

Environmentally sensitive receptor	Details	Distance from RLB at closest point
Local businesses	Children's' play park.	Pensarn: Adjacent
	Cayley Kiosk and Horizon Shine Kiosks	Phase 2b: Within
	Cayley Flyer Pub, Coast Café, Rhôs Fishing Tackle and Bait, Welsh Presence gift shop, Lazy Daisy clothes shop, Nino's Pizzeria, Fletcher and Poole estate agents, Fortes restaurant, Harbour View guest house and the Angler's Bar.	Phase 2b: Within/adjacent
	Tourist information centre/shop	Phase 2b: Within
	The Toad public house, Mount Stewart Hotel, The Whitehall Guest House and Plas Rhôs House	Phase 2b: Adjacent
	Rydal Boat Store	Phase 2b: Adjacent
	Porth Eirias, comprising Bryn Williams restaurant, Môr stand up paddleboards, bike shop and children's play area	Phase 2b: 440m east
	Shops, cafes, amusements and kiosks alongside the Pensarn promenade.	Pensarn: ~20m at closest point
	Kingsley Holiday Park (static caravans)	Pensarn: ~45m
Local infrastructure	Promenade highway and pedestrian Promenade	Phase 2b: Within
	Rhôs-on-Sea harbour	Phase 2b: Within
	NWC Railway Line	Phase 2b: Adjacent
	A55 Expressway	Phase 2b: Adjacent
	Colwyn Bay Train Station	Phase 2b: Adjacent
Recreation and amenity	North Wales Coast Path	Phase 2b: Within Pensarn: Adjacent
	National Cycle Route 5	Phase 2b: Within Pensarn: Adjacent
	Public rights of way	Phase 2b: Within Pensarn: Adjacent
	Rhôs-on-Sea – Colwyn Bay beach	Phase 2b: Within
	Pensarn Beach	Pensarn: Adjacent
	Pedestrian Promenade	Phase 2b: Within Pensarn: Adjacent
	Rhôs Harbour	Phase 2n: Within
	Rydal Boat Store	Phase 2b: Adjacent

Source: Chapters 7-14

3.2 Scheme description

3.2.1 The proposed scope of work for the Scheme comprises a combination of coastal defence, Promenade and active travel improvements. The scheme description in this chapter has been based on the following design drawings:

- Key drawings included in Section 3.5:
 - 100374-CEUK-66-2010-03-00 Phase 2b Proposed Beach Arrangement;
 - 100374-CEUK-66-2010-04-00 Phase1 Proposed Beach Arrangement;
 - 100374-CEUK-66-2010-05-00 Typical Beach Recharge Cross Section;

- 100374-CEUK-66-2010-05-00 Rhôs-on-Sea Terminal Groyne Modifications;
 - 100374-BCA-03-XX-DR-L/0100 Colwyn Bay Promenade Phase 2b General Arrangement – overview;
 - 100374-MMD-01-XX-DR-D-0510 to 0513 Outfall Extension Drawings; and
 - 100374-MMD-03-XX-DR-C-0101 to 0102 General Arrangement.
- Supplementary drawings in the ES Volume 2:1 Technical Appendix 3.1 as listed in Section 3.6.

Coastal works

3.2.2 The coastal defence works are anticipated to include:

Seawall repairs

- 3.2.3 Minor repairs (e.g. grouting, re-pointing, coping repairs, filling of voids) to the existing seawall From Rydal Boat store boundary with the Phase 2a area to the southern boundary of Rhôs-on-Sea Harbour.
- 3.2.4 Works are to be completed both from the promenade and from the intertidal area (depending on the repair needed).

Terminal groyne works

- 3.2.5 The existing rock groyne at Rhôs-on-Sea Harbour comprises approximately 2,000m³ of nominal 1.0t rock armour. The modified groyne would require approximately 10,000m³ of 1-3 tonne rock armour. This material would be obtained from removal of the three existing groynes and from the removal of existing toe protection along the base of the existing seawall between points A and B (Figure 3.1).

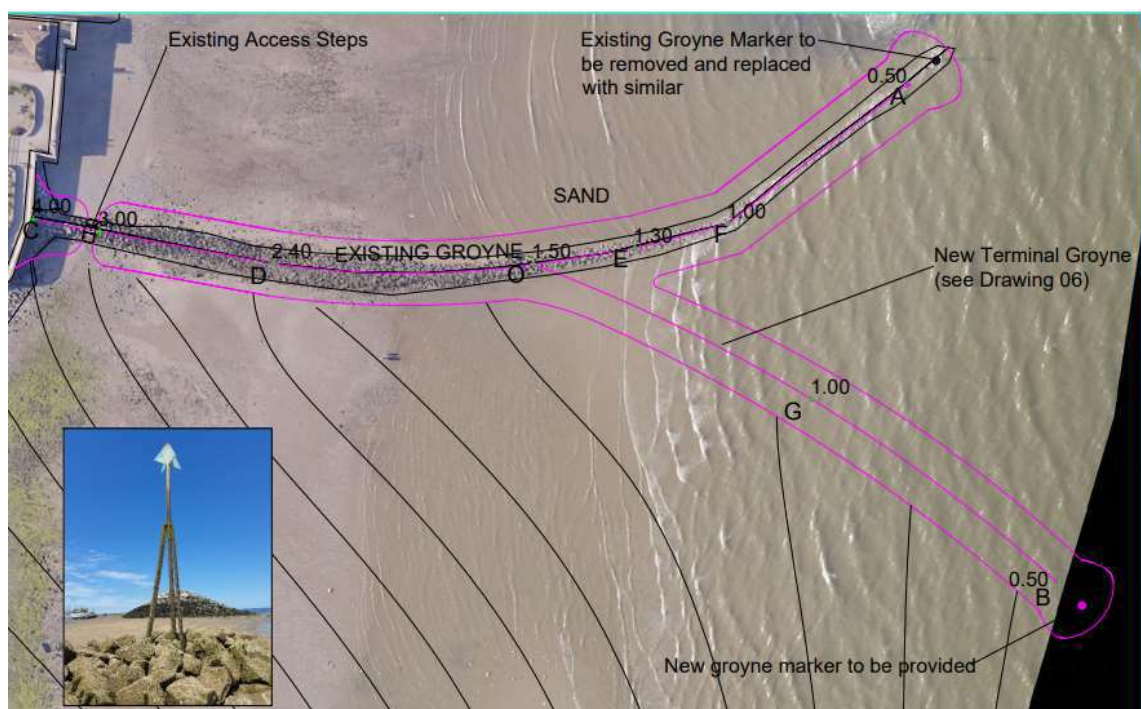
Figure 3.1: Location of terminal groyne and source of rock armour



Source: Coastal Engineering UK, 2021

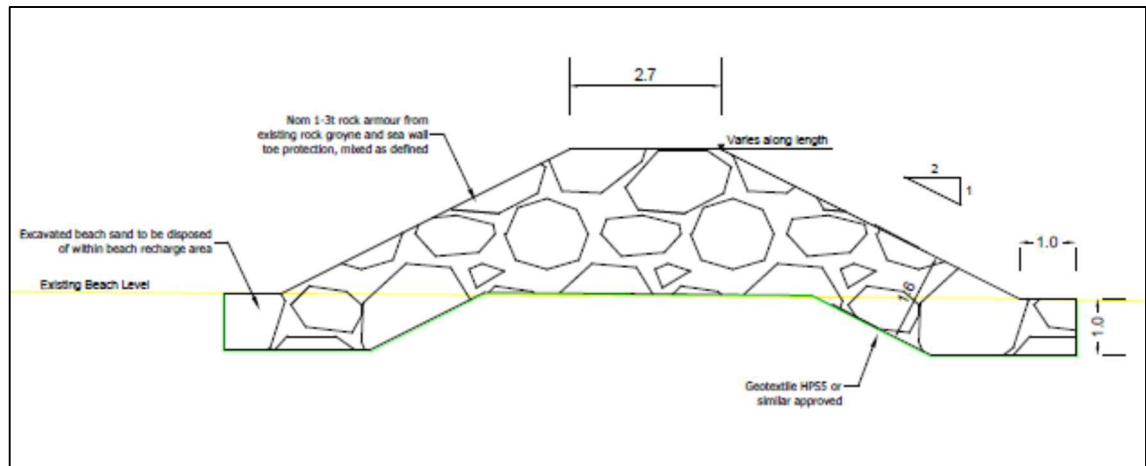
- 3.2.6 The existing groyne would be increased in elevation by approximately 1.0m along its length and in addition, a secondary wave arm would be constructed curving in a south-easterly direction from the mid-point of the existing groyne. This is needed to prevent the beach recharge activities causing siltation of the Rhôs-on-Sea Harbour.
- 3.2.7 A diagram of the additional groyne arm is provided as Figure 3.2 and a typical cross-section is provided as Figure 3.3. Existing access steps over the groyne would be reinstated following the raising activities.
- 3.2.8 The existing navigation marker at the end of the terminal groyne comprises a 125mm diameter steel pole supported by twin 100mm x 100mm x 6mm steel angle sections with bolted connections. The structure is founded on a concrete block located within the exiting armour stone. The existing marker would be replaced with a similar beacon in the same location and a new marker would be provided at the seaward end of the new arm. The top mark would be replaced with a prefabricated Sealite Starboard Hand Top Mark Ref SI-TM1-SH-A. The underside of the topmark would be set at a minimum level of +6.60m ODN.
- 3.2.9 Note any excavated sand would remain within the beach recharge area. None would be removed from the sediment cell budget.

Figure 3.2: New terminal groyne arm



Source: Coastal Engineering UK, 2021. Inset of existing navigation marker.

Figure 3.3: Proposed groyne cross-section



Source: Coastal Engineering UK, 2021

Outfall extensions

- 3.2.10 Records and visual inspection have identified a total of six Welsh Water outfalls which currently discharge surface water run-off into the sea. The beach recharge aspect of the Scheme will result in the surface water outfalls becoming buried. To ensure a continued free flowing discharge of surface water, the outfalls will need to be extended to a point where they are above the new level of the beach, but also not permanently submerged by the sea.
- 3.2.11 It is currently anticipated that three of the outfalls would be extended, with the remaining three (minor) outfalls either being diverted within the promenade to one of the three extended outfalls or protected by a gabion basket to allow continued outflow beneath the new beach surface, as has been completed at previous phases.
- 3.2.12 For the outfalls to be extended, a new chamber would be constructed at the outlet from the existing seawall. From this point a new section of pipe (matching the existing outfall diameter) would extend towards the sea. The entire length of the extended pipe would be protected by a concrete structure with a minimum thickness of 300mm around the pipe, to protect against the harsh saline environment.
- 3.2.13 Although the pipe would be circular, the concrete surround would form a rectangular shaped monolithic structure or part buried pier, extending from the seawall towards the sea, terminating at the MTL of the recharged beach (the extended outfalls would be approximately 200m in length from the existing seawall, similar to the outfalls in the Phase 1 area). This concrete structure also would extend 200mm below the existing beach level to form a solid base, helping to reduce settlement and protect against potential undermining and “washout” of the imported sand.
- 3.2.14 At the discharge point, the outfall would be protected by a small rock groyne, composed of existing rock armour material present in the Phase 2b area, providing protection against wave action.

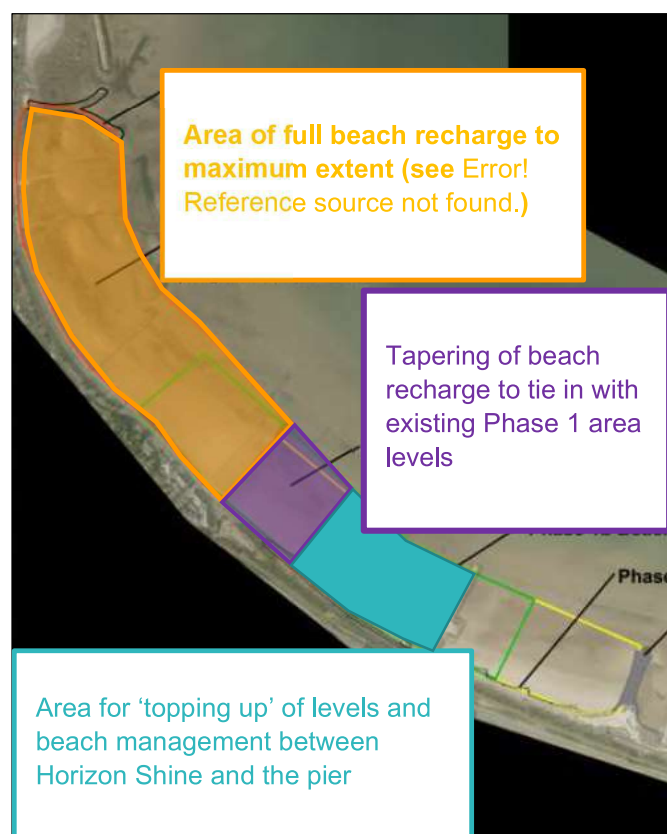
Beach recharge

- 3.2.15 Beach recharge activities would involve the importation and placement of up to 1,000,000t (~666,000m³) of dredged sand material from Rhôs-on-Sea terminal groyne to the west (recharge would taper up to its maximum extent from the terminal groyne and to the slipway north of the junction of Cayley Promenade with Rhôs Promenade) round to the existing slipway adjacent to the western junction of Cayley Promenade with West Promenade, bring levels up to

match the design profile of the Phase 1 works (5m AOD). Recharge would be then tapered off from this point eastwards to tie in with levels in the vicinity of the Horizon Shine Kiosk (Figure 3.4).

- 3.2.16 In addition, the Scheme would also include for the 'topping-up' of sand levels between the Horizon Shine Kiosk and the new truncated pier location (Figure 3.4).
- 3.2.17 The design profile of the new beach would comprise an upper berm of 20m width and 1:40 slope to seaward, which would meet the existing seawall at a level of +5.0m ODN. From the seaward edge of the berm, the beach would be placed at a gradient of approximately 1:30 until it meets the existing beach at a level typically between -2.0 and -3.0 ODN.
- 3.2.18 Once in place, beach management activities between the pier and Porth Eirias would carry on as usual under the existing marine licence.

Figure 3.4: Proposed tapering of beach recharge



Source: Adapted from Project Appraisal Review and Update Report, CCBC, 2018

Promenade improvements

- 3.2.19 In summary, the promenade improvement works are currently anticipated to comprise upgrading the promenade to enhance the experience to the general public visiting the promenade, including:

Pedestrian and cycle paths

- 3.2.20 There would be a new approximately 2.2m wide pedestrian only (Wales Coast Path) zone adjacent to the seawall segregated from an approximately 4.0m wide shared surface for cyclists (National Cycle Route 5) with frequent links between the two.

- 3.2.21 The central dividing strip of the promenade would be comprised of hard and soft landscaping, seating and activity areas. This segregation would improve safety for all users of the area.
- 3.2.22 All promenade areas would have high quality surfaces which would tie in with the areas of the Colwyn Bay Waterfront Project already completed. Railings along the seawall would be appropriate in height for the proposed adjacent pedestrian use and would be adaptable for the addition of mesh to prevent wind-blown sand interfering with the use of the promenade as an active travel route, if this proves necessary over time.

Build-out areas

- 3.2.23 Four 'build-out' areas would be included along the promenade (in between echelon car parking spaces). These areas would have minimal built in furniture to provide a flexible space for any types of activity or event, for example local community groups meeting for fitness/wellbeing classes. These also have the potential for use in less frequent events such as Prom Xtra:
- A – Location for a potential future kiosk (public open space in the interim) with adjacent picnic area adjacent to the eastern junction of Cayley Promenade with West Promenade;
 - B – North of build-out A public open space;
 - C – North of build-out B public open space; and
 - D – Adjacent to the western junction of Cayley promenade and Rhôs Promenade including a picnic area, location for a potential future kiosk (public open space in the interim) and the location of an existing sub-station.

Cycle and vehicle parking

- 3.2.24 Multiple areas for cycle parking would be provided along the promenade adjacent to the shared surface with protective barriers between the cycle parking and highway where necessary.
- 3.2.25 Overall there is proposed to be a small decrease in the number of car parking spaces from 242 to 223, with the provision of 17 disabled parking spaces and 17 electric vehicle charging bays (see Table 3.2:).

Table 3.2: Existing and proposed parking spaces

Location	Existing number	Proposed number
Bottom of Cayley Embankment parallel parking	91	73
West promenade echelon parking	128	92
West Promenade disabled parking	0	15
West Promenade electric charging bay	0	15
West Promenade motor home parking	0	2
Opposite Rhôs residential parallel parking	23	20
Rhôs opposite Combemere Gardens standard bays	0	2
Rhôs opposite Combemere Gardens disabled parking	0	2
Rhôs opposite Combemere Gardens electric charging bay	0	2
Total	242	223

Source: BCA Landscape, 2021

- 3.2.26 The proposed parking bays would be larger than the minimum standards.
- 3.2.27 A number of crossing points between the parallel parking at the base of Cayley Embankment and the promenade area would be provided.

Hard landscaping

- 3.2.28 The hard landscape has been designed and detailed to provide continuity from previous phases to the south and would provide a cost effective but robust finish to the large areas of carriageway, parking, cycleway and footway areas in the scheme.
- 3.2.29 The line and level of the new hard landscape would follow the existing as closely as possible to minimise cut and fill and to allow for the re-use of existing surfaces and/or sub-bases where possible.
- 3.2.30 New drainage would be minimised by re-using existing cross-falls to the sea and existing drainage connections.
- 3.2.31 The area immediately behind the sea wall would comprise a robust reinforced concrete surface to provide protection against scouring caused by wave overtopping, as used in previous phases.
- 3.2.32 Themes of artwork and feature paving bands would be continued from previous phases.

Art work/promenade insets

- 3.2.33 There would be a number of art installations and promenade inset works included as part of the promenade works including (but not limited to):
- Granite inset health markers at 50m intervals with etched inset artwork; and
 - Granite inset postcards with etched inset artwork; and
 - Vertical gateway feature artwork comprised of a cluster of pole mounted wind sculptures which provide visibility through height and movement, in order to attract visitors from Rhôs-on-Sea to the waterfront, and those on the waterfront to Rhôs-on-Sea.

Lighting

- 3.2.34 Lighting would comprise a combination of:
- Twin 'kirium' light emitting diode (LED) luminaire 10.0m tapered steel columns at approximately 25m intervals; and
 - 5.0m high LED cylindrical luminaire light beacons.

Soft landscaping

- 3.2.35 Following a review of the wave overtopping information, the planting areas along the Promenade shown at concept stage would be raised by 450mm minimum to provide some protection from anticipated wave overtopping.
- 3.2.36 Planting mixes have been agreed through consultation with CCBC to be appropriate to the location, without requiring excessive maintenance and would be drought resistant.
- 3.2.37 Proposals for the re-wilding of Caley Embankment would provide maximum enhancement of biodiversity in the area as a direct result of the scheme (see Section 3.3).

Street furniture

- 3.2.38 A range of robust seating, bins, picnic tables, play elements, cycle parking, electric vehicle chargers, pop-up power facilities and lighting would be incorporated to ensure a high quality provision of elements that are suited to the coastal location and easy to maintain.

Drinking water fountain

- 3.2.39 The Llandrillo-yn-Rhôs Memorial Drinking Fountain (Photo 3.1) is a non-operational 20th century drinking water fountain located on Rhôs Promenade. It is located in the middle of where the new cycle lane is proposed and would have to be moved a short distance (approximately 15m). It is proposed to re-connect the fountain to mains drinking water to restore it (if feasible) to use to allow the refill of water bottles.

Photo 3.1: Llandrillo-yn-Rhôs Memorial Drinking Fountain



Source: Mott MacDonald Ltd, 2021

- 3.2.40 The current design allows space for two new kiosks within the Scheme area, to replace the existing kiosks which would be demolished. Replacing these kiosks is outside of the scope of this Scheme. The current scheme provides new water supplies to the relocated water fountain and the two kiosk locations, for easy connection once the kiosks are constructed.

Traffic routing changes

- 3.2.41 As part of the Scheme, it is proposed to change the traffic routing in the area of Cayley Embankment and West Parade.
- 3.2.42 West Parade would become one way from west to east to allow for a wider public realm promenade area, with improved active travel routes (Wales Coast Path, National Cycle Route 5), a much-enhanced public realm and improved parking.
- 3.2.43 There would be speed restrictions (likely to be 20mph) in this area to make it safer with greater amenity for pedestrians and non-vehicular users.
- 3.2.44 Caley Promenade running along the top of Cayley Embankment adjacent to the west would remain two way and 30mph. Traffic passing through the area would therefore be routed via

Cayley Promenade unless accessing the parking and shared space area along West Promenade which would be entered from the west only.

3.3 Ecological enhancement

Cayley Embankment

- 3.3.1 Cayley Embankment consists of an area of coastal, poor semi-improved grassland currently dominated by graminaceous vegetation with a limited diversity of herbaceous species. This area would undergo 're-wilding'. This would include cut and removal of arisings twice annually, scarifying and application of green hay in the Autumn and then suitable management thereafter. There would also be the potential for additional planting of shrubs within the amenity areas (currently with limited structural diversity) which would improve the quality and species diversity of this habitat.
- 3.3.2 The current zig-zag path would be removed in the central Cayley Embankment area for safety and this would have the added benefit of minimising human disturbance of the area.
- 3.3.3 A Technical Note on the botanical recommendations for Cayley Embankment has been produced and is included as ES Volume 2: Technical Appendix 9.7.

Groyne alterations and beach reinstatement

- 3.3.4 Beach recharge activities would involve the importation and placement of dredged sand material between the Rhôs-on-Sea terminal groyne to the west round to the existing slipway adjacent to the western junction of Cayley Promenade with Rhôs Promenade to the east. The existing groyne structures on the foreshore would be removed in preparation for the recharge works, with material recycled for use in the modifications to the terminal groyne.
- 3.3.5 These structures have proven to be a good surrogate for naturally occurring rocky shores and several species of sessile fauna and flora have established themselves on the structure as outlined in Phase 1 biotope walkover survey (ES Volume 2: Technical Appendix 9.4). Although the groynes have inadvertently promoted biodiversity, the species present on these structures would otherwise be absent under baseline conditions where the habitat is more typical of biotopes found further down the littoral zone (mobile sand littoral sand).
- 3.3.6 Although these artificial structures would be lost during the recharge works, it can be argued that the restoration of mobile sand to the Phase 2b area would restore the upper littoral zone to pre-anthropogenic conditions where large hard substrate was largely absent and mobile sand was prevalent throughout the intertidal zone (Figure 3.5).