

OUTLINE METHOD STATEMENT FOR

**WORKS TO CARRY OUT REPAIRS TO REINFORCE THE RETAINING
BOUNDARY SEA WALL BETWEEN THE PROPERTY KNOWN AS
'CERRIG' & MENAI STRAITS, LLEINIOG, Nr LLANGOED, ANGLESEY,
NORTH WALES LL58 8RN.**

Document Ref :
OBR/HOD/CERR/WALL-06/19 Rev 0

Client :
Mr & Mrs Alan & Adele Hodari, Cerrig, Lleiniog, Llangoed, Anglesey. LL58 8RN

Mobile Tel Contact :
07767 832132

E-mail :
alan@hodari.co.uk or adele@hodari.co.uk

This document has been produced upon the request of our Clients, Mr and Mrs. Hodari who are the owners of the property known as, “Cerrig”. Cerrig was originally a 1920-30’s property which was in a poor state of dilapidation and therefore demolished to be replaced with a new modern modular composite steel and block construction property which was constructed and completed in early 2018.

The property is easily accessible from the public highway and sits at road level which is approximately 7.5 – 8.0 metres higher than mean high water level of the Menai Straits. The property boundary to the East currently consists of a retaining random rubble stone wall structure apparently constructed on a concrete foundation or plinth which has been undermined by various storms over the years but in particular during the last storm of November 2017.

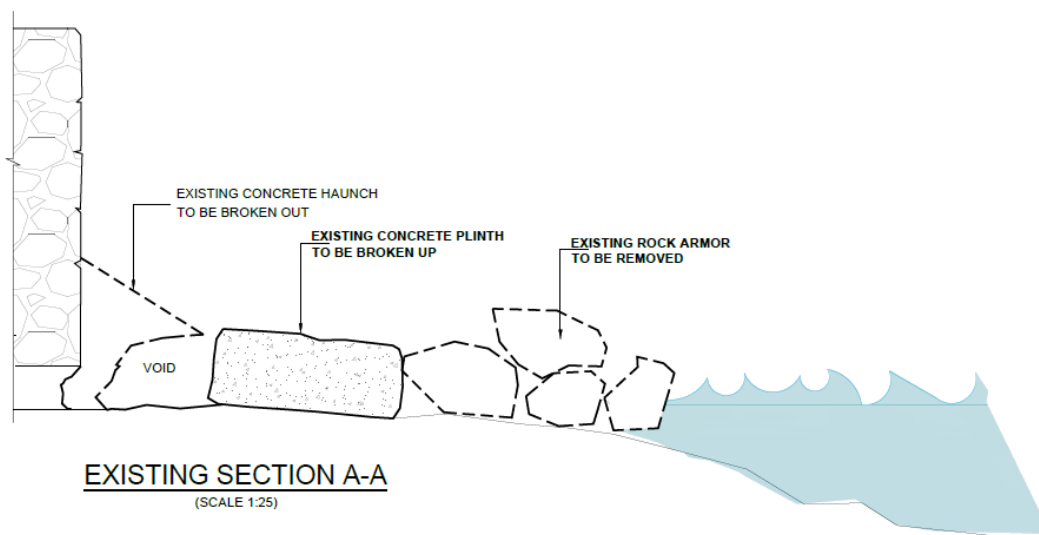
The location plan below illustrates the section of sea wall under consideration. It is sited with a designated Special Area of Conservation (SAC) which encompasses an area of just over 26,500 hectares and includes the Straits and out East to the Bay of Conwy. Immediately to the South East of the property is Lafan Sands. The intertidal **mudflats and sandflats** of the Menai Strait and Conwy Bay on this north Wales coast include Traeth Lafan, the shores of the Menai Strait, and the Foryd estuary. Traeth Lafan is an example of an almost fully marine extensive mud and sandflat that experiences a broad range of wave exposure, providing a range of sediment types with typical associated communities. For example, the shrimps *Haustorius arenarius* and *Bathyporeia sarsi* are found in mobile clean sand, whilst bivalves such as the cockle *Cerastoderma edule*, the gaper *Mya arenaria* and Baltic tellin *Macoma balthica* are common in more sheltered fine and muddy sand. The sand-mason worm *Janice conchilega* is found in more tide-swept areas. The mixed sediment shores between Beaumaris and Lleiniog are highly productive shores that are rich in animal and plant species. These shores include a nationally important biotope that is rare in the UK. The nationally scarce dwarf eelgrass *Zostera noltei* is also found at this site.



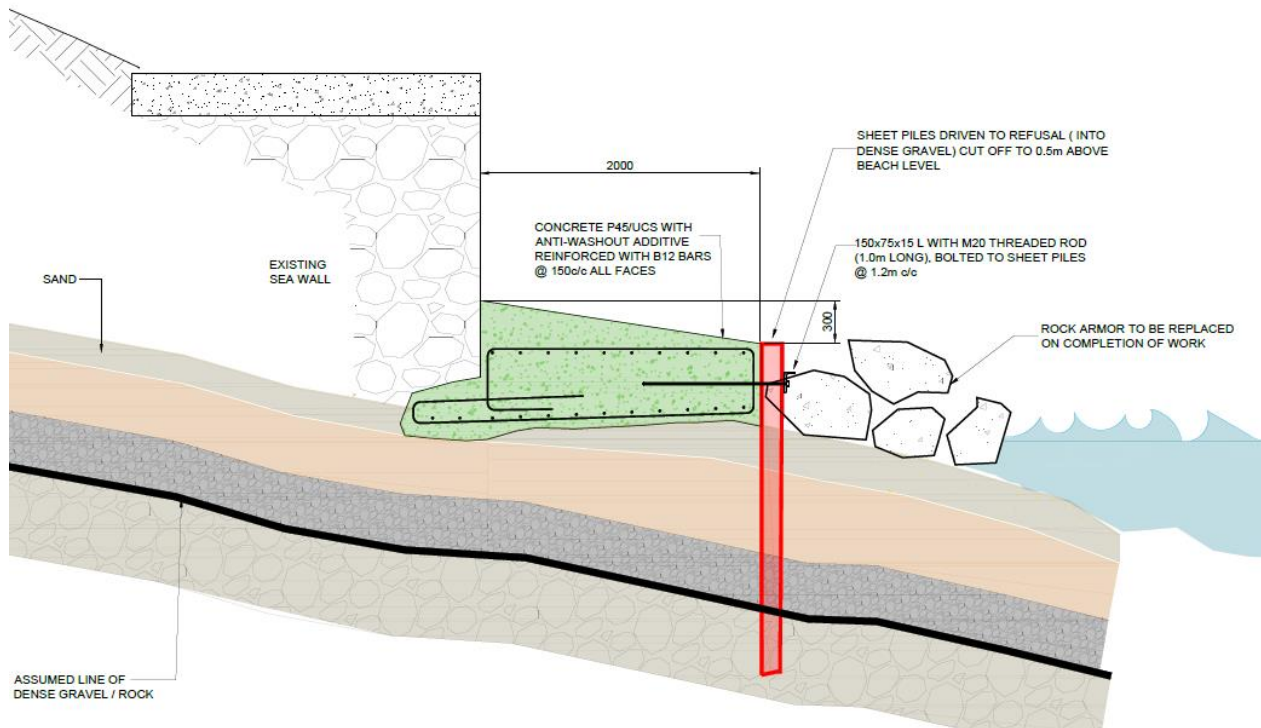
The Section highlighted in **RED** measures approximately 46 linear metres and although some sections of the structure have deteriorated at a worse rate than others, it is the consensus and recommendation of Thomasons Consulting Engineers to address the entire length and perhaps continue the section in a Southerly direction to cover the Client's entire frontage which extends down to the boundary of the next parcel of green land to the South of property, if any repair and reinforcing works are to be undertaken.

As the works are therefore to be undertaken on the shores of the Menai Straits within this SAC a Marine License Permit / License is required in accordance to The Marine and Coastal Access Act 2009. This Outline Method Statement details the Contractor's initial proposals of approaching the required works and describes the likely resources in terms of plant and machinery to be deployed to construct the permanent works both from beach level and from the upper ground level.

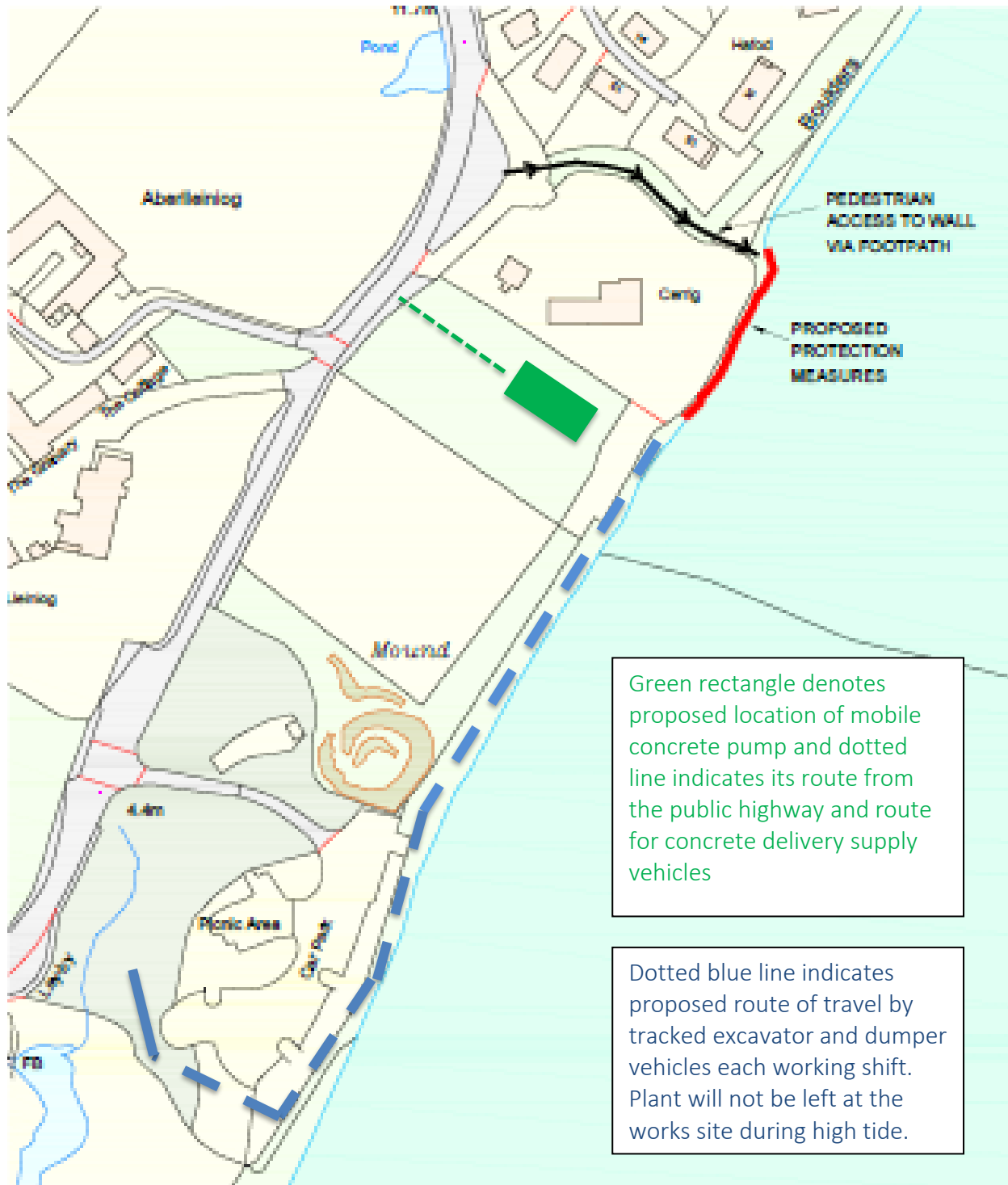
The cross-sectional diagram below illustrates the current situation and damage which has occurred over the years but in particular during the violent storms of Nov 2017. As is evident from the diagram, the structural foundation plinth or toe has been undermined and displaced from the wall above rendering the retaining structure without adequate support and stability in particular against lateral thrust from the retaining ground. What little rock armoring to the front of the toe provides little protection as the void left at the base of the wall allows penetration by wave action and progressive deterioration to the foundation which will result in eventual collapse.



It is therefore the intention to stabilize and reinforce the structure by infilling the void with imported concrete but reinforcing this mass concrete with steel reinforcement mesh and retaining the concrete using sacrificial sheet piles mechanically driven into refusal and retaining approx. 500mm above ground thus forming a new reinforced concrete support plinth. The diagram below illustrates the required cross-sectional detail to be constructed



It is OBR Construction's intention to approach the works from both beach level and upper levels. The works obviously have to be scheduled to coincide with available tidal windows and dependent on the commencement date for the works will involve approximately 8-9hr shift patterns commencing 1.5 hours following high tide and terminating some 2hrs before the next high tide. The plant and machinery to be used on the beach will be a 21 or 23 tonne tracked excavator and a 9 tonne swivel skip tracked dumper that will access the beach at low tide and be removed back off the beach, above mean high water following each daily working shift. This equipment has been chosen as being adequate to carry out the sheet pile installation, to remove, import and place the rock armor and to carry materials such as the reinforcing cages etc. The only means of access to the works area would be via the local authority owned car park at Aberlleiniog, a short distance to the South West of the proposed work site as indicated on the following plan.



Prior to being delivered and deployed for the first time on site the equipment shall be fully serviced and inspected and recorded as such. All plant deployed to work on the beach shall then be inspected daily, at the commencement and end of each shift with particular note to look for fluid leaks. Each item of plant will carry with them emergency oil absorbent mats so that in the unlikely event of a small leak occurring, it can be contained by using these mats / pads. If used, the pads will be contained within a yellow hazardous waste bag, sealed and disposed of in the appropriate manner via the OBR Construction Waste Protocols.

Small items of plant such as petrol driven generators (example opposite), if used shall be sited on a containment bund or plant nappy as they are commonly referred to and again these shall not be left on site during non- working periods.



Wherever possible, small power tools such as drills shall be battery powered but for the works which are anticipated it may be a requirement to utilize a generator such as shown to provide increased and consistent power levels to facilitate the required task.

Therefore in summary, the works which would be undertaken from beach level assisted by the excavator and dumper would include

- a) Removal / setting side existing rock armor to provide sufficient working space for the construction plant
- b) Excavator with a rock breaker attachment to break up the displaced concrete plinth / toe
- c) Dumper to transport sheet piles from the Lleiniog car park to the works area
- d) Excavator with a pile driving attachment to drive the sheet piles into the ground to the point where 500mm of the pile remains above ground. Steel piles are sacrificial and shall remain in situ as part of the permanent works
- e) Dumper to transport the steel reinforcement cage to the works site
- f) Steel pile vertical joints and corners to be sealed to prevent seepage from concrete when placed and vibrated
- g) When the concrete plinth is cast, the excavator shall replace the rock armor back against the sheet piles to offer protection in the form of wave displacement

To place and compact / vibrate the mass concrete infill behind the installed sheet piles, to minimize or mitigate this material having to be transported over the seashore, our approach would be to deploy a concrete pump and site this pump within the parcel of land adjacent just South West of “Cerrig”. With an M52 mobile concrete pump or similar, capable of a 45m horizontal radial reach, this pump would enable us to place and backfill the entire run of piles from higher ground with the concrete delivery vehicles feeding the pump almost straight of the small side road as indicated on page 5 by a green rectangle and dotted line. The Contractor would need to carry out an element of accommodation works to facilitate this setup which would include,

- Formation of a temporary access within the boundary stone wall between the public highway and the parcel of land South West of “Cerrig” to facilitate access into the plot for the mobile concrete pump
- Importing to site and the installation of a temporary load bearing trackway (Ground-Guards or similar) from the temporary access through the parcel of land to the front as indicated by the green rectangle on page 5.
- Bring the mobile pump onto, and site the pump in the approximate position as shown by the green rectangle, allowing for the mobile pump’s outrigger spread which will be some 10.5 metres

The specified pumped concrete mix is P45/UCS with an anti washout additive which has been specified specifically by the Designers to mitigate accidental seepage and if some seepage occurs through the steel sheet piles then the anti-washout additive should prevent further spread and aid swift containment.



Above photograph for illustrative purposes only, showing an M52 Mobile Concrete Pump

Whilst the concrete is being pumped through to its required location, the contractor would have two or three operatives receiving and guiding the outlet nozzle ensuring correct and accurate placement whilst colleagues would be closely on watch for any accidental seepage and to form

the required surface finish to the concrete which will form a new 2 metre wide filleted reinforced plinth

Upon completion of the concrete placement and finishes, the excavator would return to the shore and finalize the replacement of the existing and newly imported rock armor units to ensure maximum wave displacement and protection to the newly constructed work.

As a small addition to the main body of works, it may well also become a requirement to carry out repairs to the hand pointing of the stone wall structure as a last measure to prevent water ingress into and behind the stone retaining wall. This will be done by hand using hand mixed mortar which shall be mixed within the parcel of land adjacent to “Cerrig” and will not be mixed on the shore. This mixed mortar will be mixed, handled and applied in small quantities of no more than 10kg, mainly for handling purposes but also for a reduced risk of accidental spillage perspective.

An extensive photographic record of the current shore and structure condition shall be undertaken prior to any physical works commencing and then following completion, the same exercise shall be repeated.

The Contractor is fully committed to reducing or putting measures in place to mitigate any unnecessary damage to the natural habitat of our coastline, any archaeological features which might be affected and shall co-operate fully with any advice, guidelines or stipulations forwarded by Statutory Bodies which may arise from a review of this document which outlines the Contractor’s initial approach to construct the works.

OBR/HOD/CERR/WALL-06/19 Rev 0
June 2019