trial Pit No: TP-R-08
Equipment: 8t Tracked Excavator		
Dimensions: 0.7 x 1.5		

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A23 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

Style: GOR TRIALPIT File: \\BATHGATE\GEO\GINT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:35 Green Cat Renewables Ltd. Bethany Hall, Biggar ML12 6DA trading as Green Cat Renewables.co.uk Tel: 01899-309100

Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
19/6 2023					0.25	Brown TOPSOIL.				
19/6					0.40	Brownish grey mottled orange slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse. ----- END OF TRIAL PIT		DRY		0.40

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.40m	Trial Pit No: HP01
Equipment: Hand Excavated				
Dimensions: 0.25 x 0.25				

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: TRIAL PIT RECORD	Fig. No. A24 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:50						

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Progress	Sample Depth	Samples and Tests		Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
		Type	Result						Symbol	Depth
19/6 2023					0.25	Dark brown peaty TOPSOIL.				
19/6					0.40	Brownish grey mottled orange slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse. ----- END OF TRIAL PIT		DRY		0.40

Remarks:
Groundwater was not encountered.
The walls of the pit stood vertical throughout excavation.

Ground-water				Location:
Struck	Rose To	Time(mins)	Stopped	
				Level: -
Method: Trial Pit to			0.40m	Trial Pit No: HP02
Equipment: Hand Excavated				
Dimensions: 0.25 x 0.25				

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited
DRAWING TITLE: TRIAL PIT RECORD		Fig. No. A25 Sheet 1 of 1	Revisions DWN CHK APP				
SCALE: 1:50							



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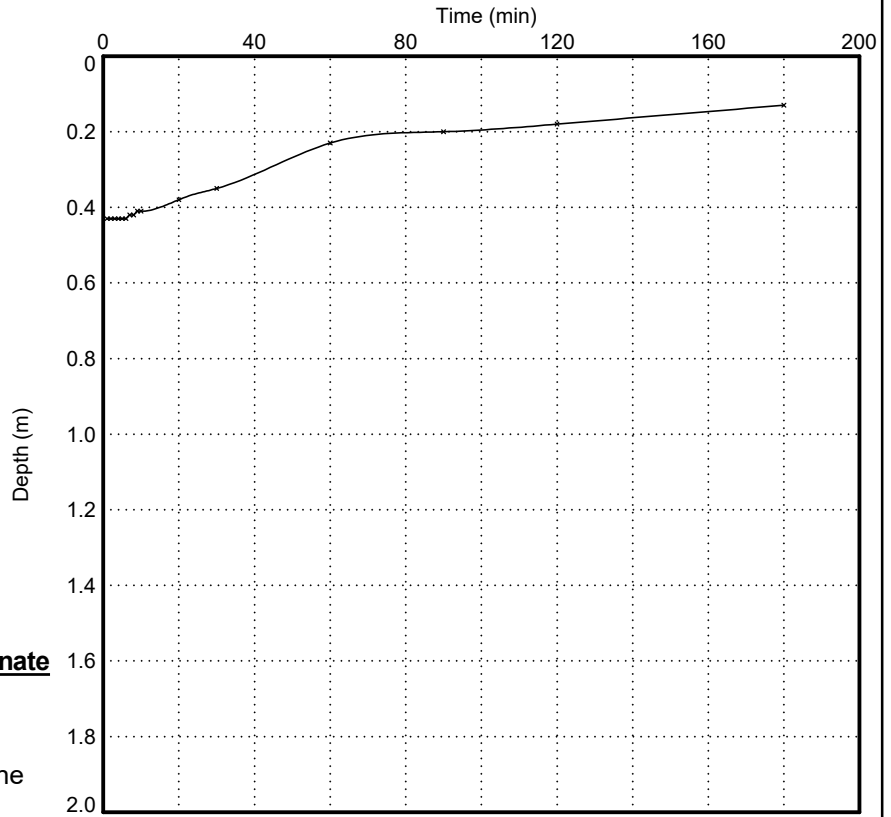
Test Pit Dimensions

Depth to Base (m bGL) **1.50**
 Length (m) **1.50**
 Width (m) **0.75**
 Depth to Ground-Water (m bGL) **0.80**

Test Results

Soil Infiltration Rate (m/s) Indeterminate

Remarks:
 Invalid test. Surface water entered pit throughout the test and this has affected the test result.




Time (minutes)	Depth to Water (m below GL)
1	0.43
2	0.43
3	0.43
4	0.43
5	0.43
6	0.43
7	0.42
8	0.42
9	0.41
10	0.41
20	0.38
30	0.35
60	0.23
90	0.20
120	0.18
180	0.13

Description of Strata
0m to 0.1m : TOPSOIL.
0.1m to 0.8m : Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.
0.8m to 1.5m : Dark brown fibrous PEAT with many plant fragments and a strong organic odour.

Trial Pit No: **TP-INF-01**

 Test No: **1**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 03/07/23 DWN: DL CHK: GGH APP: GGH	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: RESULTS OF INFILTRATION TEST	Fig. No. A26	Revisions DWN CHK APP			
SCALE:		A trading name of Green Cat Renewables Limited			

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Test Pit Dimensions

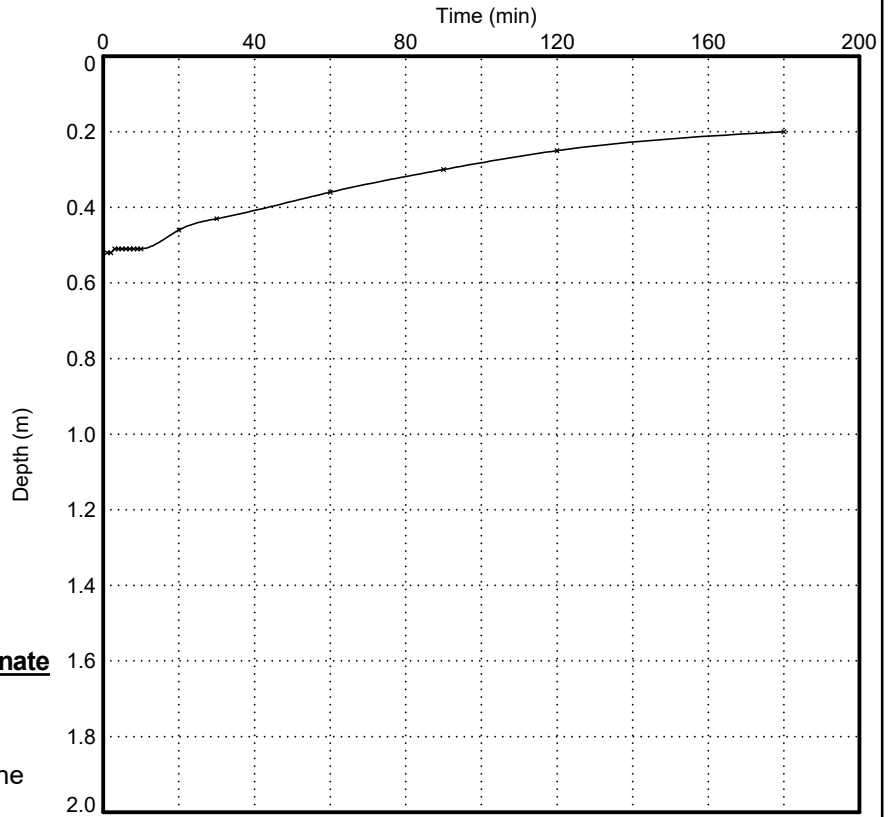
Depth to Base (m bGL) **1.50**
 Length (m) **1.00**
 Width (m) **0.75**
 Depth to Ground-Water (m bGL) **0.70**

Test Results

Soil Infiltration Rate (m/s) Indeterminate

Remarks:

Invalid test. Surface water entered pit throughout the test and this has affected the test result.




Time (minutes)	Depth to Water (m below GL)
1	0.52
2	0.52
3	0.51
4	0.51
5	0.51
6	0.51
7	0.51
8	0.51
9	0.51
10	0.51
20	0.46
30	0.43
60	0.36
90	0.30
120	0.25
180	0.20

Description of Strata
0m to 0.15m : TOPSOIL.
0.15m to 0.7m : Firm brownish grey slightly sandy CLAY with occasional pockets of brown fine and medium sand.
0.7m to 1.5m : Dark brown fibrous PEAT with many plant fragments and a strong organic odour.

Trial Pit No: **TP-INF-02**


 Test No: **1**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 03/07/23 DWN: DL CHK: GGH APP: GGH	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: RESULTS OF INFILTRATION TEST	Fig. No. A27	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE:						

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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.20								
0.275								
	83.0							2.8
	60.0							4.0
	57.0							4.2
	51.0							4.7
	42.0							5.8
	41.0							6.0
	36.0							6.8
	38.0							6.5
	39.0							6.3
	33.0							7.5
	33.0							7.5
	37.0							6.6
	30.0							8.3
	28.0							8.9
	27.0							9.3
	20.0							13
	20.0							13
0.950								

Flush		Chiselling			Water Added		Ground-water				Diam	To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)		Cut Off	Boring		Casing
															Orientation: Vertical

Remarks:		Equipment: TRL Dynamic Cone Penetrometer			Method:			Borehole No: DCP-01				
PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553		
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST		Fig. No. A28 Sheet 1 of 1		Revisions						A trading name of Green Cat Renewables Limited		
SCALE: 1:10												


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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.245								
	119.0							1.9
	76.0							3.1
	70.0							3.4
	45.0							5.4
	65.0							3.7
	40.0							6.1
	33.0							7.5
	29.0							8.6
	28.0							8.9
	20.0							13
	30.0							8.3
	19.0							13
	21.0							12
	20.0							13
	20.0							13
	20.0							13
0.930	15.0							17

0.930														
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Flush		Chiselling			Water Added		Ground-water				Diam	To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)		Cut Off	Boring		Casing
															-
															Vertical

Remarks:							Equipment: TRL Dynamic Cone Penetrometer				Method:			Borehole No: DCP-02	
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PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 03/07/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553			
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST		Fig. No. A29 Sheet 1 of 1		Revisions						A trading name of Green Cat Renewables Limited			
SCALE: 1:10													

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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.20	0.234							
	60.0							4.0
	66.0							3.6
	70.0							3.4
	85.0							2.8
	85.0							2.8
	54.0							4.5
	38.0							6.5
	37.0							6.6
	32.0							7.7
	29.0							8.6
	25.0							10
	25.0							10
	24.0							10
	26.0							9.6
	22.0							12
	30.0							8.3
0.942								

Flush		Chiselling			Water Added		Ground-water				Diam	To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)		Cut Off	Boring		Casing
															-
															Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-03
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A30 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited
SCALE: 1:10					

File: \\BATHGATE\GEO\TECH\INT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:48 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA, trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.20	0.254							
0.40	86.0						2.7	
	80.0						2.9	
	84.0						2.8	
	70.0						3.4	
0.60	69.0						3.4	
	62.0						3.8	
	60.0						4.0	
0.80	50.0						4.8	
	58.0						4.1	
0.940	67.0						3.5	

Flush			Chiselling			Water Added		Ground-water				Diam	To Depth		Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off		Boring	Casing	
															Orientation: Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-04
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A31 Sheet 1 of 1	Revisions DWN CHK APP				


Geotechnical

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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.20	0.222							
	74.0							3.2
	99.0							2.3
	89.0							2.6
	62.0							3.8
	59.0							4.1
	55.0							4.4
	45.0							5.4
	43.0							5.7
	32.0							7.7
	40.0							6.1
	30.0							8.3
	35.0							7.0
	35.0							7.0
	30.0							8.3
0.950								

Flush			Chiselling			Water Added		Ground-water				Diam	To Depth		Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off		Boring	Casing	
															-
															Orientation: Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-05
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A32 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited
SCALE: 1:10					

Style: GCR DCP_TRRL File: \BATHGATE\GEO\TECH\INT\PROJECTS\5601.GPJ Printed: 03/07/2023 10:35:52 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100

Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.20								
0.40								
0.465	25.0 30.0						10 8.3	
0.60	30.0						8.3	
0.80	41.7						5.9	
0.955	51.7 32.5						4.7 7.6	

Flush			Chiselling			Water Added		Ground-water				Diam	To Depth		Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off		Boring	Casing	
															Orientation: Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-08
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A35 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited	
SCALE: 1:10						

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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.140								
0.20	100.0							2.3
	45.0							5.4
	25.0							10
	25.0							10
0.40	23.3							11
	21.7							12
	21.7							12
0.60	21.0							12
	23.0							11
0.80								
0.950	32.5							7.6

Flush		Chiselling			Water Added		Ground-water				Diam	To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)		Cut Off	Boring		Casing
															-
															Orientation: Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-09
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A36 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited
SCALE: 1:10					

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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.20								
0.40	0.430							
	30.0						8.3	
	20.0						13	
	40.0						6.1	
	45.0						5.4	
0.60								
	38.3						6.4	
0.80								
	70.0						3.4	
0.950	60.0						4.0	

Flush		Chiselling			Water Added		Ground-water				Diam	To Depth		Location:	
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)		Cut Off	Boring		Casing
															-
															Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-10
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A37 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited
SCALE: 1:10					

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Depth (m)	Penetration/blow (mm/blow)	Equivalent CBR Value (%)					Equ CBR (%)	Remarks
		5	10	15	20	25		
0.00								
0.150								
0.20	60.0 20.0							4.0 13
	40.0 30.0							6.1 8.3
0.40	31.7							7.8
	28.3							8.8
0.60	36.7							6.7
	43.3							5.6
0.80								
0.930	70.0							3.4

Flush			Chiselling			Water Added		Ground-water				Diam	To Depth		Location:
Returns	Type	To Depth	From	To	Time(hr)	From	To	Struck	Rose To	Time(mins)	Cut Off		Boring	Casing	
															Orientation: Vertical

Remarks:	Equipment: TRL Dynamic Cone Penetrometer	Method:	Borehole No: DCP-11
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PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: TRL DYNAMIC CONE PENETROMETER TEST	Fig. No. A38 Sheet 1 of 1	Revisions DWN CHK APP			A trading name of Green Cat Renewables Limited
SCALE: 1:10					

Exploration Point No	Depth (m)	Test No.	Shear Strength τ (kN/m ²)	Remarks
TP-R-01	0.40	1	66	
	0.40	2	66	
	0.40	3	64	
TP-R-02	0.40	1	56	
	0.40	2	54	
	0.40	3	64	
TP-R-03	0.40	1	43	
	0.40	2	32	
	0.40	3	40	
TP-R-04	0.40	1	51	
	0.40	2	53	
	0.40	3	53	
TP-R-05	0.40	1	65	
	0.40	2	65	
	0.40	3	64	
TP-R-06	0.40	1	66	
	0.40	2	66	
	0.40	3	69	
TP-R-07	0.40	1	37	
	0.40	2	40	
	0.40	3	45	
TP-R-08	0.40	1	77	
	0.40	2	80	
	0.40	3	82	

PROJECT TITLE:

PROTOS SITE, INCE MARSHES

Contract No:

5601-1326

Date 12/05/23

DWN	CHK	APP
DL	SO	SO

Final

CLIENT:

Forsa Energy Gas Holdings Ltd

DRAWING TITLE:

RESULTS OF HAND VANE TESTS

Fig. No.
A39
Sheet 1 of 1

Revisions

DWN	CHK	APP

SCALE:

Ritchie House
Starlaw Business Park
Livingston
West Lothian
EH54 8SF
info@greencatrenewables.co.uk
01506 416553

A trading name of
Green Cat Renewables Limited





Geotechnical

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553																
DRAWING TITLE: RESULTS OF IN SITU RESISTIVITY TESTING	Fig. No. A40 Sheet 1 of 2	Revisions <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">DWN</td> <td style="width: 5%;">CHK</td> <td style="width: 5%;">SO</td> <td style="width: 5%;">APP</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	DWN	CHK	SO	APP					Revisions <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">DWN</td> <td style="width: 5%;">CHK</td> <td style="width: 5%;">SO</td> <td style="width: 5%;">APP</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	DWN	CHK	SO	APP					CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DWN	CHK	SO	APP																		
DWN	CHK	SO	APP																		


Trial Pit No.	Direction of Sounding	Electrode Spacing (m)	Measured Resistance (ohm)	Apparent Wenner Resistivity (ohm-m)	Remarks
RES-01	E-W	0.50	5.84	18.3	
	N-S	0.50	7.10	22.3	
	E-W	1.00	2.35	14.8	
	N-S	1.00	2.32	14.6	
	E-W	2.00	0.510	6.4	
	N-S	2.00	0.480	6.0	
	E-W	4.00	0.0500	1.3	
	N-S	4.00	0.0600	1.5	
	E-W	8.00	0.0100	0.5	
	N-S	8.00	0.0100	0.5	
RES-02	E-W	0.50	4.19	13.2	
	N-S	0.50	4.87	15.3	
	E-W	1.00	2.37	14.9	
	N-S	1.00	1.71	10.7	
	E-W	2.00	0.620	7.8	
	N-S	2.00	0.600	7.5	
	E-W	4.00	0.200	5.0	
	N-S	4.00	0.170	4.3	
	E-W	8.00	0.0700	3.5	



Trial Pit No.	Direction of Sounding	Electrode Spacing (m)	Measured Resistance (ohm)	Apparent Wenner Resistivity (ohm-m)	Remarks
RES-02	N-S	8.00	0.0600	3.0	

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No.: 5601-1326									
DRAWING TITLE: RESULTS OF IN SITU RESISTIVITY TESTING		Fig. No.: A40 Sheet 2 of 2									
SCALE:											
		Date 03/07/23									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">DWN</td> <td style="width: 25%;">CHK</td> <td style="width: 25%;">SO</td> <td style="width: 25%;">APP</td> </tr> <tr> <td>DWN</td> <td>CHK</td> <td>SO</td> <td>APP</td> </tr> </table>		DWN	CHK	SO	APP	DWN	CHK	SO	APP
DWN	CHK	SO	APP								
DWN	CHK	SO	APP								
		Revisions									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">DWN</td> <td style="width: 25%;">CHK</td> <td style="width: 25%;">SO</td> <td style="width: 25%;">APP</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		DWN	CHK	SO	APP				
DWN	CHK	SO	APP								
		Final									
CLIENT: Forsa Energy Gas Holdings Ltd											
Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited											
											


Borehole No.	Date	Atmospheric Pressure (mBar)	Gas Composition				Differential Pressure (Pa)	Flow (l/hr)	Depth to Water (m)	Remarks
			CH ₄ (%vol)	CO ₂ (%vol)	O ₂ (%vol)	H ₂ S (ppm)				
BH1A	5/5/23	1014	1.9	8.5	11.3	0.0	-7.0	-1.8	0.20	CO=0ppm
	17/5/23	1031	0.0	8.4	17.1	0.0	0.0	0.0	0.18	CO=0ppm
	10/6/23	1015	1.5	3.8	16.3	0.0	-27.0	-4.4	0.45	CO=0ppm. Borehole purged to dry once ground gas/water level readings taken.
BH2A	19/6/23	1010	5.2	11.4	11.8	0.0	13.0	3.0	0.34	CO=0ppm
	5/5/23	1014	0.0	0.6	20.3	0.0	0.0	0.0	0.30	CO=0ppm
	17/5/23	1031	0.0	0.6	20.4	0.0	0.0	0.0	0.25	CO=0ppm
	10/6/23	1015	1.1	2.1	19.2	0.0	0.0	0.0	0.55	CO=0ppm. Borehole purged to dry once ground gas/water level readings taken.
BH03	19/6/23	1010	0.0	0.2	20.9	0.0	0.0	0.0	0.50	CO=0ppm
	5/5/23	1013	0.0	0.1	20.4	0.0	0.0	0.0	0.35	CO=0ppm
	17/5/23	1031	0.0	0.2	20.6	0.0	0.0	0.0	0.56	CO=0ppm
	10/6/23	1013	0.0	1.6	20.2	0.0	0.0	0.0	0.45	CO=0ppm. Borehole purged of three well volumes once ground gas/water level readings taken. Water table lowered to a depth of 2mbgl.
	19/6/23	1010	0.0	1.0	20.3	0.0	0.0	0.0	0.60	CO=0ppm

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final		CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: RESULTS OF GAS AND WATER LEVEL MONITORING IN STANDPIPES		Fig. No. A41 Sheet 1 of 1	Revisions					
SCALE:			DWN	CHK	APP			

22/03/2023




Trial Pit No:
TP01

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenovables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A42	Revisions	DWN	CHK	APP			
SCALE:								

22/03/2023




Trial Pit No:
TP02

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date	03/07/23		Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 Geotechnical
		DWN	CHK	APP				
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A43	Revisions						
SCALE:		DWN	CHK	APP				

22/03/2023




Trial Pit No:
TP03

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenovables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A44	Revisions	DWN	CHK	APP			
SCALE:		DWN	CHK	APP				

22/03/2023




Trial Pit No: TP04

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited Geotechnical
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A45	Revisions DWN CHK APP DL SO SO				
SCALE:							

22/03/2023




Trial Pit No:
TP05

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenovables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A46	Revisions	DWN	CHK	APP			
SCALE:		DWN	CHK	APP				

22/03/2023



Trial Pit No:
TP06


PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A47	Revisions				
SCALE:			DWN	CHK	APP		
			DL	SO	SO		
			DWN	CHK	APP		

23/02/2023



Trial Pit No:

TP-INF-01


PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A48	Revisions				
SCALE:			DWN	CHK	APP		
			DL	SO	SO		
			DWN	CHK	APP		

23/02/2023



Trial Pit No:

TP-INF-02


PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited Geotechnical
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A49	Revisions				
SCALE:			DWN	CHK	APP		
			DL	SO	SO		
			DWN	CHK	APP		

23/02/2023



Trial Pit No:


TP-R-01

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final		CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited Geotechnical
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A50	Revisions	DWN	CHK	APP		
SCALE:		DWN	CHK	APP			

23/02/2023




Trial Pit No:
TP-R-02

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 Geotechnical
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A51	Revisions				
SCALE:			DWN	CHK	APP		
			DL	SO	SO		
			DWN	CHK	APP		

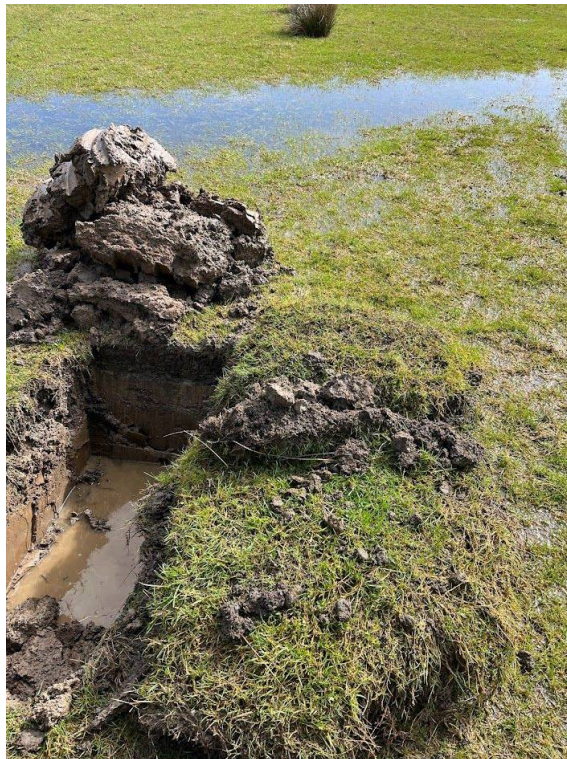
23/02/2023




Trial Pit No:
TP-R-03

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenovables.co.uk 01506 416553	 Geotechnical								
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A52	Revisions												
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DWN	CHK	APP													
DL	SO	SO													

23/02/2023



Trial Pit No:
TP-R-04


PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date	03/07/23			Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 Geotechnical
		DWN	CHK	APP	DL				
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A53	Revisions							
		DWN	CHK	APP					
SCALE:									

23/02/2023



Trial Pit No:


TP-R-05

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 03/07/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 A trading name of Green Cat Renewables Limited Geotechnical
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS		Fig. No. A54	Revisions				
SCALE:			DWN	CHK	APP		
			DL	SO	SO		
			DWN	CHK	APP		

23/02/2023




Trial Pit No: TP-R-06

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenovables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A55	Revisions	DWN	CHK	APP			
SCALE:								

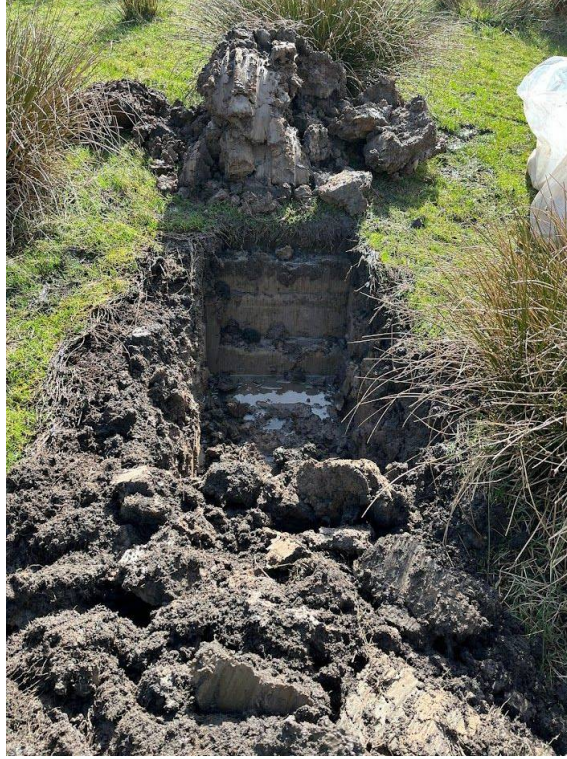
23/02/2023




Trial Pit No: TP-R-07

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final		CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A56	Revisions					
SCALE:		DWN	CHK	APP			
		DL	SO	SO			
		DWN	CHK	APP			

23/02/2023



Trial Pit No:
TP-R-08

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 03/07/23	Final			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenovables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: TRIAL PIT PHOTOGRAPHS	Fig. No. A57	Revisions	DWN	CHK	APP			
SCALE:								



PROTOS SITE, INCE MARSHES

ANNEX B: LABORATORY TESTING
(GEOTECHNICAL)

Contract No: **5601-1326**

Samples Received: **21st March 2023**

Samples Tested: 15/05/23 to 29/05/23

Approved for Issue by:

Vincent Gallagher

V Gallagher

Laboratory Coordinator

vinnie@greencatrenewables.co.uk

Client:

Forsa Energy Gas Holdings Ltd

Clyde View (Suite F3)

Riverside Business Park

22 Pottery Street

Greenock

ANNEX B TABLE OF CONTENTS

Notes on Laboratory Procedures

Description

Figure No

Summary of Index Property and Strength Tests


B1

Summary of Chemical and Electro-Chemical Tests

B2

Particle Size Distribution Tests

B3 to B10

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 30/06/23			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: CONTENTS FOR ANNEX B		Fig. No.		Revisions					
SCALE:				DWN	CHK	APP			

Style: GCR NOTES LABORATORY File: \\BATHGATE\GEO\TECH\GINT\PROJECTS\5601.GPJ Printed: 30/06/2023 16:28:20 Green Cat Renewables Ltd, Beithany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01895-309100

List of Laboratory Tests

TEST

STANDARD

CLASSIFICATION TESTS

Determination of water content	BS1377-2:2022 Clause 4.1 BS EN ISO17892-1:2014
Determination of liquid limit, 80g/30° cone, 4 point increasing water content	BS1377-2:2022 Clause 5.2 BS EN ISO17892-12:2014
Determination of plastic limit and plasticity index	BS1377-2:2022 Clause 6 BS EN ISO17892-12:2014
Determination of bulk density, linear measurement	BS1377-2:2022 Clause 8 BS EN ISO17892-2:2018
Determination of particle density (formerly specific gravity)	BS1377-2:2022 Clause 9.2
Sieve analysis by wet or dry sieving	BS1377-2:2022 Clause 10 BS EN ISO17892-4:2016
Sedimentation by the hydrometer method	BS1377-2:2022 Clause 10 BS EN ISO17892-4:2016

COMPACTION-RELATED TESTS

Determination of dry density/water content relationship	BS1377-2:2022 Clause 11
Determination of moisture condition value (MCV)	SDD Tech Memo SH7/83; SDD Appls Guide No.1 Rev. 1989; BS1377-2:2022 Clause 13
Determination of California Bearing Ratio (CBR)	BS1377-2:2022 Clause 15

STRENGTH TESTS

Determination of undrained shear strength in triaxial compression	BS1377-2:2022 Clause 28 BS EN ISO17892-2:2018
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The following tests are outside the scope of UKAS accreditation.

CONSOLIDATION TESTS

Determination of one-dimensional consolidation properties	BS 1377 : 1990 : Part 5 : 3
---	-----------------------------

CHEMICAL TESTS

Determination of organic matter content	BS 1377 : 1990 : Part 3 : 3.4
Determination of mass loss on ignition	BS 1377 : 1990 : Part 3 : 4.3
Determination of sulphate content of soil and groundwater	BS 1377 : 1990 : Part 3 : 5.2, 5.3, 5.4 and 5.5
Determination of chloride content	BS 1377 : 1990 : Part 3 : 7.2
Determination of pH value	BS 1377 : 1990 : Part 3 : 9.5

ROCK TESTS

Determination of point load strength	ISRM Commission on Testing Methods, 1985
--------------------------------------	--

PI Statement

Certified that the above mentioned samples/parts/materials have been tested/examined in accordance with the terms of the contract/order applicable and unless otherwise stated conform fully to the standards/specifications quoted. This does not however, guarantee the balance of production from which the tested samples/parts/materials have been taken to be of equal quality.

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

This report should not be reproduced except in full without the written approval of the laboratory.



'Sub' on result indicates test was sub-contracted.



PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 30/06/23	CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553 A trading name of Green Cat Renewables Limited	
DRAWING TITLE: NOTES ON LABORATORY PROCEDURES		Fig. No.	Revisions				
SCALE:			DWN CHK APP				

Exploration Point No	Depth (m)	Type	Index Properties					Density			Total Stress Parameters		
			Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 μm (%)	Particle Density (Mg/m^3)	Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	Shear Strength τ (kN/m^2)	Cohesion C_u (kN/m^2)	Angle of Shearing Resistance ϕ (degree)
BH01	3.00	T	39.0	41	18	23	100 _N	-	-	-	-	-	-
	6.50	T	19.4	36	15	21	100 _N	-	-	-	-	-	-
	9.50	T	13.8	32	13	19	100 _N	-	-	-	-	-	-
BH02	4.00	T	50.9	42	26	16	100 _N	-	-	-	-	-	-
	11.00	T	19.7	39	17	22	100 _N	-	-	-	-	-	-
	17.00	T	18.1	25	NP	-	100 _N	-	-	-	-	-	-
BH03	1.00	ES	32.5	43	19	24	100 _N	-	-	-	-	-	-
	6.50	T	141.7	50	32	18	100 _N	-	-	-	-	-	-

S denotes wet sieve, N denotes natural

PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 30/06/23		Final		CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553		
DRAWING TITLE: SUMMARY OF INDEX PROPERTY AND STRENGTH TESTS		Fig. No. B1 Sheet 1 of 1		Revisions						A trading name of Green Cat Renewables Limited		
SCALE:				DWN		CHK		APP				

Exploration Point No	Depth (m)	Type	pH	Sulphate Content as SO ₄			Chloride Content			Mass Loss on Ignition (%)	Organic Content (%)	Sulphide or Chloride Present	Passing 2mm Sieve (%)
				Total Acid Soluble (%)	2:1 Water:Soil Extract (g/l)	Ground-water (g/l)	Total Acid Soluble (%)	2:1 Water:Soil Extract (g/l)	Ground-water (g/l)				
BH01	4.00	T	8.1	-	0.20	-	-	-	-	-	-	-	
	12.50	T	8.5	-	0.04	-	-	-	-	-	-	-	
	18.50	T	9.1	-	0.01	-	-	-	-	-	-	-	
BH02	5.00	T	8.0	-	0.38	-	-	-	-	-	-	-	
	8.00	T	8.2	-	0.16	-	-	-	-	-	-	-	
	23.00	T	8.9	-	0.02	-	-	-	-	-	-	-	
BH03	8.00	T	7.2	-	0.56	-	-	-	-	-	-	-	
TP01	0.20	ES	7.7	-	0.04	-	-	-	-	-	-	-	
TP02	0.50	ES	7.7	-	0.16	-	-	-	-	-	-	-	
TP04	0.20	ES	8.0	-	0.03	-	-	-	-	-	-	-	
TP06	0.50	ES	7.6	-	0.32	-	-	-	-	-	-	-	

PROJECT TITLE:

PROTOS SITE, INCE MARSHES

Contract No:

5601-1326

Date

30/06/23

Final

CLIENT:

Forsa Energy Gas Holdings Ltd

DRAWING TITLE:

SUMMARY OF CHEMICAL AND ELECTRO-CHEMICAL TESTS

Fig. No.

B2
Sheet 1 of 1

Revisions

DWN	CHK	APP
VG	GGH	GGH

DWN	CHK	APP

SCALE:

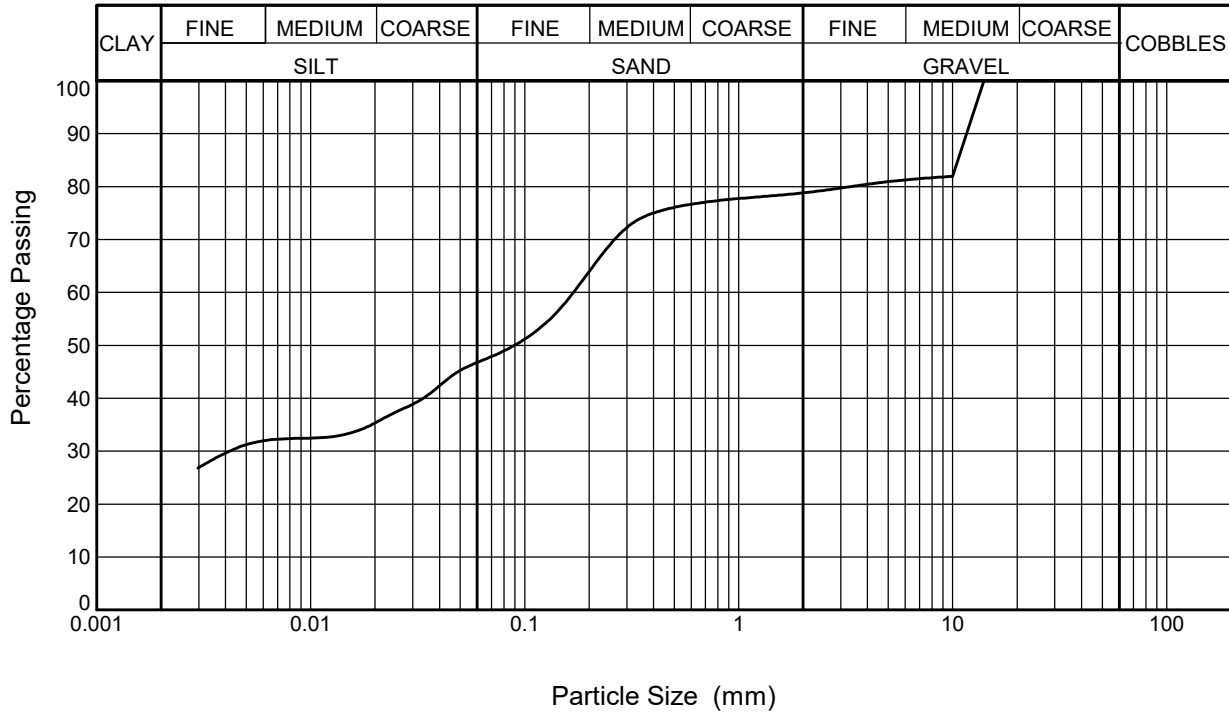
Ritchie House
 Starlaw Business Park
 Livingston
 West Lothian
 EH54 8SF
 info@greencatrenewables.co.uk
 01506 416553

A trading name of Green Cat Renewables Limited



Geotechnical

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEO\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:48 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	100
20.0	100
14.0	100
10.0	82
5.00	81
4.00	80
2.00	79
1.18	78
0.600	77
0.425	75
0.300	72
0.150	57
0.0630	47
0.0474	45
0.0342	40
0.0246	37
0.0176	34
0.00504	31
0.00297	27



Sample Proportions (%)	
Cobbles	0
Gravel	21
Sand	32
Silt & Clay	47
Silt	
Clay	

Particle Sizes (mm)	
D100	14.00
D60	0.18
D10	
Uniformity Coefficient (D60/D10)	

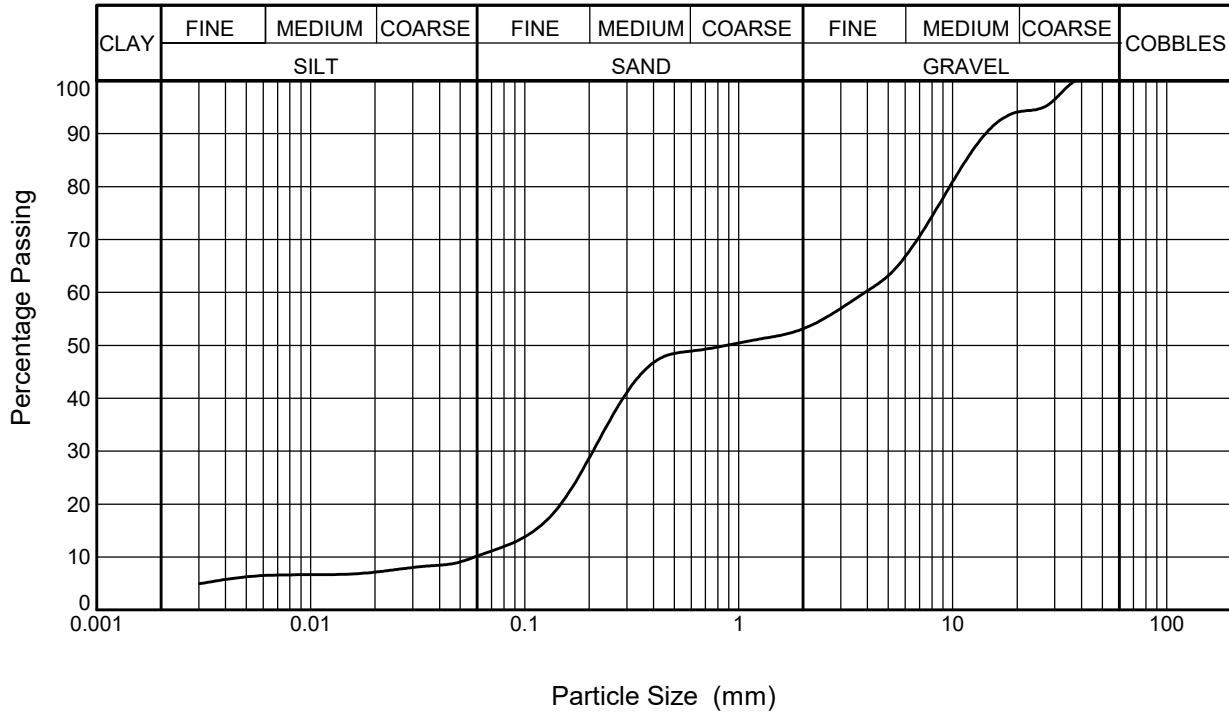
Notes
Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Medium dense reddish brown slightly silty gravelly fine and medium SAND with low cobble content, many shell fragments and occasional bands of very soft reddish brown slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse. Cobbles are subangular and subrounded.

Exploration Point: **BH01**
Test Depth: **15.00m**
Sample Type: **B**
Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 30/06/23 DWN CHK APP VG VG VG	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B3	Revisions DWN CHK APP		A trading name of Green Cat Renewables Limited		
BS1377-2:2022 clause 10 BS EN ISO17892-4:2016		SCALE:				

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEO\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:49 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	95
20.0	94
14.0	90
10.0	81
5.00	63
4.00	60
2.00	53
1.18	51
0.600	49
0.425	47
0.300	41
0.150	20
0.0630	10
0.0484	9
0.0347	8
0.0249	8
0.0178	7
0.00511	6
0.00302	5



Sample Proportions (%)	
Cobbles	0
Gravel	47
Sand	43
Silt & Clay	10
Silt	
Clay	

Particle Sizes (mm)	
D100	37.50
D60	3.92
D10	0.059
Uniformity Coefficient (D60/D10)	67

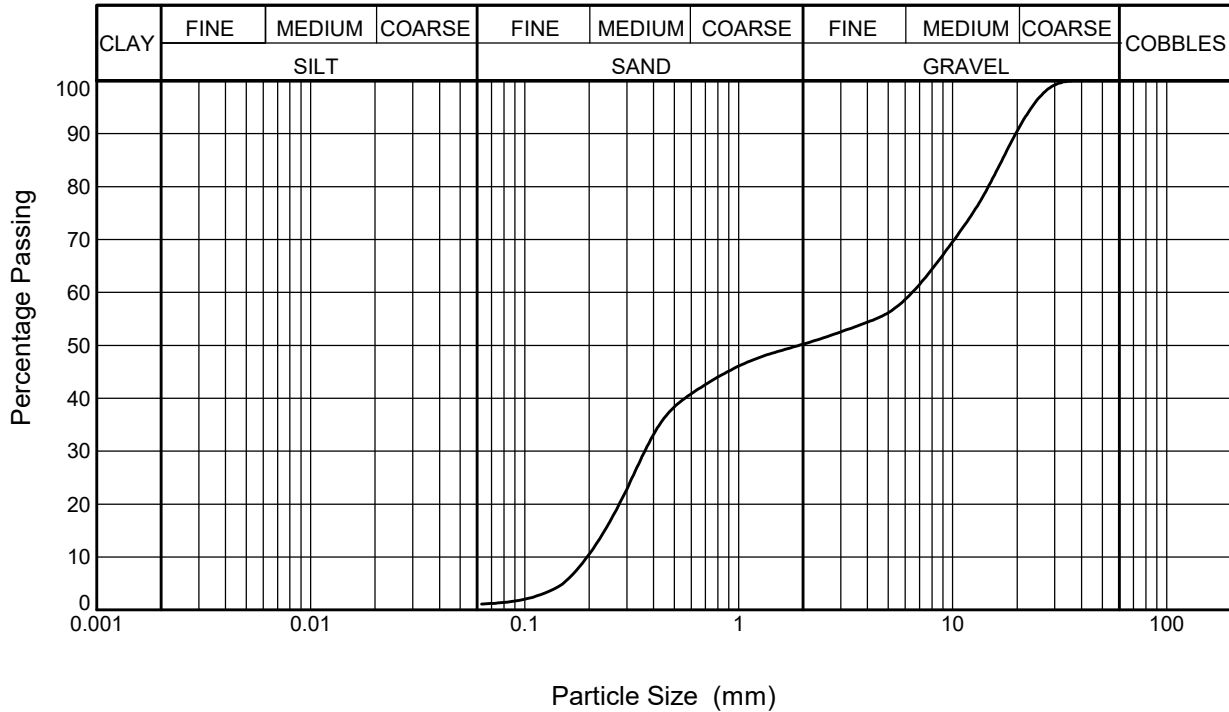
Notes
Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Medium dense reddish brown slightly silty gravelly fine and medium SAND with low cobble content, many shell fragments and occasional bands of very soft reddish brown slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse. Cobbles are subangular and subrounded.

Exploration Point: **BH01**
Test Depth: **16.50m**
Sample Type: **B**
Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 30/06/23 DWN CHK APP VG VG VG	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B4	Revisions DWN CHK APP		A trading name of Green Cat Renewables Limited		
BS1377-2:2022 clause 10 BS EN ISO17892-4:2016		SCALE:				

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEO\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:50 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	98
20.0	90
14.0	78
10.0	70
5.00	56
4.00	54
2.00	50
1.18	47
0.600	41
0.425	35
0.300	23
0.150	5
0.0630	1

Sample Proportions (%)	
Cobbles	0
Gravel	50
Sand	49
Silt & Clay	1
Silt	
Clay	

Particle Sizes (mm)	
D100	37.50
D60	6.54
D10	0.220
Uniformity Coefficient (D60/D10)	30

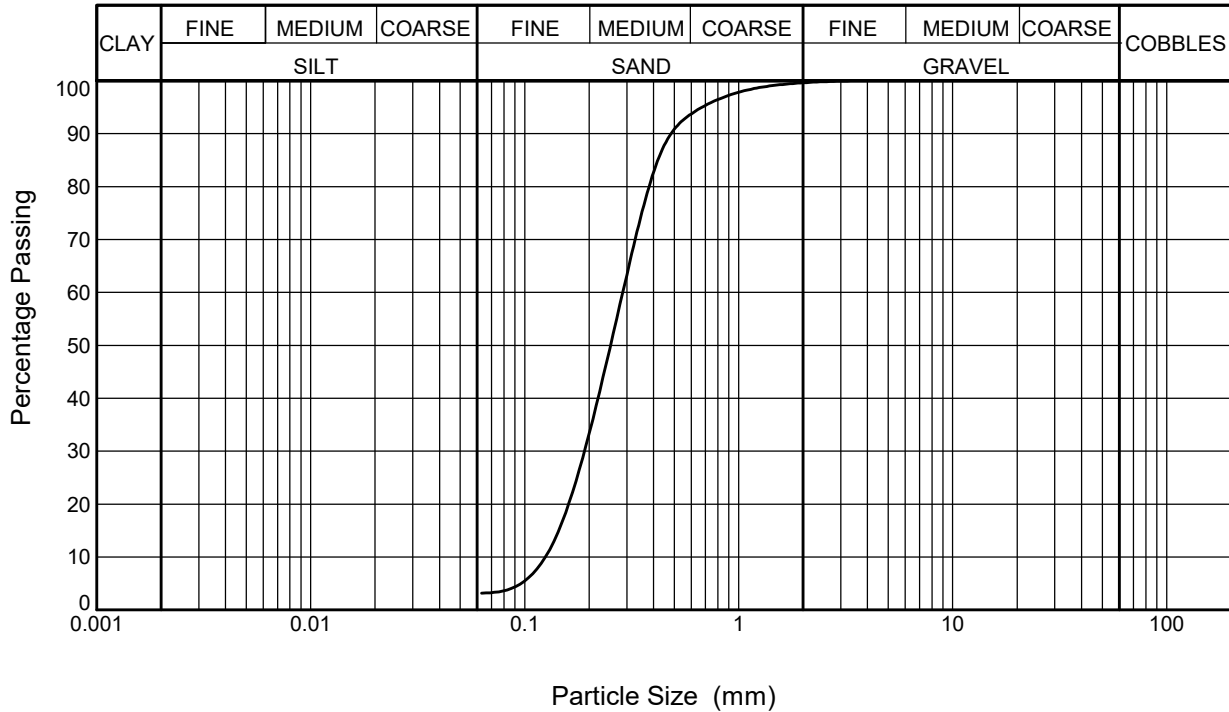
Notes
Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Medium dense reddish brown slightly silty gravelly fine and medium SAND with low cobble content, many shell fragments and occasional bands of very soft reddish brown slightly sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse. Cobbles are subangular and subrounded.

Exploration Point: **BH01**
Test Depth: **19.50m**
Sample Type: **B**
Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 30/06/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B5	Revisions DWN CHK APP			
BS1377-2:2022 clause 10 BS EN ISO17892-4:2016					

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEOTECH\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:51 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	100
20.0	100
14.0	100
10.0	100
5.00	100
4.00	100
2.00	100
1.18	99
0.600	94
0.425	86
0.300	63
0.150	17
0.0630	3

Sample Proportions (%)	
Cobbles	0
Gravel	0
Sand	97
Silt & Clay	2
Silt	
Clay	

Particle Sizes (mm)	
D100	4.00
D60	0.29
D10	0.123
Uniformity Coefficient (D60/D10)	2.4

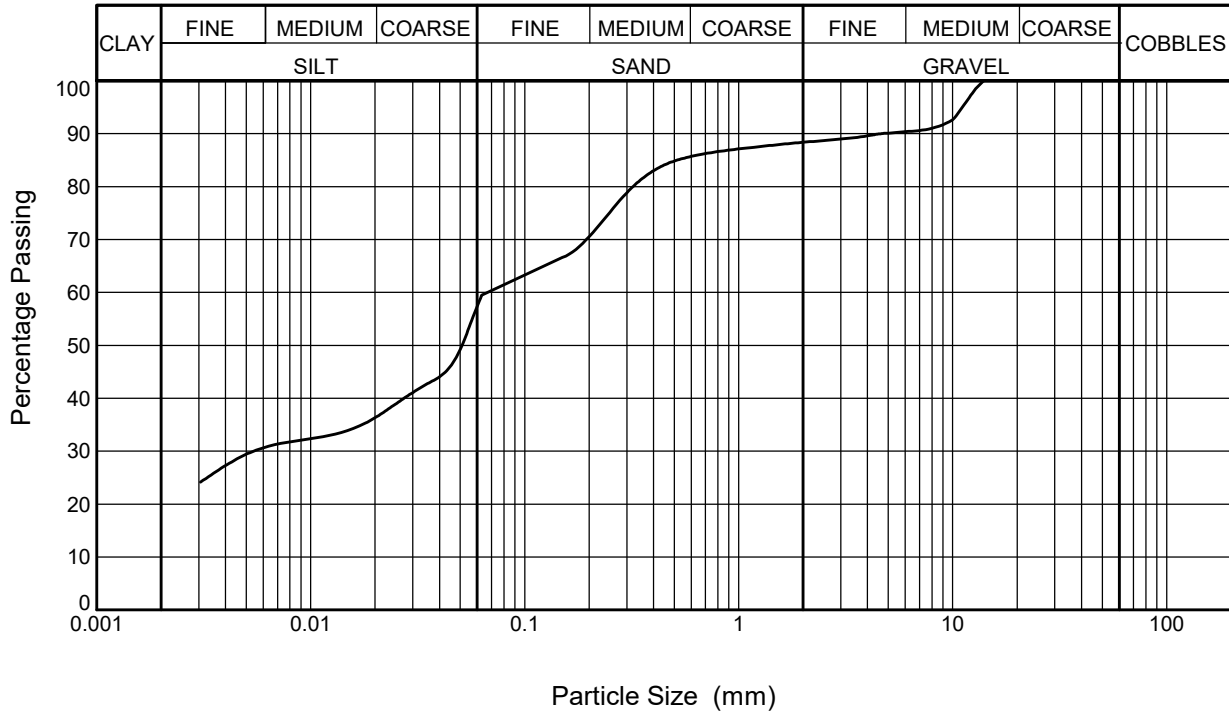
Notes
 Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Very loose reddish brown slightly silty fine and medium SAND with many shell fragments.

Exploration Point: **BH02**
 Test Depth: **16.50m**
 Sample Type: **B**
 Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 30/06/23	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553						
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B6	Revisions <table border="1" style="font-size: small;"> <tr><th>DWN</th><th>CHK</th><th>APP</th></tr> <tr><td> </td><td> </td><td> </td></tr> </table>		DWN	CHK	APP					
DWN	CHK	APP									
BS1377-2:2022 clause 10 BS EN ISO17892-4:2016	SCALE:										

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEO\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:52 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	100
20.0	100
14.0	100
10.0	93
5.00	90
4.00	90
2.00	88
1.18	87
0.600	86
0.425	84
0.300	79
0.150	67
0.0630	59
0.0488	48
0.0352	43
0.0252	39
0.0181	35
0.00520	30
0.00306	24

Sample Proportions (%)	
Cobbles	0
Gravel	12
Sand	31
Silt & Clay	57
Silt	
Clay	

Particle Sizes (mm)	
D100	14.00
D60	0.07
D10	
Uniformity Coefficient (D60/D10)	



Notes

Particle Density 2.65 (assumed)

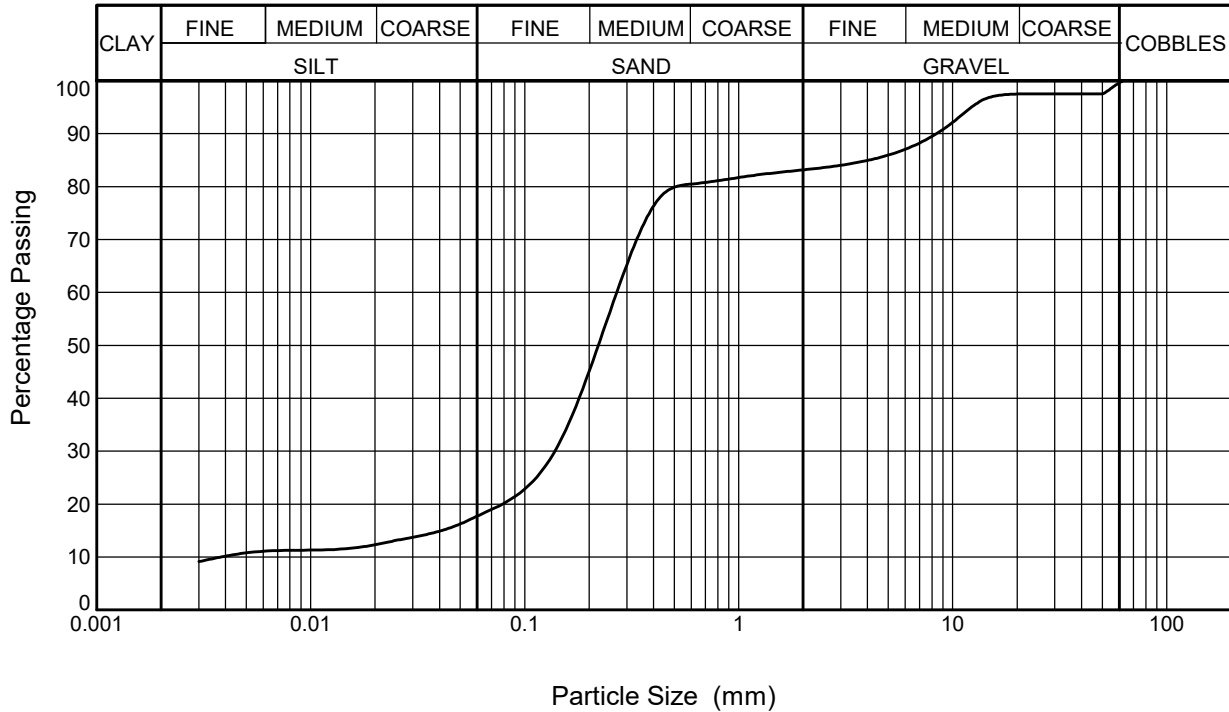
Technicians Visual Description of Sample or Strata Description from Engineering Record

Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular and subrounded fine to coarse. (Driller records cobbles).

Exploration Point: **BH02**
 Test Depth: **19.50m**
 Sample Type: **B**
 Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 30/06/23 DWN CHK APP VG VG VG	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B7	Revisions DWN CHK APP		A trading name of Green Cat Renewables Limited		
BS1377-2:2022 clause 10 BS EN ISO17892-4:2016		SCALE:				

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEOTECH\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:53 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	97
37.5	97
28.0	97
20.0	97
14.0	96
10.0	92
5.00	86
4.00	85
2.00	83
1.18	82
0.600	80
0.425	78
0.300	65
0.150	33
0.0630	18
0.0481	16
0.0347	14
0.0249	13
0.0178	12
0.00511	11
0.00300	9

Sample Proportions (%)	
Cobbles	1
Gravel	16
Sand	65
Silt & Clay	18
Silt	
Clay	

Particle Sizes (mm)	
D100	63.00
D60	0.28
D10	0.004
Uniformity Coefficient (D60/D10)	68

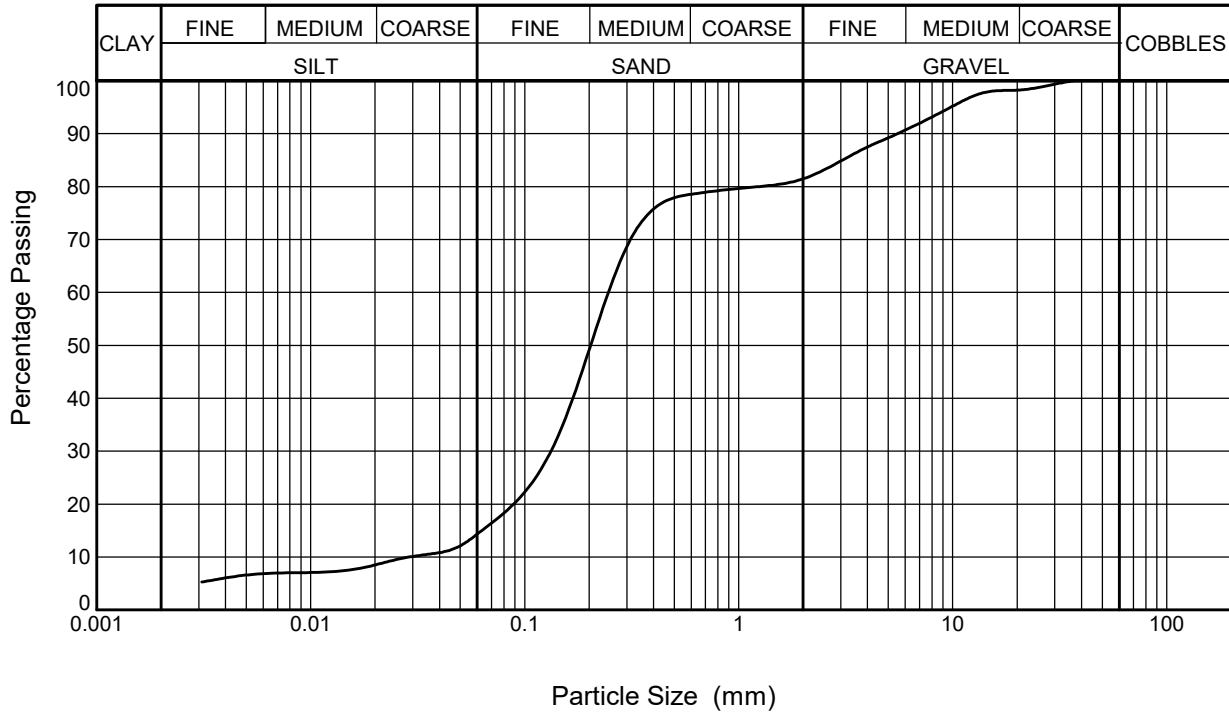
Notes
 Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Very loose reddish brown slightly silty slightly gravelly fine to coarse SAND with low cobble content, occasional pockets of reddish brown clay and traces of shell fragments. Gravel is subangular and subrounded fine to coarse. Cobbles are subangular and subrounded.

Exploration Point: **BH02**
 Test Depth: **24.00m**
 Sample Type: **B**
 Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 30/06/23 DWN CHK APP VG VG VG	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B8	Revisions DWN CHK APP		A trading name of Green Cat Renewables Limited		
BS1377-2:2022 clause 10 BS EN ISO17892-4:2016		SCALE:				

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEO\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:54 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	99
20.0	98
14.0	98
10.0	95
5.00	89
4.00	87
2.00	81
1.18	80
0.600	79
0.425	77
0.300	69
0.150	35
0.0630	15
0.0491	12
0.0354	11
0.0254	10
0.0183	8
0.00527	7
0.00309	5



Sample Proportions (%)	
Cobbles	0
Gravel	19
Sand	67
Silt & Clay	14
Silt	
Clay	

Particle Sizes (mm)	
D100	37.50
D60	0.27
D10	0.030
Uniformity Coefficient (D60/D10)	9.0

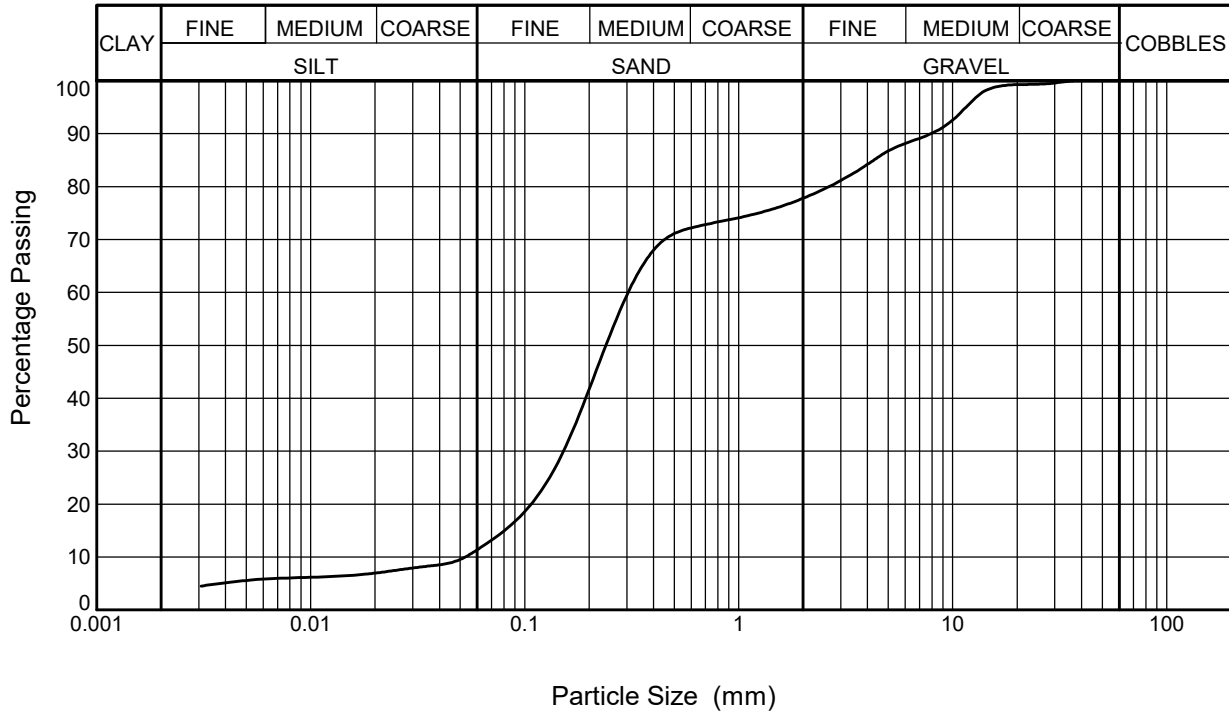
Notes
Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Very loose grey slightly gravelly silty fine and medium SAND. Gravel is subangular and subrounded fine and medium.

Exploration Point: **BH03**
Test Depth: **9.50m**
Sample Type: **B**
Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date: 30/06/23 DWN CHK APP VG VG VG	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B9	Revisions DWN CHK APP		A trading name of Green Cat Renewables Limited		
SCALE:						

Style: GOR LAB PSD SINGLE File: \\BATHGATE\GEO\GINT\PROJECTS\6601.GPJ Printed: 30/06/2023 16:28:54 Green Cat Renewables Ltd, Bethany Hall, Biggar ML12 6DA trading as Green Cat Geotechnical E-mail: info@greencatrenewables.co.uk Tel: 01899-309100



Particle Size (mm)	Percentage Passing
200	100
125	100
90.0	100
75.0	100
63.0	100
50.0	100
37.5	100
28.0	99
20.0	99
14.0	98
10.0	93
5.00	87
4.00	84
2.00	78
1.18	75
0.600	72
0.425	69
0.300	59
0.150	30
0.0630	12
0.0491	9
0.0354	8
0.0254	8
0.0182	7
0.00524	6
0.00308	5



Sample Proportions (%)	
Cobbles	0
Gravel	22
Sand	66
Silt & Clay	11
Silt	
Clay	

Particle Sizes (mm)	
D100	37.50
D60	0.31
D10	0.053
Uniformity Coefficient (D60/D10)	5.8

Notes
Particle Density 2.65 (assumed)

Technicians Visual Description of Sample or Strata Description from Engineering Record
Very loose grey slightly gravelly silty fine and medium SAND. Gravel is subangular and subrounded fine and medium.

Exploration Point: **BH03**
Test Depth: **11.00m**
Sample Type: **B**
Sample Ref: **N/A**

PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No: 5601-1326	Date 30/06/23 DWN CHK APP VG VG VG	Final	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	 greencat Geotechnical
DRAWING TITLE: PARTICLE SIZE DISTRIBUTION	Fig. No. B10	Revisions DWN CHK APP		A trading name of Green Cat Renewables Limited		

BS1377-2:2022 clause 10 BS EN ISO17892-4:2016
SCALE:



PROTOS SITE, INCE MARSHES

ANNEX C: PLANS

Contract No: **5601-1326**

ANNEX C


TABLE OF CONTENTS

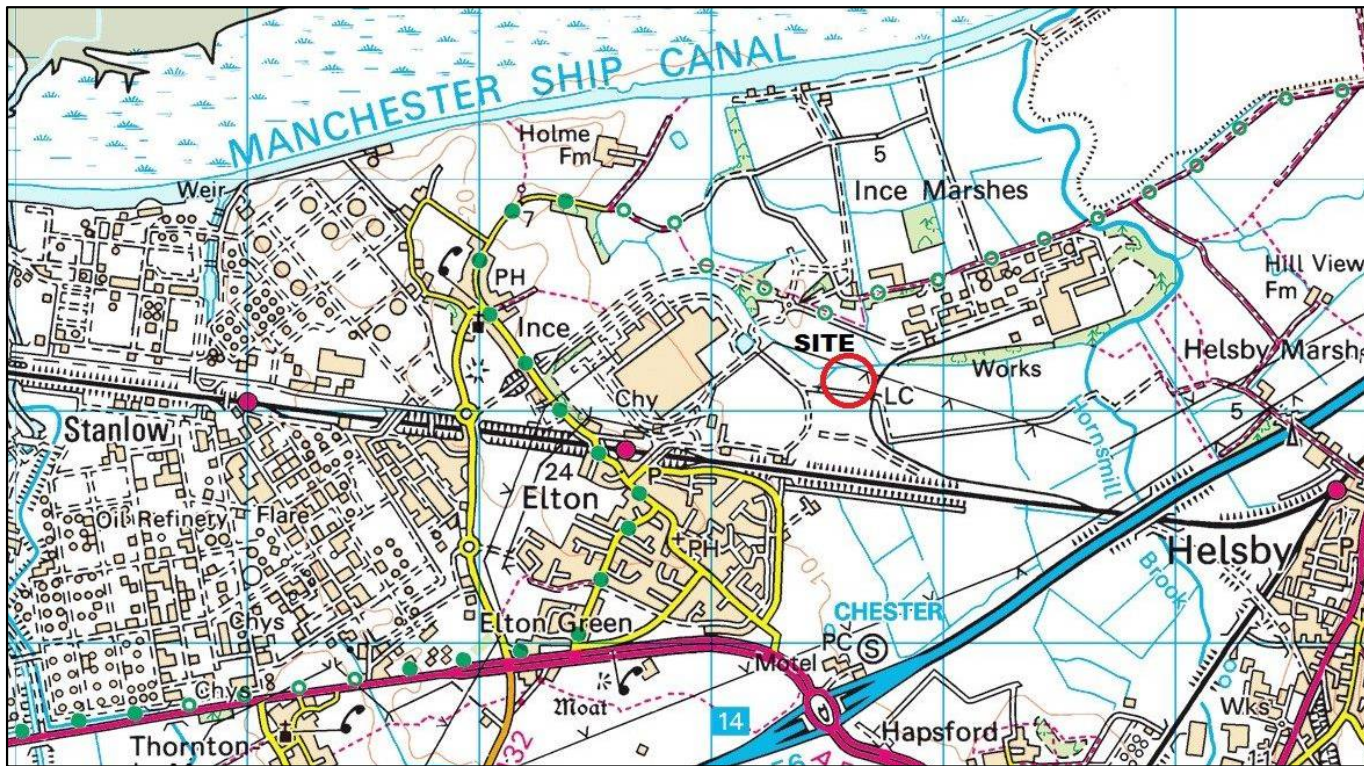
Description

Figure No


Location Plan
Site Plan

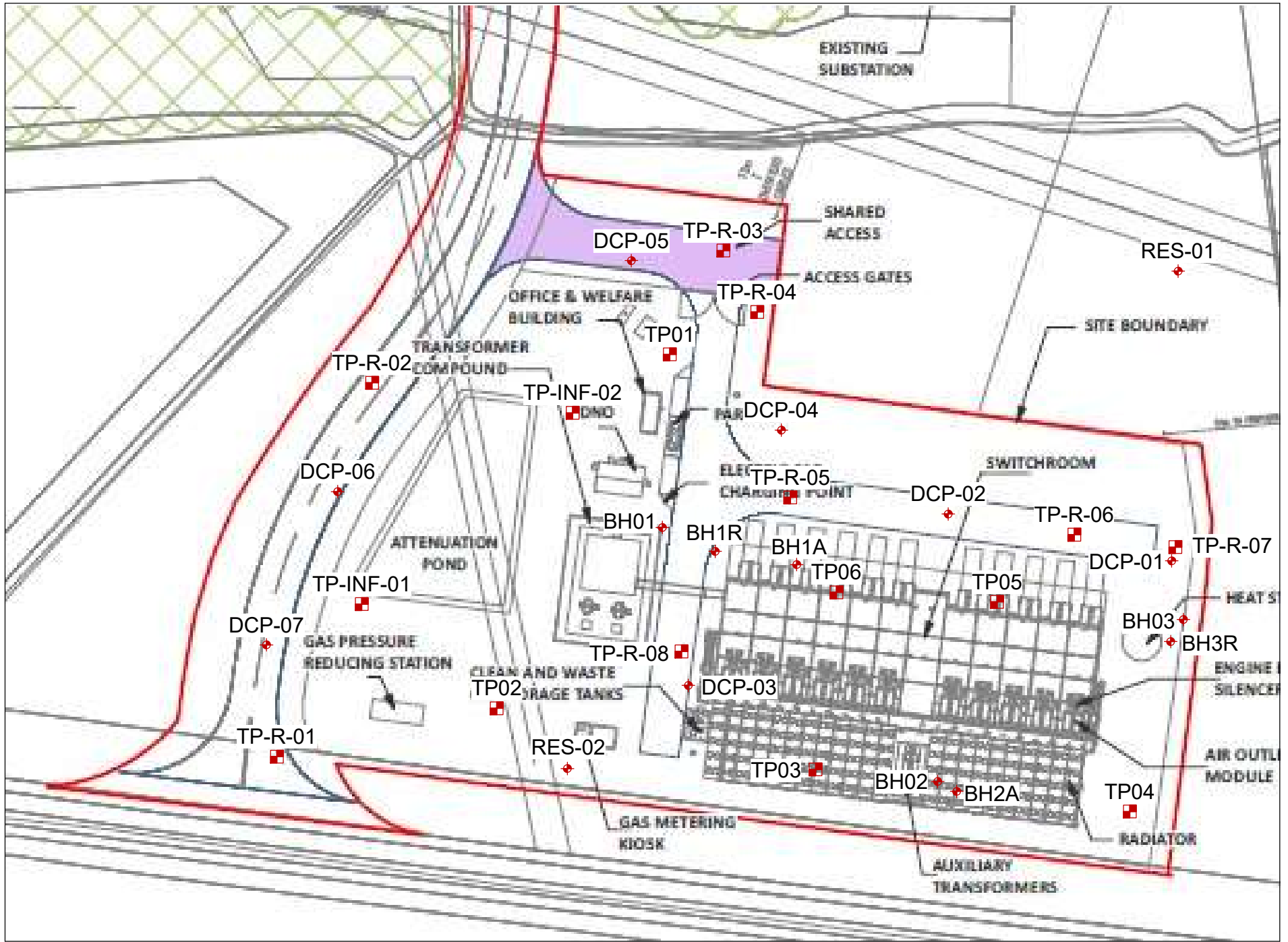
C1
C2 & C3


PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326		Date 30/06/23			CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
DRAWING TITLE: ANNEX C: PLANS		Fig. No.		Revisions					
SCALE:				DWN	CHK	APP			

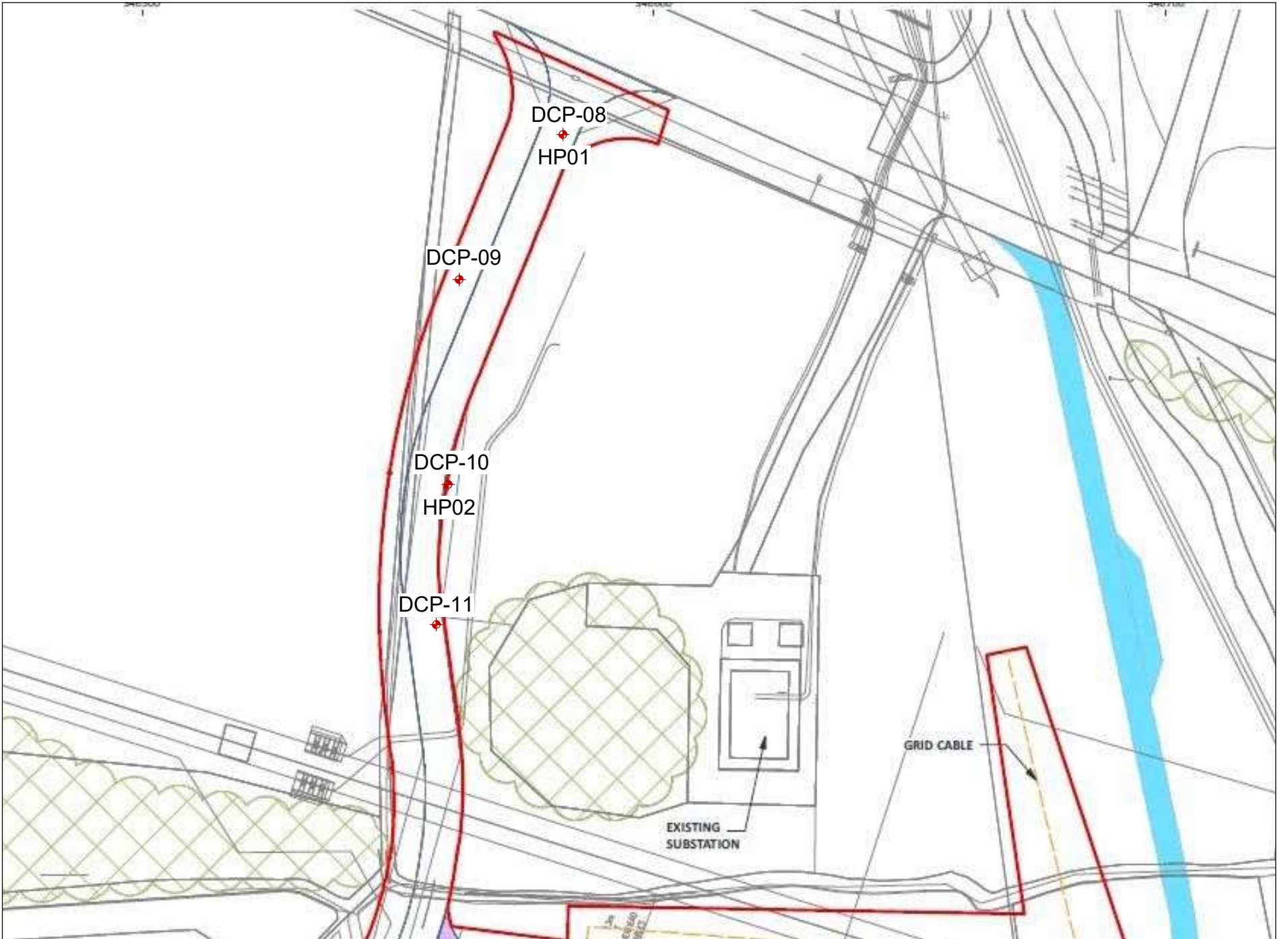


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PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	Date 30/06/23	CLIENT: Forsa Energy Gas Holdings Ltd	Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553						
DRAWING TITLE: LOCATION PLAN		Fig. No. C1	<table border="1"> <tr> <td>DWN</td> <td>CHK</td> <td>APP</td> </tr> <tr> <td>GGH</td> <td></td> <td></td> </tr> </table>			DWN	CHK	APP	GGH		
DWN	CHK	APP									
GGH											
SCALE: Not to Scale		Revisions	 A trading name of Green Cat Renewables Limited Geotechnical								
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DWN	CHK	APP									



PROJECT TITLE: PROTOS SITE, INCE MARSHES	Contract No:	5601-1326						
	Date:	15/05/23	Final					
DRAWING TITLE: SITE PLAN	Fig. No.	C2						
	Revisions:	<table border="1"> <tr> <th>NO</th> <th>CHK</th> <th>APP</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	NO	CHK	APP			
NO	CHK	APP						
CLIENT:	Forza Energy Gas Holdings Ltd Ritchie House Startlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553							
NOT TO SCALE	A trading name of Green Cat Renewables Limited 							



PROJECT TITLE: PROTOS SITE, INCE MARSHES		Contract No: 5601-1326	
DRAWING TITLE: SITE PLAN		Fig. No. C3	
NOT TO SCALE			
Date 30/06/23		Final	
Revisions			
DWN	CHK	LKR	APP
DWN	CHK	LKR	APP
CLIENT: Forsa Energy Gas Holdings Ltd		Ritchie House Starlaw Business Park Livingston West Lothian EH54 8SF info@greencatrenewables.co.uk 01506 416553	
A trading name of Green Cat Renewables Limited			