

CONSTRUCTION PHASE PLAN

CONSTRUCTION PHASE PLAN (CPP) AND SUPPORTING SAFE WORKING PROCEDURES (SWP'S)

ISSUING OFFICE:

Project Name: Barmouth North Promenade Phase 2.

Project Number: QN251224

Project Address and Postcode:

off Marine Parade
Barmouth
LL42 1BX

What Three Words: ///saddens.rosier.camera

Date: March 2025

Prepared by Geotechnics Limited in the role of Principal Contractor.

Issue	Date	Description	Prepared by	Reviewed by
1.0	14/03/2025	RAMS	Chris Bradley	Josh Noble
2.0	20/03/2025	RAMS Rev 01	Chris Bradley	Josh Noble

It is essential that you have access to the relevant CoSHH assessments and Safe Working Procedures via one of the following methods:

1	Company laptop with up to date downloaded version of the field work manual.
2	Company laptop with remote access to Templates.
3	Electronic device with access to the field work manual via 
4	Hard copy included within on-site project documentation folder.

CONTENTS

- 1.0 Description of Project.
 - 1.1 Health and Safety Goals.
 - 1.2 Contract Details, Management Structure and Supervisory Arrangements Organogram.
- 2.0 Scope of Work.
 - 2.1 Archaeological Watching Brief / Breaking Out / Permit to Drill / Dig.
 - 2.1.1 Reinstatement
- 3.0 Sequence & Method.
 - 3.1 Technical Specification.
 - 3.2 Site Personnel and Supervision.
 - 3.2.1 Induction and Briefing.
 - 3.3 Access to the Site.
 - 3.4 Other Contractors / Personnel working on Site.
 - 3.5 Transport / Vehicles
 - 3.6 Traffic Management
 - 3.7 Work at Height.
 - 3.8 Site Specific Hazards or Requirements.
 - 3.9 Lone Working.
 - 3.10 Mobile Phones.
 - 3.11 Adjacent Pedestrian Access / Rights of Way.
 - 3.12 Personnel Protective Equipment and Clothing. (PPE).
 - 3.13 Welfare facilities.
 - 3.14 First Aid Arrangements.
 - 3.15 Interaction with the General Public.
- 4.0 Programme.
- 5.0 Competency of Personnel on Site.
- 6.0 Equipment to be used.
- 7.0 Emergency Procedures.
 - 7.1 Accident / Incident / Near-Miss Reporting.
- 8.0 Monitoring of the Work.
- 9.0 Environmental Considerations.
- 10.0 Revision and Amendment Register.

APPENDICES

Appendix A – Relevant SWP's, Guidance and Information Sheets and any specific Method Statements.

Appendix B – Sketch Plan of Work Area.

Appendix C – Technical Specification.

Appendix D – Company Generic Site Rules.

Appendix E – Accident and Emergency Locations and Directions.

Appendix F – Environmental Considerations

- Site Specific Environmental Risk Assessment
- HRA Mitigation Measures
- WFD Mitigation Measures

Appendix G – Site Induction and Briefing Record.

Appendix H – Revision and Amendment Register.

1.0 DESCRIPTION OF PROJECT.

This Project Method Statement and supporting Safe Working Procedures (SWP's) has been produced by Geotechnics Ltd (known from herein as the Company), to describe the proposed ground investigation works involving geophysical surveying, cable percussion drilling, trial pits and cone penetration tests on behalf of Alun Griffiths Contractors Ltd. (known from herein as the Client).

- 1.1 **Health and Safety Goals:** The health and safety goals set by the Client for this project are to remain incident and accident free throughout.

All health and safety goals will align with our company ethos. GO SAFE.

- THINK...
...about what you are going to do today and what could cause you harm
- ASSESS...
...the hazards on your project and ensure suitable control measures
- GO...
...to work safely today and go home safely tonight

1.2 **Contract Details, Management Structure and Supervisory Arrangements.**

Duty Holder	Name	Organisation	Address	Other Contact Details	
Client	Julian Davies	Alun Griffiths Contractors Ltd.	Waterways House, Merthyr Road, Llanfoist, Abergavenny, NP7 9LN	Tel:	01873 857 211
				Mob:	07977 280 470
				Email:	Julian.Davies@alungriffiths.co.uk
Principal Designer	Pip Slattery	ARUP	Arup, 4 Pierhead Street, Cardiff, CF10 4QP	Tel:	029 2026 6543
				Mob:	07512 626780
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Designer				Tel:	
				Mob:	
				Email:	
Contractor	Chris Bradley	Geotechnics Limited	Unit 1b, Borders Ind Est, River Lane, Saltney, CH4 8RJ	Tel:	01244 671117
				Mob:	07827 576240
				Email:	cbradley@geotechnics.co.uk
Site Supervisor	Celyn Edwards	Geotechnics Limited	As above	Tel:	01244 671117
				Mob:	07786964575
				Email:	cedwards@geotechnics.co.uk
Geophysical Survey	James Cotterill	SEP Geophysical	Unit 3D, Selby Place Skelmersdale WN8 8EF	Tel:	01695 381 289
				Mob:	07590 328 769
				Email:	james.cotterill@sepgeophysical.com
GPR (if required)	Calvin Scouler	CMS Survey	37 Twigden Close, Aintree, Liverpool, L10 1NG	Tel:	0151 547 4016
				Mob:	07426 632211
				Email:	Calvin.Scouler@cmssurveys.co.uk
Cable Percussion Drilling	Ray Macklin	Macklin Geotech	14 Sandy Lane, Little Neston CH64 4DR	Tel:	
				Mob:	07717 495654
				Email:	RMacklin@geotechnics.co.uk
Cone Penetration Tests (CPTs)	Rob Ashcroft	Lankelma	Coldharbour Lane Iden, East Sussex TN31 7UT	Tel:	
				Mob:	07444 188571
				Email:	RobAshcroft@lankelma.co.uk

2.0 SCOPE OF THE WORKS.

The work comprises of the following activities:

Activity		Number of Holes / Installations (positions identified on the location plan)
1	Geophysical Survey	1500m line length (see Appendix A for methodology)
2	GPR Survey (if required)	All exploratory hole locations
3	Calbe Percussion Drilling (replacing window sampling)	4 No to 6m depth
4	Machine Dug trial pits	8 No to 2m depth
5	Cone Penetration Tests (CPTs)	8 No to 15m depth (see Appendix A for methodology)

Cable Percussion Drilling

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm (with oversize 200mm casing for depth and “clean drilling” in contaminated ground), is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an “A” frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for backfilling. Steel casing is used to prevent collapse of the borehole sides where necessary (in addition to above benefits). In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT’s) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in more dense strata. Small disturbed samples are obtained throughout.

The following procedure will be undertaken during the sampling:

1. Assess the ground soil conditions at each location and access route may also be required as well to ensure they're acceptable for working on. Check tide times and suitable working window for activities.
2. Cable Percussion crew to receive site inductions and to review operations and RAMS prior to mobilisation.
3. On site review of the utility clearance. This may require a site visit by the utility company personnel and will need approval from the utility before the work can take place if the location is within their set distances with the DCO/info from Consents.
4. Marking out of the borehole locations to be determined with the Client.
5. PAS 128 Type B survey around each borehole location and to locate and services that will be crossed during tracking to borehole locations.
6. Appropriate clothing and PPE will be worn commensurate with the weather conditions and work being undertaken, ensuring that the Company minimum requirements are always met.
7. Move equipment to borehole location, along pre-defined routes or alternative routes if the original locations are deemed to be heavily waterlogged. ensuring banksman in place to control plant movement.
8. Upon reaching the borehole location, place safety fencing (Chapter 8 or similar) around the works before commencement if in the vicinity of pedestrian rights of way or livestock.

9. Permit to Dig procedure to be carried out:
 - surface to be scanned using CAT and Genny to locate any possible services
 - service inspection pit to be dug using hand tools to 1.20mbgl
 - the base of the inspection pit to be scanned using a CAT scanner
10. The Cable Percussion rig will be set up and commence drilling and testing to the scheduled depth.
11. On completion the boreholes will be backfilled with arisings

Machine Excavated Trial Pits

Trial Pits will be excavated using a tracked excavator to investigate the superficial geology present at the specified locations. The excavator will be fitted with toothless buckets to reduce the risk of potential damage to any services.

Arisings will be segregated and deposited at the surface at a safe distance from the excavation for examination by the supervising engineer and collection of samples for laboratory analysis. Upon reaching the specified depth, or until no further progress can be made, the trial pit will be terminated. The pit will be backfilled with arisings in layers and compacted using the excavator bucket. The pit will be left slightly proud to allow for any settlement to occur. The following procedures will be undertaken during the excavation:

1. Assess the ground soil conditions at each location and access route may also be required as well to ensure they're acceptable for working on. Check tide times and suitable working window for activities.
2. Engineer supervising the excavation and excavator driver to receive site inductions and to review operations and RAMS prior to mobilisation
3. On site review of the utility clearance. This may require a site visit by the utility company personnel and will need approval from the utility before the work can take place if the location is within their set distances with the DCO/info from Consents.
4. PAS 128 Type B survey around each borehole location and to locate and services that will be crossed during tracking to borehole locations.
5. Move equipment to trial pit location, along pre-defined routes or alternative routes if the original locations are deemed to be heavily waterlogged. ensuring banksman in place to control plant movement.
6. Marking out of the trial pit locations to be determined with the Client.
7. Permit to Dig procedure to be carried out prior to mobilising to positions.
 - a. Surface to be scanned using CAT and Genny to locate any possible services.
 - b. Visual inspection for any evidence of buried or overhead services to be undertaken.
8. Trial pit location to be segregated using pedestrian barriers (chapter 8 or equivalent) prior to mobilising to the position and for the duration of the excavation if in the vicinity of pedestrians or livestock.
9. No access to Trial Pit at any time during the excavation. Trial Pit to be approached from the short side of the excavation to allow observations of the pit to be made and measure depths of strata. Soil to be logged from the arisings deposited at the surface.

Cone Penetration Tests

Utilizing a 20 tonne hydraulic ram, a 33mm diameter rod is forced into the ground at a constant rate measuring the resistance and strength of the ground as it progresses. The equipment is mounted in the centre of a tracked rig specialised for low bearing pressure ground conditions.

1. Assess the ground soil conditions at each location and access route may also be required as well to ensure they're acceptable for working on. Check tide times and suitable working window for activities.
2. Operators using the equipment to receive site inductions and to review operations and RAMS prior to mobilisation.
3. On site review of the utility clearance. This may require a site visit by the utility company personnel and will need approval from the utility before the work can take place if the location is within their set distances with the DCO/info from Consents.
4. Marking out of the CPT locations to be determined with the Client.
5. PAS 128 Type B survey around each CPT location and to locate underground High pressure Gas or Water Mains that will be crossed during tracking to CPT locations.
6. Appropriate clothing and PPE will be worn commensurate with the weather conditions and work being undertaken, ensuring that the Company minimum requirements are always met.
8. Move to the locations of the CPTs, along pre-defined routes or alternative routes if the original locations are deemed to be too soft or heavily waterlogged. ensuring banksman in place to control plant movement.
9. Scan the area using a CAT scanner and Genny.
10. The CPT rig will be set up and commence testing to the scheduled depth.
11. On completion the borehole will be backfilled and reinstated appropriately.

Relevant Safe Working Procedures and any specific Method Statements are listed in Appendix A. The Site Supervisor shall have the aforementioned on site within the Site File.

The work area and exploratory hole locations are highlighted in the sketch plan(s) provided in Appendix B

2.1 Archaeological Watching Brief / Breaking Out / Permit-to-Drill / Dig:

The Principal Contractor – Alun Griffiths (Contractors) Ltd., will arrange for an Archaeological Watching Brief to include the following;

- Geoarchaeological monitoring and recording ('watching brief') of the window samples and trial pits. This would involve the attendance of a specialist geoarchaeologist to the location that the window sample cores are opened –this could be on site or at a lab location depending on the GI contractor's methodology – and the attendance of a specialist geoarchaeologist on-site for the excavation of the trial pits.
- Specialist geoarchaeological review of the GI contractor produced window- sample logs to complement the observations and make an assessment of the archaeological potential and likely geoarchaeological significance of any former terrestrial deposits below the sand.

A Permit to Drill / Dig is to be filled in for each position.

Prior to undertaking breaking ground, each respective location shall be checked for buried services via the use of a Cable Avoidance Tool (CAT) and where appropriate, Signal Generator (Genny).

The location will then be hand dug to a depth of 1.20metres below ground level to ensure the location is free from buried services.

Where the person who is trained and competent in the use of the CAT and Genny is on site at the material time, the bottom of the hand dug pit will be checked with the CAT prior to continuing with any drilling work.

2.1.1 Reinstatement:

All locations shall be reinstated with arisings.

All trial holes / drill holes will be backfilled on completion and at the end of each working tidal window.

3.0 SEQUENCE & METHOD.

3.1 The technical specification for the programme of works in is contained in Appendix C

3.2 Site Personnel and Supervision:

The personnel working on site will consist of 9 personnel, these being:

- Site Supervisor (Engineer).
- Technician
- Geophysical Survey Team (2 persons)
- Cable Percussion Crew (2 persons)
- Cone Penetration Test Crew (2 persons)
- Excavator Operator (supplied by the Client)

The Company's SHEQ Director may also be in attendance at some point during the proposed works.

The Geotechnics Site Supervisor will be:

Name: Celyn Edwards Mobile: 07786964575

All personnel working on site under the control of the Company shall be in a possession of a valid and current CSCS or CPCS card in their name.

3.2.1 Induction and Briefing:

Each member of the team will receive an induction on the salient points of the Project Method Statement, relevant Safe Working Procedures, Company Guidance and Information Sheets, any specific Method Statements, any Environmental considerations and Site Rules prior to undertaking any work on site. A record of the Induction will be held in Appendix G.

The Site Supervisor shall ensure that an appropriate Induction is delivered to any additional personnel as they arrive on site, and readdressed if there are any changes or additions that the original inductees need to be made aware of. In addition, any personnel or visitor to site who has a medical condition which could be affected, or have an impact on the work, must inform the Site Supervisor so they are aware should an incident arise.

The Company Generic Site Rules are attached in Appendix D. Any specific site rules stipulated by the Client for this project shall be included as an addendum to Appendix D.

3.3 Access to the Site:

Physical access to the site will be off Marine Parade via The ramp access points (see plan below). Prior to mobilising the drilling crews, the ramps will be checked for structural integrity, and any scouring on the ramp/beach interface will be filled with a suitable stone to allow safe access/egress of the drilling plant and equipment. Material for grading out the ramp would comprise gravels and cobbles reclaimed from the beach to the south of the promenade and placed and compacted at the end of the ramps.

Site Location showing Access Points



Northern Temporary Access **USE THIS ACCESS**





Removal of Groyne boards.

Geotechnics have visited the site and have confirmed that access to hole positions will be available without removing the groynes, but it has been considered prudent that to cover all avenues should removing and replacing a section of groynes be necessary. Only groynes with no mussels should be removed.

If access is anyway compromised, a section of boards from the groynes may be removed to allow access regress of site investigation equipment. The boarding to be removed will be identified and checked by an ecologist to ensure there are no environmental constraints (mussels etc.). The boards will be supported by an excavator, the fixing bolts cut and removed, and the boards lifted out. The boards will be stored securely and on completion of the works will be replaced in the same locations using new bolts. A detailed Method Statement will be provided prior to any removal of groynes.

Groynes along the beach





3.4 Other Contractors / Personnel working on site: (as applicable)

Due to the Client and other Contractors working on the site, close liaison will be undertaken to ensure that the proposed works are not affected or the undertaking of the proposed works do not adversely affect others.

3.5 Transport / Vehicles:

The transport to the site and around the site will be by the use of transit vans. All vehicles shall be driven / operated in accordance with the site rules at all times.

The Drilling equipment shall be transported via towing with 4 x 4 vehicles and a towable trailer.

The CPT rig will be delivered to site on a low loader. The low loader is to unload rig on nearest area of suitable hardstanding.

All plant working on the beach will be either self-propelled tracked vehicles, or cable percussion rigs fitted with extra-wide floatation tyres and towed by tracked dumpers.

Where applicable, vehicles that are not used on site shall be parked in the client compound car park designated by the Client, this is to be confirmed on site.

3.6 Traffic Management:

An assessment on the requirements for Traffic Management (TM) has indicated that pedestrian management will be required, anticipated as localised closures. This is to be organised, set up and maintained by the Client.

The Company shall check and ensure that all personnel setting out the TM whether direct employees or contractors; are suitably trained and qualified to do so.

3.7 Work at Height:

All work will be undertaken at ground level. Care will be taken with regards to underfoot conditions, especially on unmade ground.

When assessing 'working at height', consideration has been given to the presence of an 'open deep excavation' and the procedural controls are detailed further in SWP 03 – Trial Pitting – Hand and Machine Excavation.

Where cable percussion drilling rigs are used on site, the Lead Driller shall have arrangements in place in order to comply with the requirements of the work at height regulations.

3.8 Site Specific Hazards or Requirements:

The specific site hazards known or identified in the Pre-Construction Information (PCI) or following a site visit or appraisal are:

- Sewerage Pipe
- Electricity substation
- Pollution incident in 2014
- License discharge content for sewerage – Sewerage storm overflow from 2005 to present
- Invasive Non-native species – areas where these species have been identified should be avoided as a precaution
- Bats – a structure with a moderate bat roost suitability has been identified at the site. Works should not be undertaken within 30m of the structure.

- Working in tidal beach conditions / Nearby water – best practice measures for working near water should be followed.

Beach Working

The beach works are subject to the change in tides at Barmouth. To achieve the desired productivity for Boreholes, trial pitting and CPTs tide timetables shall be consulted (and be available on site at all times) and the beach site works should begin at falling tides.

The beach will be accessed from the ramps at the agreed access points. All plant and equipment will tack around the bottom of the gryones as soon as the tidal window allows.

For the duration of site works a 30 Tonne tracked excavator with towing chains. Will be on standby to act as a rescue vehicle should any plant or equipment break down on the beach.

The beach and Foreshore will be open to the public during the ground investigation.

Members of the public should be given priority first when moving across public access areas of the beach.

All vehicles are to only use agreed access routes.

All vehicles are to maintain a 5mph speed limit on the beach.

All personnel will wear High Visibility clothing conforming to BS EN471:1994 Table 1, Class2 or 3. PPE on the high speed roads will conform to EN471 Class 3, consideration should be given to the wearing of high visibility over-trousers as an additional aid to the visibility of the employees.

Rotating beacons to be illuminated whilst moving vehicles on site.

Regardless of the above, prior to commencing the proposed works, the Site Supervisor shall carry out a visual 'Point of Work Risk Assessment' in order to ascertain if there has been any significant changes in the perceived or known site hazards. In the event that anything is identified, the Supervisor shall liaise with the Client's Supervisory presence.

3.9 Lone working:

Lone working is not anticipated during the proposed works.

3.10 Mobile Phones:

When working on site, mobile phones are only to be used in designated areas identified in the site induction, to prevent any distraction to the user or others. Only in times of emergency should a mobile phone be used outside these areas.

3.11 Adjacent Pedestrian Access / Right of Way:

Pedestrian access along the promenade may be blocked at times.

Appropriate warning signs shall be provided to warn personnel of works in progress.

In the event that the Site Supervisor assesses it necessary to temporarily close a footpath, close liaison with the Client's Supervisory presence will be undertaken. Agreed and appropriate traffic / pedestrian management shall then be put in place.

3.12 Personal Protective Equipment and Clothing: (PPE)

The following PPE shall be worn at all times:

- High visibility waist-coat or jacket.
- Safety helmet c/w ear defenders and ICE tag
- Safety glasses and gloves

- Laced safety boots or safety wellingtons (dependent on dynamic risk assessment. No rigger boots)

Safety Goggles and Gloves shall be readily available and worn when the activities being undertaken dictate their use.

Note: Hearing protection shall be required to be worn in instances such as when using a hydraulic breaker or operating the cable percussion drilling rig.

3.13 **Welfare Facilities:**

The welfare facilities shall be supplied by the Client, comprising of a static welfare unit and be located in the Client site compound.

3.14 **First Aid Arrangements:**

The Supervisor shall ensure that an appropriate First Aid kit provision is available for use and kept in the van/office/welfare unit.(delete as appropriate) In the event that additional first aid treatment or facility is required, the Site Supervisor shall ensure that the Emergency Services are called, or the casualty is transported to the nearest Accident and Emergency Unit, details of which are recorded in Appendix E.

3.15 **Interaction with the General Public:**

It is not anticipated that site personnel will be interacting with the general public. However any interactions, should they occur, will be polite and considerate. If any questions should arise, these should be directed to the client.

Members of the public should be given priority first when moving across public access areas.

The beach and Foreshore will be open to the public during the ground investigation.

All vehicles are to only use agreed access routes.

All vehicles are to maintain a 5mph speed limit on site.

All personnel will wear High Visibility clothing conforming to BS EN471:1994 Table 1, Class2 or 3. PPE on the high speed roads will conform to EN471 Class 3, consideration should be given to the wearing of high visibility over-trousers as an additional aid to the visibility of the employees.

Rotating beacons to be illuminated whilst moving vehicles on site.

4.0 **PROGRAMME.**

The proposed site works are anticipated to take 3 weeks and shall commence on **XX/XX/2025**. The working hours on site shall be 08:00 hrs to 17:00 hrs.

5.0 **COMPETENCY OF PERSONNEL ON SITE.**

All Drilling contractors to be used on site have completed the Company's internal approval process and are listed on the approved register. The approval process requires evidence of training and competence of all personnel working on site under the control of the Company.

The Company and Site Supervisor shall also ensure that other personnel under the control of the Company are trained and competent to undertake the tasks they are assigned.

The Site Supervisor shall check the training records of all personnel as relevant to the activities that are being undertaken.

All hired plant operators shall have valid CPCS cards in their personal possession at all times, and these shall be inspected prior to the plant and operator being allowed to commence work on site.

On completion of the project, the Site Supervisor shall complete the project close out form which will allow for the provision of any comments in relation performance and any shortfalls or recommendations in relation to training and competence.

6.0 EQUIPMENT TO BE USED.

The Drilling Contractors to be used on site have provided evidence that their equipment to be used on site will be inspected, maintained and tested in accordance with PUWER* and LOLER*.

Prior to allowing the equipment to be used on site, the Site Supervisor shall check that the relevant documents and certification held by the contractor is valid and in date, and that the equipment is furnished with the relevant safety protection devices, that they operate efficiently, and that the equipment appears to be in an appropriate and suitable state of repair for use.

*PUWER – Provision and Use of Work Equipment. * LOLER – Lifting Operations and Lifting Equipment Regulations.

7.0 EMERGENCY PROCEDURES.

In case of serious incident, the emergency services must be telephoned and the site first aider and supervisor contacted. The site address is:

**Marine Parade
Barmouth
LL42 1BX
W3W: ///saddens.rosier.camera**

The Emergency Services will be met at the site entrance.

The Nearest Accident and Emergency Unit is located at:

**Bronglais General Hospital
Caradoc Rd,
Aberystwyth
SY23 1ER**

and is documented in Appendix E.

Fire Safety:

The arrangements in relation to fire are as follows:

Means of raising the alarm: Shout “Fire Fire”

Means of fighting a fire: The Site Supervisor shall ensure that appropriate types and numbers of fire extinguishers are provided in relation too, and located near to the perceived risk. These shall be checked by the Site Supervisor to ensure that they have a current service and maintenance record, and appear to be operational.

Only trained and competent personnel shall use a fire extinguisher, and shall only do so if their immediate safety or exit route is not compromised.

In the event that the Fire Emergency Services are required, these will be contacted by either the Site Supervisor or Lead Driller.

Fire Assembly point: The fire assembly point shall be located at the site entrance and be confirmed by the Client during the site induction.

7.1 Accident / Incident / Near-Miss Reporting:

All Accidents, Incidents and Near-Misses shall be reported in accordance with the Company Reporting Procedures.

In addition to any requirement of the Client, the Site Supervisor shall verbally report all accidents, incidents and near-misses to the Company Project Engineer and SHEQ Director in the first instance, followed by a written report.

The Company Project Engineer or SHEQ Director shall liaise with the Client and determine the extent of any investigation to be carried out. The SHEQ Director shall ensure that any statutory reports are compiled and submitted in accordance with the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR). Details of any such report(s) shall be communicated to the Client.

Accident and Incident / Near-Miss report forms are held by the Site Supervisor within their Site File.

8.0 MONITORING OF THE WORK.

The Site Supervisor will be responsible for monitoring the day-to-day site health and safety requirements and shall record and address any shortfalls in the standards required.

The Company SHEQ Director may undertake an inspection whilst the proposed works are being undertaken.

9.0 ENVIRONMENTAL CONSIDERATION.

This effects of the proposed works on the environment and the controls to mitigate those effects are recorded on the Site Specific Environmental Risk Assessment in Appendix F.

10.0 REVISIONS AND AMENDMENTS.

The Supervisor has the autonomy to undertake minor amendments to update the Method Statement. Any significant changes or amendments shall be approved by the Project Engineer and the Client prior to action.

Any revision or amendments shall be recorded in Appendix H and incorporated into the Project Method Statement Induction and additionally communicated to the initial inductees.

Appendices

Appendix A - List of Relevant Safe Working Procedures / Site specific Method Statements.

Appendix B - Sketch Plan of Work Area.

Appendix C - Technical Specification

Appendix D – Company Generic Site Rules

Appendix E – Accident and Emergency location and directions

Appendix F – Environmental Considerations

- Site Specific EN301B Environmental Risk Assessment
- HRA Mitigation Measures
- WFD Mitigation Measures

Appendix G - Site Induction and Briefing Record

Appendix H – Revision and Amendment Register

APPENDIX A

List of relevant Safe Working Procedures, Guidance and Information Sheets and any Site Specific Method Statements

Safe Working Procedures

Cable Percussion Boring	SWP01
Trial Pitting – Hand and Machine Excavation	SWP03
Safe Use of Mobile Plant	SWP06
Underground Services	SWP08
Use of Cable Avoidance Tools and Signal Generator	SWP09
General Site Safety	SWP11
Housekeeping	SWP12
Standard Emergency Procedures and Notification	SWP13
Soft Ground Conditions	SWP14
Manual Handling and Lifting	SWP15
Provision and Use of Work Equipment (PUWER)	SWP16

Guidance & Information Sheets

Green Site – Guidance for the safe intrusive activities on contaminated or potentially contaminated land.	GIS 01
Yellow Site – Guidance for the safe intrusive activities on contaminated or potentially contaminated land.	GIS 02
Leptospirosis (Weil's Disease).	GIS 04
Psittacosis.	GIS 05
Tetanus.	GIS 06
Hepatitis A.	GIS 07
Hepatitis B.	GIS 08
Bacillus Anthracis and Anthrax.	GIS 10
Working Outdoors – UVA / UVB (Sun Protection)	GIS 13
Provision of Welfare Facilities during Construction Works	GIS 14

COSHH Assessments

Line Marker	CA001
Sand	CA004
Cement	CA005
Bentonite Pellets	CA006
Unleaded Petrol	CA008
Diesel	CA009

A copy of all Safe Working Procedures, Guidance & Information Sheets and COSHH Assessments are available on request.

Site Specific Method Statements

Lankelma RAMS for CPT work
SEP Methodology for Geophysical Survey

HEALTH & SAFETY - Risk Assessment - General Site Work

Project	Barmouth North Promenade Phase 2	Project No.	QN251224
		Date	14 March 2025
Client	Alun GriffithsLtd.	Compiled by	CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Unacceptable risk - implement control measures	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk - Specialist knowledge required to implement control measures	Possible=3	3	6	9	12	15
NOTE: The following PPE is mandatory and shall be worn at all times: High Visibility Waist-Coat or Jacket, Safety Helmet, Safety Glasses, Gloves and Safety Boots or Safety Wellingtons			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Initial Risk							Residual Risk		
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
All site Work	Interaction with the Public (Dogwalkers, Cyclists etc)	Employees, Sub Contractors	3	4	12	•Due to the Client and other Contractors working on the site, close liaison with be undertaken to ensure that the proposed works are not affected or the undertaking of the proposed works do not adversely affect others. •Some areas of the site have pedestrian rights of way (public footpaths). These areas will be signed (in English and Welsh) and identified to all staff during the site induction and all site vehicles are to maintain a 5mph speed limit in these areas. •All staff and subcontractors are to be courteous at all times. All work areas are to be suitably demarcated and secured overnight. •Any questions and enquiries from local residents or members of the public should be referred to the Client.	1	4	4

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
All site Work	Working near water, Tidal beach work.	Employees, Sub Contractors	3	5	15	• The beach works are subject to the change in tides at Barmouth. To achieve the desired productivity for Boreholes, trial pitting and CPTs tide timetables shall be consulted (and be available on site at all times) and the beach site works should begin at falling tides. •The beach will be accessed from the ramps at the agreed access points. All plant and equipment will tack around the bottom of the gryones as soon as the tidal window allows. •For the duration of site works a 30 Tonne tracked excavator with towing chains. Will be on standby to act as a rescue vehicle should any plant or equipment break down on the beach. •The beach and Foreshore will be open to the public during the ground investigation. •Members of the public should be given priority first when moving across public access areas of the beach. •All vehicles are to only use agreed access routes. •All vehicles are to maintain a 5mph speed limit on the beach. •All personnel will wear High Visibility clothing conforming to BS EN471:1994 Table 1, Class2 or 3. PPE on the high speed roads will conform to EN471 Class 3, consideration should be given to the wearing of high visibility over-trousers as an additional aid to the visibility of the employees. •Rotating beacons to be illuminated whilst moving vehicles on site.	1	5	5
All site Work	Weils Disease (leptospirosis)	Employees, Sub Contractors	3	4	12	•Weils can be spread from urine, blood and bodily tissue from infected rats, cattle, pigs and dogs. Extra care should be taken when working near any of these animals. •Wear gloves for all site activities. •Wash hands before smoking and eating food. •Monitor yourself for up to 3 months after site work for possible flu-like syptoms.	1	4	4
All site Work	Lymes Disease	Employees, Sub Contractors	3	4	12	•Lymes disease is spread by ticks and extra care should be taken when working on grassland where these may be present. •Long trousers must be worn at all times on site. •Check yourself intermittently for ticks. If a tick is found do not attempt to remove it without the appropriate tick removal tools. If in doubt, seek medical advise. •Monitor for signs of infection, such as an expanding area of redness on the skin that appears at the site of the tick bite about a week after it occurred.	1	4	4

Initial Risk									Residual Risk		
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R		
All site Work	Wild animals, invasive plant species	Employees, Sub Contractors	3	4	12	•Wild animals may be dangerous (eg snakes, badgers) or protected (eg bats, newts) and reference should be made to individual species within site procedures Section 2.3 (Environmental Data Sheets) regarding their identification and restrictions. •Invasive Species (eg Knotweed, Himalyan Balsam, Giant Hogweed) should not be approached or transported and reference should be made to individual species within site procedures Section 2.3 regarding their identification and restrictions. •If invasive species are identified adjacent to work areas or along access routes then work should be stopped in the these areas and advice taken from Geotechnics Environmental Champion on how to safely proceed without spreading the species identified.	1	4	4		

HEALTH & SAFETY - Risk Assessment - Digging Inspection Pits

Project Barmouth North Promenade Phase 2

Client Alun GriffithsLtd.

Project No. QN251224

Date 14 March 2025

Compiled by CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Unacceptable risk - implement control measures	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk - Specialist knowledge required to implement control measures	Possible=3	3	6	9	12	15
NOTE: The following PPE is mandatory and shall be worn at all times: High Visibility Waist-Coat or Jacket, Safety Helmet, Safety Glasses, Gloves and Safety Boots or Safety Wellingtons			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Positioning of location.	Buried services / structures.	Employees Sub Contractors General Public	3	5	15	• Prior to any trial pit being commenced, reference should be made to SWP 03-Trial Pitting - Hand and Machine Excavation, SWP 08-Underground Services and SWP 09-Use of Cable Avoidance Tool and Signal Generator. • Insulated hand tools to be used to excavate to a maximum depth of 1.2m. • If any services or structures are encountered, these should be recorded along with their depth and orientation and the location backfilled. The borehole position will then be re-sited. • A Permit to dig shall be issued prior to breaking ground and excavating to a minimum depth of 1.2 metres. • Hand dug pit shall be CAT scanned approximately every 300mm in depth. • The bottom of each hand dug pit shall be CAT scanned prior to any drilling work commencing.	1	5	5
Access to location.	Slips / Trips & Fall.	Employees Sub Contractors	3	3	9	• Care should be taken when accessing work site observing any potential uneven surfaces. • The work site should be kept clean and tidy as far as possible at all times. • Agreed access routes should be used. • All personnel working on site should maintain vigilance and report any concerns that they cannot readily rectify.	2	3	6

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Hand digging	Contact with sharps, contaminated soils or water	Employees Sub Contractors	3	3	9	• Appropriate gloves should be worn if contact with soils or water is likely. • Personnel undertaking the activity should be observant for any potential sharps, i.e. broken glass or discarded hypodermic needles. If hypodermic needles are encountered then all works on site shall be stopped until they have been dealt with accordingly. Staff are not to remove items. • Good hygiene practices should be observed ensuring that hands are washed prior to eating or smoking. • You must be sure you have had the full course of Tetanus vaccinations, if you are unsure contact your GP. • Reference should be made to SWP 11- General Site Safety, SWP 12 -Housekeeping	2	3	6
Hand digging	Open excavation	Employees Sub Contractors General Public	3	3	9	• A hand dug excavation pit should not be left open and unattended without appropriate barriers & signage or cover in place so as to prevent persons from falling into it. If the aforementioned control measures are not practical, the pit should be backfilled.	1	3	3
Excavation	Contaminated Land	Employees Sub Contractors	4	2	8	• Appropriate PPE to be worn whilst handling contaminated soils. • Contaminated arisings to be placed on suitable membrane / containment to prevent spread of contamination. • In the event that the site is classified as 'Red', a specific Risk Assessment and procedures shall be required prior to commencing any work on site. Further advice and guidance should be sought from the Environmental Champion, Health and Safety Manager or other suitably qualified personnel.	3	2	6

HEALTH & SAFETY - Risk Assessment - Cable Percussive Boring

Project	Barmouth North Promenade Phase 2	Project No.	QN251224
Client	Alun GriffithsLtd.	Date	14 March 2025
		Compiled by	CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Unacceptable risk - implement control measures	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk - Specialist knowledge required to implement control measures	Possible=3	3	6	9	12	15
NOTE: The following PPE is mandatory and shall be worn at all times: High Visibility Waist-Coat or Jacket, Safety Helmet, Safety Glasses, Gloves and Safety Boots or Safety Wellingtons			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Drilling through contaminated land	Exposure risk to hazardous substances	Employees Sub Contractors General Public	3	3	9	• Reference should be made to Geotechnics Limited Guidance Information Sheets 01, 02 or 03 depending on the BDA (British Drilling Association) site categorisation. • In the event that the site is classified as 'Red', a specific Risk Assessment and procedures shall be required prior to commencing any work on site. • Further advice and guidance should be sought from the Environmental Manager, SHEQ Director or other suitably qualified personnel.	2	3	6
Breaking ground	Buried Services	Employees Sub Contractors	3	5	15	• A check for buried services must be made prior to commencing hole. • Reference must be made to SWP's 01-Cable Percussion Boring, SWP 03-Trial Pitting - Hand and Machine Excavation, SWP 08-Underground Services and SWP 09-Use of Cable Avoidance Tool and Signal Generator. • A Permit to dig / drill shall be issued prior to breaking ground and excavating to a minimum depth of 1.2 metres.	1	5	5
Set up and operation of cable percussion drill rigs	Stability of drill rig during operation	Sub Contractors	3	5	15	• Ensure that only operators with the necessary skills, knowledge, training and experience operate cable percussion drill rigs. • Ensure that the stay bars are connected and secured with bolts or retaining pins at all times once the rig has been erected. • Ensure that the footprint of the rig is in firm, three point contact with the ground surface before commencing operation. • Throughout the drilling operations periodically check the stability of the rig, if required stop work and adjust to level.	1	5	5

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Transporting on site and Setting up / bringing down the rig.	Entrapment with overturning cable percussion drill rig due to uneven ground, slopes, collapse during transportation, erection and striking down.	Sub Contractors	3	5	15	• Determine the route prior to travelling to the borehole location(s), select the most appropriate routes to avoid obvious soft spots and minimise avoidable damage; If drilling is required on slopes, benching or scaffold platforms may be required. • Consideration should also be given to the additional weight that may be generated by the drilling operation i.e.. the pull down forces used to extract casing and the overall stability of the rig whilst moving. • When reversing, utilise the second man to act as a banks-man. (banks-man to wear upper-body Hi-Vis clothing). Additional timbers maybe required to enable the levelling of the rig. Care should be taken whilst travelling the route maintaining vigilance for trip / slip hazards and other moving vehicles or machinery. • The rig should be set up and operated in accordance with SWP 01 – Cable Percussion Boring. Additional timbers maybe required to enable the levelling of the rig. All drilling equipment should be compliant with current LOLER and PUWER legislation and be accompanied by in date certificates. • Equipment must be inspected before commencement of works to check for any defects or potential failure. Any equipment found to be unserviceable must be reported, destroyed/withdrawn and replaced if required.	1	5	5
Operation of cable percussion drill rigs	Contact or entrapment with moving parts	Sub Contractors	3	4	12	• Maintain safe distance from the tool whilst in operation. • Ensure people not involved in the drilling operations remain outside of the danger zone. If required erect Heras fencing to form secure work area around the drill rig. • The winch guard must be in place whilst the rig is in operation. • In the event of an emergency during operation the controls must be released, the brake applied and the engine stopped. Activate the emergency stop or switch off ignition. • Soft ground may lead to shifting of the rods/casing. Fully assess hazards prior to taking remedial action. • Do not allow hands to enter danger areas. • Ensure that the key is removed at all times when the drill rig is left unattended. • Do not work beneath suspended overhead tools. Always lower tools to ground level before conducting other operations below the crown wheel.	1	4	4

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Operation of cable percussion drill rigs	Noise	Employees Sub Contractors General Public	4	3	12	- Cable percussion drilling equipment can exceed the upper action level of 85 dB which requires hearing protection to be worn as mandatory. - In order to minimise noise exposure, adequate hearing protection shall be readily available and worn as required. - The lead driller should monitor the noise levels from the rig and shall wear, and instruct the second man to wear, hearing protection as required. - Ear protection MUST be worn at all times during SPT testing works. - Area of cordon to be set up around the work area to prevent access by unauthorised people.	2	3	6
Operation of cable percussion drill rigs	Vibration	Sub Contractors	4	3	12	It is not envisaged that any vibration generated by the drilling operation will exceed the permitted exposure level.	2	3	6
Operation of cable percussion drill rigs	Exhaust Fumes	Employees Sub Contractors	4	3	12	- Consideration should be given to the direction of the prevailing wind during the set up of the rig. - Where possible, the rig should be set up so as to allow the fumes being emitted from the exhaust to blow downwind from the driller. In the event that wind direction changes, or it is not possible to position the rig appropriately, the driller should try to take steps to minimise the fumes from being emitted into the breathing zone of the drilling crew. - Regular maintenance should minimise the degree of the fumes being emitted.	2	3	6
Operation of cable percussion drill rigs	Fire	Employees Sub Contractors	2	5	10	- Keep combustible materials clear from sources of heat (engine & exhaust) and utilise drip trays as required. - Foam, Dry Powder or Co2 fire extinguishers to be available on site. Fire extinguishers to be serviced and maintained in good working order. - The drill site to be kept clear of combustible materials that could assist fire in spreading. - Smoking is prohibited at the work site.	1	5	5
Operation of cable percussion drill rigs	Flying particles / dust	Employees Sub Contractors General Public	3	3	9	- In the event that excessive dust is generated, this should be dampened down with water. - Safety goggles and dust masks should be readily available and worn as required. - Readily available clean water or eyewash should be provided. - Any dust or debris should be kept to a minimum where practicable. The lead driller to continually monitor for any changes.	1	3	3

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Housekeeping	Slips, trips and falls	Employees Sub Contractors	4	3	12	• The run out route should be monitored if location is on soft ground as conditions will deteriorate with repeated trafficking of the same route. • Borehole location to be kept clear of debris. • Borehole location to be laid out in an orderly manner to minimise contact with ancillary equipment and consumables. • Work should be carried out in accordance to SWP - 12 Housekeeping. Rod trestles to be placed to allow for passage around the work site, trestles to be levelled such that rods do not roll and apply uneven load to one side. • The lead driller and second man to continually monitor for any changes to underfoot conditions. Where conditions deteriorate additional measures such as bog matting or ground protection boards may be required.	2	3	6
Accessing cable percussion rig components at the summit of the cable percussion drill rig	Working at Height	Sub Contractors	3	5	15	• Prior to any drilling works being carried out, the drilling equipment and drilling crew are to be checked to have suitable arrangements to prevent the need to work at height. • The rig should be fitted with an ancillary winch which allows the machine to be lowered without the need for persons to climb the mast. • If for any reason the mast needs to be lowered or raised using the electric winch, the driller must check the condition of the drum, steel wire rope and rope guide to mitigate any chance of snagging or any issues with defects. • The Site Supervisor is to ensure all necessary checks of equipment have been made.	1	5	5
Removal of detached or stuck tooling in the bore hole	Impact with tooling	Sub Contractors	3	4	12	• Reference should be made to SWP 01A – Cable Percussion - Retrieval of detached or stuck tooling. • The retrieval of tooling should only be carried out in accordance with SWP 01A unless an alternate method is discussed and agreed with the Regional Office Manager or Health and Safety Manager.	1	4	4

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Moving of drilling ancillary equipment	Manual Handling	Sub Contractors	4	3	12	• All Manual handling activities should be carried out safely and with reference to SWP 15 – Manual Handling and Lifting. • The drill site to be well organised with ancillary equipment set up in an orderly manner. • Drilling and SPT rods should be laid down and not left stood upright. • The hammer and anvil is usually stood up and leant against the rig frame. • (The potential risk of the hammer falling is outweighed by the more likely manual handling injury when picking up or laying down.) • Hands kept clear of all 'nipping or trapping' points on tooling when moving it. Care and attention should be continually restated so as to continue to work safely and cautiously. • In the event that additional help is required, this should be sought as opposed to taking risks. • Where possible, mechanical handling aids / assistance should be used at all times when undertaking manual handling activities.	2	3	6
Maintenance of cable percussion drill rigs	Failure of cable percussion rig components	Sub Contractors	3	4	12	• All plant and machinery must be in serviceable condition and checked to be so before commencing works. • All equipment must be accompanied by relevant LOLER and PUWER certification on site, which must reference any serial numbers and identifying numbers. • Daily checks must be carried out on all equipment and recorded, and the equipment must be monitored throughout the shift. If any faults are identified on site which cannot be rectified immediately, the machinery must not be used until equipment is repaired or replaced. • The Site Supervisor is to ensure equipment has relevant LOLER and PUWER certification prior to work commencing on site and ensure that daily check lists are completed prior to each shift. Checks lists are to be maintained for the duration of the project.	1	4	4

HEALTH & SAFETY - Risk Assessment - Machine Trial/Observation Pitting

Project Barmouth North Promenade Phase 2

Project No. QN251224

Date 14 March 2025

Client Alun GriffithsLtd.

Compiled by

CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Unacceptable risk - implement control measures	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk - Specialist knowledge required to implement control measures	Possible=3	3	6	9	12	15
NOTE: The following PPE is mandatory and shall be worn at all times: High Visibility Waist-Coat or Jacket, Safety Helmet, Safety Glasses, Gloves and Safety Boots or Safety Wellingtons			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Breaking ground	Buried Services	Employees Sub Contractors General Public	3	5	15	• A check for buried services must be made prior to commencement. • Reference must be made to SWP 03-Trial Pitting - Hand and Machine Excavation, SWP 08-Underground Services and SWP 09-Use of Cable Avoidance Tool and Signal Generator. • A Permit to dig shall be issued prior to breaking ground.	1	5	5
Access to trial pit location – (The use on and the operation of the excavator on public highways is the responsibility of the owner and operator)	Collision with personnel. Collision with other vehicles / plant. Collision with structures including fencing and gates / gateways.	Employees Sub Contractors General Public	3	5	15	• Access to each trial pit location shall be made via routes agreed with the Engineer or land agent / representative on site. • The operator of the excavator shall hold the relevant skills, knowledge, training and experience to operate the excavator safely. • The Site Supervisor to check PUWER maintenance records and inspection certificates prior to commencement of works on site. • The excavator shall be in roadworthy condition and have fitted, in good working order, visual and audible warning systems such as lights, flashing beacon and horn. • The Site Supervisor or site personnel shall act as a banksman specifically in relation to any 'limited space constraints', e.g. narrow gateways. • Any person, who undertakes Banksman duties shall maintain visual contact with the operator at all times. • The Site Supervisor shall clarify any access issues with the Client or its representative prior to attempting to gain access to any particular location. • The Excavator operator shall ensure a documented record of the service / maintenance history of the equipment is available on site.	1	5	5

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Setting up at the trial pit location.	Collision with individuals. Collision with structures including over-head power-lines or services.	Employees Sub Contractors General Public	4	3	12	- The Supervisor/Engineer must stand outside the swing-arc of the excavator bucket unless the bucket is grounded and the engine is switched off. - The Site Supervisor shall ensure that the excavator is positioned clear of structures or over-head power-lines or services in accordance with SWP 07. - In the event that a trial pit is required in close proximity to a structure, consideration shall not only be given to the structure itself, but also the zone of influence in relation to its foundations. - The Operator shall view the immediate location of the trial pit prior to setting up the excavator in position. - A separate specific Risk Assessment should be carried out where a trial pit is required within any potential zone of influence of a structure.	2	3	6
Trial Pit location - possible interaction with general public – road users and their vehicles	Road traffic accident / interaction	Employees Sub Contractors General Public	4	3	12	- The trial pit location shall be agreed in advance. - Consideration must be given to Traffic Management, whether it is full Chapter 8 and lane closure, or signage warning of the presence of the works. - The excavator shall where possible, be positioned so that it is facing the oncoming traffic with the front bucket grounded. - The spoil heap shall where possible be positioned between the trial pit and the carriage way. - When back filling the trial pit, the excavator shall do so by the use of the backhoe and shall compact the spoil in the same manner. - The Client's representative shall be responsible for establishing the requirements of traffic management with the local highways authority. - Whilst the excavator operator is positioned with his back to oncoming traffic, the excavator will be utilised as a physical barrier between any oncoming traffic and the engineer coordinating the trial pit. - The engineer coordinating the trial pit shall position him /herself at the opposite narrow end of the excavation to the excavator and maintain vigilance at all times. - If the manoeuvring of the excavator is required, this shall be carried out under the control of a banks-man.	2	3	6
Excavation	Collision with moving backhoe.	Employees Sub Contractors General Public	4	3	12	- All instructions to the excavator operator shall be given by the engineer coordinating the trial pit excavation and taking the samples. - The person coordinating the trial pit excavation shall be visible to the excavator operator at all times during the operation and shall maintain a safe distance from the reach of the excavator.	2	3	6

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Excavation	Unprotected deep excavation.	Employees Sub Contractors General Public	3	3	9	- The trial pit should always be approached from the opposite narrow end to the excavator position. - All samples shall be taken from the spoil heap if safe to do so or the bucket when stable on the ground. The excavator operator shall (when told to do so), place spoil to be sampled at a safe distance away from the edge of the trial pit. - In the event that a closer inspection of the trial pit is required, the excavator operator shall ground the backhoe at a safe distance away from the person inspecting the trial pit excavation and swith off the engine. - The engineer coordinating the sampling process shall ensure samples are taken from spoil which is positioned at a safe distance from the open excavation. - Under NO Circumstances is access allowed into a trial pit excavation. - Barriers and signs to be positioned around the trial pit location to prevent unauthorised access.	2	3	6
Excavation	Inappropriate positioning of the spoil heap.	Employees Sub Contractors	2	5	10	The spoil heap should be positioned at a safe distance from the edge of the trial pit excavation (minimum of 1 metre).	1	5	5
Excavation	Contaminated Land	Employees Sub Contractors	3	3	9	- Contaminated arisings to be placed on suitable membrane / containment to prevent spread of contamination. - In the event that the site is classified as 'Red', a specific Risk Assessment and procedures shall be required prior to commencing any work on site. - Further advice and guidance should be sought from the Environmental Champion, Health and Safety Manager or other suitably qualified personnel.	2	3	6

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Lifting / carrying samples	Manual Handling	Employees Sub Contractors	3	3	9	• Ensure that only personnel with the necessary skills, knowledge, training and experience carry out Manual handling activities. • All Manual handling activities should be carried out safely and with reference to SWP 15 – Manual Handling and Lifting. • Samples taken in individual jars or tubs should not present a manual handling risk. Bulk samples should be restricted to a maximum of half a bag. Generally, this will be in the region of 10-20kg. • In the event that a greater bulk sample is required, this should be divided into more than one bag and labelled appropriately. • The excavator bucket shall be utilised to carry all the samples back to the company van. • In the event that additional help is required, this should be sought as opposed to taking risks. • The engineer taking the samples shall monitor the amount of sample containers put into one bag so as to avoid any personal injury. In the event of copious sample containers, several separate bags shall be utilised to contain them. • The amount of spoil placed into a bag as a bulk sample shall be dictated by the person collecting the samples.	2	3	6

HEALTH & SAFETY - Risk Assessment - Manual Handling

Project	Barmouth North Promenade Phase 2	Project No.	QN251224
		Date	14 March 2025
Client	Alun GriffithsLtd.	Compiled by	CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Unacceptable risk - implement control measures	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk - Specialist knowledge required to implement control measures	Possible=3	3	6	9	12	15
NOTE: The following PPE is mandatory and shall be worn at all times: High Visibility Waist-Coat or Jacket, Safety Helmet, Safety Glasses, Gloves and Safety Boots or Safety Wellingtons			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Handling casing and drilling equipment	Heavy loads	Employees Sub Contractors	3	4	12	• Casing and drilling equipment to be transferred to and from the work location using a 4x4 or similar to minimise required carrying distances. • All persons involved in manual lifting of loads will be 'Manual Handling Awareness' trained. • Manual movements of casing and drilling equipment around the work location shall be undertaken by a minimum of a two person team. • All manual lifting of loads will be carried out following the kinetic lifting method: • Keep the load close to the waist • Adopt a stable position • Ensure a good hold on the load • Moderate flexion of the back, hips and knees at the start of the lift • Don't flex the back any further while lifting • Avoid twisting the back or leaning sideways	2	3	6
Handling casing and drilling equipment	Slips, trips and falls	Employees Sub Contractors	3	4	12	• Maintain good levels of housekeeping around the work location. Site Supervisor to monitor this on a daily basis.	1	4	4

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Handling rotary core boxes	Heavy loads	Employees Sub Contractors	3	4	12	• Rotary core boxes to be transferred to and from the work location using Ford Transit vans or similar to minimise required carrying distances. • All persons involved in manual lifting of loads will be 'Manual Handling Awareness' trained. • Manual movements of empty rotary core boxes around the work location can be undertaken by one person. • Manual movements of full or partially full rotary core boxes shall be undertaken by a two person team. • All manual lifting of loads will be carried out following the kinetic lifting method: • Keep the load close to the waist • Adopt a stable position • Ensure a good hold on the load • Moderate flexion of the back, hips and knees at the start of the lift • Don't flex the back any further while lifting • Avoid twisting the back or leaning sideways	2	3	6
Handling rotary core boxes	Slips, trips and falls	Employees Sub Contractors	3	4	12	• Maintain good levels of housekeeping around the work location. Site Supervisor to monitor this on a daily basis.	1	4	4
Handling 25kg bagged materials (Bentonite, Gravel, Sand & Cement)	Heavy loads	Sub Contractors	3	4	12	• Bagged materials to be transferred to and from the work location using a Ford Transit van or similar to minimise required carrying distances. • All persons involved in manual lifting of loads will be 'Manual Handling Awareness' trained. • Manual movements of individual bags around the work location can be undertaken by one person. • Manual movements of multiple quantities of bags shall be undertaken by a minimum of a two person team. • All manual lifting of loads will be carried out following the kinetic lifting method: • Keep the load close to the waist • Adopt a stable position • Ensure a good hold on the load • Moderate flexion of the back, hips and knees at the start of the lift • Don't flex the back any further while lifting • Avoid twisting the back or leaning sideways	2	3	6

Initial Risk										Residual Risk		
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R			
Handling 25kg bagged materials (Bentonite, Gravel, Sand & Cement)	Slips, trips and falls	Employees Sub Contractors	3	4	12	• Maintain good levels of housekeeping around the work location. Site Supervisor to monitor this on a daily basis.	1	4	4			

HEALTH & SAFETY - Risk Assessment - Refueling plant

Project Barmouth North Promenade Phase 2

Project No.

QN251224

Date

14 March 2025

Client Alun GriffithsLtd.

Compiled by

CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Review operations & control measures. Adapt as necessary.	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk, change control measures or abandon task.	Possible=3	3	6	9	12	15
			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Activity	Hazard	Effect	L	S	R	Mitigating Action	L	S	R	Comments / Further Actions
Refuelling mobile plant	fire	Personal injury/death, equipment damage	3	5	15	Ensure plant is turned off before refueling. Ensure no other sources of ignition to be present within the area. Appropriate fire extinguisher to be available at the refueling location.	1	5	5	
Refuelling mobile plant	Spilling fuel into environment	Environmental damage	3	3	9	Refuel at designated location. Refuel over plant nappy. Spill kit to be at the refueling location. Only use approved fuel containers (20L or less) or approved bunded bowsters.	1	3	3	
Refuelling mobile plant	Spilling fuel onto skin	Personal injury	3	3	9	Wear appropriate gloves. Discard any clothing that becomes contaminated with fuel (bag and tie affected clothing).	1	3	3	

HEALTH & SAFETY - Risk Assessment - Driving Company Vehicles

Project Barmouth North Promenade Phase 2

Project No. QN251224

Date 14 March 2025

Client Alun GriffithsLtd.

Compiled by

CPB

Risk (R) = Likelihood x Severity			Likelihood (L)	Severity (S)				
				Negligible=1	Minor=2	Absence=3	Major=4	Fatal=5
1 to 6	Low	Ensure control measures are maintained.	Remote=1	1	2	3	4	5
8 to 10	Medium	Unacceptable risk - implement control measures	Unlikely=2	2	4	6	8	10
12 to 25	High	Unacceptable risk - Specialist knowledge required to implement control measures	Possible=3	3	6	9	12	15
NOTE: The following PPE is mandatory and shall be worn at all times: High Visibility Waist-Coat or Jacket, Safety Helmet, Safety Glasses, Gloves and Safety Boots or Safety Wellingtons			Probable=4	4	8	12	16	20
			Certain=5	5	10	15	20	25

Initial Risk						Residual Risk			
Activity	Hazard	Persons who might be harmed	L	S	R	Control Measures	L	S	R
Driving company vehicles	Competency of driver	Employees	4	5	20	• Vehicles are operated in accordance with Geotechnics Ltd schedule 2 Driver Policy. • Drivers must hold a valid driving licence for the classess appropriate to the vehicle being driven. • Annual DVLA checks will be made of all driving licences. • Drivers are required to declare any endorsements or points incurred. • Drivers are required to declare any medical condition that may affect their ability to operate a company vehicle. • Drivers are require to operate vehicles in line with the Highway Code, The Road Traffic Act and other relevant legislation. • It is illegal to use a hand-held mobile phone while driving and it is also an offence to 'cause or permit' a driver to use a hand-held mobile phone while driving. Using hands-free equipment may also distract your attention from the road. It is recommended that the vehicle is stationary with the engine switched off and parked safely when using mobile phones.	1	5	5
Driving company vehicles	RTA	Employees General Public	3	5	15	• In the event of an accident the driver should exit the vehicle and make their way to the nearest place of safety away from moving traffic. • If required the driver should contact the emergency services. • Following the accident the driver should report it to the company secretary and the current insurance provider under no circumstances are you to admit any liability.	1	5	5
Driving company vehicles	Violence and aggression	Employees General Public	2	3	6	• Vehicles should be driven in a safeand courteous manner at all times in line with the Highway Code. • Drivers should avoid getting into verbal of physical conflict with other road users.	2	3	6

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Driving company vehicles	Breakdown	Employees	2	1	2	In the event of a breakdown the driver should exit the vehicle and make their way to the nearest place of safety away from moving traffic and call for assistance.	2	1	2
Driving company vehicles	Security & theft	Employees	2	1	2	- Drivers should ensure that the vehicle is left locked at all times and that the keys are never left in the ignition while unattended. - Valuables should be kept out of sight.	2	1	2
Driving company vehicles	Fatigue and tiredness	Employees General Public	3	5	15	- Plan the Journey – share the driving, allow yourself adequate time for the journey. (Refer to Journey Planner) - Take account of road types, traffic density, peak travel times, known hazards (road works, accident black spots, heavy and slow traffic), weather conditions. - Can an alternative method of travel be adopted– plane or train. - Take a break after 2 hours of continuous driving, or if tired. - Get adequate sleep beforehand. - Be aware of the time of day when sleepiness is common and take note of the early signs of fatigue. - Avoid driving in severely adverse driving conditions – e.g. heavy fog, snow, high winds. - STAY OVER NIGHT if you are or feel too tired to drive.	1	5	5
Driving company vehicles	Adverse weather conditions	Employees General Public	3	5	15	- Take extra care when driving on slippery roads, it takes ten times longer to slow down in icy conditions than on dry roads. - Try to use the highest gear possible to avoid wheel spinning and avoid harsh braking and acceleration. - If you get into a skid – ease off the acceleration but do not brake suddenly. - Before setting off ensure all windows and exterior mirrors are clear of frost, snow or ice and regularly check tyre tread and pressure.	1	5	5
Driving company vehicles	Durges & alcohol	Employees General Public	3	5	15	- No driver should attempt to operate a vehicle if they are or suspect that they may be under the influence of drugs or alcohol. - It is an offence to drive without a valid driving licence or insurance or to drive when disqualified or under the influence of alcohol or drugs. - Company drivers must not consume alcohol or drugs likely to impair ability prior to or during the course of driving. Infringement of this requirement could result in the employee's dismissal.	1	5	5

Activity	Hazard	Persons who might be harmed	Initial Risk			Control Measures	Residual Risk		
			L	S	R		L	S	R
Maintenance of vehicle	Failure of vehicle	Employees	3	1	3	• All vehicles to be serviced and maintained in accordance with manufacturers recommendations. • All vehicles must be inspected weekly by the driver.	2	1	2
Loading & unloading	Manual handling	Employees	3	4	12	• All Manual handling activities should be carried out safely and with reference to SWP 15 – Manual Handling and Lifting. • In the event that additional help is required, this should be sought as opposed to taking risks.	1	4	4
Transporting hazardous substances	Exposure to hazardous substances	Employees	3	4	12	• All hazardous substances should be securely stored within the storage area of the vehicle.	1	4	4

Lankelma project reference: 20602-1

Client: Geotechnics

Project: Barmouth

METHOD STATEMENT
Cone penetration testing with an 18.5-tonne rubber tracked crawler (UK8)
Document no. MS001

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Contents

1	Introduction.....	4
2	Location and duration of works.....	4
3	Scope of works	4
4	Manpower and supervision	4
5	Associated documents.....	4
6	Risks and controls.....	5
7	Emergency procedures	5
8	Plant and equipment.....	6
9	Materials – handling/storage/location	6
10	Environmental considerations.....	6
11	Housekeeping	7
12	Pre-start requirements and actions	7
13	Sequence of work and technical procedures.....	8
14	Technical procedure details.....	9

Appendix A – Rig data sheets

Appendix B – Equipment data sheets

Appendix C – Rig inspection records

Appendix D – Rig risk assessments

1 Introduction

This method statement details the process for undertaking in-situ soils testing from an 18.5-tonne rubber tracked crawler (UK8) for the project in Barmouth.

This document will be read and used by all Lankelma site staff working on this project and a copy will be available electronically on the test rig. All health, safety and environmental policies and procedures outlined here will be subordinate to site specific variations, providing Lankelma are informed.

2 Location and duration of works

2.1 Site location

Site address: TBC

2.2 Date of commencement

The proposed cone penetration test (CPT) ground investigation is due to commence April 2025.

3 Scope of works

8no. cone penetration test (CPT) activities at locations to be advised and positions set out for Lankelma by Geotechnics.

4 Manpower

All Lankelma staff are competent and in possession of a CSCS card.

5 Associated documents

No specification has been received for the proposed works.

6 Risks and controls

6.1 Risk assessment schedule

Risk assessment number	Subject
RA001	Work activities on CPT rig (UK8)

If other risks are identified or conditions change such that the risk assessment is ineffective work shall stop immediately and the work process will be reviewed prior to the re-commencement.

6.2 Third party protection

Hi-visibility barriers (or equivalent) may be utilised on a site-specific basis to stop unauthorised personnel approaching testing rig where public interface is possible. Unauthorised personnel will not be allowed onto the test rig at any time.

The vehicle flashing beacon will be on whilst on site.

A banks person will be present while manoeuvring the rig.

Vehicles will not drive onto public highways without checking the vehicle jacks and tyres are free from mud and debris.

7 Emergency procedures

Once on site, the nearest A&E hospital to site can be found by scanning the below QR code:



All Lankelma staff will have received a Lankelma company induction covering general emergency procedures which are written and available from the company intranet system.

All operators will be trained in emergency first aid.

All Lankelma rigs will be equipped with first aid boxes, eye wash station and fire extinguishers.

Lankelma staff will receive a site induction from the client prior to starting works detailing site-specific emergency procedures.

8 Plant and equipment

8.1 Plant, power and test equipment

Item	Type/description	Quantity
Crawler Rig	UK8	
CPT penetrometer	15 cm ² friction cone/piezocone	2

8.2 Personal protective equipment (PPE)

All Lankelma field staff will have the following CE marked PPE:

- Protective clothing – protection against rain BS EN 343:2019
- Class 2 yellow or orange hi – visibility vest or jacket
- High visibility waterproofs (EN ISO 20471, EN 343, EN 1149-3, EN 13034, EN ISO 14116), if required
- Safety footwear with toe and mid-sole protection that complies with BS EN ISO 20345: 2011
- Hard hat (EN 397)
- Gloves
- Safety spectacles
- Ear protection

9 Materials – handling/storage/location

All CPT vehicles will be self-contained with adequate storage. Additional equipment is added to CPT vehicles on project specific basis.

10 Environmental considerations

All rigs will be equipped with spill containment equipment and all operatives will be trained on its use. Any spills will be reported to the client/site management immediately.

11 Housekeeping

11.1 Record keeping

Lankelma operators shall keep a continuous record of testing details (daysheet: IMS doc. LF/P01).

A rig defect report will be completed daily (Daily defect report: IMS doc. LF/A33).

All electronic files including acquisition data files are transferred automatically to the Lankelma office every 10 minutes via FTP and emailed at the end of each work shift.

11.2 Waste and cleanliness

All waste materials shall be kept on the rig or else disposed of at the site's waste management facilities. No waste materials will be left at work sites.

12 Pre-start requirements and actions

12.1 Items requiring Client's action:

Prior to entering the work site, the client shall provide an induction for Lankelma site personnel.

All inspection pits and clearance should be completed with permits to break ground issued to Lankelma site staff.

Any locations on hard standing shall be cored/broken out.

For piezocone tests, all inspection pits and cored positions should ideally be backfilled around an open ~70 mm ID rigid plastic pipe positioned in the centre of the pit to help maintain piezo saturation. Backfill materials should be firmly compacted to provide lateral support to the rod string while under load.

If pilot-hole pre-drilling of CPT locations is required, this is to be done in advance by others. Stable holes of < Ø 100 mm may be left open or backfilled with bentonite. Larger holes should be constructed with Ø 70-90 mm ID liner/casing installed, which must be directly supported by ground or firm/granular backfill over the entire length.

For pre-drilled holes deeper than 1.5 m or below groundwater level, the bottom end of the casing/liner must be sealed with strong tape, membrane or filter fabric (easily punctured by the CPT) before installation to prevent blowing sand/silt entering the liner. The liner must not contain any soil/solids prior to the test.

Test positioning, target depths and naming requirements are required by Lankelma site staff. Ideally the minimum acceptable test depth not requiring a re-test should also be advised to site staff to avoid communication delays. If the target depth is in terms of soil strength or strata the corresponding cone measurement criteria should be agreed beforehand.

13 Sequence of work and technical procedures

This section includes three parts describing:

- 1) rig manoeuvres,
- 2) the generic works process followed by specifics relating to methods to be used, and
- 3) technical procedures/methodologies.

13.1 Crawler rig (UK8 - 18.5t)

1. The rig will be driven to site on a low loader and offloaded at a suitable location with the aid of a banksman. Rigid plant loaders are fitted with collective control measures (handrails) where necessary.
2. The rig will track to position with the aid of a banksman, as necessary.
3. Once close to the location the rig will be positioned with the aid of a banksman.
4. Equipment will be inspected, and function checked each day (*Daily defect report*: IMS doc. LF/A33) and safety measures/devices implemented Barriers and third-party protection measures will be setup as required.
5. Prior to testing each location will be inspected for
 - a. Rig/equipment clearances
 - b. Surface ground conditions and stability/weight limits
 - c. Potential impact of other site personnel and their work activities
6. After completion of each location or site visit, fencing or other third-party barriers will be closed off as required.
7. Tracks will be cleaned so that they are reasonably free from excess soils or loose material before leaving site.
8. The rig will be loaded onto the low loader with the aid of a banksman, at a suitable location as advised by the client.
9. Drive offsite.

13.2 General test procedure for static penetration

Testing will follow the general process:

- a. The instrument (penetrometer, pressuremeter etc), 'cleaning bowl' and support tube casing will be assembled.
- b. The assembly will be placed into the floor hole.

- c. The rod string will be lengthened by manually screwing on additional rods of 1m length and each weighing less than 10 kg.
- d. Hydraulic rams will advance (and extract) the instrument by clamping the rod string, with the rate of penetration between 0.5 and 4 cm/s depending on the instrument/test type.
- e. Where casing is used this will be set first, or else advanced over the existing rod string.
- f. During extraction, the 'cleaning bowl' part of the support tube will clean off excess soil from the rod string.
- g. Once the test has ended and the instrument is out the ground the assembly will be manually lifted out of the floor hole.

13.3 Test/sampling specific activities

Other activities

All activities for other testing methods, such as the use of specialist electrical penetrometers (CPT, magnetometer, resistivity, gamma etc) are covered by *General test procedure for static penetration*.

14 Technical procedure details

The following procedures detail the technical aspects of activities in sequence order where possible. Any items in the Specification (if received) received will take precedence.

14.1 Cone penetration testing (CPTU)

The CPT procedure and equipment will be in general accordance with BS EN ISO 22476-1:2012 "Geotechnical investigation and testing - Field testing - Part 1: "Electrical cone and piezocone penetration test". The following procedure provides clarity on items missing in the standard (e.g. refusal criteria, cone temperature management) and items where options/variables exist (e.g. cone capacity, cone size, piezometer filer position, stroke length).

Technical procedure:

1. The test will be undertaken with the use of 17.5 tonne hydraulic push capacity rams to advance a CPT penetrometer into the underlying ground.
2. An electrical penetrometer (subtraction type) with 150 kN axial capacity and 15 cm² cone area will be used measuring cone tip resistance, friction sleeve resistance, inclination, and dynamic pore pressure in the u2 position (piezocone testing only).

3. The penetrometer will be pushed in 1m ram strokes with standard 36mm Ø 1m rod sections (40 m available). Stroke lengths may be less with shorter seismic testing intervals or dissipation tests.
 4. The test will be hydraulically advanced maintaining a penetration rate of 2 cm/s +/- 0.5. In difficult soils such as very dense sands and gravels, penetration rates may be reduced to prevent equipment damage and/or early refusals permitted by BS EN ISO 22476-1:2012.
 5. All penetrometer sensors will have down-hole amplification with signal transmission via an umbilical to the data acquisition system which will digitize and log the data at a resolution of 10 mm. Lankelma may opt to use penetrometers with down-hole digitized signal (digital cone).
 6. Prior to testing:
 - a. all equipment will be checked for defects and agreement with dimensional tolerances
 - b. the rig will be levelled to obtain vertical penetration
 - c. the penetrometer will be cleaned, pre-loaded, saturated (piezocone only) and temperature stabilised as necessary
 - d. zero load sensor output and measurement stability will be recorded, and compliance checked
 - e. for piezocone tests the assembled penetrometer will be vacuum saturated for at least 5 minutes prior to testing (this removes air introduced while changing the filter. The filter elements are pre-saturated in a vacuum for at least 10 days prior to mobilisation.
 7. During the test, the acquisition software will plot the cone end resistance, local side friction, friction ratio, pore pressure and inclination.
 8. Where possible, short dissipation tests may be performed in high permeability materials to assess the ambient pore pressures at depth for use in post processing and interpretation. Short dissipations (<2 minutes) may be undertaken at selected depths during the project to assess the general drainage type for verification of the drainage behaviour and approximate material types encountered.
 9. In general, tests will be terminated when either the required penetration depth is achieved or the test refuses on the maximum safe capacity of the equipment. Tests will proceed until the last sensor in the assembly reaches the required depth and will proceed regardless of total penetrometer inclination if the risk of damage to equipment is considered low.
- Standard nominal 100 MPa capacity cones (150 kN 15 cm²) have stop criterion detailed in the data sheet of Appendix C. Any/all of the criteria listed may be adjusted if significant damage is sustained during the project or if unusual circumstances apply.
10. Following the test:
 - a. Post-test zero values will be recorded as soon as possible (<1 minute) after extraction to capture the penetrometer at ground temperature.

- b. Any equipment defects will be recorded.
11. Re-tests due to errors affecting the original test will be undertaken at least 1m or 20-hole diameters from the original test location. Re-tests due to refusal where valid data has been obtained in the original test will be performed down the same hole (following drill out) or any distance from the original position. All re-positioned locations will be agreed with the client in advance of testing.
12. Additional quality procedures may be implemented depending on the interpretation requirements for piezocone test results in low strength soils. The quality procedures tabulated below may be implemented to reduce measurement error/uncertainty where low strength soils exceeding 1 m thickness are expected or encountered.

Low strength soil test procedure	Notes
Temperature stabilisation	The penetrometer may be temperature stabilised to 10 degrees or approximate ground temperature prior to testing low strength soils.
Penetration pauses	Penetration may be paused below thick granular deposits overlying soft/firm soils (< 1 MPa) to dissipate frictional heat.
Penetrometer pre-loading	The penetrometer may be preloaded at the start of each shift to restore the calibration condition of the load cells. This will be done if there has been a long period of cone disuse.
Use a high sensitivity - low capacity digital penetrometer in very low strength soils	Only if requested. Use of a high sensitivity cone can be beneficial in extremely low strength soils, however, the same quality can usually be achieved with a standard high capacity cone that is temperature stable.
Pre-form an open or water charged hole to saturated ground for piezocone tests	Only if requested. Required to guarantee piezo saturation through unsaturated zone. As a compromise it is often effective for others to pre-install ~60-70 mm ID PVC pipe through any inspection pit to more saturated soils. This procedure can add 25 minutes to each test position.

APPENDIX A RIG DATA SHEETS



UK8

Tracked crawler



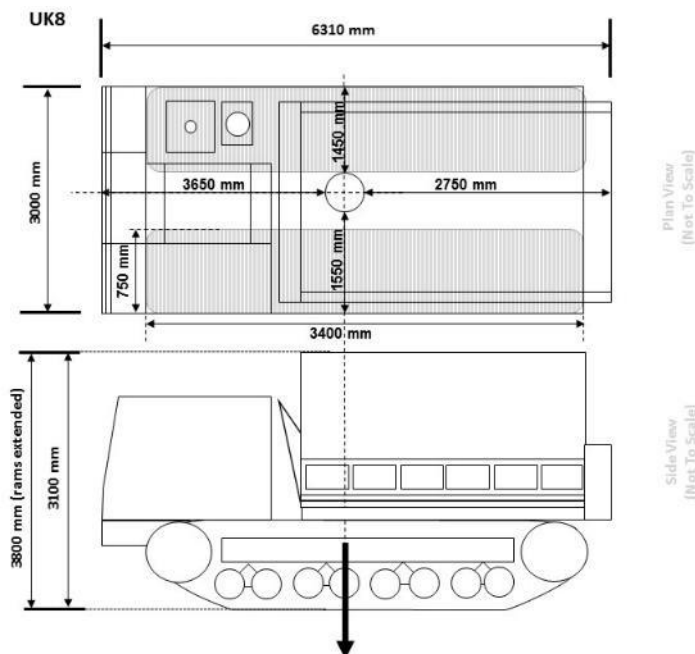
Rig weight	18.5 T
Max. operating ram capacity	15 T
Max. travelling speed	15 km/h
Track material	Rubber
Track length	3.40 m
Track width	0.75 m
Max. ground clearance on jacks	0.21 m
Max. ground bearing pressure	Tracking/testing: 35 kPa Rod extraction: 63 kPa
Max. testing gradient	Flat – no self levelling
Max. traversing gradient	20 degrees (operator assessed)
Noise output at 2 m	Testing – 74 dBA Driving – 95 dBA
Clamp arrangement	36/55 push-pull clamp
Ram stroke	0.70 m
Max. casing size	55 mm
Oil type	Biodegradable

The low ground bearing pressures, large footprint and high ground clearance of our 'bogskipper' tracked crawler makes it perfect for working on sites with boggy or very soft ground conditions.

This unique rig has experience working on intertidal projects, peat bogs and weight-sensitive sites.

The rubber tracks minimize the potential for any damage to delicate infrastructure, such as a sea wall.

Biodegradable diesel and hydraulic oil for working on environmentally sensitive sites.



APPENDIX B EQUIPMENT DATA SHEETS



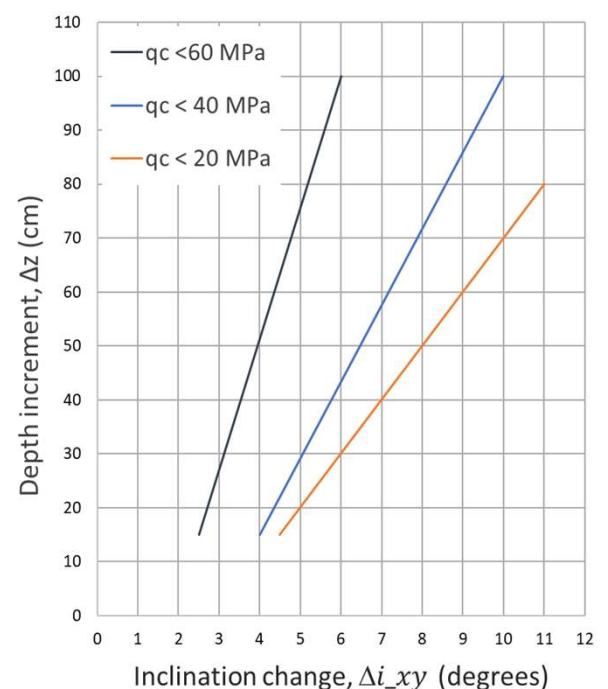
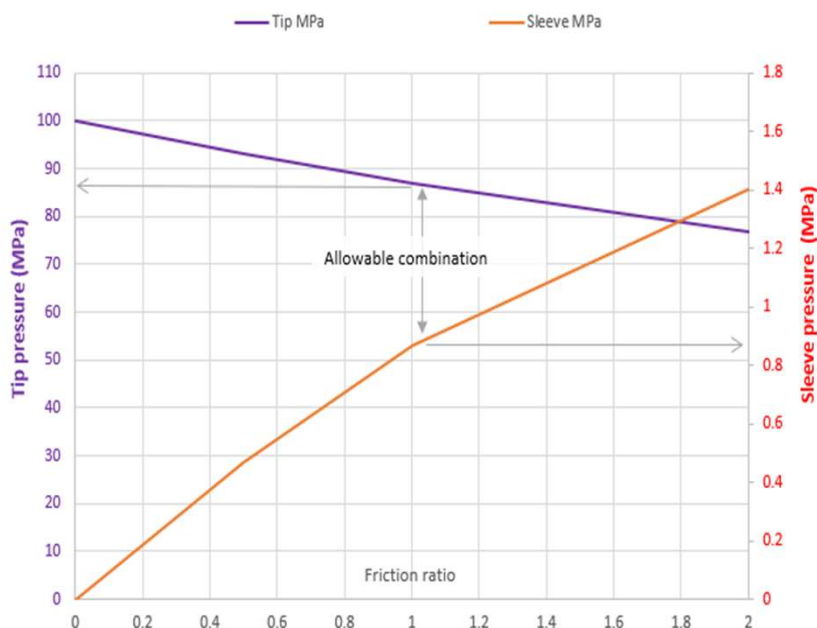
DIGITAL CONE PENETROMETER

15 cm² 150 kN PENETROMETER - TECHNICAL DETAILS

Sensors	Tip (cone) resistance (q_c), friction sleeve resistance (f_s), pore pressure (u as u_1 or u_2), biaxial inclination, load cell thermistors. Optional seismic triaxial accelerometer and/or magnetometer. Full flow 75 cm ² ball (ball penetrometer) can replace the conical tip in low strength soils.	
Sensor areas at mid-point of wear	Nominal tip = 14.91 cm ² . Nominal Sleeve = 22.61 cm ² . Pressures are calculated based on micrometer-based field measurements for each test.	
Nominal axial load capacity (tip + sleeve force), applicable without significant bending forces. Max. tip and sleeve pressure combinations provided on page 2.	150 kN	
Maximum cone resistance (q_c), nominal	100 MPa	
Maximum sleeve (f_s), nominal	1.33 MPa	
Maximum pore pressure (u as u_1 or u_2)	2, 5 or 10 MPa (model dependant)	
Sleeve measurement method	Subtraction	
Tip area ratio α (typical)	0.8 (pressure chamber calibrated)	
Standard uncertainty u of q_c measured value in MPa (typical)	$u < 2\%$ for $0.1 < q_c < 0.66$ $u < 0.8\%$ for $0.66 < q_c < 66$ MPa	
Minimum calibration force	$q_c = 0.1$ MPa, $f_s = 4$ kPa, $u = 50$ kPa	
Load cell temperature measurement and error correction	Measurements corrected for temperature effects, with method described and validated in calibration certificate	
Calibration	• Calibration according to ISO-22476-1:2022 • Low range polynomial calibration model, linear high range • 9 months calibration interval	
Field methodology	ISO-22476-1:2022 for test category A	
Saturation method	Disassembled vacuum prior to each test	
Piezometer filter	Porous HDPE (trimmed to sleeve diameter) or cindered stainless steel	
Diameter of push rods	Ø 36 mm	
Data acquisition increment	10 mm (5 Hz data capture)	
key refusal parameters (detailed parameters defined on page 2)	Inclination deviation rate (typical)	10° over 1 m
	Overall Inclination	20° to 35°

DETAILED REFUSAL CRITERIA

Max. tip resistance, q_{c_max}	100 MPa (for 'standard' 150 kN, 15 cm ² cones)	Tip resistance, q_c , and cone force, F_c , with respect to current inclination, i_{xy}	$q_c = q_{c_max} - 3 \cdot i_{xy}$ or $F_c = F_{c_max} - 3 \cdot i_{xy}$
Max. sleeve resistance f_{s_max}	1.33 MPa	Max. tip resistance, q_c , or cone force F_{c_max} with respect to current rate of inc. change with length	$q_c = 0.043 \cdot i'_{xy}(z)^2 - 3.6908 \cdot i'_{xy}(z) + 98$
Max. dynamic pore pressure - u_{max}	2 MPa 5 MPa or 10 MPa (model dependant)	Combined tip and sleeve force with respect to max. cone force (see chart below)	tip force + sleeve force = F_{c_max}
Max. cone axial force (tip + sleeve force) kN - F_{c_max}	150 kN	Max. push force F_t with respect to low CPT rod support	$200 - \frac{5}{q_{cave}} \cdot T$ Where T is the low strength layer thickness (m) and q_{cave} is the average layer tip resistance in MPa
Max. inclination degrees, i_{xy_max}	20° to 35° (depending on rate of inclination change and geology, or as agreed/specified)	Max. push force, F_{c_max} , with respect to rate of inclination change, $i'_{xy}(z)$	$F_{c_max} = 0.0439 \cdot i'_{xy}(z)^2 - 3.743 \cdot i'_{xy}(z) + 179$
Max. rate of inclination change with depth, $i'_{xy}(z)_{max}$	As described on graph overleaf	Max. rod rebound – rebound of the push rods due to the release of elastic bending strain	General: 3 cm Offshore/overwater with support casing: 6 cm



APPENDIX C RIG INSPECTION RECORDS

PLANT SERVICING AND REPAIR RECORD

RIGS

UK8

DATE:

4/2/25

JOB NO.

HOURS/MILEAGE

5352

MARKING CODE: ✓ = SERVICEABLE X = REQUIRES ATTENTION N/A = NOT APPLICABLE

ENGINE OIL LEVEL	✓
ENGINE FUNCTION	✓
COOLANT LEVEL/ANTI FREEZE CONTENT	✓
RADIATOR MATRIX	✓
FUEL LEVEL	✓
BATTERY SECURITY AND CONNECTIONS	✓
BATTERY CHARGING	✓
AUX. DRIVE BELT CONDITION AND PULLEYS	✓
FUEL/OIL LEAKS	✓
EXHAUST SYSTEM	X
WARNING HORN FUNCTION (UK2)	N/A
ENGINE SERVICE CARRIED OUT?	✓
VALVE CLEARANCE CHECK?	N/A
STARTER MOTOR AND CONNECTIONS	✓
STEERING COMPONENTS/CONTROLS	✓
HYDRAULIC PUMP CONDITION AND FUNCTION	✓
HYDRAULIC MOTORS FUNCTION	✓
HYDRAULIC OIL LEVEL	✓
HYDRAULIC FILTER/OIL RENEWAL NEEDED?	N/A
CONDITION OF HYDRAULIC HOSES/PIPES/FITTINGS	✓
CONDITION OF HYDRAULIC COUPLINGS AND VALVES	✓
TRACK HUB OIL LEVEL	✓
TRACK CONDITION	✓
TRACK STOPPING AND PARK MODE FUNCTION	✓
TRACK ROLLERS CONDITION	✓

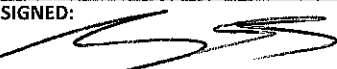
TRACK ADJUSTMENT	✓
CONDITION OF ELECTRICAL CABLES USED	✓
PAT DATE VALID	✓
CONDITION OF ELECTRICAL EQUIPMENT	✓
FUNCTION OF ELECTRICAL PUMP MOTORS	✓
EMERGENCY STOP SWITCHES	✓
CAMERA FUNCTION	✓
WINDSCREEN WIPER FUNCTION (UK8)	N/A
HORN	✓
CONDITION CAB, DOOR HINGES AND LOCKS	✓
ACCESS/EGRESS, HAND RAILS AND GATES	✓
FUNCTION OF WORK AND BEACON LIGHTS	✓
CONDITION OF CREW SEATS AND AMENITIES	✓
CONDITION OF RIG CHASSIS WELDS AND BOLTS	✓
CONDITION OF BODYWORK, PAINT AND LIVERY	✓
CONDITION OF CPT RAM MOUNTS AND FIXINGS	✓
CONDITION OF CPT RAM AND FUNCTION	✓
FUNCTION OF CPT EQUIPMENT	✓
FUNCTION AND CONDITION OF ANCILLARY CPT EQUIPMENT	✓
CONDITION OF EXCAVATOR HITCHES AND FIXINGS	N/A
FUNCTION OF LEVELLING JACKS	N/A
CONDITION/FUNCTION SCREWPICK MECHANISM	N/A
FUNCTION OF INVERTER	✓

DISRIPTION OF WORK/REPAIRS CARRIED OUT

INSPECTION SERVICE
 NIGHT HEATER NOT WORKING REPLACED FUEL LINE / DRAINED FROM
 EXHAUST LEAK REAR SILENCER JOINT RE-SEALED FAD BLUE FUEL TANK

PARTS USED	QTY	PART NUMBER
AIR FILTER	1	AF1862
AIR FILTER INNER	1	P134354
FUEL FILTER	1	P550392
FUEL FILTER/WATER SEPARATOR	1	36223 FUE MOWER 1000 SERIES
OIL FILTER	1	P502190
OIL FILTER	1	P550010
ENGINE OIL 15-40W		
ANTI FREEZE LTRS	2	

EQUIPMENT BORROWED/LEASED		
DISCRIPTION/ASSET NUMBER	QTY	LOCATION

INSPECTED BY: LRussell	SIGNED: 	DATE OUT: 7/2/25
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APPENDIX D RIG RISK ASSESSMENTS

What is a risk assessment?

A risk assessment is simply a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm or suffering. Workers and others have a right to be protected from harm caused by a failure to take reasonable control measures.

Definitions

Hazard	A condition or practice with the potential to cause damage, ill health, injury or other loss
Accident	An unplanned, uncontrolled event which has lead to damage, ill health or injury
Likelihood	The possibility of an event occurring
Consequence	The outcome of the event
Risk	The combination of the likelihood that a hazard will result in an accident and the severity of the consequence of that accident

The Risk assessment form (LF/A35) should be completed.

Identify all activities / tasks to be carried out, what the hazards are, the likelihood, consequence and risk

Likelihood (L)	5	Likely (more than 10 events per annum)
	4	Probable (2 to 10 events per annum)
	3	Possible (1 event every 1 to 10 years)
	2	Remote (1 event every 10 - 100 years)
	1	Improbable (1 event every +100 years)
Consequence (C)	5	Catastrophic - accident involving one or more fatalities, severe damage to or destruction of property, irreversible environmental damage
	4	Major - accident reportable under RIDDOR or major damage to property or the environment
	3	Serious - accident necessitating more than seven days off work, serious damage to property or the environment
	2	Minor injury - accident necessitating less than seven days off work, minor damage to property or the environment
	1	Incident - near miss or no loss time accident, little or no damage to property or the environment

Risk = Likelihood x Consequence

Identify any controls required which can be taken to eliminate the risk and responsibility (ownership or responsibility indicated)

Residual Risk - Where is the risk remaining after the controls are in place

Residual Risk = Likelihood x Consequence

Whilst the company is aware of its responsibility within health and safety, it will always work with the client to produce all site specific risk assessments/method statement/work package plan

Risk Ranking Matrix

Risk Ranking		Likelihood				
		5-Likely	4-Probable	3-Possible	2-Remote	1-Improbable
Consequence	5-Catastrophic	25	20	15	10	5
	4-Major	20	16	12	8	4
	3-Serious	15	12	9	6	3
	2-Minor	10	8	6	4	2
	1-Incident	5	4	3	2	1

Critical risks (16-25) - Unacceptable, risk must be reduced, Significant Risks (8-15) - to as low as reasonably practicable, Minor Risks (1-6) broadly acceptable, if possible reduce the risk to as low as practicable Tolerable, if possible reduce the risk

Description of work or Method Statement title:		UK8	Project ref.:	20602-1
Job type:		CPT	Risk assessment ref. and issue:	RA001
Location of works:		Barmouth	Method statement ref. and issue:	MS001
Created by:		Polly Marklew	Date of creation:	14/03/2025
Assessed by:		Paul Dimelow	Date of assessment:	14/03/2025
Item ID	Hazard	Potential risk	Personal Protective Equipment (PPE)	
1	Falls from height (person)	X	• Hard hat (EN 397) • Protective clothing – protection against rain BS EN 343:2019 • Class 2 yellow or orange hi – visibility vest or jacket • High visibility waterproofs (EN ISO 20471, EN 343, EN 1149-3, EN 13034, EN ISO 14116), if required • Gloves • Safety footwear with toe and mid-sole protection that complies with BS EN ISO 20345: 2011 • Safety spectacles (EN 166 FT) • Ear protection (EN 352)	
2	Slip/trips/falls	X		
3	Vehicle / pedestrian movements	X		
4	Striking buried services	X		
5	Manual handling	X		
6	Contact with moving part	X		
7	Contact with tools	X		
8	Contact with hazardous substances	X		
9	Fire/explosion	X		
10	Adverse weather	X		
11	Environmental contamination - spillage	X		
12	Exposure to long durations of sunlight	X		
13	Ground conditions	X		
14	Use of gas (LPG/oxygen/hydrogen etc.)			
15	Contaminated land			
16	Lone working			
17	Railway infrastructure works			
18	Tidal conditions			
19	Drowning			
20	Loading/unloading rig	X		
21	UXO risk		Additional controls	
22	Environmental risk	X		
23	Contact with electricity		See overleaf for hazard control details	
24	Contact with pressurised air/gas/liquid			
25	Contact with hot/cold surface			
26	Exposure to noise			
27	Exposure to vibration			
28	Confined spaces			
29	Exposure to fumes and dust			
30	Asbestos			
31	Refuelling operations	X		
32	Seismic source generation			
33	Tracking over uneven ground			
34	Contact with aggressive landowners and/or public	X		
35	Working on or near frozen surfaces			

Item ID	Hazard / consequence	Persons or environment at risk	L	C	RR	Existing controls	L2	C2	RR2	Additional controls
1	Falls from height (person)	Lankelma Others	3	3	9	Three points of contact when climbing the steps to the rear of the rig or in and out of the drivers cab. Access onto the rig is restricted to unauthorised persons. Secure locking strap runs across door when open. All pontential falls from height below ground should be secured with barriers. Lankelma staff to receive a full site induction from client/site management. No Lankelma staff permitted to work at height unless agreement has been sought with senior management. Rigid loaders fitted with collective control measures.	1	3	3	
2	Slips, trips and falls	Lankelma Others	5	2	10	Good housekeeping on the rig at all times. Trailing cables to be avoided during testing. All Lankelma staff to wear safety footwear with mid-sole protection.	2	2	4	
3	Vehicle/pedestrian movements	Lankelma Others	4	4	16	Banks person must be present when manoeuvring onsite. Lankelma staff are fully trained in banksman operations. Flashing beacons on vans to be used at all times when manoeuvring on site. All Lankelma staff to wear high visibility vest or jacket at all times.	1	4	4	
4	Striking buried services	Lankelma Environment	2	5	10	Client to undertake a complete service survey and advise of service presence. Permit to work to be issued prior to the commencement of works.	1	5	5	
5	Manual handling	Lankelma	4	2	8	All Lankelma staff are trained in manual handling techniques. Lifting aids available if required. Gloves and safety footwear with mid-sole protection to be worn at all times.	1	2	2	
6	Contact with moving parts	Lankelma	2	4	8	All Lankelma staff are trained in use of the equipment and are competent to operate safely. Gloves worn at all times. All work equipment subject to a regular maintenance programme. Visual inspections undertaken of work equipment prior to use.	1	4	4	
7	Contact with tools	Lankelma	2	2	4	Only trained Lankelma staff are to authorised to use hand tools. Visual inspections undertaken on tools prior to use. Faulty or damaged tools immediately removed from service.	1	2	2	
8	Hazardous substances	Lankelma Others Environment	2	4	8	COSHH assessments available for all hazardous substances. PPE as identified by COSHH assessment to be utilised.	1	4	4	
9	Fire/explosion	Lankelma Others Environment	2	5	10	All plant and equipment subject to a regular maintenance regime. Daily defect reports completed for plant and equipment. Rig fitted with a CO2 fire extinguisher. All electrical equipment PAT tested.	1	5	5	

10	Adverse weather	Lankelma	4	2	8	All Lankelma staff issued with wet and cold weather clothing. Weather conditions assessed prior to the commencement of works.	1	2	2	
11	Environmental contamination - spillage	Environment	3	2	6	Spill kits are available on each CPT rig. All plant and equipment subject to a regular maintenance regime. Daily defect reports completed for plant and equipment.	2	1	2	
12	Exposure to sunlight	Lankelma	2	2	4	All Lankelma staff advised to cover up when working outside in sunny conditions and ensure they wear plenty of sun screen.	1	1	1	
13	Ground Conditions	Lankelma	3	1	3	Lead operator to assess the location of each test prior to movement.	2	1	2	
20	Loading/unloading rig	Lankelma Others	2	5	10	Lead operator fully trained in use of the CPT rigs. Lankelma staff trained in banksman operations.	1	5	5	
22	Environmental risk (great crested newts, ground nesting birds, japanese knotweed)	Environment	2	3	6	Assessment by client ahead of Lankelma's arrival on site. Site management rules and zones of working will apply at all times. Operator vigilance.	1	3	3	
31	Refuelling operations	Lankelma	3	3	9	Jerry cans used to refuel the rig on site. Operators trained to safely use a jerry can.	2	2	4	
34	Contact with aggressive landowners and/or public	Lankelma Others	2	2	4	Emergency telephone number of site management to be provided to Lankelma staff during site induction. Works to be stopped. Contact details of site management to be passed on to aggressive person.	1	2	2	

Created By	PM	Date	14 March 2025	Signed	<i>Polly Marklew</i>
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Assessed By	PDI	Date of next Review	14 March 2026	Signed	<i>Paul Dúmelow</i>
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Name	Company	Job title	Date

Barmouth Phase 2 GI Geophysical Survey

Technical and Commercial Proposal



Document Administration	
SEP Geophysical Ref:	G-25_813-1(00)
Prepared for:	Gary Done , gdone@geotechnics.co.uk
Prepared by:	James Cotterill , james.cotterill@sepgeophysical.com
Revision:	00
Date:	03/03/2025

Table of Contents

1.	Executive Summary	3
2.	Project Overview.....	3
2.1.	Site Details	3
2.2.	Scope	4
3.	Proposed Survey Timeline	4
4.	Proposed Survey Techniques	5
4.1.	Seismic Refraction	5
4.2.	P-wave Equipment & Deployment	6
4.3.	S-wave Equipment & Deployment	6
4.4.	Seismic Refraction Data Processing.....	6
4.5.	Multi-channel Analysis of Surface Waves (MASW)	7
4.6.	Equipment & Deployment	7
4.7.	MASW Data Processing	7
5.	Deliverables	8
6.	Site Assumptions and Limitations	9
7.	Availability & Duration	9
8.	Schedule of Prices	10
9.	QHSE Management	11

This proposal and the contents detailed herein are strictly intended for the recipient as set out on the cover page.

This proposal is commercial in confidence.

1. Executive Summary

SEP Geophysical have been requested by Geotechnics Ltd, to supply a technical and commercial proposal for undertaking non-intrusive geophysical surveys as part of the sea defence renewal at Barmouth.

The project would be managed to our high standards of health and safety, quality and customer service, overseen by an experienced project manager. Our operations commonly involve various stakeholders, and we work collaboratively to achieve the overall project aims.

We hope our proposal is of interest to Geotechnics Ltd and we welcome the opportunity to discuss the approach further.

2. Project Overview

2.1. Site Details

The site is located on the beach front of Barmouth. The area of interest is a linear route from northwest to south east along the beach front where a series of redevelopment works will be completed to the existing sea defence structures. **Map 1** below presents the site location and proposed geophysical profiles (in green). The geology is recorded to be Blown Sand underlain by the Rhinog Formation.



Map 1 – Proposed Line Plan

2.2. Scope

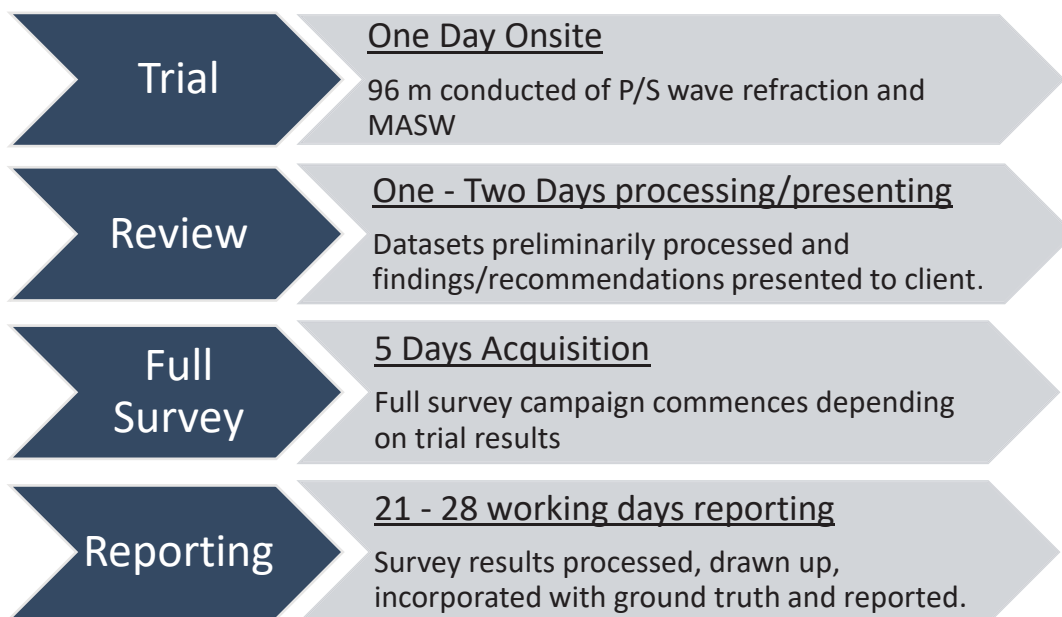
A renewal scheme has been suggested across the sea defences along a 1.5 km stretch of Barmouth beach. This involves redevelopment of secondary and tertiary sea walls, placement of additional rock armour and the refurbishment of the sheet pile walls. Previous ground investigations have been undertaken, however these were primarily focused on the promenade conditions and looking for potential voiding. As such there is minimal information regarding the underlaying ground conditions.

To continue developing the ground model a selection of intrusive positions have been proposed as part of the phase 2 works as well as geophysical surveying. The specification, reference '*BMTH-ARP-CGT-OFFSH-RP-G-000001-Phase 2 Ground Investigation Specification*' outlines the requirements for the scheme. The geophysical objectives are as follows;

- Thickness of blown sands, and presence, thickness, soil stiffness characterisation and acoustic parameters of any directly underlying soft layer which may be present.
- Bedrock: top level, thickness, weathering profile (gravel/rock), soil stiffness characterisation and acoustic parameters.

3. Proposed Survey Timeline

The works are within a tidal area which will need to be planned accordingly. Further to site visits, it is understood there is a 6 hour working window. SEP Geophysical would recommend conducting a trial of seismic methods to ascertain what the best techniques are for this environment. This will comprise of a single profile of P-wave and S-wave Refraction and Multi-channel Analysis of Surface Waves (MASW). **Flowchart 1** presents the proposed timelines.



Flowchart 1 – Proposed Project Timeline

4. Proposed Survey Techniques

Working in the intertidal area requires careful consideration and planning to avoid lost time and / or incident. SEP Geophysical have considerable experience working in intertidal areas having conducted cable landing surveys for numerous projects around the UK and Ireland. We have been advised that there is a 6-hour safe working window for this area and have planned our operational timings accordingly.

SEP Geophysical would recommend P-wave Seismic Refraction is used primarily to map the seismic velocity structure. Layer boundaries will be interpreted based on observable contrast in P-wave velocities. It should be appreciated that ground truthing is required to assign lithological units. The seismic velocities will be calculated and a rippability measure, using the Caterpillar Tractor Co. (1988) estimations, assigned based on the derived velocities.

An assessment will be made during the trial between the S-wave refraction and MASW datasets which provides the most robust dataset determining the shear wave velocity structure and hence an estimation on small-strain shear modulus.

A combination of sensor spacing and total linear line length dictates the balance between data resolution and achievable survey depth, it is advisable to set this with your target investigation depth. Currently we have allowed to deploy the seismic methods at 2 m centres based on anticipated access and proposed profile length. In this environment we would anticipate this discover any velocity boundaries up to a depth of 20 meters below ground level (mbgl).

Table 1 below summarises the total survey profile length and survey duration to complete.

Site	Total Linear Length (m)	No of Acquisition Days
Elizabeth Harbour – Trial Survey	96	1
Elizabeth Harbour – Full Survey	1404	5

Table 1 – Summary of survey profile length and acquisition duration.

4.1. Seismic Refraction

Near-surface seismic refraction is the analysis of first arrival times of seismic waves as they are refracted from interfaces with varying acoustic/elastic properties. Seismic energy is generated by deploying a source, such as striking a hammer on the ground, and measured by geophones along a linear array. Through analysis and inversion of the first-arrival times of the seismic signal it is possible to determine the number of seismic velocity layers and hence generate a seismic velocity model. Variations within the velocity model can be

attributed to changes in strata and give depth approximations on different geological interfaces.

4.2. P-wave Equipment & Deployment

We would propose the refraction surveys are conducted with a rolling 48 channel system, such as the Geometrics Geode system, connected to vertically sensitive 4.5 Hz geophones with a spacing of 2 m. We would propose utilising a sledgehammer as the seismic source.

Data acquisition will be completed by undertaking multiple shot locations at each survey line. This will include 'off-end' shots and shots along the line at regular intervals, currently envisaged to be every 20 m. A further geophone placed adjacent to the polymer plate will act as a 'trigger' for the seismograph to commence recording data. All data collection is monitored on site by an experienced geophysicist for quality and suitability.

Positions and levels of the geophones would be recorded using RTK GPS techniques.

4.3. S-wave Equipment & Deployment

The S-wave refraction method will be trialled initially. Data are acquired using a railway sleeper with metallic shoes placed at either end. Each end is then struck with a sledgehammer to generate the transverse seismic energy. The opposite end is then struck and the two shot gathers combined to produce a polarised S-wave dataset.

The same system connected to horizontally sensitive 14 Hz geophones will be deployed for the S-wave refraction. Shots will be undertaken at the same chainage as the P-wave refraction to allow direct comparison.

4.4. Seismic Refraction Data Processing

Both sets of P and S wave refraction will be processed in modules from the specialist software Seisimager. Initially this is imported into the Pickwin module, and each shot point is analysed. This involved the identification and picking of the time taken for the respective arrivals to arrive at each sensor.

This information is then imported into a second module called Plotrefa, the picked arrival times from each shot point are compiled into a travel time plots of an entire profile. The finalised time travel plot is then integrated with the topographic information so an initial velocity model can be created. A tomographic inversion is then undertaken to produce the final seismic velocity model. This is undertaken by iteratively tracing synthetic rays through the model to find the most likely ray paths which fit the observed data.

Tomographic velocity models as well as simplified layered models will be presented in 2D cross-sections as a function of linear distance and elevation. An example is presented in

Figure 1

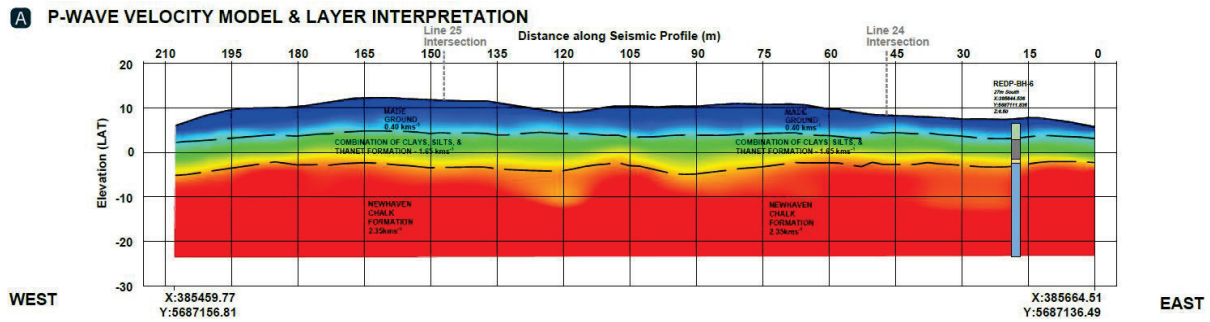


Figure 1 – Example P-wave refraction cross-section

4.5. Multi-channel Analysis of Surface Waves (MASW)

The MASW technique is another seismic technique, it is a measure and analysis of the change in phase velocity with frequency (dispersion) of a seismic wave, typically the Rayleigh Wave. Data is acquired along a linear array of low frequency geophones. By analysing multiple shot records a dispersion spectra can be produced, and dispersion curves can be calculated at various sub-sections of the array. These are then modelled to produce a shear wave velocity model which in turn allows for the shear modulus (G_{max}) or ground stiffness to be calculated.

4.6. Equipment & Deployment

The MASW trial survey will be conducted with the same 48 channel system and sensors as the P-wave refraction. Utilising the Geometrics Geode system connected to vertically sensitive 4.5 Hz geophones. Shots will be undertaken and an increased density to ensure a dispersion curves can be derived throughout the array. The increment will be determined by the timeframes, but it is currently envisaged to be every 5 - 10 m.

4.7. MASW Data Processing

Raw seismic traces are imported into the specialist software – Geogiga Surface Plus. The traces are grouped into Common Zone Gathers so that the relationship between surface wave phase velocity and frequency can be analysed. Subsequent dispersion spectra for each zone are created using a wavefield transform which separates the surface wave energy from those of the body waves. The spectra are reviewed for coherency and a dispersion curve (DV) is picked. This process is completed along the length of the spread. The resulting DV curves are inverted utilising a least-squares technique to produce a 2D synthetic apparent shear velocity model (as shown in **Figure 2**) which is then converted into small-strain shear modulus (G_{max}) using an assumed density.

6. Site Assumptions and Limitations

For SEP Geophysical to undertake these works it is assumed that;

- Access will be organised and granted through the client. Clear and unrestricted access is required to undertake the survey.
- If specialist competencies are required in order to work on site, the client is to make this known to SEP Geophysical prior to contractual agreement.
- If there is a requirement for an onsite induction, it is assumed it will last no longer than 1 hour. Should the induction last longer than 1 hour then additional fees may apply.
- Unless indicated otherwise, it is assumed the client will provide all welfare facilities onsite.

It should be appreciated that;

- Our quotation does not cover revisits in order to cover areas which were inaccessible at the time of survey.
- Very high levels of cultural noise may obscure the surface wave coherency when undertaking active source MASW surveying. This may limit the investigation depth and very near surface dispersion analysis.
- geophysical methods are remote sensing techniques which record changes in electrical and physical properties, within the ground. If there is insufficient contrast between the features of interest and the surrounding ground then it may not be possible to resolve the object of the survey. The inability to measure a change in physical response does not necessarily suggest the lack of a geophysical anomaly but rather it is suggestive there is not a measurable physical contrast between the materials and the subsurface medium.

7. Availability & Duration

SEP Geophysical have a lead time of 3 - 4 weeks at the time of writing this proposal although tide timings will dictate potential mobilisation dates. A formal purchase order is required to confirm any booking.

Based on the provided line plan, we would envisage the full geophysical investigation (inclusive of the trial) to be conducted in 6 days onsite.

APPENDIX B
SKETCH PLAN OF WORK AREA.

SCHEDULE 2: EXPLORATORY HOLES

S2.1 Geophysical survey

The provisional layout of the survey line is shown in Drawing 1. The actual alignment and extent of the survey line shall be agreed between the Contractor and the Investigation Supervisor taking account of relevant constraints including, but not limited to, access and location of services.

Geophysical Survey Technique	Line Length (m)	Line Start Point (m)	Line End Point (m)	Remarks
SRS – Seismic refraction survey (P- wave); and either: MASW – Multi-channel analysis of surface waves or SRS – Seismic refraction survey (S- wave)	1500	E 260121 N 317472	E 260744 N 316073	The Contractor shall select between MASW and SRS S-wave based on anticipated suitability/effectiveness for the site and the investigation objectives. If deemed useful, the Contractor may allow for the part of the survey line to be advanced with both techniques as a trial; in this case their Tender shall include any additional cost and programme details. ERT electrode spacing of 2m is anticipated to be adequate but will be reviewed following completion of the Phase 1 GI. The Contractor's tender shall present details of the proposed geophysical techniques (e.g. electrode spacing), evidence of their suitability for the investigation objectives listed in S1.5, and any recommendations for additional survey lines or alternative techniques.

S2.1 Exploratory Holes

Provisional locations of exploratory holes are shown in the Drawings. The actual location of each exploratory hole shall be agreed between the Contractor and Investigation Supervisor taking account of relevant constraints including, but not limited, access and location of services.

Hole	Type	Scheduled depth (m)	National Grid		In-situ tests* and installations (response zones and depths)	Existing ground surface type	Remarks (all specific aspects for this hole, e.g. termination criteria, special tests, access restrictions, type of standpipe, piezometer cover, fence protection etc.)	Monitoring requirements
			Easting (m)	Northing (m)				
WS201	WS	6	260356	316978	Small disturbed samples, bulk samples, UT100 samples; SPTs.	Sand and pebbles	Refer to Section 1.8 for site constraints. Works to be undertaken following the marine license requirements. Fencing protection required for all exploratory holes as per S1.8.11. WSs are located along the beach.	N/A
WS202			260434	316806				
WS203			260532	316557				
WS204			260682	316191				
TP201	TP	2	260179	317369	Small disturbed samples, bulk samples; HSVs	Sand and pebbles	Refer to Section 1.8 for site constraints. Works to be undertaken following the marine license requirements. Fencing protection required for all exploratory holes as per S1.8.11. TPs are located along the sheet pile wall front on the beach. Photos shall be taken of the exposed sheet piles.	N/A
TP202			260261	317191				
TP203			260385	316957				
TP204			260419	316868				
TP205			260505	316649				
TP206			260600	316432				
TP207			260672	316255				
TP208			260745	316091				
CPT201	CPTU	15	260132	317439		Sand and pebbles	Refer to Section 1.8 for site constraints. Works to be undertaken following the marine license requirements.	N/A
CPT202			260209	317275				
CPT203			260286	317096				
CPT204			260374	316896				
CPT205			260467	316722				

Hole	Type	Scheduled depth (m)	National Grid		In-situ tests* and installations (response zones and depths)	Existing ground surface type	Remarks (all specific aspects for this hole, e.g. termination criteria, special tests, access restrictions, type of standpipe, piezometer cover, fence protection etc.)	Monitoring requirements
			Easting (m)	Northing (m)				
CPT206			260506	316510				
CPT207			260610	316301				
CPT208			260693	316139				

* In addition to those required in schedules and annexes.

Abbreviations:

CP - cable percussion borehole	OP - observation pit
CPTU - cone penetration testing with piezocone	OT - observation trench
CPT - cone penetration testing (without piezocone)	PP - pneumatic piezometer
CP+RC – cable percussion starter hole with rotary cored follow-on	RC - rotary drillhole (with core recovery)
DP - dynamic probing	RO – rotary drillhole (with no core recovery)
EP - electrical piezometer	RZ – response zone
G - gas standpipe	SP - standpipe piezometer
GS - gas sampling	TP - trial pit
GW - combined gas and groundwater standpipe	TT - trial trench
HA - hand auger borehole	V – vapour standpipe
HP - hydraulic piezometer	WS – window/windowless sampling (dynamic sampling)

APPENDIX C
TECHNICAL SPECIFICATION

APPENDIX D

COMPANY GENERIC SITE RULES & ANY SITE SPECIFIC RULES

ALL OF OUR SAFETY RULES **MUST** BE OBEYED.

Failure to do so may result in Disciplinary and Criminal action being taken.

1. All personnel working on site under the control of the Company must comply with the requirements of the Health and Safety at Work etc Act 1974 at all times, and all other relevant statutory provisions applicable to the work being carried out.
2. These Site Safety Rules are a minimum requirement and must be read in conjunction with any relevant CDM Construction Phase Plan or Project Method Statement. Any divergence between the two should be referred to the Site Supervisor.
3. Keep your mind on your work at all times. No horseplay on the job.
4. Personal Protective Equipment (PPE) and clothing must be worn as prescribed for each job and as necessary as works progress. Do not enter any area that is a designated Mandatory PPE zone without first putting on the appropriate PPE or clothing.
5. Watch where you are walking. Don't run.
6. The use of illegal drugs or alcohol, or being under the influence of the same on site shall be cause for termination of employment. You **must** inform your Supervisor or Manager if you are taking strong prescription drugs that warn against driving or using machinery.
7. Do not distract the attention of fellow workers. Do not engage in any act which would endanger another employee.
8. If you observe or experience any Near-Miss, Incident or Accident, report it immediately to the Site Supervisor. The Site Supervisor should ensure that a relevant record is made of the occurrence and submitted to the SHEQ Manager at the first available opportunity.
9. Sanitation and welfare facilities have been or will be provided for your use. Defacing or damaging those facilities is forbidden.
10. A good job is a clean job, and a clean job is the start of a safe job.
11. Keep your work area free of debris and rubbish and ensure that the area is left in a clean and safe state on completion.
12. Know where the firefighting equipment is located and the arrangements to take in the event of an emergency including the location of the designated assembly point(s).
13. Do not use fire extinguishers unless you are trained to do so.
14. Know where the first aid provision is kept, who the first-aid trained personnel are, and how they can be contacted.
15. Lift correctly – with legs, not your back. Use mechanical aids where possible. If the load is too heavy or awkward, GET HELP!
16. Do not ride on machinery or equipment unless proper seating is provided.

17. Do not use power tools and equipment unless properly instructed and trained in the safe work methods.
18. All power tools shall be 110 volt supply unless a specific dispensation to use 240 volt equipment has been granted by the Client.
19. In the event that 240 volt equipment is used on site, this will also require the use of a suitable circuit breaker / residual current device between the equipment and source of supply.
20. Never oil, lubricate, or refuel equipment or machinery whilst it is running or in motion.
21. Before servicing, repairing, or adjusting any powered tool or piece of equipment, disconnect or isolate it from the source of power.
22. Be sure that all guards are in place. Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job, or interfere with the use thereof.
23. Never enter any excavation regardless of depth with the exception of CBR, Plate load or similar testing. Only in these instances will controlled access be allowed. Even under these circumstances, specific requirements will be required, for example, maximum depth of 500mm and the excavation side walls assessed prior to entry for their stability. In the event that the side walls are considered unstable, the excavation shall either be widened or have adequate supports installed.
24. Never use or permit use by another, any defective tools or equipment. The defective tools or equipment should be taken out of use and reported to the responsible person in control of the stores at each respective office. The responsible person shall ensure that the defective tools or equipment are either repaired or replaced accordingly.
25. Any ground penetration will require a **"Company Permit to Dig/Drill"** and works should not proceed unless the person undertaking the works is in receipt of a copy of said permit.

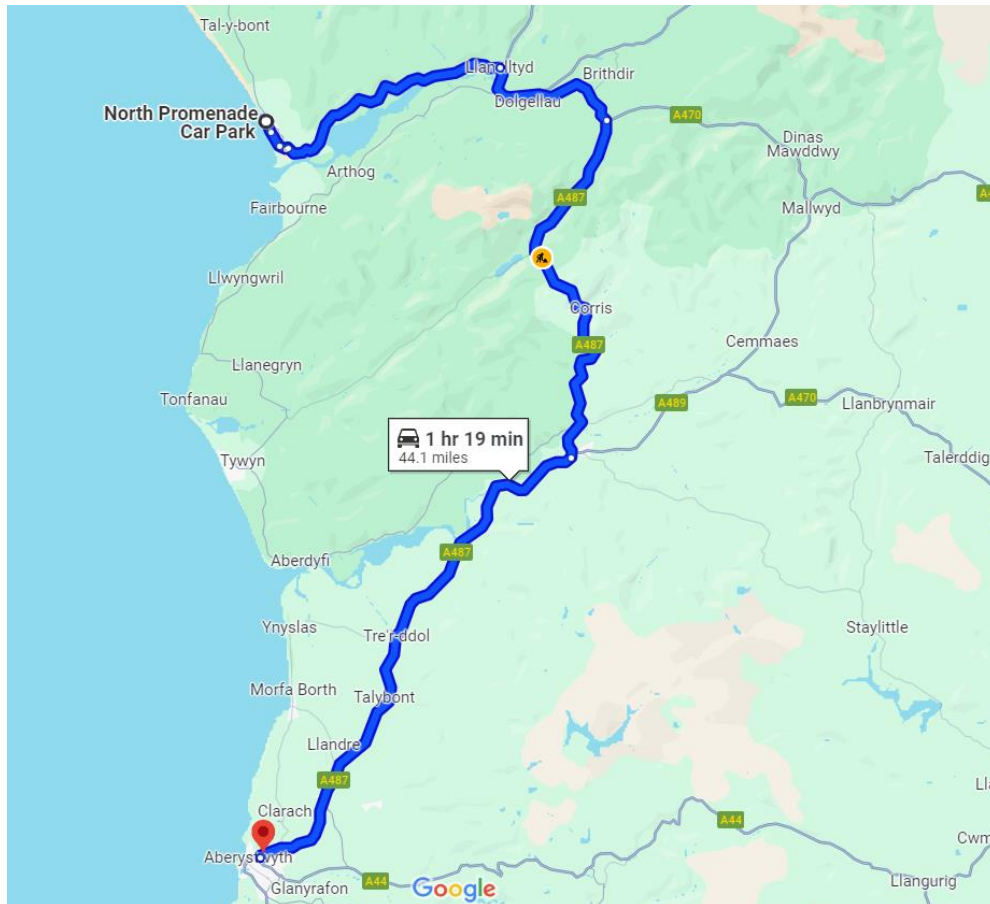
"NO PERMIT = NO DIG OR DRILL"

26. Adhere to site traffic rules including speed limits at all times.
27. Adhere to all on site safety signs and instructions at all times.
28. Never use a compressor to clean down equipment, clothing or personnel.

APPENDIX E

ACCIDENT AND EMERGENCY LOCATION AND DIRECTIONS

Nearest A&E Department:
Bronglais General Hospital
Caradog Road
Aberystwyth
SY23 1ER
Tel: 01970 623131



1 hr 19 min (44.1 miles)   

via A487
Fastest route, the usual traffic

North Promenade Car Park
Promenade Barmouth, Gwynedd LL42 1YS

> Take A496 to A470

20 min (9.2 mi)

> Take A487 to Caradog Rd in Aberystwyth

59 min (34.8 mi)

> Drive to Caradoc Rd

56 sec (0.2 mi)

Bronglais General Hospital
Caradoc Rd, Aberystwyth SY23 1ER

APPENDIX F

ENVIRONMENTAL CONSIDERATIONS - Site Specific Environmental Risk Assessment

Geotechnics Ltd Environmental Policy Statement

Geotechnics Limited provides a wide range of Geotechnical and Geoenvironmental services to the Construction Industry, landowners, developers, and to any stakeholders concerned with ground quality. It has offices in Coventry, Chester, Exeter and Yorkshire.

The Company is committed to the protection and enhancement of the environment. Its aim is to achieve this through the development, delivery and continual improvement of high quality professional and client-focussed services which consider the environmental impacts of its decision-making in all aspects of its activities. Procedures embrace both ISO 14001 Quality Management and Health and Safety considerations together with environmental issues. Geotechnics Limited will:

- Operate and maintain an Environmental Management System to meet the requirements of ISO 14001.
- Continually improve its environmental performance and, by identifying and targeting any significant adverse Environmental Aspects of its activities, seek to reduce their impacts on the environment and prevent pollution.
- Identify the significant Environmental Aspects of the Company's activities including the use of resources and materials, non-renewable energy, potential noise and dust emissions, hydrocarbon emissions, waste production, and the potential to cause discharges of untreated water to land and controlled waters.
- Be committed to the protection of the environment by compliance with all environmental legislation, regulations and other requirements in carrying out its activities and in providing advice to enable clients to do likewise.
- Provide a strong framework for setting and reviewing environmental objectives, ensuring that targets are met and ensuring that its environmental programme is consistent with EMS commitments through regular auditing and reviews.
- Communicate this Policy to staff, clients, suppliers, and sub-contractors using its Website, the Intranet and internal memoranda and newsletters.

This Policy is a public statement and will be made freely available on request to any interested parties.

Basic Environmental Site Rules

To prevent damage and pollution to the environment and ecology, always please observe the following rules:

- Do not allow the spread of contaminated soil or arising's onto 'clean' areas of the site.
- Ensure that the site is kept clean and tidy and that wastes are disposed of appropriately and immediately.
- Be considerate to other site users and local residents – keep nuisance to a minimum.
- Respect wildlife and wildlife habitat.
- Minimise waste and be energy efficient.
- If in doubt, call your office or talk to a member of the Environmental Team. There is also an expanding range of Environmental Data Sheets which you may find useful.

Environmental Notes

To ensure our commitment to avoid damage and pollution to the environment please observe the following rules:

- At all times please try to ensure that no potentially contaminative material enters adjacent ground or waters
- Please ensure the site is kept tidy and that wastes are disposed of appropriately and immediately
- Please consider the potential for local nuisance and be considerate at all times
- Always wear appropriate protective equipment and ensure it is in good working condition
- Please report any unusual finds immediately to the engineer
- When in doubt, please ask

Site Specific Environmental Risk Assessment

Note: See Guidance Note ENV007 as an aid to completion

BDA Site Classification (Circle)

Green

Yellow

Red

Ensure any special precautions for YELLOW and RED sites are STRICTLY observed and communicated to all site personnel.

1) Is there potential for contaminated soil on site? If so, describe any special methodologies that are required (e.g. ground/water protection, containment, disposal, clean drilling etc.)

Any spoil must be disposed of appropriately in a Geotechnics Limited licensed skip with appropriate paperwork to follow.

2) Is there potential for contamination of Controlled Surface Waters? If the site contains or is in close proximity to water bodies such as rivers, streams, canals, lakes, estuaries, coastal waters etc. then special measures may be required to prevent contamination and should be described here.

All efforts will be made to ensure that no spoil or water enters nearby water sources.

Geotechnics will work in accordance with good practice guidance GPP5 (2017) Guidance for Pollution Prevention. Terram and visqueen shall be utilised where appropriate to contain water.

3) Is there potential for contamination of Controlled Ground Waters (aquifers). If the site is over or adjacent to an aquifer then special measures may be required to prevent contamination and should be described here.

The site is underlain by a Secondary A aquifer.

4) Are there any ecological considerations on site (e.g. sensitive wildlife/habitat, invasive plants etc)? If so, identify the habitat or species present on site any special methodologies to mitigate the effects of the investigation on them or vice versa.

A potential bat roost structure has been identified. No work shall be carried out within 30m of the structure.

5) Has Geotechnics Ltd been advised that special precautions will be necessary to mitigate nuisance caused by its operations (e.g. noise, dust, smoke, odor, visual etc)? If so, describe any special mitigation measures.

None Advised.

6) Waste. Describe how waste soils, other solids and liquids are to be stored, transported and disposed of.

Spoil

To be disposed of in a Geotechnics licensed waste skip.

Waste transfer notes to be filled out as necessary.

Drill Flush

Addition of water to the boreholes will be kept to a minimum. Any water that is used will be managed using appropriate barriers and measures to prevent migration and contamination.

Waste Transfer Notes

Waste transfer notes to be obtained for all waste removed from site.

All external and internal waste transfer notes will be retained for a minimum of 2 years.

Spillages

All personnel on site will be provided with training in Geotechnics emergency spillage procedures and subsequent disposal of resultant waste.

Waste to be treated as hazardous and offsite disposal to be arranged with a specialist registered waste facility

Hazardous waste transfers to be accompanied by a hazardous waste consignment note.

Consignment notes will be retained for a minimum of 3 years

If any transfer of waste from site is required Geotechnics are registered as an Upper Tier Waste Carrier this means:

- We can transport construction or demolition waste, we have produced as a business.
- We are licensed to collect and transport waste other people have produced as part of our business activity.
- Every transfer of waste between two parties must be covered by the appropriate documentation.
- For non-hazardous waste, this is generally a Waste Transfer Note (WTN) and for hazardous waste, a Consignment Note.
- This will usually be provided by the waste carrier, however if the waste is to be transported by Geotechnics then an internal waste transfer note will be completed and accompany the waste on its journey.
- Copies of all internal and external WTNs will be issued to the local environmental reps for appropriate filing and record keeping at each regional office.

7) Have you been advised that the site has archaeologically significant structures or deposits? If so, describe any methodologies in place to protect them.

None Advised.

8) Other things to consider (e.g. special considerations or instructions outlined by the client or regulatory authority, fuel storage, spill procedure, fire, resource use etc.)

All substances and equipment shall be stored either in the secure storage container and/or site vehicles.

Plant nappies shall be used under all rigs. Drip trays will be used when refueling on site.

All COSHH certificates are available electronically and paper copies will be available on site in the project folder.

If any equipment has to be left on site over the borehole, it shall be secured and segregated in order to prevent access to unauthorised personnel (so far as is reasonably practicable).

ENVIRONMENTAL CONSIDERATIONS – HRA MITIGATION MEASURES

Pollution control

1. It is assumed that best practice will be adopted in line with GPP 518 to minimise the risk of pollution during the Proposed Investigation.
2. All construction activities will be carried out in accordance with guidance outlined within CIRIA best practice guidance¹⁹.
3. A pollution risk assessment should be carried out for the proposed site ahead of construction, considering both the storage and transportation of materials used. This would identify potentially hazardous materials or activities and assess the probability and magnitude of potentially harmful effects. From this, a pollution incident response plan (see GPP 2120) would be compiled to identify the specific measures needed to reduce the likelihood of a spillage happening, and to minimise the impact of any spills that may occur.
4. All plant operating on the beach will use biodegradable oils and carry spill kits. Both the beach and adjacent drains/watercourses will be protected from run-off pollution.
5. The RAMS will contain the following best practice methods to mitigate the risk of pollution (as relevant):
 - Ensuring that all site activities in proximity to watercourses and intertidal areas are controlled and are in accordance with relevant legislation and undertaken in compliance with the relevant Guidance for Pollution Prevention (e.g. GPP5,) and industry best practice (CIRIA, CIRIA C74121). Additional measures such as silt fencing, silt busters or bales may be necessary to prevent silt or contaminants from being released into watercourses connected to the site via drainage measures or as surface run off;
 - Emergency spill kits are to be maintained at every work location or be easily accessible at all times from a centralised location;
 - Drip trays and “nappies” to be used under plant when not in use and when re-fuelling;
 - Spill kits deployed in the event of a spillage. In the event of a pollution incident, work should cease in the vicinity of the incident and contaminants must be cleaned up immediately;
 - The storage and use of hazardous chemicals would be in accordance COSHH Regulations (1998);
 - A clean and tidy site will be maintained at all times;
 - Bio-oils will be used in plant;
 - Daily checks to be carried out before any plant is used on site;
 - Equipment to be stored on designated drip trays/bunded areas;
 - All fuel will be stored within the site compound. The main fuel storage area will be at the main site compound on Promenade, which will house the stationary tank, which will be double skinned, bunded, secure and lockable. This will be sited in a safe position, out of public view, away from heavy movement areas.
 - All refuelling operations are to be undertaken at the site compound, at least 10m from any watercourse or intertidal area;
 - All refuelling will be carried out with a spillage control kit in place, at the refuelling location (Carried by the tractor/item of plant). Care will be taken not to spill any fuel, the operative must remain in attendance at all times and the filling nozzle must not be fixed open unless automatic shut-off nozzle is fitted on the hose;

- A designated, trained and experienced operative will fill the mobile fuel bowser unit from the stationary tank at the main compound using the delivery nozzle; Hoses and valves to be checked regularly for signs of wear and renew as and when required;
- If a spill should occur, the following should be used: stop, contain and notify. All spillages, no matter how small, will be cleaned up immediately and reported to the Site and Agent; and
- All highways affected by the works will be cleansed as and when necessary, following continuous monitoring by the site team to prevent unnecessary build-up of dirt on carriageway surfaces and within associated run off drains.

Minimising disturbance:

6. Appropriate measures should be included within the work method statements to reduce potential environmental impacts of any activities within the intertidal zone. This includes measures to:
 - In order to ensure minimal lighting of adjacent habitats and disturbance to nocturnal species, any construction lighting required outside of daylight hours will be directional towards the ground and away from semi-natural habitats;
 - Minimise the footprint of any intertidal works as far as reasonable possible to reduce the degree of physical disturbance of the existing marine and coastal environment;
 - Noise levels and vibration impacts shall be minimised where possible;
 - Mitigation measures to suppress dust generation will be implemented throughout the duration of the Proposed Investigation, as and when the requirement is deemed necessary;
 - Plant will be regularly serviced and maintained;

Biosecurity:

7. Measures should be adopted to minimise the risk of construction activities leading to the spread of these invasive non-native species.
8. Good biosecurity practices are vital for preventing the spread of invasive non-native species (INNS) and pathogens such as waterborne fish diseases. Measures should be adopted to minimise the risk of activities leading to the spread of invasive non-native species or pathogens.
9. All machinery, equipment and footwear will be cleaned thoroughly before entering the site with a suitable disinfectant. In addition, all equipment and footwear will be thoroughly cleaned and disinfected when leaving site, particularly in areas where INNS have been located in accordance with Check, Clean, Dry guidance.
10. If any protected species or signs of protected species such as an otter holt, or other ecological features including new occurrences or increase in extent of INNS are encountered during the works, all work in the vicinity is to stop immediately and a suitably qualified ecologist contacted as soon as possible.
11. To avoid the spread of these invasive species the following measures should be adhered to, and detailed within the RAMS, during the Proposed Investigation:
 - Contractor's Ecologist to undertake toolbox talks for any INNS prior to works starting. Toolbox talks are to be signed by contractor on site;
 - Fencing will be erected around the working areas;
 - Ensure all site teams are briefed on INNS prevention procedures and made aware of areas on site where INNS are known to be present. No working is to be undertaken in areas where INNS are present.

General:

- Plant will be located as far as reasonably practicable away from ecologically sensitive features, and will be shut down when not in use;
- Trenches and holes will be covered when not being worked on to prevent entry by mammals (such as otter) and where this is not possible exits and escape routes such as ramps or mammal ladders will be provided; and
- Measures to protect trees to be retained within and immediately adjacent to the site and access routes in line with the British Standard BS5837:2012.

ENVIRONMENTAL CONSIDERATIONS – WFD MITIGATION MEASURES

WFD Mitigation measures include a specialist INNS Management Plan will be developed as part of the RAMS for the treatment and/ or avoidance of these species.

Site Specific Hazards or Requirements:

The specific site hazards known or identified in the Pre-Construction Information (PCI) or following a site visit or appraisal are:

- Working in a tidal zone
- Working near water
- Members of the public/pedestrians on the promenade
- Members of the public on the beach
- Sewer outfall
- Environmentally sensitive area– mussels on the groins
- Soft ground for heavy plant
- Plant breakdown/vehicle recovery
- Pollution/oil spill

Environmental Procedure:

Prior to commencing:

- Refer to Site Specific Environmental Method Statement.
- Bio-oils to be used in plant
- Spill kits located near works on site.
- Daily checks to be carried out before any plant is used on site.
- Awareness of any environmental restrictions (Biotope survey)
- Noise levels shall be minimised where possible
- Storage of fuel and refuelling of plant to be subject to the procedures in The Control of Pollution (Oil Storage) Regulations 2001. Fuel to be stored in the site compound
- Maintain clean and tidy site.
- Protect adjacent drains/watercourse and the beach from run off pollution – debris, silt, etc.
- Mitigation measures to suppress dust generation will be implemented throughout the project duration, as and when the requirement is deemed necessary
- All highways affected by the works will be cleansed as and when necessary, following continuous monitoring by the site team to prevent unnecessary build-up of dirt on carriageway surfaces and within associated run off drains.
- Spill kits to be available on site and in vehicles and at refuelling points
- Drip trays and “nappies” to be used under plant when not in use and when re-fuelling.
- Fencing to be provided around the working areas.

APPENDIX G
INDUCTION & BRIEFING RECORD

Geotechnics Employees do not need to enter CSCS/CPCS card details as these are controlled by the training matrix on Geocentric please enter N/A in the box.

This form should be completed and signed on every occasion that the Induction is provided.
This includes visitors to site and any additional site labour.

Project Name:

Project Number:.....

Name:	Position:	CSCS/CPCS Card No:	Company:	Contact No:	Signature:	Time & Date:

Briefed on site by Geotechnics Limited Site Supervisor.

The above have been briefed on the Salient points of the Project Method Statement, Site Specific Risk Assessments, POWRA, relevant Safe Working Procedures, Company Guidance and Information Sheets, any Specific Method Statements, Site Rules and associated Environmental Considerations, and are aware of the issues and required considerations associated with the site.

Briefed by:

Print Name:

Signature:

Date and Time:

APPENDIX H
REVISION AND AMENDMENT REGISTER

Revision Number	Date	Details	Revised by

Point Of Work Risk Assessment

Project number		Project name	
Geotechnics supervisor		Date	
Completed by		Signed	

Part 1. Think	Before you start		Yes	No	N/A
	Do you have the right documentation for the job ?				
	Do you have the right PPE for the job ?				
	Are all power tools, lights and leads PAT tested ?				
	Has all plant been PUWER inspected ?				
	Has lifting equipment been LOLER inspected ?				
	Are sub- contractors being used on site ?				
	If yes to above name of sub-contractors.				
	Are all sub-contractors to be used on the Geocentric approved list.				
	Do they have LOLER certificates and PUWER maintenance records for all drilling rigs to be used on site ? (obtain copy)				
	Are all cable percussion rigs proposed for use on site fitted with an ancillary winch ?				
	If you answered no to the above is a suitable harness fitted with a personal rescue device available on site.				
	Do all sub-contractors due to attend site hold a relevant CSCS card ? (obtain copy)				
	Do all Lead Drillers proposed for use on site have relevant NVQ training ? (obtain copy)				
	If you have answered 'no' to any of the above, take the required action or report to your supervisor. If in doubt always ask!				
	Details of any actions taken as a result to a 'no' answer to any of the above:				

Point Of Work Risk Assessment

Part 2. Assess	Unforeseen hazards that require further considerations (if the hazard is present tick the box)			
	Falls from height		Entry into a confined space	
	Falling or flying objects		Dust	
	Chemicals or harmful substances		Fumes	
	Heat, fire or explosion		Noise	
	Asphyxiation or drowning		Vibration	
	Risk to plant		Electricity	
	Contact with stationary object		Unstable slopes	
	Object overturning or collapse		Asbestos/ACM's	
	Slips, trips or falls on the same level		Manual handling	
	Discarded syringes		Invasive plants	
	Poor lighting Temperature (high/low) Adverse weather Uncertified equipment Risk to you from your work Risk to others from your work Stored energy or insecure load Traffic or moving vehicles Livestock Other (state)			
If required, you must have a rescue plan in place (hazards highlighted blue will require a rescue plan). Provide brief details. (You must always be able to provide a way of safe escape in the event of something going wrong)				
If no control measure are in place for the hazards identified above, then appropriate control measures need to be included in Part 3 before work commences.				

Part 3. Go	Additional safety assessment required		Yes		No	
	Hazard	Control measures or precautions	Remaining risk			
			H	M	L	

Go to work safely today and go home safely tonight

Part 4. Review	End of job review					
	Are there any lessons for next time ?		Yes		No	
	Has the work created any new hazards ?		Yes		No	
	If you have answered 'Yes' to either of these questions, make a brief note below and document on the Geocentric close out record					

Engineer's Aide-Memoire for Site Induction

Project Name		Project Number	
Project Address and Postcode			
Site Supervisor		Client	

Description of project	Reason for ground investigation
Programme	Proposed programme of ground investigation
Scope	Scope of site works including any specific sampling and installation requirements
Roles and responsibilities	Include details of CDM duty holders particularly on Main Contractor sites
Permit to Dig	Include details of known underground and overhead services
Communication/Coordination	Include arrangements for daily activity briefings and weekly meetings
Security policy	Details of site security and signing in & out requirements
Competence cards	Include requirements for CSCS, CPCs cards and relevant NVQ requirements. Details of CSCS cards to be recorded on the induction and briefing record.
Welfare facilities	Include details of on site welfare facilities.
First Aid	Include details of First Aider and location of First Aid kits.
Accident, Incident and Near Miss Reporting	Detail requirements and procedures for reporting of on site incidents.
Site Rules	Include company policy on drugs & alcohol, use of mobile phones on site, smoking policy.
Personal Protective Equipment	Include details of mandatory PPE requirements and task specific PPE requirements
Fire and Emergency arrangements	Include details on how to raise the alarm, fire assembly point and on site means of fighting a fire (include the requirement for only trained operatives to use fire extinguishers)
Deliveries	Include details of access arrangements for deliveries of materials and equipment
Working at Height	Detail Geotechnics policy and requirements for working at height during the use of cable percussion drilling rigs and machine excavated trial pits
Maintenance of plant and equipment	Detail the requirements for all drilling rigs brought to site to have up to date LOLER and PUWER certification. Confirmation that this has been checked to be recorded on the POWRA.
Site traffic management	Speed limit, traffic routes, parking, designated footpaths etc
Storage of materials and equipment	Include on site arrangements for storage of materials and equipment both within the site compound and at the work location.
Asbestos	Provide details on companies procedures in the event that any suspected ACM's are encountered on site.
Environmental Considerations	Include the BDA category for the site and any specific procedures to be implemented. Cover requirements for invasive plants/protected species/protection of surface and groundwater bodies as appropriate
CoSHH	Provide details on any hazardous substances to be used on site and the requirements of the relevant CoSHH assessments.
Waste facility/transfer	Detail waste disposal arrangements on site
Nearest A&E	Quickest and safest route. Display map and directions
Slips, trips and falls	Keep to designated paths and roads, keep off unmade ground
Hypodermic needles/sharps	Do not touch, if observed identify to client or office for safe removal to be arranged
Weils disease	Individuals are responsible for following standard good hygiene practices (hand washing before eating, wearing gloves as per site rules, covering exposed areas of broken skin with water proof plasters etc)
Other site specific safety risks	Provide details of any additional significant risks and hazards identified in the CPP/method statement/risk assessment

Inductee's Declaration - All inductees are to sign the Site Induction and Briefing Record in the CPP/Method Statement

POL001 Health & Safety Policy Statement

Geotechnics Limited (from herein known as "The Company") is committed to continuous improvement of its Health, Safety and Welfare Management System, and is committed to Policies and Procedures which are designed to ensure the health, safety and welfare, of all its employees, contractors, visitors and others likely to be affected by its undertakings, so far as is reasonably practicable.

The Company expects employees, contractors, visitors or other employers who work at any premise or on any site under the control of the Company, to share and adopt this commitment.

To achieve its commitment, the Company will provide appropriate information, instruction, training and supervision at all levels to ensure that employees are aware of the hazards at their workplace, together with the appropriate measures to be taken to protect against these hazards and prevent in so far as reasonably practicable work-related injury or ill health.

Additionally, the Company in so far as is reasonably practicable, shall ensure it is:

- Operating and maintaining a Health & Safety Management System to the requirements of ISO 45001:2018,
- Managing and maintaining safe work environments, and in which risks to health are eliminated,
- Providing adequate and appropriate facilities and arrangements for welfare at work,
- Providing, managing, and maintaining plant and equipment so that it is safe, and that risks to health and safety are eliminated,
- Ensuring that the use, handling, storage and transport of items and substances are done safely and that risks to health are eliminated,
- Implementing systems of work that are safe and where risks to health and safety are eliminated,
- Consulting with, and involving employees in matters that may affect their health, safety and welfare,
- Ensuring that all contractors employed by the Company possess the necessary skills, knowledge, experience, and training and that the contractor carries out risk assessments for all the work they control, ensuring any plant and equipment provided or used by them is serviced, maintained, and tested in accordance with the relevant statutory obligations.

The Company will ensure adequate resources are provided to carry out regular assessments, inspections, auditing, and reviews to implement the Company Policy of continuous improvement.

The Company will set and review objectives against which its performance is monitored and reported.

Every employee is required to assist with the prevention of accidents and incidents and maintenance of a safe and healthy working environment. To achieve this everyone should take care of their health, safety and welfare, and that of any person who could be affected by their acts or omissions.

Delegated responsibilities, procedures and arrangements developed to implement this Policy and to comply with current legislation and other requirements are detailed in the Company's Health, Safety and Welfare Procedures Manual and supporting Safe Working Procedures.

These procedures apply to all employees of the Company and all contractors working on its sites or under its control or employ.

Every employee is required to assist with the prevention of accidents and incidents and maintenance of a safe and healthy working environment.



Paul Hayes

Managing Director

Revision: 4.0
Issue date: 01st Oct 2024
Review date: 30th Sept 2025
Changes since last issue:

Site Supervisors Checklist

Safe Systems of Work

- Is the CPP available on site?
- Are the site specific risk assessments available on site?
- Can you access the CoSHH assessments and MSDS?
- Can you access the Safe Working Procedures?
- G2 Health and Safety tab for the project completed?

Induction

- Has everyone on site received a site induction?
- Has everyone on site got a CSCS card and recorded the number on the induction record?

Documentation

- Have you completed a POWRA?
- Ensure you complete a Daily Activity Briefing
- Is a Permit to Dig in place for all work locations?
- Are daily checks being completed for all plant on site and have you been issued with a copy?

Welfare

- Have adequate facilities been provided (1 toilet per 7 people)?
- Are first aid kits available on site and are the contents in date?
- Are fire extinguishers available and in date?

Signage

- Ensure general site safety signs are in place at the site entrance or work locations.
- Ensure the Health & Safety Law poster is on display in the welfare cabin/van.
- Don't forget GO SAFE posters are available.

PPE

- Is everyone wearing the required mandatory PPE?
 - Hard Hat
 - Hi Viz
 - Safety glasses
 - Safety footwear
 - Gloves
- Are ear defenders being worn as required i.e. SPT testing?

Buried Services

- Does the pre work service status provide a method?
- Has a permit to dig been completed for all work locations?
- Has a CAT and Genny scan been completed for all work locations?
- Is a hand dug pit to 1.2m being completed for all boreholes?

Cable Percussion rigs

- Has the CP rig got in date LOLER certification?
- Is there evidence the drill rig has been maintained in accordance with PUWER?
- Is a Wire rope retaining bar (Dodd bar) fitted?
- Are spill kits and plant nappies in place?
- Have Daily checks been completed?

Rotary rigs

- Has the rotary rig got in date LOLER certification?
- Is there evidence the drill rig has been maintained in accordance with PUWER?
- Are spill kits and plant nappies in place?
- Have Daily checks been completed?

Windowless sampling rigs

- Is there evidence the drill rig has been maintained in accordance with PUWER?
- Are spill kits and plant nappies in place?
- Have Daily checks been completed?

Trial Pits

- Is there evidence the excavator has been maintained in accordance with PUWER?
- Has the excavator operator got the correct competencies?
- Ensure personnel only approach the trial pit from the narrow end.
- **NO ENTRY** allowed to trial pits.
- **NEVER** leave an open trial pit unsupervised.

Waste

- Have suitable arrangements been made for removal of on site waste?
- If skips are available on site is everyone aware of what can be placed in the skip?
- If waste is being transferred to the office ensure you complete an internal Waste Transfer Note?