Colin Jones (Rock Engineering) Ltd.
Units 11 & 11a Penamser Ind. Est.,
Porthmadog
Gwynedd
LL49 9NZ
☎ 01766 513332
🖷 01766 513339

Project Name: Morlais, Nefyn Beach

Client: Chris Blackham

Construction Phase Plan for;

Slope Stabilisation Measures, including Rock Netting, Soil Nails, Pre-cast Retaining Walls & Staircases, Asbestos Removal & Demolition of Existing property, new Drainage, Slab construction & General cart away.

Issue Record				
Issue No.	**Date:**	**Reason**	**Prepared by:**	**Authorised by:**
1	**15/02/2024**	**For Construction**	**RWO**	**DM**

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General Description

Undertake various works on site to prepare the plot to allow a new dwelling to be constructed (by others).

De-vegetation of the slope to allow the future slope stabilisation works to take place.

Installation of precast staircases down to the beach for the public footpath diversion, with retaining walls and sea wall construction.

Asbestos removal and demolition of the existing property.

Installation of additional retaining walls to the rear and slope stabilisation works to the slope.

Undertake drainage works and slab construction ready for the future contractor.

Works are to avoid existing watermain, BT and above ground Electricity to the rear of the property.

Colin Jones Rock Engineering Ltd to take on Principal Contractor role, working with the client supplied designers and employing various subcontractors and suppliers for the whole proposed works.

Brief Description and Sequence of Works

Undertake de-vegetation works to the slope that is to be stabilised.
Supply & Construct bases/ and anchored landings for the precast staircases to allow diversion of the Public Footpath to accommodate the new works to take place.
Asbestos removal and disconnection of site services
Demolition of existing property.
Undertake sheet piling scour protection to beach level.
Supply and install precast walls to beach level and sea wall construction to form new public footpath.
Supply and install soil nails and rock netting to slope.
Final installation of rear retaining wall
Possible installation of drainage and new slab construction (TBC)
Hand excavation in areas near water main, BT and electric cables and drainage systems.

Location of Works

The site is located at Morlais, Nefyn Beach

What3Words - https://w3w.co/discussed.dumps.cliff

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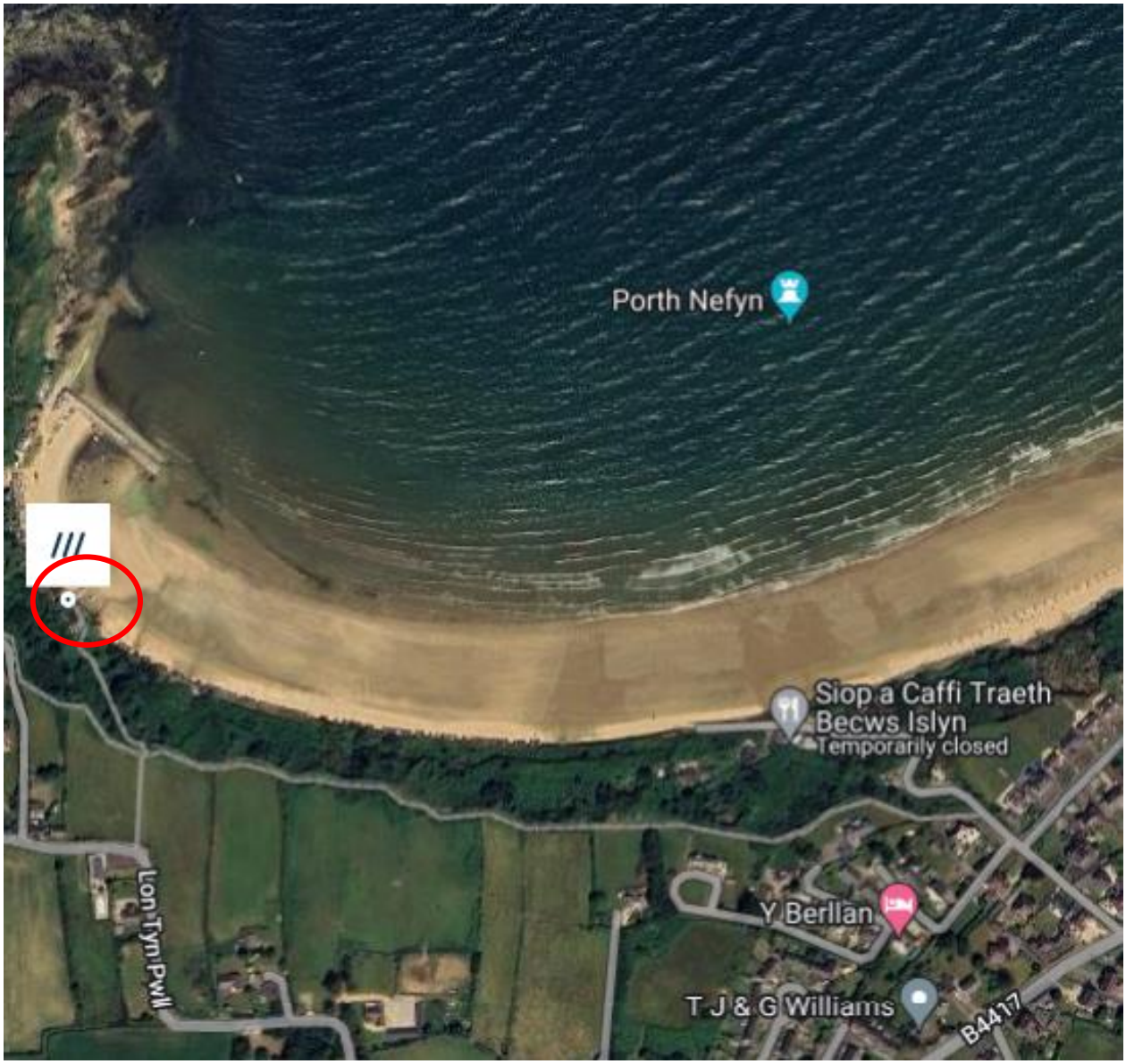

Access to Work Location:

Access and egress to the site will be from the B4417 through Nefyn, turning down towards the beach 'Lon Y Traeth' and follow the winding road down the slipway onto the Beach.
The property is the First on the Left as you proceed to the end of the Beach.

The site will be fully secured with perimeter fencing and the Public Footpath is being Diverted for the Main Works by CJRE and ready for the Newbuild by others.

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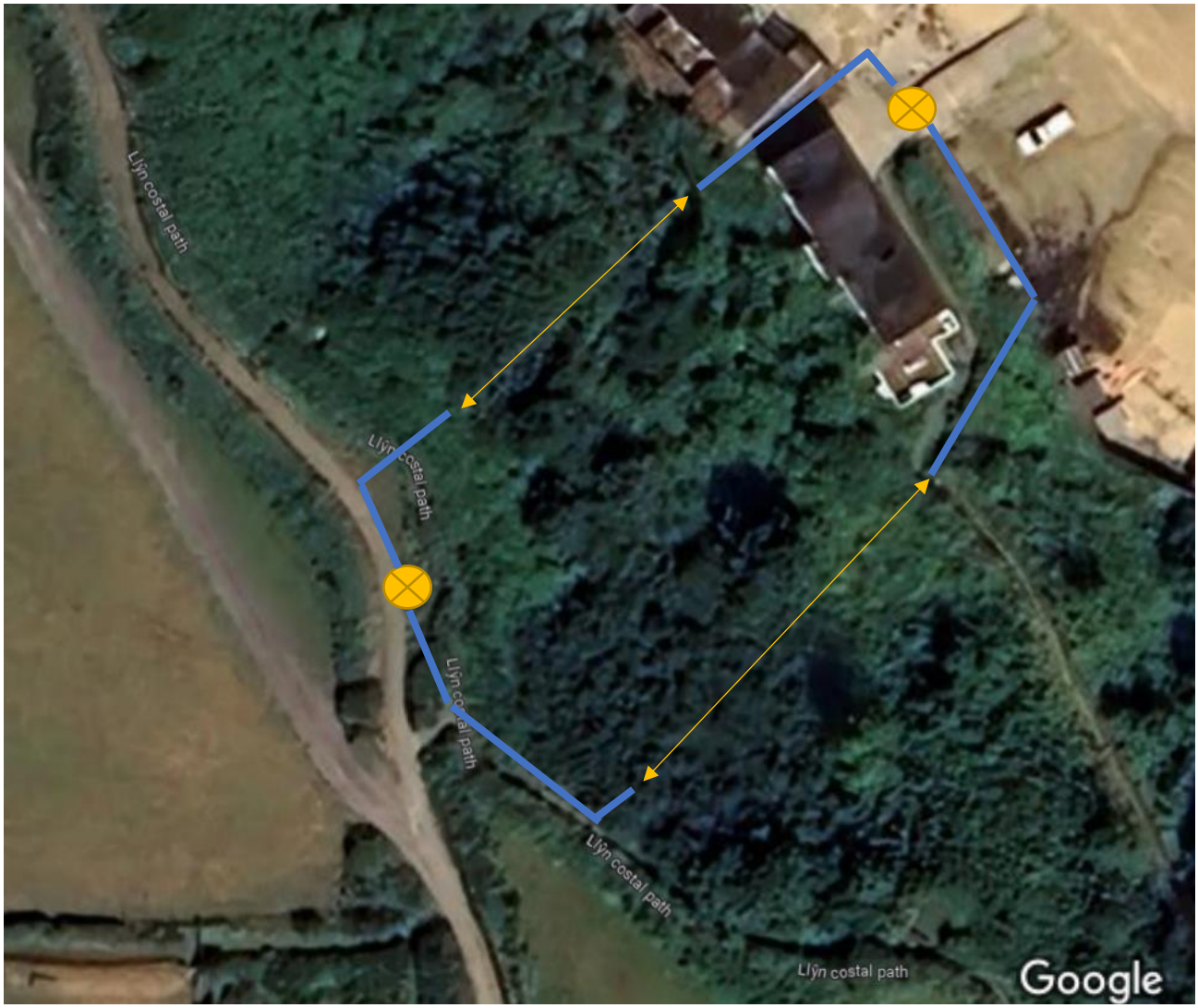
Traffic Management:

Site TM to be arranged by use of herrace fencing with a 6m access gate for site use only and maintained by Rock Engineering.
Client / Developer to arrange approval and agreements for which sections need to be closed for the duration of the project to allow works to be undertaken safely.
Site Traffic and Public Traffic will use alternative routes around other routes whilst we work on sections requiring the stabilisation and associated works.



Boundary Rope

Site Entrance gates

Site Herrace Fencing

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Principal Contractor: Colin Jones (Rock Engineering) Ltd
Units 11 & 11a, Penamser Ind. Estate,
Porthmadog, Gwynedd LL49 9NZ
T - 01766 513332
Richard Wyn Owen – General Manager
M – 07766 952606
e-mail – mail@rock-engineering.co.uk

Client Agent: Downs Merrifield Architects
The Studio
5 Cefn Coed Crescent
Cardiff
CF23 6AT Nic Downs
T - 02921 672672
www.downsmerrifield.com

Attendance / Responsibility from Client / Developer;

Pre-Construction Information - requested.

F10 Issued and laminated on site.

8m wide working area with the ground suitable for our 26tonne Merlo Roto 50:30 MCSS and 21tonne Excavator.

We allow in our revised tender for Site Herrace fencing / Pedestrian Barriers, Pedestrian Management.

Site Welfare provided by client in the existing building for De-vegetation works.
Site Welfare self-contained by CJRE for main works once property has been demolished.

Co-ordination with local public, residents and with Client design team, local authority and other regulatory bodies their consultants by Client's Agent.

All Cart Away to be removed immediately off site to registered tip. No storing of excavated material on site or on the beach under no circumstances.

Clear access for work vehicles, visiting deliveries for plant and materials, also heavy goods vehicles for general cart away.

All client deliveries and collection to be co-ordinated with CJRE site manager.

Key's to the property while un-occupied, pre demolition in the key box under the decking, code 1945.

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Start Date:
De-veg team 15th February 2024

Main contract Site Setup w/c 1st April 2024

Estimated Completion Date:
6-8 months

Site Hours:
8am to 4:30pm - Monday to Friday
*Restriction on noisy operations before 8am
No weekend working – due to neighbourly issues.
Bank holidays and Bank holiday weekends will not be worked.

Delivery & Storage:
All materials, plant and tools to be delivered to site, and stored, in either the site security lock up or company vehicles.
Large equipment and material can be laid on the secure concrete slab.

Design & Risk Register:
Refer to Developer's Designer's Documents.

Fuelling up of Machinery.
Only small volumes of fuel are to be kept on site at any one time. A daily supply of fuel, cans filled at our yard, will be brought to site. Spill kits to be available on site placed in all high-risk areas.

Management, Supervision & Labour:
General Manager, Project Co-ordinator: Richard Wyn Owen – SMSTS, NEBOSH
Contracts Manager: Darren Moore - SMSTS
Site Manager: James Oakes – SSSTS, CSCS,
Site Operatives: Gareth Williams, Aled Perry, Justin Williams,
Additional resources if required; Jack Jones, Carwyn Ephraim, James Lyon, Callum Snape, Cai Bullard

First Aid:
Site First Aiders: James Oakes, Aled Perry, Justin Williams, Carwyn Ephraim, Gareth Williams

Competence:
Only competent and qualified personnel will be allowed to work on this site, all personnel have current CSCS certification appropriate to the tasks. (See Appendix)
All works carried out in a safe manner, and to comply with relevant Health & Safety Regulations, and approved codes of practices.

Language:
All works carried out in a safe manner, and to comply with relevant Health & Safety Regulations, and approved codes of practices. The Contractor should ensure that the workforce have the ability

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to understand written and spoken English for health and safety purposes. In the case of workers who cannot communicate in the English language arrangements will be put in place during the induction and toolbox talks. It is important that a satisfactory level of understanding has been reached before they are allowed to proceed to site.

Welfare Facilities:
Site welfare facilities will be provided by the client and have been inspected and are very satisfactory for the purpose of our works.

Site Security:
Ensure that all plant and equipment are secured at the end of each shift and at weekends.
Most small tools and light materials will be stored in the Company vehicles whereas all larger plant and other materials stored on site in a locked container if required.
All rubbish and waste materials will be cleared off site and deposited at the designated area.
8m Minimum clearance zone for access and works.
Security Fencing and pedestrian barriers by Rock Engineering.

Plant and Equipment:
P.P.E.(General): See assessment below

Soil Nailing and Rock Netting:

8T excavator & 18-21T Long reach excavators
Merlo Roto 50:30
Dumper 9T
CID 80 Mast 1600mm stroke
MA 100 S ID hydraulic / pneumatic drifter rock drill
Hydraulic power pack
250 cfm Compressor
Pre-cast products from McCann
Concrete for foundations
Sheetpiles
Soil nails as Specification
Rock Netting
Terram and drainage pipes and fittings
Testing kit
Oil spill kit
Lubricator oil
Airlines with whip checks
Water bowser
Rope access kits
De-veg equipment
Grouting unit
4no x Grout cubes
Two Way Radios

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First Aid Kits
Lacing wire
Hooked anchors
Galv steel boundary rope
Ringing gun and rings
Disc cutter
Vans / Vehicles
Fuel cans for diesel/petrol
Cat Scanner
Hand digging tools

Grouting:
Grout Mixer (GS55) and Pump
Air Lance
Various hand tools for veg Removal & small trees
Chainsaw if required

Environmental

All works to comply with the environmental plan as set by Val Gateley, Director of Ecology
t. 01244 319019 Land Studio - valgateley@landstudio-uk.com

see;
Landscape Management Plan – Rev G – Dec 22
Precautionary Ecological Working Specification – P01 – Jan 24
Outline Construction Environmental Management Plan – 8/6/22
Cambrian Ecology Ltd - Ecology Report – 28th January 2022

Access to above;
https://cjrockengineering-my.sharepoint.com/:f:/g/personal/mail_rock-engineering_co_uk/Emr9sriF0JdEjPIz0ApCNKcBxwH2bfXMOr7smvmAs3q0tQ?e=I76KpM

All aspects of the works are to comply with CJRE Environmental Policy
No fires on site – it is illegal to burn any waste on site.
Keep the site tidy – do not drop litter – site waste to be put in the skip provided and disposed of properly.
Spill trays to be used with static plant.
Spill kit on site
All plant to be checked daily for leakages of fuel and oil.
Biodegradable oil used in plant
Do not contaminate watercourses.
On completion, site must be cleared and reinstated.

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Preparation:
Vegetation and tree cutting clearance on slope, Developer to arrange all approvals to carry out the works.

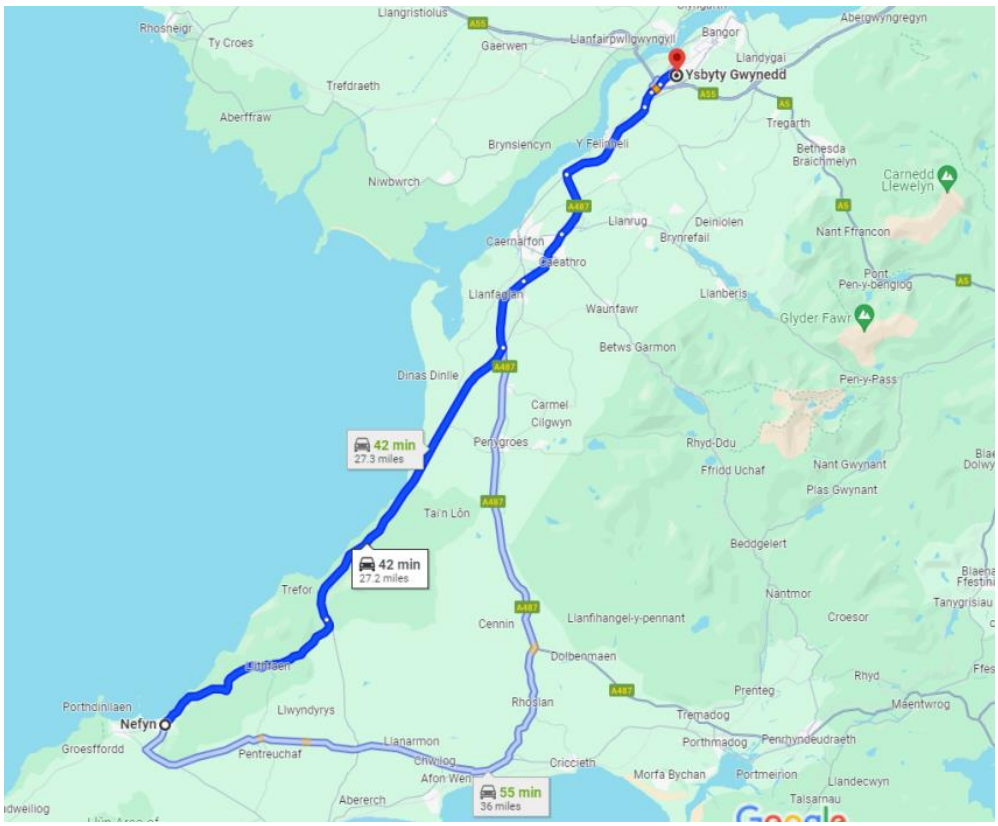
Environment:
All staff is reminded that they may be working within a protected site – SAC and SSSI.
Works will be restricted to authorised areas.
Environment Risk Assessment required for all materials used on site, Including the Lubricant oils and the grout.
Note below the procedure in remediating spillages.
All aspects of the works are to comply with CJRE Environmental Policy and Clients Obligations provided in the reports above.

Remediating Spillages:
In the event that lubricant oil, fuel or grout spillage is encountered, absorbent nappy pads used.
All work locations are within the site boundary as designated in the main contract. The soil nailing and netting on the slope and Gabion Basket areas may have rare species / wildlife. Developer to advice if work is to be ceased / arranged in different times or advise of any exclusion zones.

Appendix 1 Contacts List:

As current email chain

Directions to Local Hospital;



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Nearest A&E;
Ysbyty Gwynedd Bangor
Address: Penrhosgarnedd, Bangor LL57 2PW
Phone: 01248 384384
In an Emergency, please call 999

Local Police Station;
Heddlu / Police Station
Yr Ala, Pwllheli LL53 5BU
In an Emergency, please call 999
Non-emergency 101

Local Fire Service;
Pwllheli Fire Station
Cardiff Rd, Pwllheli LL53 5NF
In an Emergency, please call 999

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Site Name / Job Name: _____

Name: _____

Home Telephone No: _____

Company: _____ Trade: _____

Next Of Kin: _____

Telephone No: _____

Disability/ Diabetes/ Epilepsy/ Other: _____

On arrival to site I received Safety Induction on the following:

Reference	SUBJECT
1	**Emergency Procedures**
2	**Fire and Assembly Point**
3	**First Aid**
4	**Health & Safety Policy**
5	**Management & Employees Responsibilities for Health and Safety**
6	**Local Procedures and Site Rules**
7	**Communication Paths**
8	**Systems of Work/ Permits**
9	**Plant and equipment**
10	**Training**
11	**Accident Reporting Procedure and Recording**
12	**Drug, Alcohol and Smoking Rules**
13	**Health Surveillance**
14	**Welfare**
15	**Location of Statutory Notices**
16	**Personal Protective Equipment**
17	**Covid 19 Rules**

I understand that if found to be contravening any site rules, I may be requested to leave site, dismissed or suspended immediately.

Signature: _____ Date: _____

You will be required to attend any group or individual site safety talks that will be held during the length of the Contract, i.e. Group Site Safety meeting will be held to improve the safe working of the Contract. Individual meetings will be held to explain Method Statements where applicable. On attendance of any site safety meetings, you will be required to complete a Training Record. Remember YOU **are responsible for your own safety and the safety of others.**

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Site Rules:

General Site Safety

Read and adhere to all site notices and regulations

Do not enter any excavation, building, etc. Unless authorised by site supervisor / management.

Be aware of moving plant or vehicles.

Only use the correct tools and equipment for the job and ensure that they are in good order prior to using and are kept in a good condition.

Do not interfere or alter any mechanical or electrical plant or equipment.

Report and label any unsafe condition or defects in plant or equipment immediately.

COVID-19 RULES

Any Symptoms of Covid to be checked and tested, if positive please call the office before attending work.

All employees must follow the current government covid 19 guidelines outside of the workplace as well as in work.

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Method Statement

Site boundary
To be clearly marked out by the Setting out contractor, this will determine the de-veg area and the likely soil nail location.

Services
Service location plans all sourced by Client and a pack of the existing services issued to site for the Site Supervisor and clearly marked out on site.

Rock Engineering personnel to CAT scan areas before installing anchors. Previous records with Local buried Electric cable, services and drainage.

Hand excavation in and around location of buried services to mark out clearly and peg and tape the locations.

Vegetation Removal

Engineer to mark out the areas to receive treatment.
This work may involve the removal of small trees and shrubs / growth from the slope.
The vegetation removal will be carried out by ourselves using bow saws by rope access and also by foot where possible.
All vegetation removal to be carried out in accordance with the Ecology report and the Landscape Plan. All under the supervision of Land Studio

The system of work will be as follows:
Work will consist of two to three operatives and a safety person. The two operatives will be in on foot or rope access, the safety person to position themselves in the best advantageous place to monitor all aspects of the site.
The slope operatives will only work from the slopes with rope access will be attached by means of full fall arrest harness.
The operatives on the slope will cut away the vegetation and allow it to fall before collecting for chipping / disposal on the slope.
Vegetation to be cut no smaller than 300mm initially and the final cut to be under the supervision of the ecologist.

Asbestos Removal

There is a current report that identifies asbestos in the current property. This is not a Refurbishment and Demolition survey. We will carry out an R&D Survey in accordance with CDM Regulations. And quote initially for the current asbestos report and then any further identified samples will re-quote at a later date.

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The asbestos will be removed in isolation of the remainder of the works and y a specialist contractor that will provide their own welfare, scaffolding and remove the materials in accordance with the required waste management plan and regulations.

The specialist contractor will provide their own RAMS for the works.

Demolition

In isolation of all other works, a Specialist Demolition contractor will be employed to de-construct the existing building, the whole site will be fenced off with the new pedestrian walkway in place prior to the demolition commencing.

The specialist contractor will provide their own RAMS for the works.

All material will be segregated and recycled where possible and reused and or carted away to a suitable tip.

Reduced level dig / Excavation works

We will have a 13T long reach excavator on site to re-grade the existing slope back to the new line, ready for soil nailing to commence. It will be used as well for the lower soil nails as far as possible. The Long reach will also be present for the works to excavate, lay piling, concrete foundations and install the precast units and beach sea wall.

The machine and operator will be competent to undertake the works and have a banks-person in attendance. A 9T Dumper or Tractor and Trailer will be on standby to cart the subsoil from the on-site stockpiles for removal off site or re-use behind the retaining walls.

No Stockpiles to be left off site on the beach.

Concrete;

Due to location of works, All Concrete to be delivered to the carpark in Nefyn Beach and transported to site with a dumper. Dumpers to be large enough to half fill to avoid spillage onto the ramp / beach.
Alternatively, review the top access with a smaller wagon and pump down to area of works.

Retaining Walls.

Delivery of the Retaining wall panels, walls and staircases to be offloaded in the carpark on Nefyn Beach, and transported to place of work along the beach with a telehandler.

Site to mark out all services and comply with the statutory authority requirements included under a separate document in the site file.

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All excavation by excavator to be carried out once the CAT Scanner has been completed, all services marked out, and service plans are provided, and each service provider is contacted.

Install scour protection sheet piles to beach area in readiness for the new concrete foundation to support the precast seawall.

Excavate location to each retaining wall to reduced level dig and take material to stockpile in accordance with above.

Install timber shutter and mesh / steel reinforcement as per design. All site cutting of steelwork to comply with hot work permit system. And all correct PPE to be always worn.

Once in place, pour concrete into trench and form new foundation for the retaining wall.

Place new retaining sections in place following the lifting plan using the Merlo 50:30 or the onsite excavator. Drill through base and install dowel as specified.

Grout up retaining wall section in accordance with designers / manufacturers recommendations.

Repeat process for upper retaining wall areas, concrete the base and install the rebar as designed.

Transport to site the precast panels and place in the correct position and bolt/anchor down and grout up.

Services and Trenches.

Site to mark out all services and comply with the statutory authority requirements included under a separate document in the site file.
All excavation by excavator to be carried out once the CAT Scanner has been completed, all services marked out, and service plans are provided, and each service provider is contacted.

Excavate with excavator to each trench or duct for new / diverted services and take material to stockpile in accordance with above.

Once in close proximity to any services, hand dig in accordance with Service providers requirements with attendance if they deem required.

Rock Fall Netting

Fixing rock fall netting to the slope,
Including boundary wire rope, fixed to the slope with 1m long hooked anchors at the top and bottom of the netting.

Access to the work areas - rope access

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Competence. Only personnel trained in the use of rope access will be allowed to carry out this work.

The netting is measured and cut with hand held cutters, on the floor, then hauled by rope or lifted to the top of the slope with the excavator. From there it is temporarily staked to the ground and carefully rolled down the slope and rock face.

It will be rolled out as the face is re graded to the new level.

The netting strips are joined together by operatives from the rope access system, abseiling down and placing galvanised rings from a pneumatic ringing tool and fixed at 250mm intervals or 3no diamonds.
The top and bottom of the netting is fixed by 1m long galvanised hooked anchors, which are driven into the slope with a sledge hammer.

Top Fixings. 1m long x 25mm dia galvanised hooked anchors are driven into the slope using a sledge hammer

Intermediate Fixings: Are as described in the soil nail section

Bottom Fixings: 1m long x 25mm dia galvanised hooked anchors or 20mm galv solid bar if rock is encountered.

Galvanized steel wire rope cable will be placed along the top and bottom row of anchors. The wire rope is fixed to a turnbuckle (or rigging screw) using wire rope grips, at the extreme end of the top row of hooked anchors, then run out along the rest of the anchors and fixed to the last anchor using wire rope grips. The turnbuckle is then rotated and the wire rope tensioned. The same method is used for the bottom. The netting is then folded over the rope and anchors and ring tied down.

Drilling and installing 1m long solid galvanised bolts in place of sledge hammer driven hooked anchors
A compressor will be situated on the ground within the site boundary. Where possible the compressor is to be situated in an area where it will cause the minimum disruption to the local residents & general public.

The compressor will be our own or hired in from a reputable local hire company. Drip trays or similar will be placed under the compressor to minimise the risk of diesel and oil spillage.

Air lines complete with whip checks at the joints are run out to the rock drill. The drilling will be done via rope access.

The working procedure will be as follows: - Holes drilled with a Marini rock drill which is attached to the working basket of the Merlo. Hole diameters and inclinations agreed on site with the Engineer.

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Soil Nailing

All anchors will be marked out and agreed with the site engineer before work commences. Type of nails as directed by the Designer.
Drilling Equipment will consist of a pneumatic drifter rig mounted on a Long Reach Excavator driven by an employee of CJRE, and powered by a 250cfm compressor or by use of our Merlo Roto 50:30. The compressor will be situated on the ground with airlines running up the cutting to the workface, all airlines to have whip checks on all joints.

Once established on site, the Excavator/Merlo will be manoeuvred to the location of the first nails and set up for drilling.

A typical drilling gang will normally consist of three operatives namely:
The driller: - who will operate the controls from a fixed position in the working basket.
The second man: - who adds and removes the drill string/bar to assist the driller.
Driver: - who will manoeuvre the plant into position, assist the second man with materials etc., and control personnel within the working area.

With the rig set up at the drilling position, all geometry checked and agreed, the second man will place the drilling hardware, drill bit, bar and couplers on the drill, and apply thread grease to all the threads (bar and coupler) with a paint brush.

The Driller will feed the drilling rods down the mast until the bit is in contact with the slope, hydraulic rotation and slow forward feed is then introduced. When the drill no longer continues to feed into the slope the hammer is introduced. This determines the depth of the soft material, which is then recorded in the driller's logs.

This percussive rotary and air flush action continues into the hard material (or rock) to the required depth. Depth of different materials encountered are logged and recorded for each soil nail.

On completion of the drilling, the driller will lower the working basket to the ground and vacate the basket before the machine is moved / manoeuvred to the next location under his instruction. The process is then repeated for the subsequent soil nails.

Soil nails can also be installed using a 13 to 21T excavator positioned at the top of the slope with a feed beam attached for the pneumatic rock drill.
This is dependent on the loadings provided by Engineer to ensure there is no surcharge to the current stability of the slope.
The long reach machine could also work from the bottom on the old building slab and assist the Merlo.

The control panel for the rig will be situated on the top of the slope or the bottom depending on where the drilling equipment is used from, the compressor and power pack will be located in the same location. All airlines to have whip checks on all joints.

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The designer will determine the position where the machine can be situated on the top of the slope. A barrier and/or marking tape will be positioned to advise the operator how close it can be used to the crest of the slope.

The upper part of the slope can be undertaken using a DACHS sledge held by Tirfor winches to areas where we cannot access with a Long Reach Excavator / Merlo.

With all the kit in place and connected the installation of the soil nails will commence.
Each anchor location will be marked up and agreed with the engineer and the rig will be setup at each location to the correct angle of inclination. A length of bar with the specified bit will be loaded into the rig and presented to the face. The Bit/Bar can be positioned in between the 100 x 80mm apertures in the Maccaferri Netting. The rotation of the rig will be applied, slowly initially, to enter the bit into the ground after which full rotation and hammering will be applied to drive the nail into the ground. The hollow bar is driven using air flush. As the soil nail (hollow bar) gets driven additional lengths of bar with a coupler will be added to achieve the required depth. Drilling with Grout flush in an unstable slope and SSSI would be an option to avoid as it would cause excess grout loss onto the ground and the surrounding nature.

Once at depth, the rig will release the bar and will be moved to the next location where the process is repeated. The anchors will be grouted up in the mornings of a shift. This will reduce the risk of missing any grout escaping onto the slope through unseen voids in the underlying material.

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A visual inspection to be undertaken of the location where the Anchors have been installed and any significant damage (i.e more than 2 diamonds cut) to the netting we will patch a layer of 1m x 1m over the anchor position and crimp it every three sections as spec above.
Maccaferri have confirmed even if cut and left as a raw cut the netting would still achieve the design life expectancy as the galv coating of 280 microns within the additional polymer coating would not be detrimental to its integrity. In the right conditions this netting is guaranteed for 120 years. No Treatment required to cut ends of wire.
All works will be carried out in accordance with manufacturer's recommendations and guidance.

Grouting of Soil Nails
Grouting plant will be bought to site and set up on the ground. The grout mixer, pump, cement and water bowser will be located at strategic positions along the works. Initial setup point is to be at a point where the grout pump pipe can reach the furthest soil nail without being stretched or held on a tension.

After setting up has been completed the grout will be mixed at a ratio of 11.5 litres of water for every 25 kg bag of cement and allowed to mix for minimum of 3 minutes before discharging into the pump.
Whilst the first batch is being mixed all the soil nail holes are checked and flushed out as required. Any holes that require flushing will be done by air pressure only as water flush may effect the quality of the grout.

Run the first few litres of grout through the pump and delivery pipe and return to the mixer before the soil nails are grouted. This proves the flow and ensures that there is no excess water added to the grout from the pump.

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The delivery pipe is connected to the end of the soil nail with an adaptor and the delivery tap opened. The delivery is at pressure and the operator will monitor the hole for the returns. As soon as the hole has been filled, the grout delivery is halted and the grout in the pump is allowed to circulate around the pump to prevent segregation or setting.

The process is repeated for all the remaining soil nails.

During the grout batching a minimum of four grout samples are taken for sampling and strength testing. This can be at anytime during the batch or as directed by the site engineer.

When all nails in the batch have been grouted all equipment will be thoroughly cleaned and removed from site for soil nailing woks to continue. All washing water will be collected in a suitable container to allow for proper disposal.

Pull Testing

Pull Testing /Loading Soil Nails
For this contract a maximum of 5% of the installed soil nails will be tested and all nails are to be loaded to 10kN. The nails to be tested and the format of the testing are to be agreed wit the site engineer in advance. Pending the Geotechnical Engineer's advice or instruction. See testing schedule sheets below.

Testing
The equipment to be used for the testing include: -
300kN stressing jack, complete with calibration certificate and conversion chart.
Hydraulic hand pump complete with 4m long hoses with quick release fittings.
Articulating stool and reaction plate to suit the situation.

Method
Access preferably by Merlo or rope access. The reaction plate will be placed over the protruding section of the soil nail ensuring that there are no large voids underneath it. Any voids or uneven areas are to be levelled before testing commences.
A coupler is screwed onto the end of the soil nail, and an extension piece added to extend the nail through the articulating stool and the stressing jack to lock the whole assembly for testing.
The articulating stool is lowered over the extension and the jack follows. The locking of all units is then achieved by attaching a washer and nut to the end of the soil nail.
Once everything is secure the testing will commence.
The operator calculates the incremental loads from the conversion chart and compiles the testing record sheet. The engineer will agree all details before testing commences.
The operator will test each soil nail in turn and allow sufficient time for the logging of results.
Soil nails will be loaded up in the specified increments and all measurements recorded and agreed with the engineer. Once the specified load has been reached, the sequence of loading will be reversed. As previously all measurements will be recorded and agreed with the engineer.
All equipment will be dismantled and moved to the next location.
The soil nail will then be stressed to the required load and locked off to secure.

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Loading of Soil Nails

To comply with engineers requirements. It is assumed that loads can applied with a spanner.

Photo 1 Typical setup for testing (Reaction plate, articulation stool and stressing jack)

Photo 2 Connecting to hand pump.

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Services,

See Service location Plan, also please locate all services and clearly mark out pre-commencement.

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Rope Access Checklist

Site Name/Location .....

Access to the top of the slope .....

Risks accessing top of slope .....

Anchor Points _____ Trees _____ Hooked Anchors _____ What Else? _____

Rope abrasion hazards .....

Sabotage by 3rd party risk .....

Hazards on face, including rope cutting risks .....

How many ropes are needed to access all the work (horizontally) .....

If one set of ropes are used, will we need to deviate the rope .....

What protective measures should be taken to prevent rope protectors cutting (horizontal & vertical movement) .....

Do we need to re-belay anywhere on the top or on the face Y/N .....

Warning signs above and below Y/N .....

Can the public access the top whilst work is being done off ropes Y/N .....

Do we need safety guy at the top Y/N .....

Do we need safety guy at the bottom Y/N .....

Two way radios Y/N .....

Do mobile phone work at the work place Y/N .....

All hand tools to be attached to lanyards Y/N makethis possible Y/N

Check nap sack sprayers for any leaks Y/N .....

Check nap sack sprayers for corrosive contaminants Y/N .....

Check that they operate efficiently Y/N .....

Highlight dangers of falling debris Y/N .....

Highlight any other relevant items with regard to working procedures and safe working practices

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ROPE ACCESS SITE RULES

PPE WORN AT ALL TIMES

THE TOP PERSON MUST BE ATTACHED TO A SAFETY ROPE IF HE/ SHE IS WITHIN 3 MTRS OF THE CREST, OR AS DIRECTED BY THE FOREMAN ON SITE.

MINIMUM OF TWO INDEPENDENT ANCHOR POINTS FOR EACH ROPE

MINIMUM OF TWO OPERATIVES TO WORK AT ANY ONE LOCATION

BUDDY CHECKS BEFORE WORK COMMENCES

USE ADEQUATE ROPE PROTECTION

TOOLBOX MEETINGS HELD DAILY

ALL TOOLS TO BE TIED TO LANYARDS

MINIMISE TRIPPING HAZARDS

CARRY A KNIFE

KEEP TOOLS & EQUIP. WELL AWAY FROM THE EDGE OF THE FACE

ESTABLISH GOOD COMMUNICATIONS

ALL HARD & SOFTWARE VISIBLY CHECKED DAILY

SIGN & GUARD SITE

KEEP HAZARDOUS MATERIALS AWAY FROM YOUR KIT

CLEAN KIT DAILY

DO NOT WORK DIRECTLY ABOVE OR BELOW ANYONE

POSITION SHUNT CORRECTLY

LOCK OFF WHEN WORKING

KEEP TWO POINTS OF ATTACHMENT AT ALL TIMES

GOOD LOGISTICS (getting the right things in the right place at the right time)
ESTABLISH EMERGENCY PROCEDURES
FIRST AID KIT PRESENT ON SITE

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Risk Assessments

CONTRACTORS RISK ASSESSMENT RATINGS MATRIX

Hazard Severity / Likelihood	1 Catastrophic	2 Major	3 Serious	4 Minor
A Almost Certain	1A	2A	3A	4A
B Very Likely	1B	2B	3B	4B
C Likely	1C	2C	3C	4C
D Unlikely	1D	2D	3D	4D
E Very Unlikely	1E	2E	3E	4E

Risk Index	Risk Factor
1A, 1B, 1C, 2A, 2B, 3A	**Very High**
1D, 2C, 2D, 3B, 3C	**High**
1E, 2E, 3D, 3E, 4A, 4B	**Medium**
4C, 4D, 4E	**Low**

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RISK ASSESSMENT LIKELIHOOD CLASSIFICATIONS

Almost Certain	**A**	An effect arising from a hazard that is almost certain to be encountered, based on judgment and experience, and where possible, supported by project or other incident statistics.
Very Likely	**B**	An effect arising from a hazard that is very likely to be encountered, based on judgment and experience, and where possible, supported by project or other incident statistics.
Likely	**C**	An effect arising from a hazard that is likely to be encountered, based on judgment and experience, and where possible, supported by project or other incident statistics.
Unlikely	**D**	An effect arising from a hazard that is unlikely to be encountered, based on judgment and experience, and where possible, supported by project or other incident statistics.
Very Unlikely	**E**	An effect arising from a hazard that is very unlikely to be encountered, based on judgment and experience, and where possible, supported by project or other incident statistics.

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RISK ASSESSMENT HAZARD SEVERITY CLASSIFICATIONS		
Catastrophic	**1**	Multiple loss of life from injury or occupational disease, immediate or delayed. Damage to works or plant causing delays for greater than 7 days
Major	**2**	Single loss of life from injury or occupational disease, immediate or delayed Damage to works or plant causing delays between 1 and 7 days
Serious	**3**	RIDDOR reportable injury, disease or dangerous occurance Damage to works or plant causing delays up to 1 day.
Minor	**4**	Minor injury. No lost time or person involved, returns to work during the shift after treatment Damage to works or plant does not cause significant delays.

Activity / Location:	General Activities					
Identification of Hazard	**Consequence**	**Severity**	**Likelihood**	**Risk Factor**	**Control Measures**	**Residual Risk**
Persons Struck By Moving Vehicles	Personal Injury	2	A	Very high	Operatives to remain within the working zone when on foot. Adequate signing Traffic management (fenced / barriered off) whenever vehicles are parked to load and unload. Road to be closed to vehicles.	4D Low
Exposure to extreme environments	Personal Injuries / Health Hazard	3	C	Medium	Suitable adequate clothing to be used at all times Safety helmets or bump caps to be worn at all times Supervision by competent person at all times. Monitor weather conditions.	4D Low
Manual Handling	Personal Injuries	2	C	High	Ensure a reasonably level area for operatives to stand Assess weight of unit prior to lifting Safe means of access and egress Safe operating procedures – avoid long periods of curved back	4D Low
Recommendations					OVERALL ASSESSMENT ACCEPTABLE	Yes
Assessment carried out by: R W Owen			Date: 19/2/24			

Activity / Location:						
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Operating CP 9 Jack Hammer / rotation drill to remove mortar and masonry	Personal Injuries / Health	3	A	Very High	Safe operating procedure regulations apply Qualified / Competent Operatives Scan area for buried services. Correct PPE –Ear Defenders, gloves, goggles, steel toecaps. Regular health checks – Effects of Noise, Vibration and other operating hazards to be adhered to. HAVS Records. Tool box talks Disposal of debris in the co skip.	4C Low
Compressed Air Tools	Personal Injuries	2	C	High	Identify a reasonably level area for plant Adequate material storage area Safe means of access and egress to plant Whip checks on all airline joints Report any defects in plant or associated equipment.	4D Low

Anchor stressing	Personal injury from tendon failure. hydraulic hose burst	3	C	High	Experienced operative to supervise works. Tool box talks Do not stand directly behind the anchor whilst it is being pulled/ stressed or check lifted. Stressing in progress signs in place to warn others. Visual inspection of all components. Check for wear in hoses. Tighten all joints. Calibration of equip. wear PPE. Keep onlookers well away.	Low 4 D
Activity / Location:	*Working at Height ON SCAFFOLDING OR MERLO WITH PERSONEL PLATFORM*					
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Working on Scaffolding / Access platform	Personal Injuries	2	B	Very High	Ensure platform/scaffolding has been passed for use. Do not alter any component / section Any changes/alterations to be made by scaffolding sub-contractor. Or Merlo Roto 40-30 registered user. Keep platform clean, tidy and free from debris. Use of harnesses where practical.	3D Medium
Working at height with Underbridge machine	Personal injury/ falling objects	2	B	Very high	Trained operator tool box talks	2D High

					All Rock Engineering personnel to receive safety briefing by operator.	
Working at Height General	Personal Injuries/ Falling Objects	2	B	Very High	All hand tools to be attached to lanyards. Ensure good working / standing area Use of support line / harnesses where possible. Assess access and egress beforehand.	2D High
Falling from heights	Personal Injuries	2	B	Very High	Qualified / Competent Operatives Manual handling training to all operatives Suitability of plant Wearing of appropriate PPE Wearing of harnesses Attach lanyards to all tools Tool box talks	2D High
Hand Tools Safety / Falling Objects	Personal Injuries	2	B	Very High	All hand tools to be attached to lanyard at all times. Tools to be lowered as required for each operation. Appropriate PPE to be worn – helmets.	4D Low

Covid-19 infection	Health hazard	2	C	High	Appropriate PPE – gloves Keep 2 m physical distance- rig ropes 3 m apart	4D Low
Covid-19 cross contamination	Health hazard	2	C	High	Regularly wash/sanitise hands and gloves Assign tasks and tools to individuals e.g. ropes and harnesses	4D Low
Activity / Location:	*Working in SSSI, Woodland Areas or private land*					
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Concrete Works	Personal injury	4	B	medium	Observe manufacturers warnings COSHH Assessment Washing facilities on site Trained First Aider on site Read safety date sheet for grease Wear appropriate PPE- cover all exposed skin, wear gloves, safety eye wear.	4E low
Slips, Trips and Falls – Uneven ground	Personal Injury	3	B	High	Wear appropriate footwear – good grip and ankle support. Inspect ground surface where access is required – find alternative route if possible. Beware of protruding objects.	4D Low

Falling Rocks from masonry	Personal Injury	3	C	High	Monitor wall regularly, especially in inclement weather. Agree on alarm system for emergencies Agree on a warning system – verbal or mechanical	4C Low
Wildlife	Personal Injury/ Transmission of disease	2	B	Very High	Avoid contact / confrontation with wild animals' e.g. goats, deer, etc. Reduce contact with domestic animals e.g. dogs, cats etc Seek immediate medical advice if bitten.	4C Low
Fatigue	Personal Injury	2	A	Very High	Take regular breaks from long operations Job rotation Monitor working hours / shifts	4c Low
Lone Working	Personal Injury	2	A	Very High	No lone working will be permitted on this contract	4E Low

Activity / Location:	*Working with Materials*					
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Cementitious Products	Health	2	B	Very High	Observe manufacturers warnings COSHH Assessment Washing facilities on site Appropriate PPE Trained First Aider on site	3D medium
Use of cutting equipment (Abrasive wheels etc.)	Personal Injuries	2	C	High	Selection of suitable safe area for cutting Create platform if needed Use competent/qualified operatives Adequate provisions for access to plant Observe abrasive wheels regulations HAVS RECORDS and tool box talks	4C Low

Activity / Location:	*Vegetation removal if required.*					
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Unauthorised Access	Personal Injury	2	B	Very High	Signs to restrict access and forewarn of hazards at each and every access point. Advance warning signs to be posted at possible diversion points. Tool box talks	4D Low
Site Visitors	Personal Injury	2	B	Very High	Induction to be given to all visitors to site. Restrict access if not wearing appropriate footwear. Issue appropriate PPE if required All visitors to be escorted through the site Tool box talks	4D Low
Herbicide treatment using Eco Plugs	Personal injury	3	C	High	Observe manufacturers warnings COSHH Assessment Washing facilities on site Trained First Aider on site Read safety date sheet for eco plugs	4 E

					Wear appropriate PPE- cover all exposed skin, wear gloves , respiratory masks, safety eye wear	
Access and Egress	Personal injury	4	B	Medium	Plan access and egress route in advance. Clear any shrub, brash along egress route including protruding branches Wear appropriate protective footwear	4E Low
Activity / Location:	**Working at height by Rope Access**					
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Working at height Rope Access	Personal Injuries	2	B	Very High	Qualified personnel (eg IRATA trained) to be assigned the task Supervision by competent person at all times. Safe and secure anchor point. If vehicles used as an anchor point, keys removed from vehicle. Rope access assessment prior to start of work Restrict access to unauthorized persons Tool box talk on Rescue methods	2D High

Exposure to extreme environments	Personal Injuries / Health Hazard	3	C	High	Suitable adequate clothing to be used at all times Safety helmets to be worn at all times. Supervision by competent person at all times. Monitor weather conditions.	4D Low
Dust /Risings	Health Hazard	2	B	Very High	Appropriate PPE – Eye protection, Dust Masks, Ear defenders and Gloves. Monitor weather conditions – Wind speed and direction.	3C High
Loading / Unloading Plant	Personal Injuries	2	C	High	Safe operating procedure regulations apply Qualified / Competent Operatives Certificated lifting equipment Experienced banksman Safe means of access and egress	4D Low
Location of working area	Personal Injuries	2	C	High	Ensure adequate working zone Safe means of access and egress	4D Low
Recommendations					OVERALL ASSESSMENT ACCEPTABLE	Yes
Assessment carried out by: R W Owen			Date: 19/2/24			

Activity / Location:	**Excavation by Mechanical Plant**					
Identification of Hazard	Consequence	Severity	Likelihood	Risk Factor	Control Measures	Residual Risk
Loading / Unloading Plant	Personal Injuries	2	C	High	Safe operating procedure regulations apply Qualified / Competent Operatives Certificated lifting equipment Experienced banksman Safe means of access and egress	4D Low
Location of working area	Personal Injuries	2	C	High	Identify a reasonably level area for excavator Ensure adequate working zone Safe means of access and egress	4D Low
Operating Excavating Plant	Personal Injuries	2	B	Very High	Observe Plant Manufacturers operating manual Qualified / Competent Operatives Regular health checks – Effects of Noise, Vibration and other operating hazards	4D Low
Overturning/ Sloughing	Damage to machinery/ Personal Injury	2	B	Very High	Experienced operators only. Experienced banksman to assist operator Excavated track to be a minimum of 1.8 metres wide to accommodate plant.	4C Low
Damage to existing services	Personal Injuries	1	B	Very High	Follow guidance of service providers, request site attendance by specialist service providor. Seek a copy of all up to date service record drawings, mark out all services prior to commencement. Hand dig in the area where the service is located to expose. Support and protect the existing service, continue with excavator when area is clear from the exiting service.	2D High
Recommendations					OVERALL ASSESSMENT ACCEPTABLE	Yes
Assessment carried out by: R W Owen			Date: 19/2/24			

COSHH ASSESSMENT RECORD

Contract: Morlais, Nefyn

Risk Category: M

Substance: Grout

Date: 19/02/2024

DETAILS OF WORK ACTIVITY:

Grouting hollow bar soil nails / Grout or Concrete works to insitu padstones

HAZARDS / RISKS IDENTIFIED

Skin irritant

Eye contact

Environmental damage

Inhalation from cement dust

CONTROL MEASURES

PPE – Coveralls, rubber gloves,

PPE- Suitable eye protective wear

Protect risk areas with visqueen, plywood etc. protect watercourses & environment from likely spillage.

PPE- Wear face fit dust mask

EMERGENCY PROCEDURES

Wash the affected area thoroughly with soap and water. If irritation, pain, or other skin troubles occurs, seek medical advice. Contaminated clothes removed and washed

Speedy response is essential. Wash eyes immediately with plenty of clean water for at l; east 15mins and seek medical attention.

Contamination of the environment or any watercourse should be reported immediately to the authorities. Clean up any concrete spillage and dispose of in the on-site skip. Use lots of water to wash affected areas.

HEALTH SURVEILANCE REQUIRED

Skin / eye irritation seek medical help

Any Respiratory problems seek medical advice immediately

PPE:

Please refer to enclosed PPE Assessment Form

Activity:- **Installing soil nails, Netting, Pressure Pointing and Grouting**

Assessment Carried out by: **Richard Wyn Owen**

Personal Protective Equipment to be worn will be: **Helmets, Goggles, Ear Defenders, Gloves, Disposable Gloves, Safety Shoes, High Visibility**

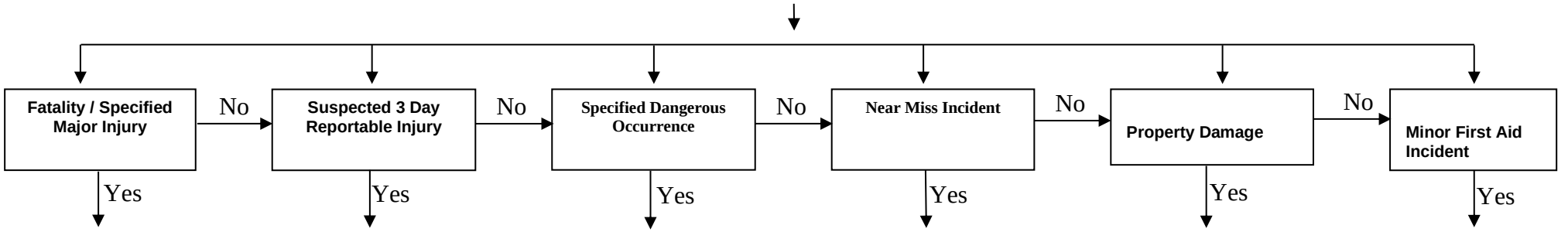
Clothing to BSEN 471

			RISKS																				
			The PPE at Work Regulations apply except where the Construction (Head Protection) Regulations 1989										The CLW, IRR, CAW, COSHH and NAW[1] will each apply to the appropriate hazard										
			Mechanical					Therma															
			Falls from height	Blows, cuts, impact, crushing	Stabs, cuts, grazes	Vibration	Slipping, falling over	Scalds, heat, fire	Cold	Immersion	Non-ionising radiation	Electrical	Noise	Ionising Radiation	Dust fibre	Fume	Vapours	Splashes, spurts	Gases, vapours	Harmful bacteria	Harmful viruses	Fungi	Non-microbiological antigens
Parts of the Body	Head	Cranium																					
		Ears											✓										
		Eyes													✓								
		Respiratory tract													✓	✓	✓						
		Face																					
		Whole head																					
	Upper Limbs	Hands			✓	✓																	
		Arms (parts)			✓	✓																	
	Lower Limbs	Foot																					
		Legs (parts)																					
	Various	Skin																					
		Trunk Abdomen																					
		Whole body	✓				✓		✓														

[1] The Control of Lead at Work Regulations, The Ionising Radiation Regulations, The Control of Asbestos at Work Regulations, The Control of Substances Hazardous to Health Regulations and the Noise at Work Regulations.

Emergency Procedures

ACCIDENT REPORTING PROCEDURE



1. Site Agent to make safe area & suspend works.
2. Site First Aider to administer first aid (if applicable).
3. Site Agent to inform Contracts Manager immediately.
4. Contracts Manager to Inform Managing Director immediately
5. Site Agent to inform police immediately if fatality.
6. Contracts Manager to inform HSE immediately
7. Site Agent Record accident in site accident book
8. Copy of report in Safety Plan
9. Copy of report sent to Contracts Manager
10. Contracts Manager to investigate occurrence

1. Site First Aider to administer treatment.
2. Site Agent to inform Contracts Manager immediately.
3. Contracts Manager to Inform Managing Director immediately
4. Record accident in site accident book
5. Copy of report in Safety Plan
6. Copy of report sent to Contracts Manager
7. Inform Contracts Manager if injury causes absence for 3 days
8. Contracts Manager to investigate occurrence
9. Contracts Manager to report occurrence to HSE within 10 days.

1. Site Agent to make safe area & suspend works.
3. Site Agent to inform Contracts Manager immediately.
4. Contracts Manager to Inform Managing Director immediately
3. Record accident in site accident book
4. Copy of report in Safety Plan
5. Copy of report sent to Contracts Manager
6. Contracts Manager to investigate occurrence
7. Contracts Manager to report occurrence to HSE within 10 days.

1. Incident reported to site Agent / Foreman
2. Record accident in safety concern form.
3. Copy of report in Safety Plan
4. Copy or report sent to Contracts Manager
5. Site agent to investigate if serious injury could have resulted.

1. Damage reported to site agent
2. Record accident in site accident book.
3. Report verbally to Managing Director immediately
4. Accident investigation report by Site Agent within 48 hrs.
5. Copy of investigation & accident report to Contracts Manager & Managing Director

1. Site First Aider to administer treatment.
2. Record accident in site accident book
3. Copy of report in Safety Plan
4. Copy or report sent to Contracts Manager

In addition to the above, all operatives are to observe Main Contractor's emergency procedures initially.

Materials Specification and Data Sheets:

https://cjrockengineering-my.sharepoint.com/:b:/g/personal/mail_rock-engineering_co_uk/EbcoI3vZMpBMnom9wSiOj8AByghrSdCg_xh68tc9gkFeiw?e=NOQ1UK

Hanson Cement

Material Safety Data Sheet – Common Cements

According to Regulation (EC) No 1907/2006 (REACH)

Hanson HEIDELBERGCEMENT Group

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Products EN 197-1 Common cements and mixtures containing them	
Trade Names	
Bulk Cements	Packed Cements
Hanson Portland Cement Hanson Rapid Hardening Portland Cement Hanson Coarse Ground Portland Cement	Hanson Multicem Hanson General Purpose Cement Hanson +SR Hanson White Cement

The following are the substances in the cement that contribute to the classification of the mixture as regards acute toxicity, skin corrosion or serious eye damage, respiratory or skin sensitisation, specific target organ toxicity (STOT) or aspiration hazard

Substance	EINECS	CAS	Hazard
Portland cement clinker	266-043-4*	65997-15-1	Serious eye damage, Skin sensitisation and STOT SE
Flue dust from production of cement clinker**	270-659-9	68475-76-3	Serious eye damage, Skin sensitisation and STOT SE

* Entry is called Cement, Portland, Chemicals.
** May exist in some products. For the purposes of this SDS information assume this substance exists.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Cements are used in industrial installations to manufacture/formulate hydraulic binders for building and construction work, such as ready-mixed concrete, mortars, renders, grouts, plasters as well as precast concrete.

Common cements and cement containing mixtures (hydraulic binders) are used industrially, by professionals as well as by consumers in building and construction work, indoor and outdoor. The identified uses of cements and cement containing mixtures cover the dry products and the products in a wet suspension (paste).

Any uses not mentioned above, are advised against.

1.3 Details of the supplier of the safety data sheet

Hanson Cement Ltd
Ketton
Stamford
Lincolnshire
PE9 3SX

Hanson Cement Customer Services
Tel: 0330 123 2074
e-mail: cement.customer.services@hanson.biz

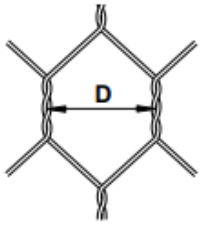
1.4 Emergency telephone number

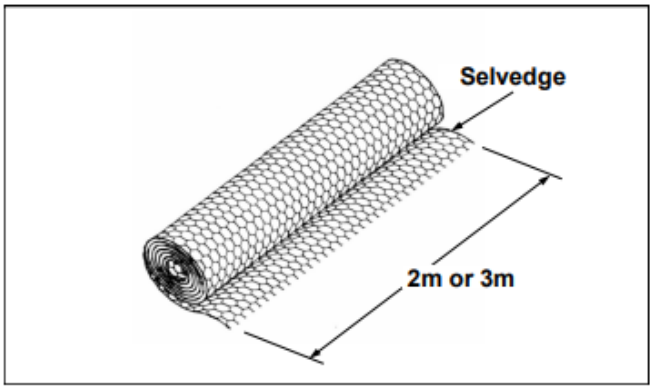
Emergency telephone number: 0330 123 2074
Hours of operation: 08.45 – 17.00 (Monday-Thursday) 08.45 – 16.00 (Friday)

MACCAFERRI

TECHNICAL DATA SHEET
UK / TDS / RN / PZ827 / Rev: 03, September 15

ROCKFALL NETTING
PVC ZINC GALVANISED 8 / 2.7

SPECIFICATIONS		
PROPERTIES		
Type	Double twist hexagonal woven steel wire mesh	 D = 80mm (nominal)
Mesh Type	8 x 10	
Mesh Wire	2.7 mm diameter (BS EN 10218-2 & BS EN 10223-3)	
Selvedge Wire	3.4 mm diameter (BS EN 10218-2 & BS EN 10223-3)	
Corrosion Protection	Zinc galvanised coated to BS EN 10244-2 Class A (245 g/m^2) with an extruded grey PVC coating of mean wall thickness 0.5mm	
Roll Size / Weight	2m x 25m (Roll Weight = 84 kg (Nominal)) 3m x 25m (Roll Weight = 126 kg (Nominal))	
Jointing	All joints and connections shall be formed with high tensile 3 mm diameter stainless steel 'C' rings.	
BBA Approval	Maccaferri PVC coated hexagonal wire mesh is BBA certified for up to 120 years design life. Agreement Certificate No. 95/3141	
Tensile Test Strength (cert. no. ETA 13/0524)	55 kN/m (>1mx1m sample in accordance with harmonized European Standard UNI 11347:2012)	
Tensile Elongation	22 % (>1mx1m sample in accordance with harmonized European Standard UNI 11347:2012)	
Punching Test Strength (cert. no. ETA 13/0524)	70 kN (3mx3m sample in accordance with harmonized European Standard UNI 11347:2012)	
Punching Displacement	514 mm (3mx3m sample in accordance with harmonized European Standard UNI 11347:2012)	



Maccaferri reserves the right to alter product specifications without notice. Please contact us for the most up to date specifications.

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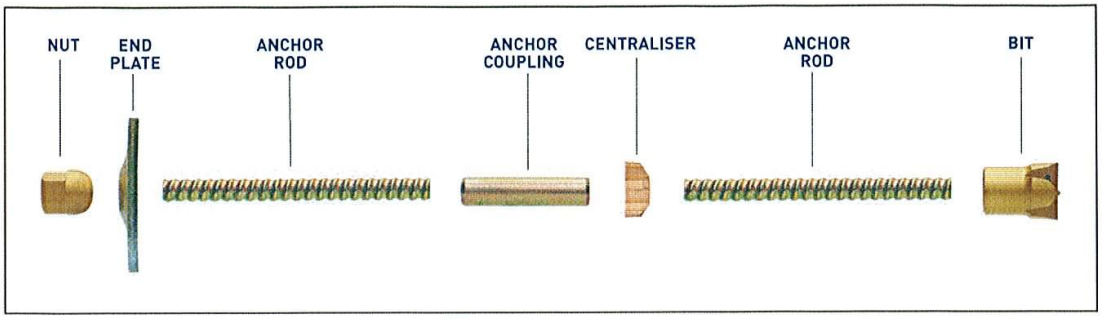
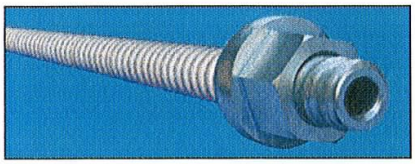
Oxford, Perth, Belfast

The Self-Drilling Steel Anchor System



The Weldgrip Self-Drilling Steel Anchor System is designed for Soil Nailing, Ground Anchors and Micro-Piling applications, including slope and cliff face reinforcement. It provides the optimal solution for use in difficult ground and rock conditions.



Threaded Tube Part Numbers

	1 meter long	2 meters long	3 meters long	4 meters long	6 meters long
R25	63R25/1.0	63R25/2.0	63R25/3.0	63R25/4.0	63R25/6.0
R32	63R32/1.0	63R32/2.0	63R32/3.0	63R32/4.0	63R32/6.0
R38	63R38/1.0	63R38/2.0	63R38/3.0	63R38/4.0	63R38/6.0
R51	63R51/1.0	63R51/2.0	63R51/3.0	63R51/4.0	63R51/6.0

Domed Nuts

	Ultimate Tensile	Spanner Size	Length mm	Weight Kg	Part Number
R25	197 kN	41A.F.	55	0.47	63R25NUT
R32	294 kN	46A.F.	55	0.59	63R32NUT
R38	500 kN	50A.F.	50	0.42	63R38NUT
R51	690 kN	75A.F.	75	2.1	63R51NUT

Coupling Sleeve

	Ultimate Tensile	Outside Dia. mm	Length mm	Weight Kg	Part Number
R25	>208 kN	36	150	0.72	63R25COUPLING
R32	>308 kN	42	160	0.89	63R32COUPLING
R38	>500 kN	50	220	1.70	63R38COUPLING
R51	>690 kN	64	200	2.0	63R51COUPLING

Steel End Plates

Size mm	Weight Kg	Part Number
150 x 150 x 8	1.4	63STL150X8
150 x 150 x 10	1.7	63STL150X10
200 x 200 x 8	2.5	63STL200X8
200 x 200 x 10	3.1	63STL200X10
200 x 200 x 12	3.7	63STL200X12
300 x 300 x 8	5.6	63STL300X8
300 x 300 x 10	7.0	63STL300X10
300 x 300 x 12	8.4	63STL300X12

Other sizes made to customer requirements.

Designers Schedule of works;

See designers documents.