

Kinmel Bay Coastal Defences Improvements Scheme

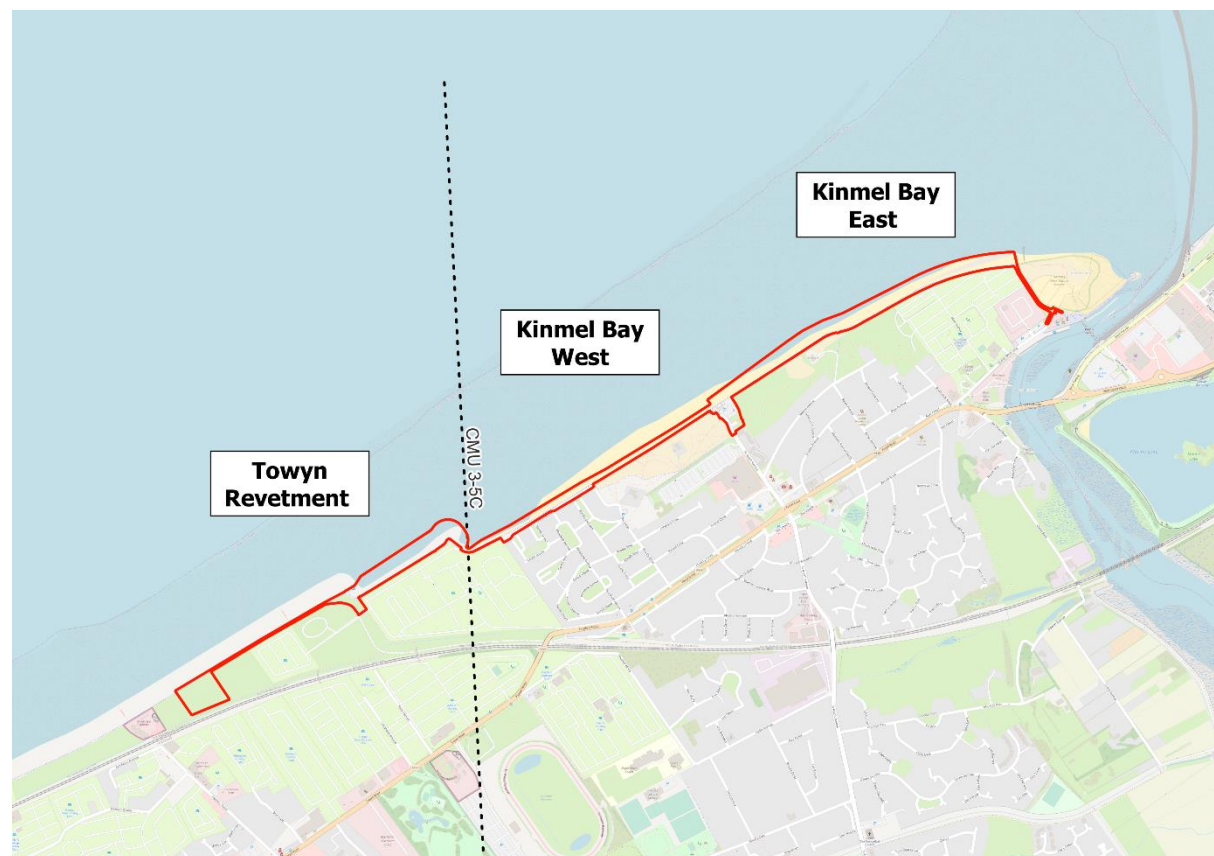
Construction Methodology

CH1701-AMEY-GEN-XX-MS-CE-0108

1. Construction Sequencing

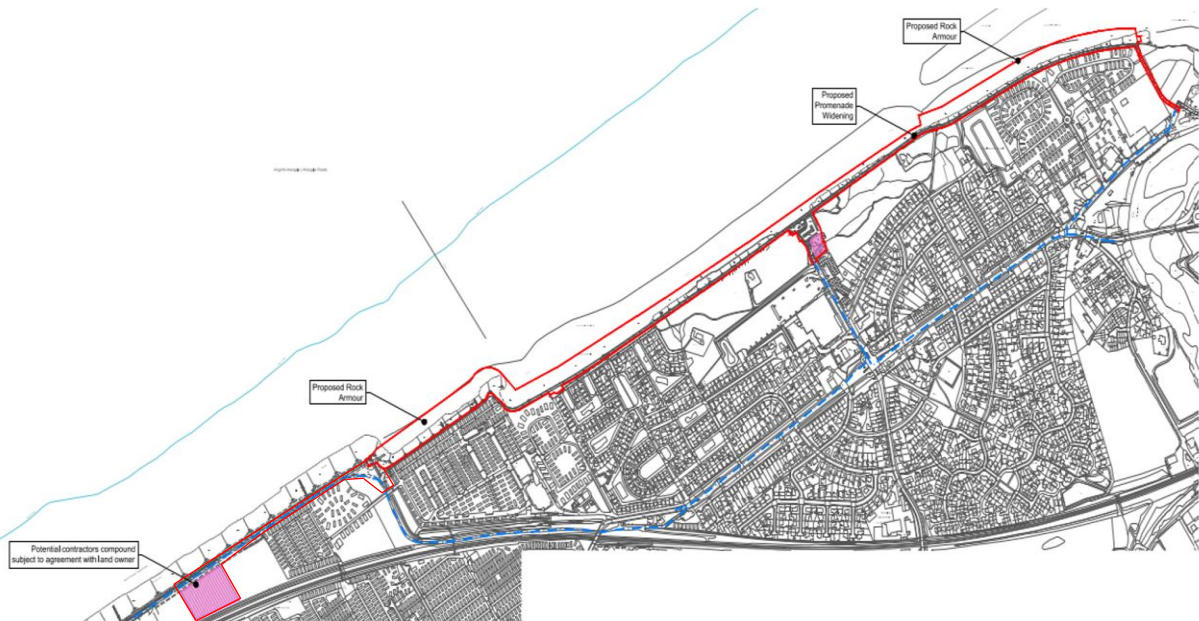
The proposed construction sequence is shown in Appendix A, the outline Construction Programme (CH1701-AMEY-GEN-XX-PR-ZM-0104 – Rev B)

Diag. A – Extent of Sea Defence construction



Access Routes - Work is proposed to access from the following points of the public highway – shown as blue lines in Diag B, below.

Diag. B – Towyn Revetment, Kinmel Bay East and West - Access Routes



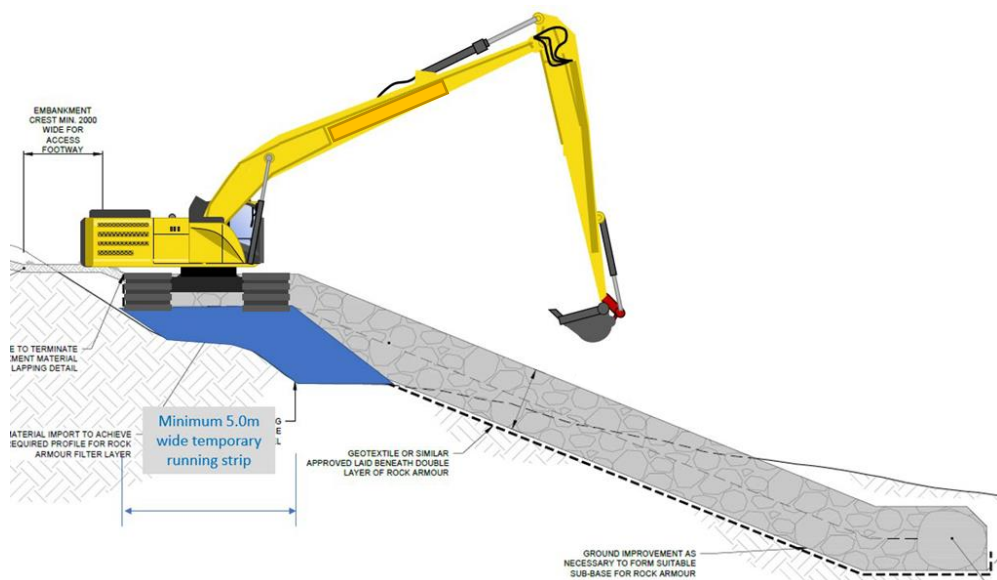
Construction Methodology

While the preferred method for excavations and placing rock armour is per Diag. C below, there will also be a need to enable access to each work site from the north side to handle and manage excavated material, geotextile and rock armour.

It is expected that construction activities will take place between 8:00am to 6:00pm between Monday to Friday, and 8:00am to 12:00pm on Saturdays and no construction on Sundays and Public Holidays.

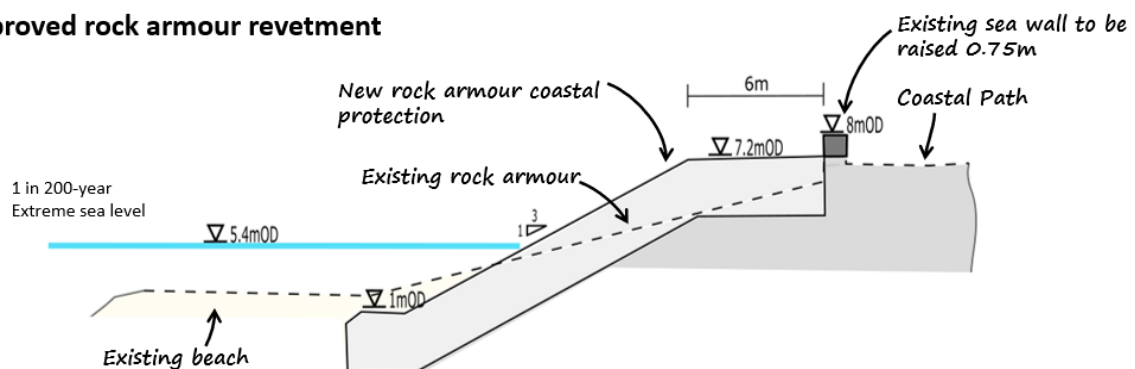
There will be approximately 30 operatives and 10 office staff present on-site, however, this will depend on the number of sites open at any one time.

Diag C - Typical Construction Arrangement



Diag. D – Towyn Revetment

Improved rock armour revetment

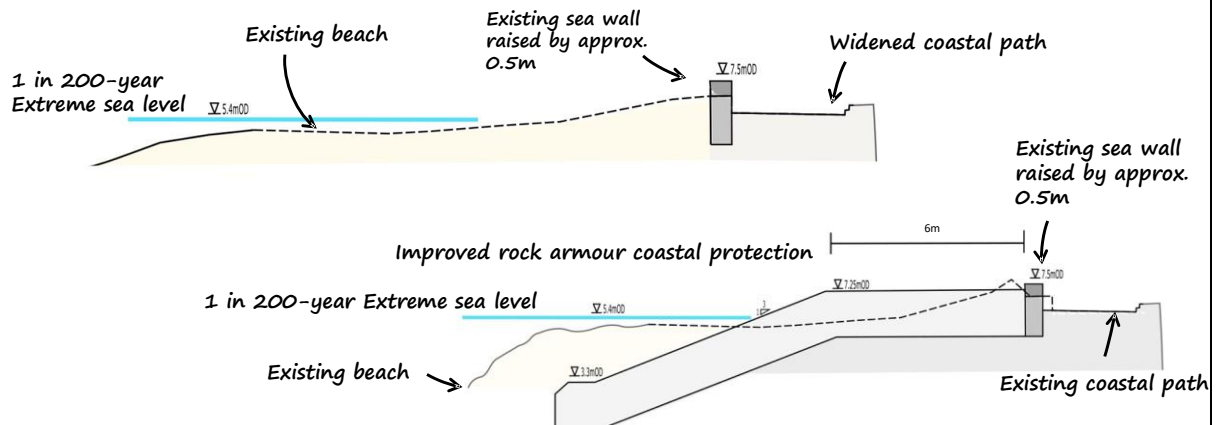


Towyn Revetment proposed construction sequence is :-

1. Stockpile rock armour and sea wall prefabricated sections
2. Carry out initial excavation to form the crest
3. Install sheet piles for beach accesses and provide fill between piles
4. Install geotextile and sufficient depth of stone along the length crest to provide a running surface / access track for plant movement
5. This will be constructed in line with permanent construction specification but used as temporary access platform.
6. The temporary imported stone will be reused within the permanent works
7. Construct rock armour embankment using long reach excavator situated on crest
8. Construct sea wall vertical extension
9. Complete crest construction
10. Environmental enhancements
11. Remove temporary fill between beach access sheet piles
12. Construct beach accesses

Diag. E - Kinmel Bay East and West

Raised sea wall & improvements to existing rock armour



Kinmel Bay East proposed construction sequence is :-

1. Stockpile rock armour and sea wall prefabricated sections
2. Carry out initial excavation to form the crest
3. Install sheet piles for beach accesses and provide fill between piles
4. Install geotextile and sufficient depth of stone along the length crest to provide a running surface / access track for plant movement
5. This will be constructed in line with permanent construction specification but used as temporary access platform.
6. The temporary imported stone will be reused within the permanent works.
7. Construct rock armour embankment using long reach excavator situated on crest.
8. Complete crest construction

9. Environmental enhancements
10. Remove temporary fill between beach access sheet piles
11. Construct beach accesses
12. Install sea wall concrete height extensions

Kinmel Bay West proposed construction sequence is :-

1. Stockpile sea wall prefabricated sections
2. Install sheet piles for beach accesses
3. Construct beach accesses
4. Install sea wall concrete height extensions
5. Environmental enhancements

2. Schedule of Construction Materials

The figures in the table below are calculated from design models of the scheme and subject to change, dependent upon site conditions.

Table 1 – Principal Construction Volumes

CONSTRUCTION MATERIAL VOLUMES			
Location	Geotextile	Rock Armour	Excavation Volume (below MHWS)
	M ²	M ³	M ³
Towyn Revetment	8569	25534	8375
Kinmel Bay East	8602	26716	0
Totals	17171	52250	8375

Material Disposal.

Our plan is to retain excavated material on site, however, should off-site disposal be required, the following will occur :-

- Material testing to classify the material
- Development of a material management plan under the Claire protocol
- Allocating suitable storage areas to process and dry out materials

Note – Incorporation of all site materials within the permanent works is the preferred method.

3. Schedule of Main Construction Plant and Machinery

We have reviewed the drawings and scope of works and our thoughts are that the works will be carried out from the landside. We would not propose the use of marine based plant such as a jack-up or spud leg barges. As this coastline has a large tidal range, barges would not be practical.

We therefore consider that land-based plant should be employed, and we have provided a list below of the key plant proposed.

Table 2 – Construction Plant and Machinery

	40t Tipper (104 dBa)	36t Excavator (101.8 dBa)	20t Road Wagons (Concrete & Rock) (103 dBa)	10t Tipper (106dBa)	3 tonne tipper (102 dBa)	1.5 t tipper (102 dBa)	15 t Excavator (97.5 dBa)	5t Excavator (89 dBa)	Asphalt Spreader (92 dBa)	Sheet piling Rig (69 dBa)	Vibrating Roller (100 dBa)
Rock armour Kinmel Bay East & Towyn Revetment	2	1	4	2							
Sea wall - Kinmel Bay East & West			4	2	1		1				
Car park - Kinmel Bay			2		1		1		1		1
Coastal Path Widening			1			2		1	1		1
Beach accesses			2	1	1		1			1	

Sheet piling will be installed using the Giken (or similar) vibration free piling method. No hammer piling will take place.

Wheel cleaning facilities will be provided at each site compound which will be included in the contractor specification.

4. Outline Construction programme

Our Outline construction Programme CH1701-AMEY-GEN-XX-PR-ZM-0104 – Rev A which is shown in Appendix A.

We consider that supply, delivery and placement of rock armour material will be key to the critical path of this project. We also consider that there may be a need for enabling works (Est. 5 weeks) in advance of construction to stockpile rock armour (above the MHWS line).

Construction of the sea defence works elements of the programme are subdivided into key locations as follows -

- Towyn Revetment – Rock Armour and Sea Wall Height Increase
- Kinmel Bay East – Rock Armour and Sea Wall Height Increase
- Kinmel Bay West – Sea Wall Height Increase

The work will require installation of one temporary access track (per work site) to the most distant extent of each work site. This will enable construction of the permanent works back towards each access route.

5 - General Measures

General measures that will be implemented to manage the construction process, including construction environmental management (such as general provisions to reduce the risk of environmental pollution/contamination and site waste management procedures)

Archaeological written scheme of Investigation	
NRW - Marine License Consent	Pre-commencement conditions to be discharged
CCBC Planning consent	Pre-commencement conditions to be discharged
UXO survey / risk assessment / Desk top study	Prior to piling / excavation
Environmental Surveys	
Ecological surveys	
Traffic Management Plan	
Stakeholder Engagement / Consultation	NRW Local tenants CCBC Highways Network Rail Statutory Undertakers

6 – Road Access

The proposed 'red line' boundary encompasses the proposed works, construction access routes from the public highway and construction compounds.

The proposed access arrangements are based on obtaining access from existing highways. We do not envisage the use of marine based plant, such as barges.

All plant and materials will be delivered by road.

We do not envisage any requirement for access outside the red line boundary.

7. Decommissioning

We do not plan to decommission any elements of the permanent works.

Appendix A – Preliminary Construction Programme – (Revision B)

