Tywyn Neptune Road Slipway Repair

Water Framework Directive Assessment

CPF12531

Document Control Sheet

Document Title:	Water Framework Directive Assessment
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Project Ref / Title:	CPF12531 – Tywyn Neptune Road
Project Manager:	Rhydian Roberts

Revision History

Date	Version No.	Summary of Changes
09/12/2024	0.01	Initial draft version
	0.02	
	0.03	

Reviews

Name	Title	Date	Version
Rhydian Roberts	Principal Engineer	16/01/2025	0.01

Approvals

Name	Title	Date	Version
Rhydian Roberts	Principal Engineer	16/01/2025	0.01

Distribution

Name	Title	Date	Version
Marine Licencing	Designated Officer		

Content

Background

YGC have been commissioned to carry out Environmental Assessments, including a Water Framework Directive Assessment, in support of a Marine Licence application, for proposed beach slipway repair works near Neptune Road, Tywyn. The existing slipway has suffered partial collapse due to lowering beach levels, where material has been lost from the base of the slipway, leaving cavities underneath. The proposed project involves constructing a cut-off wall in front of the slipway to prevent wash-out before reconstructing the slipway deck. The total length of the slipway is approximately 30m.

Introduction

Neptune Road slipway is one of the four primary access slipways to the beach at Tywyn, Gwynedd. At Neptune Road, there are two slipways located opposite each other. Lowering beach levels has caused the undermining of the northern slipway at this location, resulting in the formation of a large cavity in the base of the slipway, causing a lowered and unstable ramp. As a result, the slip was closed in 2023 restricting access towards the beach for visitors.

The proposed project involves constructing a sheet-piled cut-off wall in front of the slipway to prevent washout before reconstructing the slipway deck. The proposed works also involve extension of the slipway to meet existing beach levels, and also demolition and re-construction of the existing steps to the rear of the slipway. Drawings *12531-DE010_GA_01* and *12531-DE010_GA_02* have been submitted as part of the application and are contained in Appendix A of this document.

The works are likely to include the following activities and will be timed to avoid periods of high-tide:

- Excavation in front of existing slipway to suitable formation level and set material aside for re-use;
- Break up and remove existing concrete steps at rear of structure;
- Installation of sheet piles around base of structure using excavator with piling hammer attachment;
- Fixing of reinforcement through sheet piles into existing concrete wall;
- Erect formwork and cast in situ capping beam for new pile lines as shown in GA drawings – concrete to be pumped from promenade above;
- Remove formwork and backfill trench using previously excavated material;
- Break existing deck slabs into void beneath structure and use 6N granular fill to raise levels to underside of slab, working one bay at a time from top of structure;
- Fix reinforcement, erect formwork and pour concrete for replacement deck;
- At rear of structure excavate to suitable formation level for installation of new steps and set material aside for re-use;
- Erect formwork for new access steps and pump concrete from promenade above;
- Remove formwork and backfill trench using previously excavated material;

The southern slipway will be used as an access point onto the beach to carry out the proposed works with the vehicles tracked to site via the boundary of the existing slipways.

The proposal is subject to a Marine Licence by Natural Resource Wales, and must also follow the guidelines set out by the WFD legislation and not cause negative effects to the water environment, water quality, ecosystems or biodiversity. This report therefore highlights any impacts the work could

potentially have on the waterbody, along with mitigation and an assessment (if required) of whether the proposals complies with the Water Framework Directive.

Legislative Background

The Water Framework Directive (WFD) is a European Directive which sets out a strategic planning process for the purposes of managing, protecting and improving the water environment. The WFD introduces new environmental requirements which aim to meet good status in all water bodies. For surface waters, good status is made up of 'good ecological status (GES)' (or good ecological potential (GEP) where artificial or heavily modified) and 'good chemical status'. Ecological status and potential are made up of a number of biological, hydromorphological and physio-chemical quality elements. Chemical status is recorded as either good or failing. For groundwater to be in overall 'good' status, both quantitative and chemical status must be 'good'. The WFD also requires prevention of deterioration in water body status including deterioration of any of the individual quality elements.

The main objectives of the WFD are to:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least 'Good Status' for all waters by 2015 (2021 or 2027 where fully justified within an extended deadline under Article 4.4);
- Promote sustainable use of water;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Help reduce the effects of floods and droughts.

New activities and schemes that affect the water environment may adversely impact biological, hydromorphological, physico-chemical and/or chemical quality elements (WFD quality elements), leading to deterioration in water body status. They may also render proposed improvement measures ineffective, leading to the water body failing to meet its WFD objectives for GES/GEP. Under the WFD, activities must not cause deterioration in water body status or prevent a water body from meeting GES/GEP by invalidating improvement measures.

WFD Assessment in Stages

The Water Framework Directive Assessment can have up to three stages, which are

- Screening Stage: excludes any activities that do not need to go through the scoping or impact assessment stages
- Scoping Stage: identifies the receptors that are potentially at risk from your activity and need impact assessment
- Impact Assessment Stage: considers the potential impacts of your activity, identifies ways to avoid or minimise impacts, and shows if your activity may cause deterioration or jeopardise the water body achieving good status

The Proposal

Your activity	Description, notes or more information
Name of activity	Slipway repair, Neptune Road Tywyn
Brief description of activity	The proposed project involves constructing a cut-off wall with a deeper base directly in front of the slipway to prevent further wash-out of material, before reconstructing the slipway deck. The works are likely to include the following activities and will be timed to avoid periods of high-tide: • Excavation in front of the slipway to suitable formation level; • Assembly of formwork and steel shuttering for new wall; • Pouring of concrete from pump placed on the promenade; • Removal of formwork and reinstatement of beach level; • Breaking up of existing slipway deck from landward side; • Pouring of concrete to fill existing voids within slipway and re-construction of deck.
Location of activity (central point XY coordinates or national grid reference)	*Scheme location: Grid Reference SN 58053 99862*
Footprint of activity (ha)	*Approx.0.012ha*
Timings of activity (including start and finish dates)	*Start date: April/May 2025* *Duration of works: 3-4 weeks* **Exact timings to be confirmed on return of application for grant funding*

Extent of activity (for example size, scale frequency, expected volumes of output or discharge	The length of the slipway being repaired is 30m.
Use or release of chemicals (state which ones)	*None*

WFD Assessment

WFD Classification

The WFD classification for a defined water body is produced by assessment of a wide variety of different 'elements' which includes:

- 'biological elements' such as fish, invertebrates, phytobenthos (which includes plants, macro-algae and phytoplankton);
- 'supporting elements' that include chemical measurements such as ammonia, dissolved oxygen, pH, phosphate, copper, zinc and temperature; and
- 'supporting conditions' (sometimes referred to as hydromorphology), that assess the physical attributes of the water body such as 'quantity and dynamics of flow' and 'morphology'.

The assessment given for each element is also accompanied by a measure of certainty in the result. The status classification is published in the River Basin Management Plan (RBMP)[1] and provides a baseline condition against which compliance and future improvements can be measured.

The activity / proposal involves the Cardigan Bay North waterbody and the Meirionnydd Groundwater body, and a summary of key elements is provided below.

Water body[1]	Description, notes or more information
WFD water body name	*Cardigan Bay North*
Water body ID	*GB621009600000*
River basin district name	*Western Wales River Basin*
Water body type (estuarine or coastal)	*Coastal*
Water body total area (ha)	*712.9km² which equates to 71219ha*
Overall water body status (2018)	*Moderate*
Ecological status	*Good*
Chemical status	*Moderate*
Target water body status and deadline	*Not Designated*
Hydromorphology status of water body	*Not Designated*
Heavily modified water body and for what use	*No*
Higher sensitivity habitats present	*Not within the scheme footprint*
Lower sensitivity habitats present	*Intertidal soft sediment (mudflats and sandflats), gravel and cobbles (intertidal and subtidal coarse sediment), subtidal soft sediment (sand, mud and mixed), rockyshore (intertidal rock)*
Phytoplankton status	*Not specified*
History of harmful algae	*Not specified*

[1] https://www.gov.uk/government/collections/river-basin-management-plans-2015#north-west-river-basin-district-rbmp:-2015

WFD protected areas within 2km	*Pen Llyn a'r Sarnau SAC, Meirionnydd Oakwoods and Bat Sites SAC, Abermawddach SSSI (also part of Pen Llyn a'r Sarnau SAC).*

Water body[2]	Description, notes or more information
WFD water body name	*Meirionnydd*
Water body ID	*GB41002G203200*
River basin district name	*Western Wales River Basin*
Water body type (estuarine or coastal)	*Groundwater*
Overall water body status (2021)	*Poor*
Quantitative	*Good*
Chemical status	*Good*

[2] Water Watch Wales https://waterwatchwales.naturalresourceswales.gov.uk/en/

WFD Assessment - Screening:

The WFD is also required in support of a Band 2 Marine Licence Application, by NRW.

WFD Assessment – Scoping Exercise:

The scoping exercise is carried out to identify all the potential risks to each receptor element that are used to determine the status of the waterbody. The receptors / elements are:

- Hydromorphology
- biology – habitats
- biology – fish
- water quality
- protected areas

These receptors are based on the water body's quality elements (supporting elements, biological elements, and chemical elements).

The scoping exercise has been undertaken following the template provided on the gov.uk[2] website.

Hydromorphology:

Consider if your activity:	Yes	No	Hydromorphology risk issue(s) / observations
Could impact on the hydro morphology (for example morphology or tidal patterns) of a water body at high status	Requires impact assessment	Impact assessment not required	*The proposal seeks to maintain and improve the existing structure.*
Could significantly impact the hydro morphology of any water body	Requires impact assessment	Impact assessment not required	*As above.*

[2] https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters#contents

Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	*The proposed activity is not within a waterbody classed as heavily modified.*

Biology - habitats:

Consider if habitats are at risk from your activity.

Higher sensitivity habitats [3]	Lower sensitivity habitats [4]
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

Consider if the footprint[5] of your activity is:	Yes	No	Biology habitats risk issue(s) / observations
0.5km^2 or larger	Yes to one or more – requires impact assessment	No to all impact assessment not required	*No – the total area of the proposed activity is 0.012ha, which equates to 0.00012km2.*
1% or more of the water body's area			*No - the total area of water body is 12600 ha, and area of proposed activity does not exceed 0.012ha, which represents less than 1% of the waterbody area.*
Within 500m of any higher sensitivity habitat			*No – the activity isn't within 500m of a higher sensitivity habitat.*

[3] Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.
[4] *Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.*
[5] Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

1% or more of any lower sensitivity habitat			*No – There are lower sensitivity habitats within the area of the works (intertidal soft sediments like sand and mud). However, the footprint of the scheme would not exceed a total area of more than 1% of the habitat area.*

Biology – fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s) / observations
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	Continue with questions	Go to next section	The work is not located within an estuary and does not involve creating any physical barriers within the watercourse that would impact fish movement.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)	Requires impact assessment	Impact assessment not required	Not applicable
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	Not applicable

Water Quality:

Consider if water quality is at risk from your activity.

Consider if your activity:	Yes	No	Water quality risk issue(s) / observations
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment	Impact assessment not required	No – the proposed work would predominantly be carried out above tide level, and therefore would not directly impact water clarity, temperature, oxygen levels, nutrients or microbial patters of the water body, especially not for continuous periods longer than 14 days. There may be some very localised discolouration of water and sediment resuspension, however, this would clear within 1 tidal cycle i.e. high water – low water – high water
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	No – From available information, the waterbody does not have a phytoplankton status of moderate, poor or bad.
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No – As far as we are aware, the waterbody does not have a history of harmful algae.

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s) / observations
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment	Impact assessment not required	Plant machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels into the environment, albeit, the risk is considered to be low.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	No – we have no reason to believe that the activity would disturb sediments with contaminants above Cefas Action Level 1.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s) / observations
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment[5]	Impact assessment not required	No – the proposal does not use a chemical mixing zone.

WFD Protected Areas

Consider if WFD protected areas are at risk from your activity. These include:

- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Shellfish waters
- Bathing Waters
- Nutrient Sensitive Areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s) / observations
Within 2km of any WFD protected area[6]	Requires impact assessment	Impact assessment not required	The activity is within 2km of the following protected areas: West Wales Marine SAC Pen Llyn a'r Sarnau SAC Dyfi SSSI Northern Cardigan Bay SPA

Invasive Non-Native Species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.
Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other water bodies
- activities that help spread existing INNS, either within the immediate water body or other water bodies

Consider if your activity could:	Yes	No	INNS risk issue(s) / observations
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	The works will be carried out by terrestrial plant and machinery in dry conditions (above tide level), therefore the risk of introducing marine or water based INNS is negligible. The risk will be managed further by ensuring the plant are cleaned before leaving the existing / preceding site, and are clean on arrival onto this site.

Summary of Scoping:

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	It is concluded that it is unlikely that the slipway repair works would have any impact on hydromorphology, due to the maintenance and minor improvements nature of the works on the footprint of the existing structure.
Biology: habitats	No	Total area is less than 0.5km^2, is less than 1% of water body area and does not meet the higher or lower sensitivity habitat thresholds.

Biology: fish	No	The works are not located within an estuary and does not involve creating any physical barriers within the watercourse that would impact fish movement.
Water quality	Yes	Plant and machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels (PAHs) into the environment, albeit, the risk is considered to be low.
Protected areas	Yes	The proposed activity is being undertaken on the boundary of a protected area, therefore, potential impact to protected sites cannot be ruled out at scoping stage. Risk / issues for impact assessment include physical change, disturbance and pollution.
Invasive non-native species	No	The works will be carried out by terrestrial plant and machinery in dry conditions (above tide level), therefore the risk of introducing marine or water-based INNS is negligible. The risk will be managed further by ensuring the plant are cleaned before leaving the existing / preceding site and are clean on arrival onto this site.

Assessment of impacts on waterbody quality elements

WFD Compliance

There are three key objectives against which the impacts of proposed works on a water body need to be assessed to determine compliance with the overarching objectives of the WFD:

- Objective 1: The Scheme will not cause deterioration in any element of water body classification.
- Objective 2: The Scheme will not prevent the WFD status objectives from being reached within the water body or other downstream water bodies.
- Objective 3: The Scheme will contribute to the delivery of the relevant WFD objectives. In this case it will be what contribution the Scheme can make towards the water body reaching its objective Good Ecological Potential (GEP) through planned RBMP mitigation measures.

The first two objections must be met to avoid infraction of the WFD. The delivery of the third objective is central to the implementation of the WFD, where it can be supported through its operational activities. If it is considered that the scheme is likely to cause deterioration in water body status or prevent a water body from meeting its ecological objectives then an assessment would be

made against the conditions listed in Article 4.7 of the WFD. Article 4.7 can be invoked if; 'new modifications' are of overriding public interest and/or the environmental and social benefits of achieving the WFD objectives are outweighed by the benefits of the new modifications to human health, safety and sustainable development; there are no significantly better environmental options that are technically feasible or not disproportionately costly; and all practicable steps for mitigation have been taken.

Water Quality

Plant and machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels into the environment, although the risk is considered to be low due to no in water works, the impact on the waterbody could not be completely ruled out at the scoping stage. The following Reasonable Avoidance and Mitigation Measures will be implemented during the course of the proposed work:

- Use biodegradable lubricant and hydraulic oil in plant machinery if possible. Biodegradable oils are less toxic than most synthetic oil but should be stored to the same standards as other oils and prevented from entering the water environment;
- Implement best practice to ensure good housekeeping, for example ensuring all machinery used is kept to good repair and subject to regular checks;
- Ensure all fuel and other potentially hazardous chemicals is stored in a safe compound at a distance of at least 10m from the shoreline;
- Use of spill kits and personnel trained to use the kit will be available on site on case of oil leak.
- Good working practices will be taken, such as adhering to GPP5 Works and maintenance in or near water. Pollution prevention measures to be stipulated in a Construction Environmental Management Plan (CEMP)
- The contractor has a designated company, which they use to deal will accidental spillages this forms part of their emergency plan.
- NRW emergency help line (0300 065 3000) will be contacted in the case of an emergency spill.

Since the plant and machinery would not directly enter the waterbody, and assuming that machinery used are well maintained, it is considered unlikely that the proposed activity would result in a contravention of Objective 1. However, accidents do happen – and by having the above measures in place it will reduce any impact should an accident occur.

Protected Areas

The proposed work is located within 2km of WFD Protected Areas, namely West Wales Marine SAC, Pen Llyn a'r Sarnau SAC, Dyfi SSSI, and Northern Cardigan Bay SPA. Since there are engineering works within 2km of these protected areas, and a potential impact pathways in the form of tidal action, impact upon these receptors could not be ruled out at scoping stage

A Habitat Regulations Assessment (CPF1541 Tywyn Neptune Road Slipway Repair - Habitat Regulations Assessment– available as a separate document), has been produced for the works. Likely Significant Effect could not be ruled out in the screening stage (Stage 1 – Test of Likely Significant Effect), due to potential pollution impacts on to the Pen Llyn a'r Sarnau SAC and West

Wales Marine SAC, along with potential disturbance impacts to the mobile species features of the Cardigan Bay SPA, therefore the assessment progressed to Stage 2 Appropriate Assessment. A conclusion of No Likely Significant Effect was reached in Stage 2 with the implementation of mitigation and reasonable avoidance measures. Therefore it is considered that the proposed activity will not result in the contravention of Objective 1.

The mitigation measures can be found in Table 12 of the HRA.

Conclusion

It is established through the assessment above that by implementing good working practices and reasonable avoidance measures that the proposed works would not lead to deterioration of any quality element of the waterbody (objective 1) nor would prevent the overall objectives for the waterbody being met (Objective 2).

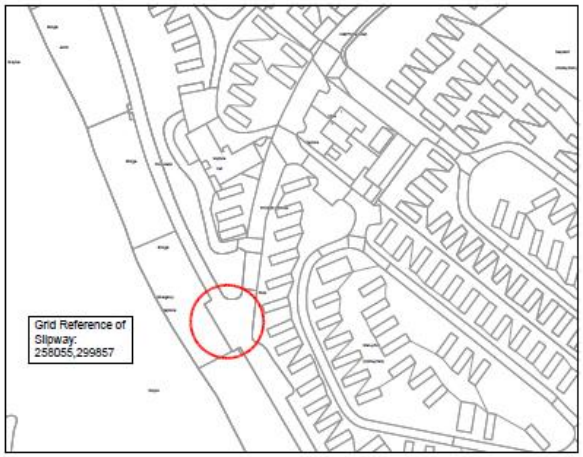
Appendices

Tywyn Neptune Road Slipway Repair Habitats Regulations Assessment (HRA) (as separate document)

Appendix A – General Arrangement drawings

Location Plan

Scale 1:12 500



Location Plan

Scale 1:1 000

Groyne & Pilaster, SW Corner

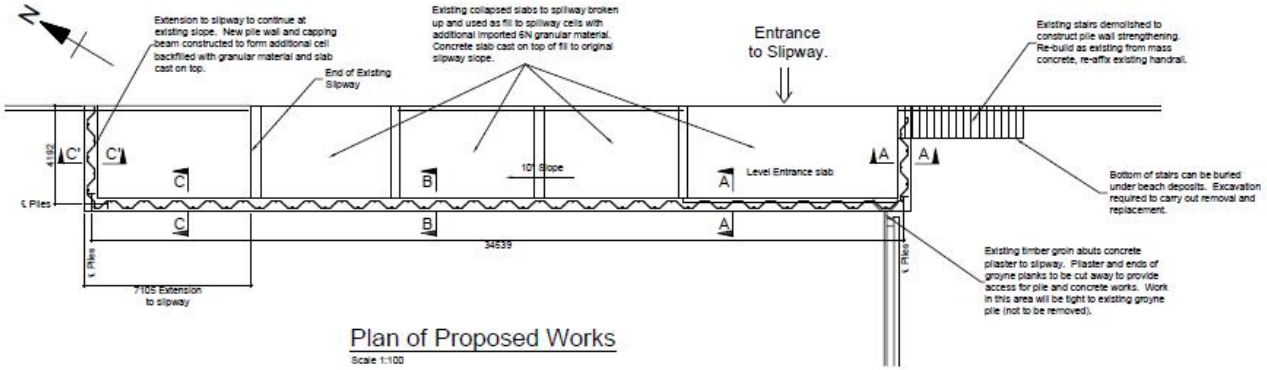
Photo Taken December 2024

Slipway - Low Beach Level

Photo Taken June 2024

Slipway - High Beach Level

Photo Taken December 2024



Plan of Proposed Works

Scale 1:100

Stairs to South of slipway

Photo Taken December 2024

CLIENT/CLIENT :

NODIADAU/NOTES

1. All dimensions are in millimeters and levels in meters unless noted otherwise.
2. Foundations of the existing slipway structure are unknown. No settlement of the walls of the structure has occurred since constructed even though granular fill beneath the slabs forming the slipway has been washed out and the slabs collapsed.
3. Piles shall be installed to the lengths shown by driving, or by excavation to depth and placement. If an excavation method is used, the contractor shall take appropriate precautions to ensure the excavation does not undermine the existing slipway structure. Excavated material shall be fully replaced and compacted around the piles to the same strata from where it was excavated.
4. All concrete shall have a compressive strength of 50N/mm^2 (Cube crushing strength).
5. Piles shall be AZ-12-700 or a similar pile with a nominal depth of 300mm and Plastic Section Modulus of 1415cm^3/m. Pile steel strength shall be S 355 GP.

RHIF/NO.	NEWIDIADAU/MODIFICATIONS	GAN/BY	DYDDIAD/DATE

YGC

CYNLLUN / SCHEME :

Neptune Road Slipway Refurbishment
Tywyn

TEITL LLUNIAD / DRAWING TITLE :

Location Plan and General Arrangement

DARLUNWYD GAN / DRAWN BY :	JJC	DYDDIAD DARLUNIWYD / DATE DRAWN :	20/12/24
CHWILIWYD GAN / CHECKED BY :	JJC	DYDDIAD CHWILIWYD / DATE CHECKED :	20/12/24
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Rhif Lluniad / Drawing No. 12531-DE010/GA/01

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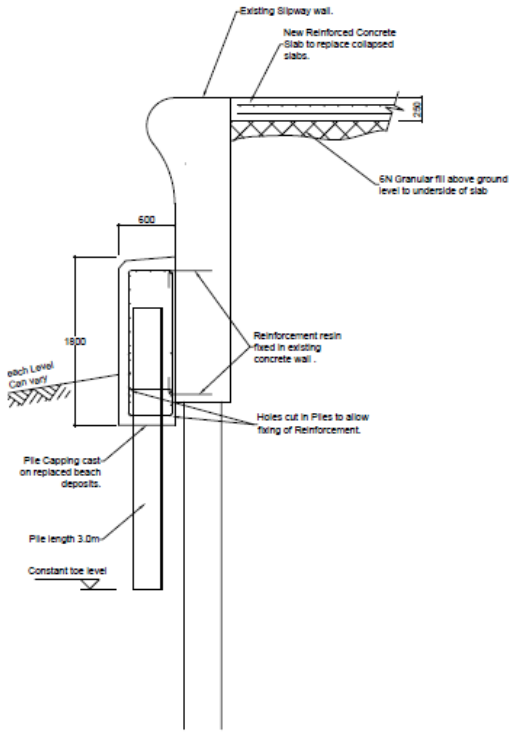

Section A-A

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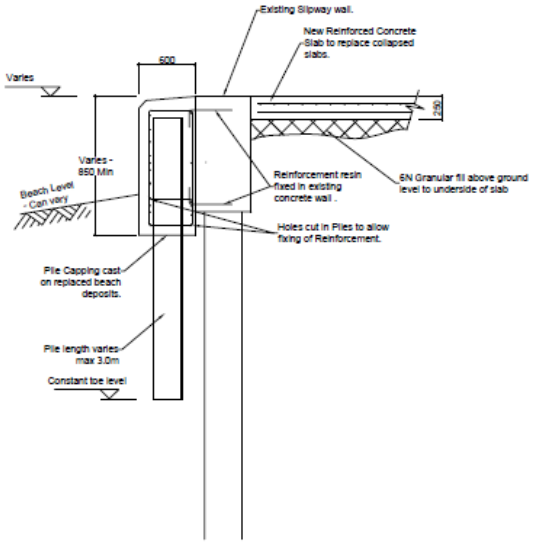

Section B-B

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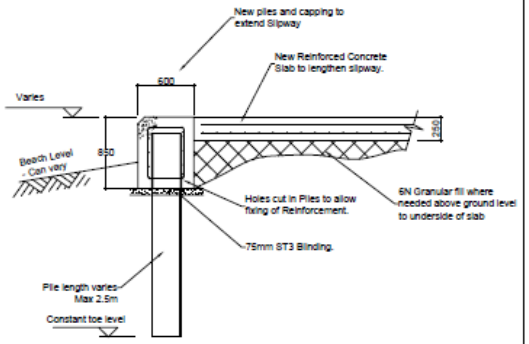

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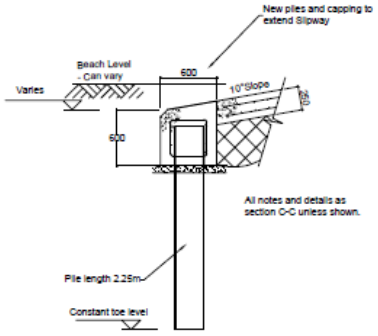

Section C'-C'

Scale 1:25

CLIENT/CLIENT:

NODIADAU/NOTES

1. All dimensions are in millimeters and levels in meters unless noted otherwise.

CYNLLUN / SCHEME:

Neptune Road Slipway Refurbishment Tywyn

TEITL LLUNIAD / DRAWING TITLE:

Proposed General Arrangement Details

DARLUNIWYD GAN / DRAWN BY:	JJC	DYDDIAD DARLUNIWYD / DATE DRAWN:	20/12/2024
GWIRIWYD GAN / CHECKED BY:	JJC	DYDDIAD GWIRIWYD / DATE CHECKED:	04/12/2025
Tudalen / Sheet	1 of 1	GRADDFRYDD / SCALE:	As shown at A1

Rhif Lluniad
Drawing No. 12531-DE010/GA/02

CYNG/ISS