

# **Old Colwyn Coastal Defence and Active Travel Scheme Environmental Statement**

Volume 3: Non-Technical Summary

July 2020

Mott MacDonald  
Mott MacDonald House  
5 Woodland Road West  
Colwyn Bay LL29 7DH  
United Kingdom

T +44 (0)1492 534601  
mottmac.com

Conwy County Borough  
Council  
Environment, Roads &  
Facilities  
Swyddfeydd Mochdre  
Ffordd Conway  
Mochdre  
Bae Colwyn  
LL28 5AB

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# Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
P01	July 2020	N. Spofforth	C. Williams	C. Williams G. Mitchell	First Issue

**Document reference:** 415437-MMD-00-XX-RP-N-1717

**Information class:** Standard

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# Contents

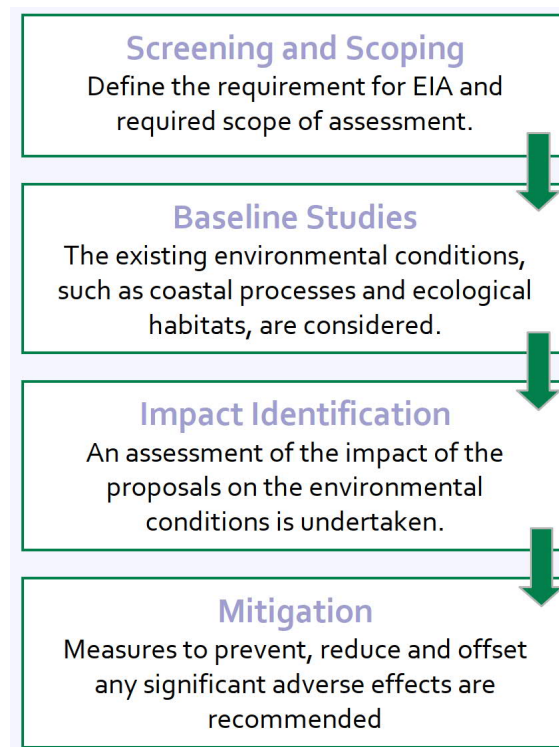
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# 1 Introduction

## 1.1 About this Document

This document forms Volume 3 (Non-Technical Summary) of the Environmental Statement (ES) for the Old Colwyn Coastal Defence and Active Travel Scheme (the “Scheme”), formerly known as Phase 3 of the Colwyn Bay Waterfront Project.

An ES is the report which presents the findings of an Environmental Impact Assessment (EIA). An EIA is required for some development projects where there is the potential for significant effects on the environment. The general stages in the EIA process are as shown below.



Following consultation with Conwy County Borough Council (CCBC) and Natural Resources Wales (NRW) it was decided that this Scheme required an EIA because:

- It covers a large area;
- It is situated on and above the intertidal beach area which is of interest for its ecology and is very close to the Liverpool Bay Special Protection Area (SPA), a very important habitat for birds; and
- The Promenade (road and pedestrian area) and beach form important recreational and tourism assets which are significant to the economic and social well-being of Colwyn Bay.

## 1.2 Why do We Need the Scheme?

The Promenade which runs along the waterfront at Old Colwyn is currently under threat from storm damage and tidal flooding (overtopping). Regular overtopping of the existing coastal defences is causing damage to the Promenade and defences themselves, sections of which are

at imminent risk of failure (see Figure 1.1 for representative photographs). Important infrastructure assets which run parallel to the waterfront, such as the North Wales Coast Railway Line, A55 Expressway and buried Welsh Water sewerage services are at risk from overtopping and associated coastal erosion, as are the active travel (walking and cycling) routes along the Promenade.

The Promenade highway is often closed when spring high tides occur at the same time as onshore winds, during storm events and while subsequent damage is repaired. As a result of the poor standard of coastal protection, there has been a lack of investment in the Old Colwyn Promenade area in comparison to the Colwyn Bay Waterfront Project Phase 1 area to the immediate west with the construction of Porth Eirias and the recharged beach.

**Figure 1.1: Examples of Coastal Overtopping and Damage at Old Colwyn**



To reduce the risk of damage to this infrastructure, starting in January 2020, the Splashpoint Project commenced, comprising the construction of a short rock revetment approximately 30m and 30m in length against the existing sea wall at the location identified as being at highest risk of imminent collapse – the easternmost corner of the Promenade known as Splashpoint.

Subsequent to this, CCBC now want to provide a permanent upgrade of the coastal defences to protect the remainder of the Old Colwyn stretch of coastline from Splashpoint to Porth Eirias concurrently with improvements to the Promenade to facilitate active travel and regeneration.

### 1.3 What are the Alternative Options?

Consideration of alternatives is a key part of the EIA process. Adverse effects can often be avoided by considering different designs or different ways of achieving the requirements. Within the ES, an assessment considered alternatives to the Scheme in terms of their environmental impacts in order that a justified selection of the final scheme could be undertaken. The study evaluated four options, ranging from a “Do Nothing” scenario, through options to maintain (“Do

Minimum”) and sustain the existing defences, to options which improved the level of coastal protection.

The Do Nothing scenario was shown to result in the failure of the defences, loss of the Promenade and highway, including buried sewerage utilities, the subsequent loss of the railway embankment and closure of the railway and in the long term, closure of the A55, with significant negative wider local, regional and national impacts. The Do Minimum scenario was assessed as resulting in a similar outcome to the Do Nothing scenario in the longer term when the costs of annual repairs become unsustainable. Of the options to improve the level of coastal defence, the construction of a full scale revetment was selected as the preferred option, not only providing a much improved level of coastal protection, but also facilitating regeneration of the Old Colwyn waterfront area.

## 2 The Proposed Scheme

### 2.1 Scheme Design

The proposed scope of work for the Scheme comprises a combination of coastal defence, Promenade and active travel improvements along the Old Colwyn waterfront area between Porth Eirias car park and Splashpoint. The Scheme red line boundary and area of permanent construction are illustrated on Figure 2.1.

The Scheme includes the following key components:

- The construction of a rock revetment approximately 30m in cross-sectional width and 1.2km in length, with associated modifications to existing surface water outfalls on the beach to extend them through the new revetment (see Figure 2.2 for a photograph showing the current Porth Eirias revetment of which the Scheme would be an extension);
- A new access build-out area to be constructed in the western half of the Scheme area which would have several functions, including providing a greater area for pedestrian access; Equality Act compliant ramp access and stepped access to the beach, along with landscaped seating steps at varying levels, to the beach access (a 3D representation of this area is provided as Figure 2.3);
- New pedestrian accesses through the proposed revetment to comprise three sets of beach access steps perpendicular to the linear rock revetment (a 3D representation of a typical set of steps is provided as Figure 2.4);
- A dedicated fishing platform in the Splashpoint Area to keep anglers at a safe distance from active travel routes;
- The raising of the Promenade to the west of Rotary Way and the raising of the Promenade and highway to the east of Rotary Way with associated access provision;
- Pedestrian and cycle path improvements, pedestrian crossings and improved Promenade access;
- Improved picnic area in a landscaped garden setting and an adjacent outdoor classroom area; and
- Improvements in parking provision, street furniture and lighting and provision of space for a new concession building.

A Scheme landscape general arrangement drawing (number 19.537-101-GA01) is provided on page 7 as produced by BCA Landscape and Mott MacDonald Ltd coastal design drawings (numbers 415437-MMD-00-XX-DR-C-3001 and 3002) are provided on pages 8-9.

**Figure 2.1: Plan Showing the Red Line Boundary and Areas of Permanent Construction**



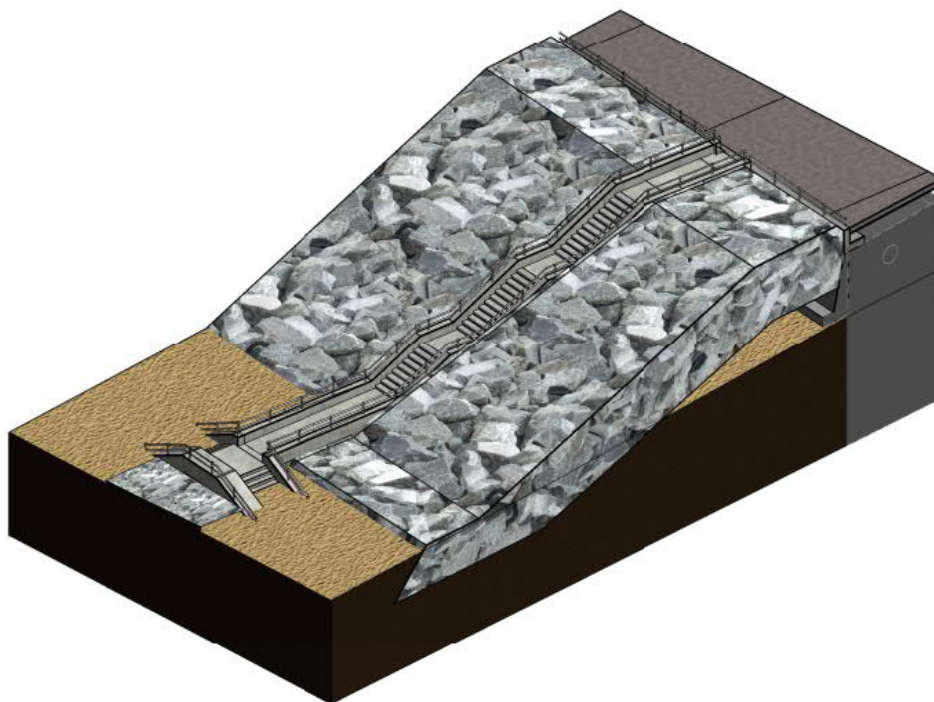
**Figure 2.2: View Looking East Across the Scheme Area (proposed rock revetment to be an extension of the existing Porth Eirias revetment visible in the lower right hand corner)**

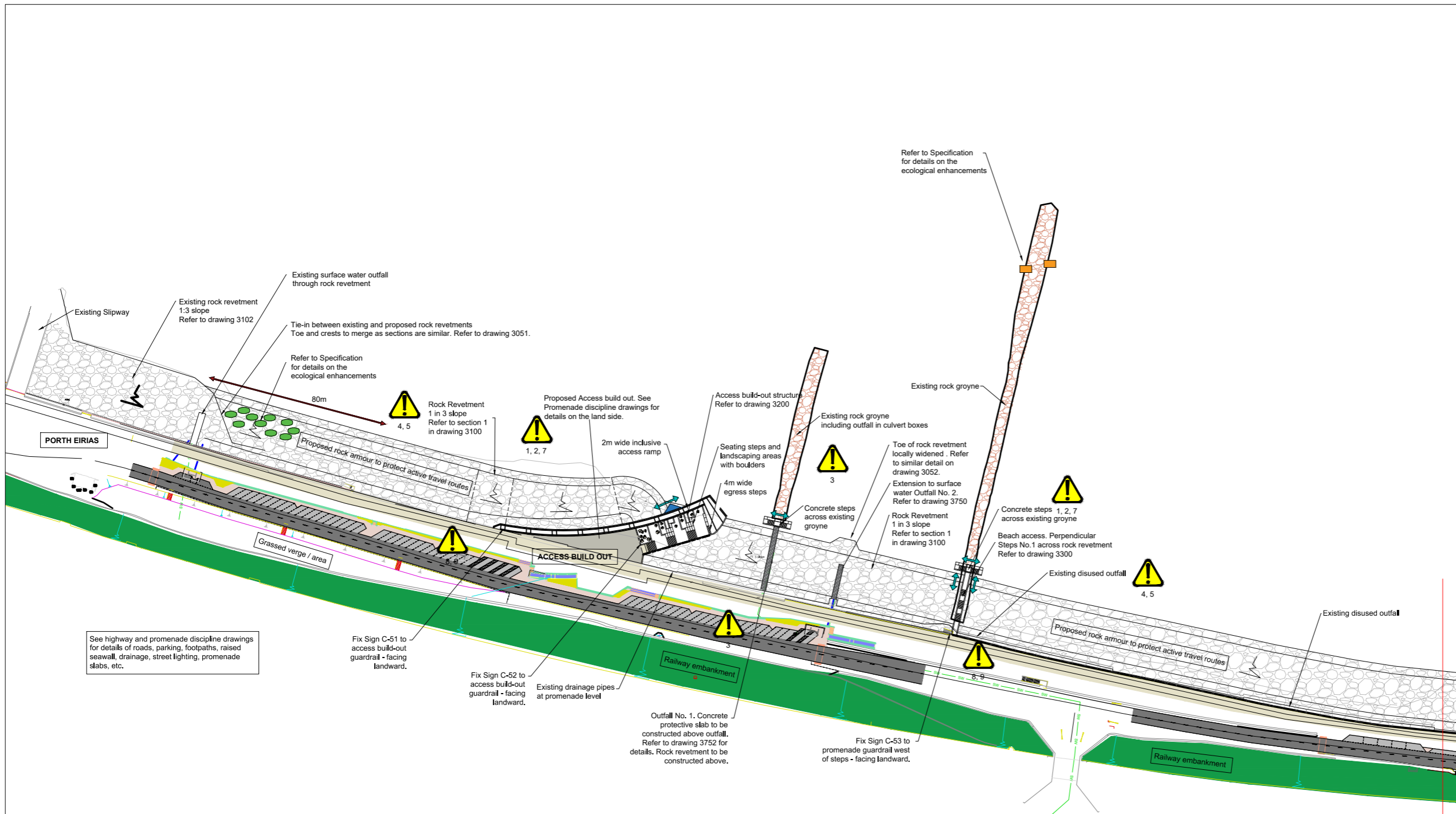


**Figure 2.3: Access Build-Out Area 3D View**



**Figure 2.4: Perpendicular Access Steps 3D View**





Location Plan - Area 1  
1:1000

**Safety, Health & Environmental Information**

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.

**⚠** In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following risks and information:

**CONSTRUCTION**

- 1 Depth and full extent of existing seawall foundations are unknown. Existing seawall becomes destabilised (DHER Ref. 19 & 23).
- 2 Unforeseen ground conditions/obstructions prevent sheet piles being driven (DHER Ref. 20).
- 3 The status (i.e. disused or live) and precise positions of some outfalls are unknown (DHER Ref. 21).
- 4 Falling from height. Falling objects from promenade (DHER Ref. 22).
- 5 Working in tidal zone (DHER Ref. 27).
- 6 Presence of Unexploded ordnances (UXOs). Site area categorised as low risk. (DHER Ref. 30).

**OPERATION AND MAINTENANCE**

- 7 Beach levels to be reinstated to existing levels or higher after completion of works. Beach levels shall be monitored at regular intervals including before and after storms and at least once a year in spring (DHER Ref. 4).
- 8 Marine growth to be removed periodically from pedestrian access surfaces (DHER Ref. 5).

- Notes**
1. This drawing is to be read in conjunction with all discipline drawings, specifications and standards.
  2. Unless otherwise noted (UNO), all dimensions are in millimetres, all levels are in meters above ordnance datum (AOD), and all setting-out points in millimeters to the British National Grid (OSGB36). Do not scale from drawing, if in doubt ask.
  3. All relevant setting-out points, dimensions & levels are to be checked by Contractor on-site prior to commencement of the works.
  4. The onshore topographical survey was supplied by Survey Operations Ltd in April 2008. The offshore topographical (beach) survey was supplied by Environmental & Engineering Services in 2019. The CCTV survey was supplied by Invek Surveys Ltd in May 2020.
  5. Drawings show approximate position of known services. See Site Information for further information. Further unknown services maybe present. Contractor to undertake survey to determine full extent of services present within working area. Results to be forwarded to the Structural Design Engineer 2 week prior to commencement of works, or ordering of materials, whichever occurs first.
  6. See 415437-MMD-00-XX-DR-C-2000 series drawings for the proposed promenade works. See 415437-MMD-00-XX-DR-D-0000 to 1399 series drawings for the proposed highway & drainage works.
  7. Refer to Appendix 12/1 of the Works Specification for all the sign details.

**Key to symbols**

	Existing railway embankment		Rock structures
	Proposed extent of highway		Fishing platform
	Group of 5 Vertipools fixed to wall		Outfall extension/ protection
	Textured outer walls		Tidal pools
	Enhancement of rocks		Ecological Armouring unit

- Reference drawings**
- 415437-MMD-00-XX-DR-C-3051 - Plan at Porth Eirias End
  - 415437-MMD-00-XX-DR-C-3052 - Plan at Splash Point End
  - 415437-MMD-00-XX-DR-C-3100 - Revetment Cross Sections - Sheet 1 of 3
  - 415437-MMD-00-XX-DR-C-3102 - Revetment Cross Sections - Sheet 3 of 3
  - 415437-MMD-00-XX-DR-C-3200 - Access Build-Out Plan
  - 415437-MMD-00-XX-DR-C-3300 - Perpendicular Steps No.1 Plan
  - 415437-MMD-00-XX-DR-C-3750 - Outfall Extensions and Culvert Cross Sections
  - 415437-MMD-00-XX-DR-C-3752 - Outfall No. 1 Protection Details
  - 415437-MMD-00-XX-DR-C-2000 series - Promenade Works
  - 415437-MMD-00-XX-DR-D-0000 to 1399 series drawings - Highway and Drainage Works
  - 19.537 - 100 Old Colwyn GA Landscape Drawing

Rev	Date	Drawn	Description	Ch'k'd	App'd
P05	17/07/20	AA	Construction Issue for Client Approval	AD	ZH
P04	26/06/20	AA	Construction Issue for Client Approval	AD	ZH
P03	27/04/20	ZD	Tender Issue for Client Comments	AD	ZH
P02	25/03/20	ZD	Second Issue for Internal Comments	AD	ZH
P01	12/03/20	ZD	First Issue for Comments	AD	ZH

Status Stamp

**MOTT MACDONALD**

Mott MacDonald House  
5 Woodland Road West  
Colwyn Bay  
LL29 7DH  
United Kingdom  
T +44 (0)1492 534601  
F +44 (0)1492 533063  
W www.mottmac.com

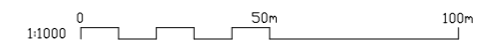
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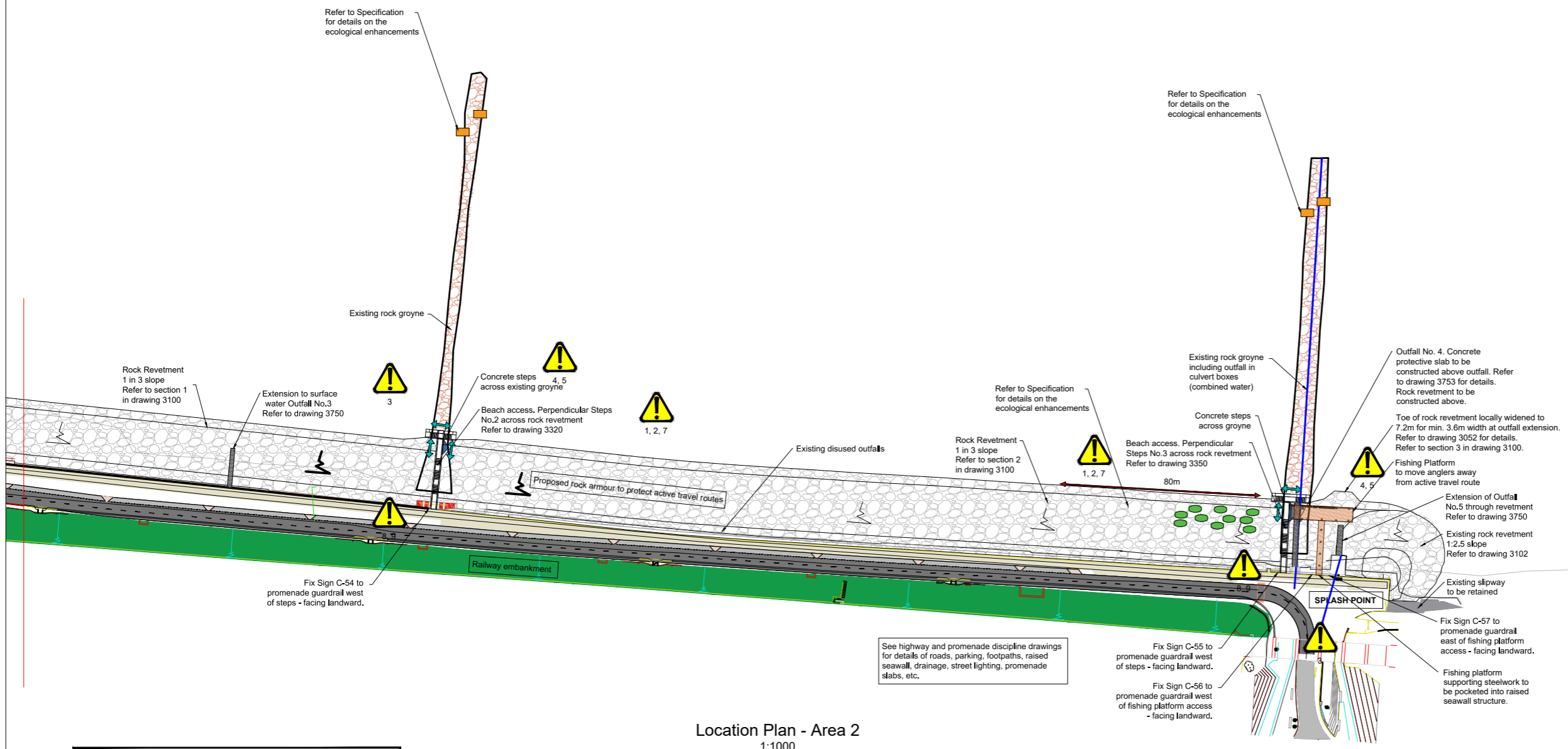
Title

Old Colwyn Promenade Coastal Defence & Active Travel Improvements

General Arrangement Plan - Area 1  
Sheet 01 of 02

Designed	P. Kacperek	PK	Eng check	A Douglas	AD
Drawn	A. Al-Abdullah	AA	Coordination	F. Loy	FL
Dwg check	D. Sciuto	DS	Approved	Z. Hutchison	ZH
MMD Project Number	415437	Scale at A1	1:1000	Security	STD
Suitability Description	Issue for Construction Approval	Suit. Code	S4	Revision	P05
Drawing Number	415437-MMD-00-XX-DR-C-3001				





Location Plan - Area 2  
1:1000

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  - 415437-MMD-00-XX-DR-C-3102 - Revetment Cross Sections - Sheet 3 of 3
  - 415437-MMD-00-XX-DR-C-3320 - Perpendicular Steps No. 2 Plan
  - 415437-MMD-00-XX-DR-C-3350 - Perpendicular Steps No. 3 Plan
  - 415437-MMD-00-XX-DR-C-3450 - Fishing Platform Plan
  - 415437-MMD-00-XX-DR-C-3750 - Outfall and Culvert Cross Sections
  - 415437-MMD-00-XX-DR-C-3753 - Outfall No.4 Protection Details
  - 415437-MMD-00-XX-DR-C-2000 series - Promenade Works
  - 415437-MMD-00-XX-DR-D-0000 to 1399 series drawings - Highway and Drainage Works
  - 19.537 - 100 Old Colwyn GA Landscape Drawing

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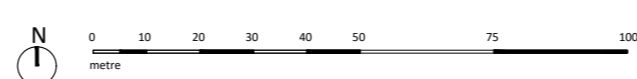
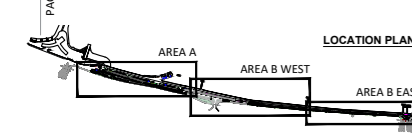
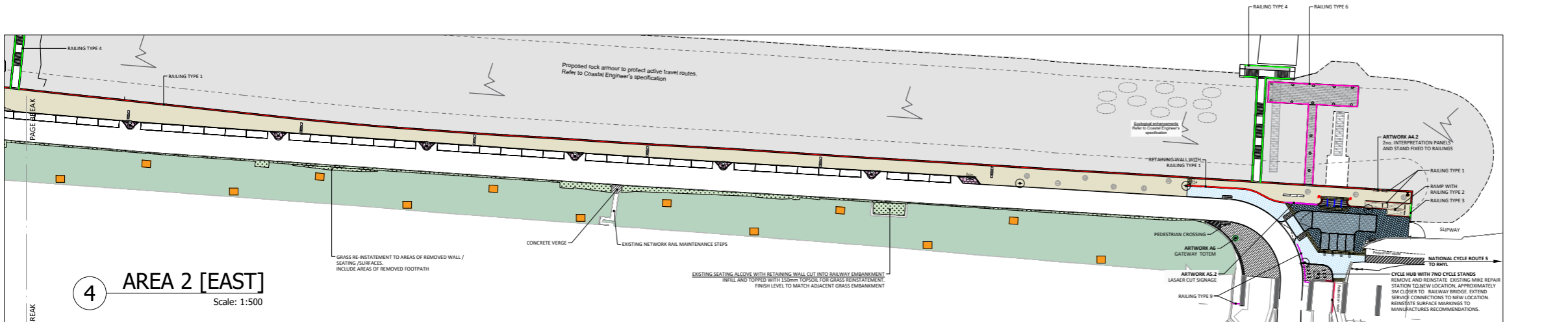
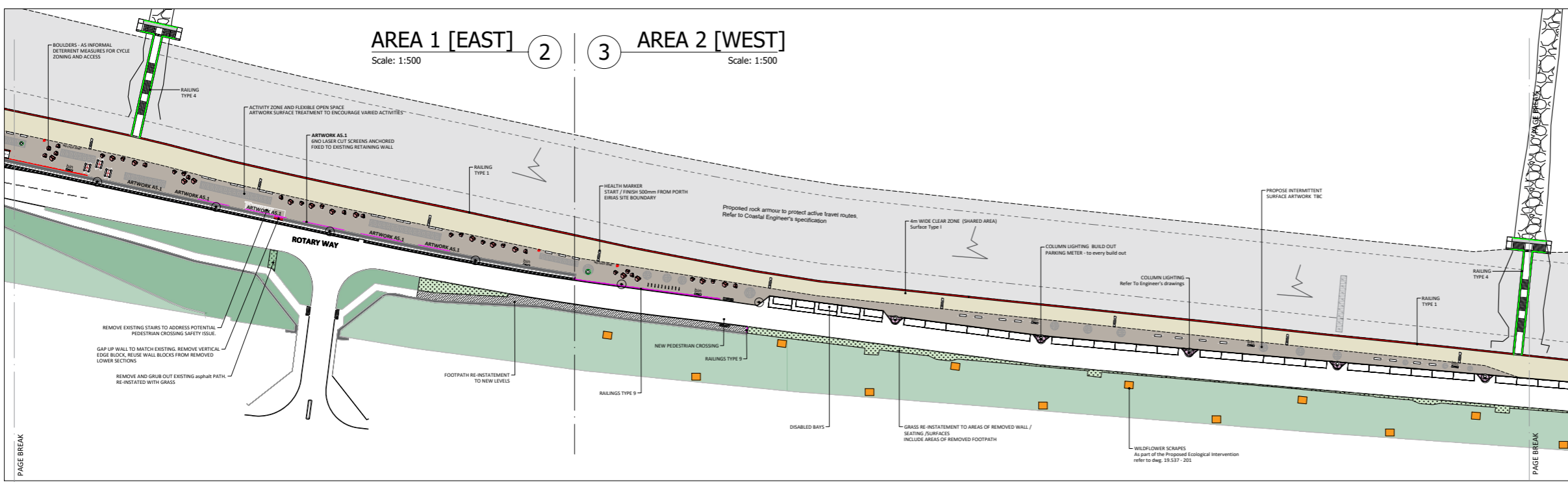
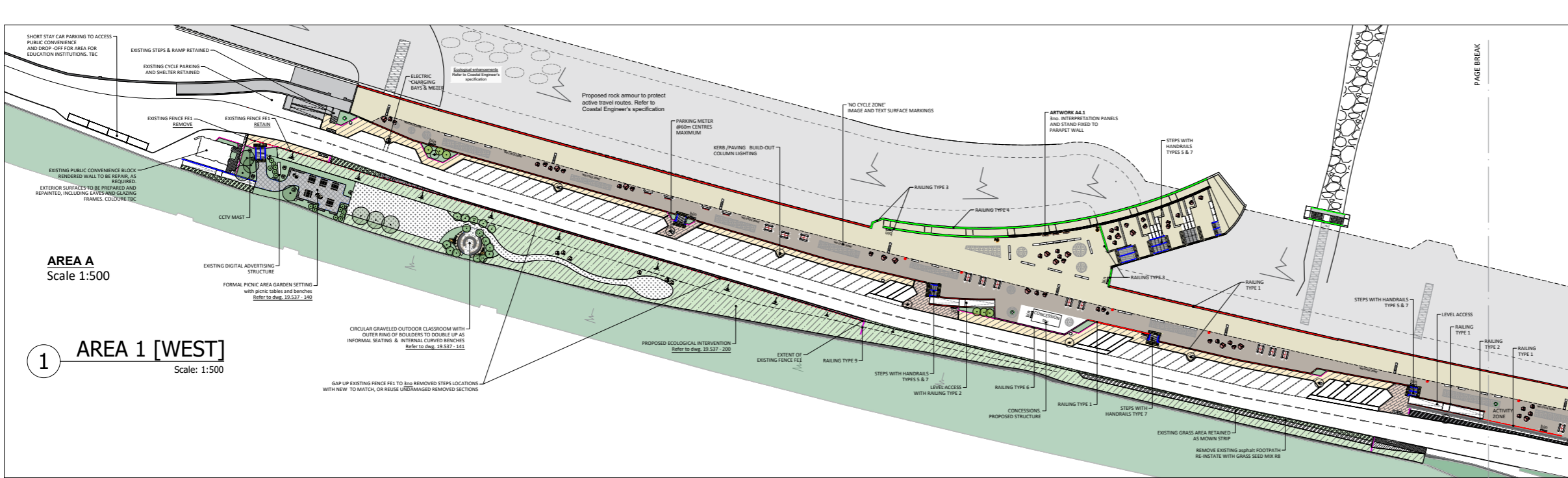
Mott MacDonald House  
5 Woodland Road West  
Colwyn Bay  
LL29 7DH  
United Kingdom  
T +44 (0)1492 534601  
F +44 (0)1492 533063  
W www.mottmac.com

Client

Title  
**Old Colwyn Promenade Coastal Defence & Active Travel Improvements General Arrangement Plan - Area 2**

Sheet 02 of 02

Designed	P. Kacperek	PK	Eng check	A. Douglas	AD
Drawn	A. Al-Abdullah	AA	Coordination	F. Loy	FL
Dwg check	D. Sciuto	DS	Approved	Z. Hutchison	ZH
MMD Project Number	Scale at A1			Security	
415437	1:1000			STD	
Suitability Description	Issue for Construction Approval			Suit. Code	S4
Drawing Number	415437-MMD-00-XX-DR-C-3002			Revision	P05



**EDGINGS**  
ALL HIGHWAY KERBS AND EDGINGS TO MOTT'S SPECIFICATIONS AND DESIGN

TYPE	DESCRIPTION	FINISH
Type E1	145 x 255 Conservation Kerb	100mm upstand
Type E2	145 x 145 Conservation Centre Stone	Flush edging
Type E3	145 x 145 Conservation Centre Stone	Flush edging
Type E4	145 x 145 Conservation Centre Stone	Flush edging
Type E5	50 x 150 pcc flat top kerb, flush	Flush
Type E6	150mm high x 250mm long x 2.5mm thick	governments, site
Type E7	150mm high x 250mm long x 2.5mm thick	governments, site
Type E8	150mm high x 250mm long x 2.5mm thick	governments, site
Type E9	150mm high x 250mm long x 2.5mm thick	governments, site

**SURFACES**  
REFER TO MOTT'S SERIES 1100 DRAWINGS FOR BUILD-UP SPECIFICATIONS

**UNIT PAVING:**  
SEE DRAWING TO BE 'KELLEN', TO MATCH PREVIOUS PHASES. SUPPLIER: HARDCAPE LTD

AREA	TYPE	DESCRIPTION	FINISH
AREA 1	Type A	Flexible construction, 60mm thick	Asphalt
	Type B	Flexible construction, 80mm thick	Asphalt
	Type C	Rigid construction, 100mm thick	Asphalt
AREA 2	Type D1	Rigid construction, 100mm thick	Asphalt
	Type D2	Rigid construction, 100mm thick	Asphalt
	Type D3	Rigid construction, 100mm thick	Asphalt

**CONCRETE VERGES**  
Type G: 100mm thick fibre reinforced air entrained PAK2 concrete to BS 8500 on 150mm Type 1 sub-base. Slope out construction joints at 4.5m spacing. Depth of construction joints to be approx. 30mm and sealed with Nitoseal 22 or similar approved. Brushed finish to match Phase 2 finish.

**HAZARD PAVING**  
Type H: 100mm thick fibre reinforced air entrained PAK2 concrete to BS 8500 on 150mm Type 1 sub-base. Slope out construction joints at 4.5m spacing. Depth of construction joints to be approx. 30mm and sealed with Nitoseal 22 or similar approved. Brushed finish to match Phase 2 finish.

**EDGE RESTRAINTS AND HANDRAILS**  
REFER TO DRAWINGS: 19.537.108 FOR TYPES AND LOCATIONS; 19.537.123 INDICATIVE DETAILS

**PROPOSED FERROCAST HARBOUR STYLE POST AND RAIL SYSTEMS BY MARSHALLS OEA**  
50mm Ø horizontal rails, surface finish as standard. Post & rail system to resist class 3 loading to BS 7518. Base plate & holding down bolt arrangement to withstand loading requirements for class 3 post & rail pedestrian restraint system as detailed in table 2 of BS 7518:1995. Supplier/fabricator to provide final construction detail drawings package and components schedule including post and rail variations to suit different applications.

TYPE	DESCRIPTION	FINISH
Type 1	To Promenade Edge	As per previous phases
Type 2	Ramp (including beach access ramp)	As per previous phases
Type 3	To 500mm high parapet walls	As per previous phases
Type 4	To 1000mm high parapet wall and steps	As per previous phases
Type 5	To 1000mm high parapet wall and steps	As per previous phases
Type 6	To 1000mm high parapet wall and steps	As per previous phases
Type 7	To Concessions Area & Fishing Platform	As per previous phases
Type 8	To 1000mm high parapet wall and steps	As per previous phases
Type 9	To 1000mm high parapet wall and steps	As per previous phases

**NEW FENCE**  
Type 9: Protective barrier adjacent to selected pedestrian crossings and pedestrian access restriction at Splash Point. Product: V4 Optimal. Supplier: Alphalab OEA. Height: 1050. Support Posts: 60 x 60 x 1.5m (H) and 60 x 60 x 1.5m (H) @ 2m centres. 2m long panel. Concrete roof fixed posts. Finish: Powder coated, RAL colour TBC. Fencing Surface mounted on baseplate.

**EXISTING FENCE**  
Type 1: Chain link fence and mesh fence to bottom of picnic area grass bank. RETAIN: Remove section along new step access to picnic area. Gap-up at removed steps locations.

**LIGHTING**  
Refer to Highway Engineers drawings and specification

**STREET FURNITURE**  
Refer to dwg. 19.537.102 Furniture

**SEATING - GENERAL**  
Type 1: 1000mm high, 400mm wide, 400mm deep. Supplier: Marhall's OEA. Dimensions: 1000mm high; 400mm deep. Roof fixed.

**PCNIC SETS**  
Type 1: 1000mm high, 400mm wide, 400mm deep. Supplier: Marhall's OEA. Dimensions: 1000mm high; 400mm deep. Roof fixed.

**TOURNEY TELESCOPE**  
Product: HDC DFN14 Dual Head, Wheelchair Accessible. Non-coin Operated Telescope. 200 Magnification. Supplier: HDC International OEA.

**LITTER BINS**  
MLB446 Large capacity Quad Recycling Bin. Size: 472 (H) x 1062 (W) x 472 (D). Supplier: Wyloone.

**SHEPHERD FERROCAST CYCLE STANDS**  
Supplier: Marhall's OEA. Dimensions: 500mm diameter x 950mm long x 770mm high. Roof fixed.

**ACTIVE TRAVEL NORTH WALES BOULDERS**  
Refer to dwg. 19.537.101 GA 02

**ARTWORK**  
Refer to dwg. 19.537.104 Artwork Strategy

**A1 ACTIVE TRAVEL HEALTH MARKER**  
As per previous phases

**A2 ACTIVE TRAVEL SURFACE ARTWORK**  
Surface artwork treatment to selected areas. Product: DecoraMark - perforated thermoplastic sheet; applied to promenade concrete surfaces. Artwork design to be confirmed following further consultations. Assume artwork area as 477m².

**A3 ACTIVE TRAVEL NORTH WALES BOULDERS**  
Refer to selected boulder sets @ 20% of total boulder quantity. A3.1 Artwork control of geographical classification, geographical identification, composition, process, material, origin etc. Artwork letters to be of either carved, inset, different finish. A3.2 Carved boulders as a sunken and base relief. E.g. mythical creatures.

**A4 INTERPRETATION PANELS AND STAND**  
Quantity: 5no

**A5 LASER CUT PANEL**  
Powder coated steel. Resin anchored to new/re-existing walls. LED strip back lighting

**A6 GATEWAY TOTEM**  
PROCESSED: 50M  
To be designed

**SOFT LANDSCAPE**  
Refer to dwg. 19.537.104 Soft Landscape Strategy  
121 Planting Bed Details  
122 Tree Planting Details  
123 Tree Planting Details

**GROUND COVER PLANTING**  
Area 1: 75m²  
Picnic Area: 153m²  
Outdoor Classroom: 57m²

**PLANT SPECIFICATION:**  
General planting: 2-3 plants @ 50cm/m² average density. Specimen plants: 3-7 plants @ 2m/m² average density. Landscaping membrane to support with 75mm deep loose gravel (50mm depth bark mulch for picnic area only). 400mm depth topsoil for shrub planting. Plant species to be predominantly low maintenance small shrubs, with selected areas of grass and herbaceous mixes.

**THIS SHRUB PLANTING:**  
Picnic Area & Outdoor Classroom: Trees. Mix deciduous and evergreen species; various sizes.

**ECOLOGICALLY RICH HABITAT CREATION**  
AREA 1 INTERVENTION  
Refer to dwg. 19.537.200 for full planting mix and specification

**AREA 2 INTERVENTION**  
Refer to dwg. 19.537.201 for full planting mix and specification

**WILDFLOWER SEED MIX**  
Rotary Way to Rotary Post Railway Embankment  
24no. 2x 2.5m scrapes  
Locations to be determined on site.

**NOTE:**  
This drawing is to be read in conjunction with all relevant discipline drawings, specifications and standards.

**CLIENT:** McDonald's

**JOB TITLE:** Old Colwyn Promenade Coastal Defence And Active Travel Improvements

**DRAWING TITLE:** General Arrangement

**DATE:** 24 July 2020

**SCALE:** 1:500 @ A0

**PROJECT NUMBER:** 19.537

**DRAWING NUMBER:** 100

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**DESIGNED BY:** RAZAK, H

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**CONSTRUCTION**

**BCA Landscape**

The Scheme has been identified as having potential for ecological enhancement which has been integrated into the Scheme design from the earliest opportunity. Marine enhancements include the creation of rock pools located within the revetment, and enhanced rock areas (to aid colonisation by marine species), the use of “vertipools” to retain water on vertical surfaces at lower tidal states, enhanced sea wall areas and biological armouring units (bioblocks or similar) placed within the existing groynes. Terrestrial ecological enhancements include the use of planting and seeding mixes within the picnic and outdoor area. The planting of wildflowers along the railway embankment is also being considered.

The Scheme also includes future management actions such as Promenade repair and inspection and maintenance of the new defences where appropriate.

## 2.2 Planning Framework

The Scheme supports policy objectives at all planning levels, particularly with regards to enhancing sea defences and reducing flood risk. Additionally, regeneration of the waterfront is considered to support policy objectives to regenerate Colwyn Bay as a desirable tourist destination.

The long term effects of the Scheme are also considered to support planning objectives concerned with nature conservation and environmental management. Improved erosion protection provided to transport infrastructure would support policy objectives for developing sustainable transport links in North Wales.

## 2.3 Scheme Construction

During construction of the new coastal defences and Promenade improvements, works would occupy the Promenade and intertidal area generally within 50m to 60m of the existing sea wall. It is proposed that (funding allowing) the Scheme would be constructed in two phases with the first being from Splashpoint to Rotary Way and the second being from Rotary Way to Porth Eirias, with each phase anticipated to take around 10 months (although the exact amount of time would be determined by the Contractor appointed to undertake the work).

For the first phase, the Promenade would need to be closed fully, while for the second phase it is anticipated that for the majority of the works period the Promenade would remain open for westbound traffic. Appropriate diversions would be put in place for eastbound traffic. During construction, the Wales Coast Path and National Cycle Network Route 5 would be diverted around the works through the quiet residential area of Old Colwyn where necessary, and access to this section of the beach and public spaces would be limited.

Non-tidal general construction activities would take place between 07:00 and 20:00 Monday to Friday and 08:00 and 12:00 on Saturdays, although piling activities may extend to 16:00 on Saturdays (depending on tidal conditions). Some tidal construction activities would be dependent on the timing of the low tides, and therefore night-time working may be required for these activities. There is the potential that the large rock revetment stone may be imported by barge which would require 24-hour working with unloading onto the beach taking place for around 2 hours either side of each high tide. Members of the public and local residents would be kept informed on the Scheme through community engagement. All other construction deliveries would access the Scheme directly off the A55 Expressway Junction 22.

The location of the construction compounds for the Scheme have not yet been finalised given the funding and phasing constraints, however all would be located within the existing red line boundary drawing on the hardstanding Promenade area to the south of the sea wall. It is considered likely that the Splashpoint area would be used for a compound, along with a central

area of Promenade. There is the potential that the eastern third of the Porth Eirias car park could be used for the storage of plant and access to the slipway. Hours of access to the car park would be restricted and agreed with CCBC and their tenants in order to avoid adverse impacts on Porth Eirias operation and businesses.

It is proposed that the rock revetment would be constructed first followed by the Promenade improvements. Foundation piling activities for the revetment access steps, fishing platform and access build-out area would be completed prior to placement of the revetment. The design of the of the works would ensure that flood risk is minimised during construction. When construction of the new coastal defences is completed, all areas of public open space occupied during construction would be restored to their original use.

## 3 Summary of Environmental Effects

Following a thorough EIA scoping process, a number of different environmental topics were “scoped-in” for assessment within the ES. A summary of the findings of each of these environmental topics is provided below.

For most environmental topics, effects are identified as Neutral, Slight, Moderate, Large or Very Large and can be adverse or beneficial. For the purposes of this assessment, effects of Moderate (adverse or beneficial) and above have been considered to be significant.

### 3.1 Air Quality

The air quality assessment undertaken modelled the potential air quality impacts of traffic during construction on sensitive worst-case receptors along proposed diversion routes within the Old Colwyn and wider Colwyn Bay area. The greatest air quality impact from the Scheme was identified as being temporary and Slight Adverse, and as such the air quality effects of the Scheme were found to be not significant.

### 3.2 Biodiversity

The ecology assessment considered a range of terrestrial and marine designated sites, habitats and species. The site is located adjacent to the Liverpool Bay Special Protection Area which is of international importance for a number of bird species including wintering common scoter and red-throated diver. To inform the ecology assessment, surveys of habitats, wintering birds and bats were completed alongside a desk study of local records, which confirmed presence of these wintering birds as well as identifying presence of blue mussel beds and honeycomb worm reefs (although both in poor condition). The ecology assessment considered all of these features as well as potential impacts on reptiles, fish, marine mammals and benthic fauna.

The key potential impacts from the Scheme are anticipated to be during the construction phase. Construction activities could, in the absence of mitigation, cause damage to habitats (from pollution and tracking of machinery) and/or disturbance to birds, marine mammals and fish (from noise, vibration, lighting, visual disturbance from works and changes in turbidity). As mitigation, working measures have been proposed as part of a Construction Environmental Management Plan (CEMP) to specifically safeguard these features and minimise disturbance, following which residual effects are anticipated to be Slight Adverse (not significant).

In the long-term, the operational Scheme is anticipated to require less maintenance and therefore cause less disruption to ecology, providing an overall benefit. In addition to this, a suite of measures are proposed for both the enhancement of marine ecology and biodiverse promenade landscape planting. These enhancements as a package are considered to result in permanent Slight Beneficial effects, not significant in the context of the wider area, however significant benefits for biodiversity are anticipated at a local level within Colwyn Bay.

### 3.3 Climate

A carbon assessment has been completed for the Scheme to determine the impact the construction of the Scheme would have upon climate change. This assessment considered the embodied carbon of construction materials, emissions from construction activities and emissions from the transport of material to site. Throughout the iterative design process large savings have

occurred of approximately 32% to date. The assessment concluded that the effect on climate would not be significant.

## 3.4 Coastal Processes and Flood Risk

### 3.4.1 Coastal Processes

During the construction of the Scheme there are likely to be small-scale impacts to the coastal processes along this frontage that result from the stockpiling of rocks and the movement of vehicles along the beach. Mitigation for these impacts has been included in the CEMP to reduce the loss of beach material. With the proposed mitigation the construction stage effects of the Scheme are considered to be temporary Slight Adverse (not significant). Following the construction of the Scheme it is anticipated that there would be a permanent Slight Beneficial (not significant) impact to the coastal processes owing to a reduction in scour at the toe of the revetment.

### 3.4.2 Flood Risk

The Promenade is currently at risk of coastal flooding with frequent overtopping events occurring. During the construction of the Scheme there could be an increased risk of flooding along the frontage assessed as temporary Slight Adverse. To reduce this impact, mitigation has been proposed in the CEMP to ensure phasing of the works is undertaken and a Flood Risk Management Plan is in place. Once operational, the Scheme would have a Major Beneficial effect (significant) in reducing the current overtopping risk along the frontage and providing structural stability to the coastal defences in the longer term.

### 3.4.3 Water Framework Directive Quality Elements

The Water Framework Directive is a European Directive, which aims to protect and improve the water environment. The standard objective is to achieve “good status”, when considering a lot of different water quality indicators known as “quality elements”. An Assessment has been completed for the Scheme, identifying the potential for effects on the North Wales Coastal Water Body. When taking into account the mitigation measures both from the design stage and those proposed during construction including adherence to the Scheme CEMP, no deterioration of the water body quality elements is anticipated. Construction effects have been classed as temporary and Slight Adverse (not significant) while operational effects are anticipated to be permanent Slight Beneficial (not significant).

## 3.5 Landscape

The Landscape and Visual Impact Assessment (LVIA) investigated the effects the Scheme would have from the point of view of landscape and visual amenity receptors. Landscape receptors are different types of landscape classified by various official bodies. They include nationally designated Landscape Character Areas and Marine Character Areas. Visual amenity receptors are people including residents, walkers, and road users. Receptors can only be considered if they are predicted to have visibility of the Scheme.

The LVIA incorporated 10 viewpoints to give a wide range of views covering landscape and visual amenity receptors in the area. The effects of the Scheme on views from these areas were then assessed by professional landscape architects using methods as advised by the Landscape Institute.

The main findings were that there would be temporary Moderate Adverse (significant) effects on visual amenity predominantly during construction of the Scheme in relation to recreational users

of the Promenade such as walkers and cyclists due largely to the closure and diversion of paths and cycle routes, along with users of Porth Eirias outdoor areas and of users of Colwyn Bay waters (for sailing and fishing for example).

On completion, visibility of the proposed sea defences from residential areas such as Rhos Promenade would be limited. The proposed sea defences would be in keeping with similar projects along the bay. Visibility of the Scheme from the main roads and railway lines through the study area would be very limited.

In terms of the landscape character of the site and surrounding area and having regard to the similar and proposed coastal defence schemes in the area, it is considered that the landscape has the capacity to accommodate the proposed coastal defences.

### 3.6 Materials

The Scheme has potential to impact on the availability of material resources for other projects locally and in the future, subsequent impacts on the demand for key construction materials, and the depletion of non-renewable resources. As a worst case scenario, it has been assumed that greater than 50% of primary materials required for the rock revetment would need to be sourced internationally, resulting in a permanent Large Adverse (significant) effect on non-renewable material resources. There is also anticipated to be a permanent Moderate Adverse (significant) effect on the availability of material resources, due to the likelihood that less than 70% of non-hazardous construction and demolition waste generated on-site would be recovered or recycled to substitute the use of primary materials.

Environmental design and mitigation measures across all phases of the Scheme have and would continue to try to minimise the potential effects of material resource use and waste generated. These measures have included the completion of a materials reduction workshop at the early design stages and would continue to manage waste during construction in accordance with a Site Waste Management Plan, which sets out good practice measures for minimising waste. In addition, the CEMP would detail mitigation measures to be adhered to on-site to reduce the effects on material resources during construction. Where appropriate, a Materials Management Plan would also be used to ensure materials are re-used efficiently.

### 3.7 Noise and Vibration

The Noise and Vibration Chapter assesses the effects of construction noise and traffic resulting from the Scheme on nearby sensitive receptors.

A number of residential properties in close proximity to the Scheme have been selected as being representative for the purposes of the assessment. The minimum separation distance between the nearest construction work boundaries and the closest residential property is approximately 80m. Noise assessments have been undertaken at these properties by comparing predicted construction noise levels with published assessment criteria.

The construction noise assessment has determined that associated levels are expected to be Slight Adverse (not significant) throughout the construction phase when considering the proposed mitigation which includes restricting hours of piling, good community engagement and traffic management. Noise and vibration during the construction phase is expected to be temporary and the effect is negligible. Good industrial practice is recommended which would further reduce the impact of noise and vibration at nearby receptors.

### 3.8 Population and Human Health

The construction phase of the Scheme is likely to cause temporary disruption to local residents due to reduced access to the Promenade and Old Colwyn Beach. This would reduce the ability for people to walk, cycle and undertake other recreational activities. These Slight Adverse (not significant) impacts would be managed through the CEMP which would require the Contractor to implement and publicise diversions to walking and cycling routes so that the local population are still able to undertake recreational activities on these well utilised routes.

There are also likely to be temporary impacts on businesses which operate within the local Promenade area due to disruption to access and a reduction in amenity due to the close proximity of the construction activity. These effects would also be managed through the CEMP which would require the contractor to minimise disruption to businesses, for customers, deliveries and staff.

The proposed traffic diversions are likely to have a temporary impact on the quality of life of residents due to lengthier routes and delays. However, these are temporary and would be managed through a Construction Traffic Management Plan which would require the contractor to make sure that the diversion and other management procedures are well advertised.

During the operational phase all population and health effects are likely to be beneficial and permanent. A permanent Moderate Beneficial effect (significant) would be anticipated for the local population who would have access to enhanced walking, cycling and recreational opportunities and an outdoor classroom as a result of the Scheme. This would lead to improved quality of life for the local population. The Scheme also contributes to the regeneration of Colwyn Bay waterfront which would lead to permanent Slight Beneficial (not significant) impacts for businesses and tourism.

### 3.9 Traffic and Transport

A Transport Statement (TS) was completed for the Scheme which looked at both the estimated traffic anticipated to be generated by construction deliveries and in relation to diverted traffic. The TS identified the requirement for a traffic management plan to be produced by the Scheme Contractor prior to works commencing.

The completed TS has demonstrated that:

- The site benefits from having convenient and direct access from the A55. Construction vehicles and material deliveries would be via Junction 22, avoiding the need to use the local highway network, with minimal disruption expected;
- There is good opportunity for construction staff to reach the site via sustainable modes of travel, with suitable footpaths, bus services and train connections within Colwyn Bay; and
- The temporary diversion of traffic can be accommodated via recognised diversion routes, which are used when the Promenade is closed to traffic.

On the basis of this assessment it is considered that the traffic impacts associated with the construction of the coastal defences would be satisfactorily accommodated by the existing highway network and proposed diversion routes.

### 3.10 Cumulative Effects

An assessment of effects that occur both as a result of combining different environmental topic effects, along with considering the effects that might be generated “cumulatively” by the Scheme alongside other proposed development in the area, has been undertaken.

No additional significant in-combination effects have been identified when considering the different environmental topics together.

One principal development identified which has the possibility for cumulative effects is Phase 2b of the Colwyn Bay Waterfront Project. The potential for Moderate Adverse (significant) effects has been identified in relation to the combined quantities of materials required and for noise if piling activities were to coincide. The quantities would be minimised through good design and noise assessment of the Phase 2b project when more details are available.

There were also a number of potential Major Beneficial (significant) effects identified in relation to the improvements in flood risk and beneficial effects for local residents relating to improved active travel and recreational opportunities, along with improvements for local tourism and visitor spending within the local area.

