



Old Colwyn Coastal Defence and Active Travel Scheme

Water Framework Directive Assessment

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

Old Colwyn Coastal Defence and Active Travel Scheme

Water Framework Directive Assessment

July 2020

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	July 2020	N. Spofforth	A. Crow	C. Williams	First Issue

Document reference: 417437-MMD-00-XX-RP-N-1721

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

1	Introduction	8
1.1	Overview	8
1.2	Background	8
1.3	Scheme Location	9
1.4	Coastal Defences – Current Condition	10
1.5	Current Overtopping Conditions and Storm Damage	12
1.6	Scheme Description	13
1.6.1	Rock Revetment Construction	13
1.6.2	Outfall Extensions and Groyne	13
1.6.3	Access Build Out	13
1.6.4	Beach Access Steps	14
1.6.5	Existing Groynes and Slipway	14
1.6.6	Fishing Platform	14
1.6.7	Promenade Raising	14
1.7	Scheme Construction	14
1.7.1	Phasing	14
1.7.2	Marine Construction Methodology	15
1.7.3	Rock Revetment Deliveries	15
1.8	Scheme Operation	16
2	WFD Assessment Methodology	17
2.1	The Water Framework Directive	17
2.2	Methodology of WFD assessment	17
2.2.1	Stage 1 (WFD Screening)	17
2.2.2	Stage 2 (WFD Scoping)	17
2.2.3	Stage 3 (WFD Impact Assessment)	17
2.3	Scope of this assessment	17
3	Stage 1: Screening	18
3.1	Construction	18
3.2	Maintenance	18
4	Stage 2: Scoping	19
4.1	Water Body Scoping	19
4.1.1	Identified Water Bodies	19
4.1.2	Potential Impact Pathways: Scoping In/Out of Waterbodies	20
4.1.3	Baseline WFD Status of Scoped-in Water Body	21
4.2	Habitats and Designated Sites	22
4.2.1	European Commission Protected Areas and Designated Sites	22

4.2.2	Other WFD Protected Areas and Sensitive Habitats	23
4.3	North Wales Coastal Water Body: Scoping In/Out of WFD Elements	24
5	Stage 3: Detailed Compliance Assessment	28
6	Outcomes and Conclusions	37
6.1	Assessment outcomes	37
6.1.1	Stage 1 – Screening	37
6.1.2	Stage 2 – Scoping	37
6.1.3	Stage 3 – Detailed Compliance	37
6.2	Marine Biodiversity Enhancement	38
6.3	Conclusions	38
A.	Red Line Boundary and Area of Permanent Construction Drawings	39
B.	Scheme Drawings	40
C.	Phase 1 Habitat Plan	41
D.	Biosecurity Risk Assessment	42
E.	HRA Screening Assessment	43

1 Introduction

1.1 Overview

This Water Framework Directive (WFD) Assessment has been prepared in support of an application by Conwy County Borough Council (CCBC) for a Marine Licence for marine works, as part of the Old Colwyn Coastal Defence and Active Travel Scheme (hereafter referred to as the “Scheme”). The Scheme, located in the Old Colwyn area of Colwyn Bay, North Wales, comprises coastal defence works in the form of a new rock revetment and promenade raising, in combination with promenade improvements to facilitate active travel.

The scope of this report is to identify potential WFD receptors that could be impacted by the works, assess the potential effects from the works, and to incorporate mitigation to minimise these potential effects (where required).

The report will describe any additional assessments required to ensure the proposed works are compliant with the WFD.

1.2 Background

The Victorian built coastal defences at Old Colwyn have suffered from undermining, corrosion, partial collapses and degradation with frequent overtopping events occurring at Spring Tides, especially if onshore westerly to north-westerly winds occur concurrently. The Promenade has to be closed during these events with the number of closures increasing in recent years – the promenade is now routinely closed whenever high tides coincide with forecast northerly or north-westerly winds.

The defences have been assessed as being at significant risk of “catastrophic failure”¹, which could lead to the loss of the pedestrian promenade and a section of National Cycle Route 5, along with the Promenade (highway) which would leave the main North Wales Coast (NWC) Railway Line (which connects London to Holyhead) highly vulnerable (and subsequently the A55 Expressway should the NWC Railway Line embankment fail).

The main trunk sewer that serves the whole of Old Colwyn is situated immediately behind the sea wall and could be lost should the defences fail catastrophically during a storm event. This would result in a discharge of significant quantities of untreated effluent directly onto the beach with associated severe environmental consequences. Other services are also present in this area.

To reduce the risk of damage to this infrastructure, starting in January 2020, the Splashpoint Project commenced comprising the construction of a 30m deep rock revetment against the sea wall at the location identified as being most vulnerable – the easternmost section of the promenade (where a revetment is currently absent). This was completed in July 2020.

Subsequent to this, CCBC are now seeking to provide a permanent upgrade of the coastal defences comprising a 32m deep 1.2km long rock revetment to protect the remainder of the Old Colwyn stretch of coastline from Porth Eirias to Splashpoint. The works are proposed to be completed concurrently with improvements to the Promenade to facilitate active travel. The

¹ Colwyn Bay Waterfront Project Phase 3 – Phasing Review, CCBC, August 2019

presence of the revetment would reduce the energy from storm waves reaching the promenade, providing passive resistance against the existing wall.

1.3 Scheme Location

The Scheme is located along the easternmost section of the promenade at Old Colwyn, from the eastern side of Porth Eirias in the west to Splashpoint in the east (see Figure 1.1). The Scheme footprint is divided into two principal areas:

- Area 1 – From the picnic area to the east of Porth Eirias car park (approximate National Grid Reference (NGR) 285822, 378870) to the east of Rotary Way (approximate NGR 286347, 378756) where the road currently reduces in height from the junction back down to promenade level; and
- Area 2 – From the eastern edge of Area 1 (approximate NGR 286347, 378756) to Splashpoint in the far east (approximate NGR 287029, 378701).

The red line boundary has been extended beyond the footprint as shown in Figure 1.1 to allow for access during construction.

Figure 1.1: Location of the Scheme



Source: Old Colwyn Coastal Defence and Active Travel Environmental Statement (ES) Volume1, August 2020

Scheme areas as shown on the Red Line Boundary Plan Drawing and Area of Permanent Construction Drawing located in Appendix A are summarised in Table 1.1.

Table 1.1: Approximate Scheme Areas

Area Boundary	Marine (north of sea wall) (ha)	Terrestrial (south of sea wall) (ha)	Grand Total (ha)
Area of Permanent Construction	3.6	3.0	6.6

Area Boundary	Marine (north of sea wall) (ha)	Terrestrial (south of sea wall) (ha)	Grand Total (ha)
Ecological Enhancements Only	0.3	0.7	1.0
Total	3.9	3.7	7.6
Red Line Boundary*	30.2	4.9	35.1

Source: Mott MacDonald Ltd, 2020 *Note: Other than a working buffer approximately 20m-30m north of the marine area of permanent construction (revetment area), the remainder of the intertidal area only needs to be accessed for revetment stone deliveries by sea (if revetment stone is to be delivered by barge) and for ecological enhancements.

1.4 Coastal Defences – Current Condition

The frontage at Old Colwyn covers around 1.2km of coastline and comprises a near vertical masonry sea wall that abuts a generally sandy foreshore, locally mixed, with natural gravels particularly along the toe of the wall.

The toe of the sea wall has been protected from erosion and undermining by a variety of defences. Across the first 750m west to east, rock armour has been placed directly in front of the wall (Photo 1.1, Photo 1.2), while over the remainder the toe has been protected either by reinforced concrete aprons or steel sheet piling (Photo 1.3).

Across the westernmost 200m of frontage the wall has a recurved section with the promenade lower to the rear. Over the remainder of the frontage there is no recurve and the crest level is the same as the promenade.

There are slipways located at Porth Eirias to the immediate west of the Scheme footprint and Splashpoint in the far east for beach access along with four sets of pedestrian access steps in various states of disrepair with some currently deemed unsafe and blocked-off. Rock groynes are present at four locations, outfalls are culverted beneath two groynes while other outfalls currently discharge directly to the beach (Photo 1.4).

Immediately landward of the wall is a part paved/part tarmac surfaced dual usage (pedestrian and cycle path) promenade, which adjoins the Promenade highway (Photo 1.5 and Photo 1.6). Moving west to east through Area 1, the Promenade highway increases in height to meet the incoming link road from Old Colwyn (Rotary Way) which provides access to the A55 (Junction 22) before dropping down to the same level in Area 2 as the top of the sea wall over the remainder of the length.

To the immediate west of the Scheme, a section of rock revetment approximately 30m wide with a 1:3 gradient has already been constructed against the sea wall in association with Phase 1 of the Colwyn Bay Waterfront Project and the Porth Eirias control structure as shown in Photo 1.7.

In addition, at the far eastern end of the Scheme, as part of the Splashpoint Project a rock revetment section of similar width with a 1:2.5 slope was constructed earlier in 2020 (Photo 1.8 **Error! Reference source not found.**) to curve around the eastern corner of the promenade highway to the point at which it makes a right angle turn southwards beneath the A55 Expressway and NWC Railway Line towards Beach Road/Cliff Gardens.

Within Area 2, overtopping of the promenade during storm events is a common occurrence which results in the closure of the highway and frequent (and increasing with deteriorating condition) damage to the sea wall, promenade and the NWC Railway Line embankment.

Photo 1.1: Looking North-West from Area 1 Promenade Across Old Colwyn Beach



Source: Mott MacDonald, 2020

Photo 1.2: Looking North-East from Area 1 Promenade Across Old Colwyn Beach



Source: Mott MacDonald, 2020

Photo 1.3: Looking West Along Sea Wall in Area 2 with Toe Protection Visible



Source: Mott MacDonald, 2020

Photo 1.4: Looking North-East At Splashpoint Nant y Fynnon Outfall During Revetment Construction



Source: Mott MacDonald, 2020

Photo 1.5: Looking West along Promenade South of Rotary Way



Source: Mott MacDonald, 2020

Photo 1.6: Looking East Along Promenade in Area 1



Source: Mott MacDonald, 2020

Photo 1.7: Looking North-East Across the Transition between the Existing Porth Eirias Revetment and the Scheme Area 1



Source: Mott MacDonald, 2020

Photo 1.8: Looking South-East Across the Transition between the Existing Splashpoint Revetment (Area 2) and the Area to the East of the Scheme



Source: Mott MacDonald, 2020

1.5 Current Overtopping Conditions and Storm Damage

As early as 1991, the Colwyn Borough Sea Defence Review identified that “*Overtopping, which occurs regularly when onshore winds coincide with spring tides, results in large quantities of shingle and cobbles being thrown over the wall. The road....is closed up to a dozen times a year for several days at a time while the shingle is cleaned back onto the beach*”². Conditions, which have continued to the present day with increasing frequency and severity³.

The impact of present day conditions is shown in visual and recorded evidence from more recent storm events (Figure 1.2), which confirms the overtopping behaviour and also identifies the following as taking place:

- Damage/Loss of Railings;
- Damage to promenade/highway surfacing and removal of fill behind the sea wall;
- Damage to boundary wall and erosion at toe of railway embankment;
- Lowering of beach levels in front of the sea wall;
- Undermining of the sea wall; and
- Removal of facing blocks to the sea wall.

Examples of this damage are provided in Figure 1.2.

Furthermore, with sea levels predicted to rise in the future, due to anticipated climate change, by the end of the 21st century the tide is anticipated to reach approximately the crest of the current wall on each spring tide i.e. every 2 weeks. This means that the wall along the toe of the railway embankment would be impacted by waves rather than water that overtops the sea wall, as at present.

² Colwyn Bay Waterfront project Phase 3 – Phasing Review, Draft Report for Stakeholder Distribution, Coastal Engineering UK Ltd, August 2019

³ Discussions with CCBC 2020. No annual closure data available.

Figure 1.2: Examples of Old Colwyn Promenade Storm Damage



Source: CCBC records

1.6 Scheme Description

The proposed scope of work for the Scheme comprises a combination of coastal defence, promenade and active travel improvements. A series of Scheme detailed design drawings are included in Appendix B.

The coastal works design is summarised in Sections 1.6.1 to 1.6.7.

1.6.1 Rock Revetment Construction

The revetment would be approximately 32m in cross sectional width and 1.15km in length with an approximately 5m wide crest and a slope of 1:3 down to beach level. The revetment is required to protect the active travel routes along the promenade along with the Promenade highway, underground services, NWC Railway Line and A55 Expressway. The revetment would tie-in to the existing rock revetment east of Porth Eirias to the west and Splashpoint to the east – the toes and crests would merge as cross-sections are very similar.

1.6.2 Outfall Extensions and Groynes

Modifications to five existing outfalls would be required along the length of the revetment including extensions and protective slabs where necessary. The revetment toe would need to be widened locally to 7.2m (from typically 3.6m) at two locations. Stainless steel grills would be fixed to the end of each of the three culverts which are to be extended.

1.6.3 Access Build Out

A new access build out area would be constructed in the western half of Area 1, located between Porth Eirias and the first set of beach groynes. This build out would have numerous functions including:

- Providing a greater area for non-vehicular activity;

- Equality Act compliant access to the beach
- Stepped access to the beach; and
- Areas of landscaping and seating.

1.6.4 Beach Access Steps

New pedestrian accesses through the proposed revetment to comprise three sets of beach access steps perpendicular to the linear rock revetment, would be constructed at the location of each of the three longest groynes within the Scheme area to the west of Rotary Way, mid-way between Rotary Way and Splashpoint and at Splashpoint.

1.6.5 Existing Groynes and Slipway

The existing groynes present would be retained, maintained and enhanced ecologically through the installation of two ecological armouring units per groyne. Concrete access steps would be provided across the southernmost section of each groyne adjacent to the revetment.

The existing slipway at Splashpoint would be retained in its current location.

1.6.6 Fishing Platform

A fishing platform would be constructed in the Splashpoint area to ensure anglers do not block active travel routes (as is currently the case). The platform would be accessed from a pedestrian only area and extend out over the revetment with supporting steelworks to be pocketed into the raised sea wall structure at this location.

1.6.7 Promenade Raising

The raising of the promenade is required to permissible overtopping levels with consideration for climate change. The new promenade finished level is to be +7.0mOD directly behind the seawall, with the promenade slabs typically falling approximately 1:40 towards the seawall to allow over the edge drainage for surface water run-off. In Area 1 the promenade is to be raised above the levels of the Promenade highway and associated parking with a side retaining structure located along the rear of the promenade slabs (the Promenade highway would be maintained at approximately current levels). In Area 2, the promenade and highway would both be raised and the available promenade would be widened where it narrows between Rotary Way and Splashpoint.

1.7 Scheme Construction

1.7.1 Phasing

The Project has been divided into the two general sections for the purposes of planning and sequencing the works as follows:

- Construction Section 1: Splash Point to Rotary Way (Area 2); and
- Construction Section 2: Rotary Way to Porth Eirias (Area 1 and the westernmost section of Area 2).

In both Sections, the initial activity would comprise the delivery and placement of the rock revetment either by road or by barge and general site clearance of the promenade. Construction of the coastal defence elements would be completed before the promenade construction works commence.

1.7.2 Marine Construction Methodology

The marine works consist of constructing the rock revetment, drainage outfalls, access build-out, fishing platform and access steps of various configurations. The crest wall would form part of the highway works and support the end of the fishing platform. Access onto the beach would be via the slipways at either end.

Existing revetment rock present against the sea wall would be examined and if suitable, it would be removed and stockpiled on the beach. Piling activities would take place first (tubular steel piles driven into the underlying clay for the fishing platform and sheet piles for the access steps and access build-out structure) followed by the construction of the revetment.

Revetment construction would start from the toe. Core fill material would be delivered by road and stockpiled on the beach close to its final location within the revetment. Revetment rock would also be stockpiled on the beach following delivery, immediately seaward of where it is to be used. The core material would be placed against the existing sea wall to form the required profile with pipes/culverts for the outfall extensions placed within the core. The geotextile separation layer would then be placed over the core.

The revetment underlayer would need to be complete before the crest wall is constructed. In order to protect the underlayer the front face of the primary armour (3t-6t revetment rock) would be constructed as soon as possible. The construction of the outfall culverts through the armour layers would be coordinated with the revetment rock placing.

1.7.3 Rock Revetment Deliveries

Depending on funding and timing constraints, if revetment rock (particularly the 3t to 6t size) cannot be sourced from local quarries in sufficient quantities, bringing in some (or all) quarried rock from elsewhere by barge for direct delivery to the beach would be necessary. Revetment rock deliveries would be stockpiled on the beach, immediately seaward from where they are to be placed within the revetment.

For barge deliveries, the revetment rock would be transported on larger delivery vessels (anticipated to be ~6000t capacity) and then transferred onto smaller barges (~1,500t capacity) to be guided to shore by a tug at a designated (and rising) tidal state when access to the upper shore area is possible (understood to be approximately 2 hours either side of high tide). The revetment rock would be unloaded directly to shallow water. Land based plant would then move the unloaded revetment boulders to the designated stockpile locations along the beach at low tide.

Delivery by barge represents the worst case for potential impacts on the North Wales Coastal Water Body and therefore for the purposes of this assessment, it has been assumed that barge delivery of revetment will be the selected delivery method rather than by road.

Rock deliveries by barge would be likely to need 24/7 working patterns to allow the contractor to use the tides. Barge works are also very weather dependant and safe mooring locations inshore would be required in case of bad weather. These would be agreed before construction commenced.

Given the high costs of delays and standing time for barge deliveries combined with health and safety issues, delivery of materials by barge if transshipment is needed is not considered to be suitable for the winter months when the risk of storms is much higher. In addition, the Liverpool Bay SPA is designated for wintering birds and therefore barge deliveries would not be able to take place between March and October.

1.8 Scheme Operation

The Scheme also includes future management and maintenance actions. In addition to regular inspections, the following activities are of relevance to this assessment:

- Reactive maintenance and repair of revetment, structures, groynes access-build out, steps and fishing platform as required following routine inspections (this is anticipated to be minimal in the short-medium term);
- Routine maintenance and repair of promenade including pavement and drainage system;
- Cleaning and maintenance of slipways and flood gates (hinges and seals) with a suitable inspection regime; and
- Monitoring of beach levels at the toe of the revetment and along the beach: The revetment design has allowed for a 0.5m fall in beach levels. Should beach levels be noted to fall more than 0.5m following inspections, localised recycling of beach material would be required. Conversely should accretion of more than 1m be noted, this could be detrimental to access or ecological enhancements and some limited beach management may be required.

2 WFD Assessment Methodology

2.1 The Water Framework Directive

The Water Framework Directive (WFD) is a European Directive⁴ which aims to protect and improve the water environment. It became law in the UK in 2003. The current Regulations are the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017⁵.

The WFD requires the identification and setting of objectives for protecting and improving 'water bodies'. These include; rivers, streams, lakes, reservoirs, estuaries, coastal waters, canals and groundwaters.

The standard objective is to achieve 'good status', or 'good potential' (if the water body is artificial or has been extensively modified), and to protect the water body by preventing any deterioration in status. Good 'status' or 'potential' is made up of ecological and chemical components in surface waters. Ecological status consists of biological quality elements, physico-chemical supporting elements and hydromorphological supporting conditions. For groundwater, status consists of quantitative and qualitative elements. In this report for consistency, all the above components are referred to as 'WFD quality elements'.

2.2 Methodology of WFD assessment

The assessment has been completed in accordance with NRW guidance⁶, which provides guidance on assessing projects and activities for compliance with the WFD. This guidance recommends that WFD assessments are completed in a 3-stage approach:

2.2.1 Stage 1 (WFD Screening)

Stage 1 is an initial assessment to determine if there are any activities associated with the Scheme which have the potential to impact on waterbodies within the vicinity and to ensure that only those activities that may cause deterioration or prevent a water body from meeting its objectives are assessed further.

2.2.2 Stage 2 (WFD Scoping)

Stage 2 comprises a more detailed assessment to identify WFD water bodies and WFD quality elements that are at risk from the proposed activity. The aim of this assessment is to identify if any waterbodies would require further detailed assessment.

2.2.3 Stage 3 (WFD Impact Assessment)

Stage 3 is a detailed assessment of waterbodies and activities carried forward from the screening stage. It must include identification of waterbodies, description of the proposed development, methods used to determine impacts, risk of deterioration and mitigation required.

2.3 Scope of this assessment

This report covers the three stages of the assessment, as outlined above.

⁴ Water Framework Directive 2000/60/EC

⁵ Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, 2017/407

⁶ Guidance for assessing activities and projects for compliance with the Water Framework Directive, OGN 72, 2018

3 Stage 1: Screening

This stage determines if there are any activities associated with the Scheme which have the potential to impact on water bodies within the vicinity (not listed within Appendix 2 or Table 5 or OGN72⁶).

3.1 Construction

The following aspects of the scheme have the potential to impact upon the water environment and have been screened into the assessment:

- Construction of 1.2km length of rock revetment connecting the existing Porth Eirias revetment in the west to the Splashpoint revetment in the east and associated extensions of outfalls through the revetment (including revetment deliveries by barge); and
- Construction of promenade access build out, associated fishing platform and access steps x3.

It is anticipated that the promenade works would be completed following the revetment construction and would be located above the levels of even the highest tides. Therefore, the promenade construction works have been screened out.

3.2 Maintenance

According to Appendix 2 of OGN72⁶ (activities that can be screened out from further assessment in the majority of cases), the following activities in the estuarine/coastal environment can be screened out:

- “*Minor Construction and Repairs*” including minor maintenance, resurfacing slipways and removal of marine growth; and
- “*Beach Management Activities*” including beach re-profiling, beach recycling, replacing or returning wind-blown sand and clearance/removal of beach material in and around outfalls to facilitate drainage.

It is considered that the standard maintenance anticipated to be required during operation of the Scheme would fall within those categories and in addition, maintenance requirements are anticipated to become much less frequent to the annual reactive repairs completed currently following regular storm damage. Therefore maintenance activities have been screened out from further assessment.

4 Stage 2: Scoping

This stage identifies water bodies and WFD quality elements that are at risk from the proposed activities and require further assessment.

4.1 Water Body Scoping

4.1.1 Identified Water Bodies

Information on WFD water bodies and associated data was obtained from the Water Watch Wales website⁷. The Western Wales River Basin Management Plan⁸ covering the study area was also used. A copy of the Water Watch Wales map is provided as Figure 4.1.

4.1.1.1 Coastal Water Bodies

The proposed works area predominantly falls within the North Wales Coastal Water Body (ID: GB 641011650000). The North Wales Coastal Water body starts at Great Orme's Head and continues eastwards along the Welsh coast and ends in the estuary of the River Dee.

4.1.1.2 Groundwater Bodies

Part of the Scheme works area also overlaps the Conwy Groundwater Body (ID: GB41002G2033000). This groundwater body extends across North Wales.

4.1.1.3 River Water Bodies

There are no WFD surface watercourses that drain via the Colwyn Bay waterfront area and the closest (the Ganol East (ID:GB 641011650000) is located over 3km distant to the west at its closest point).

There are three rivers discharging within and immediately adjacent to the Scheme area:

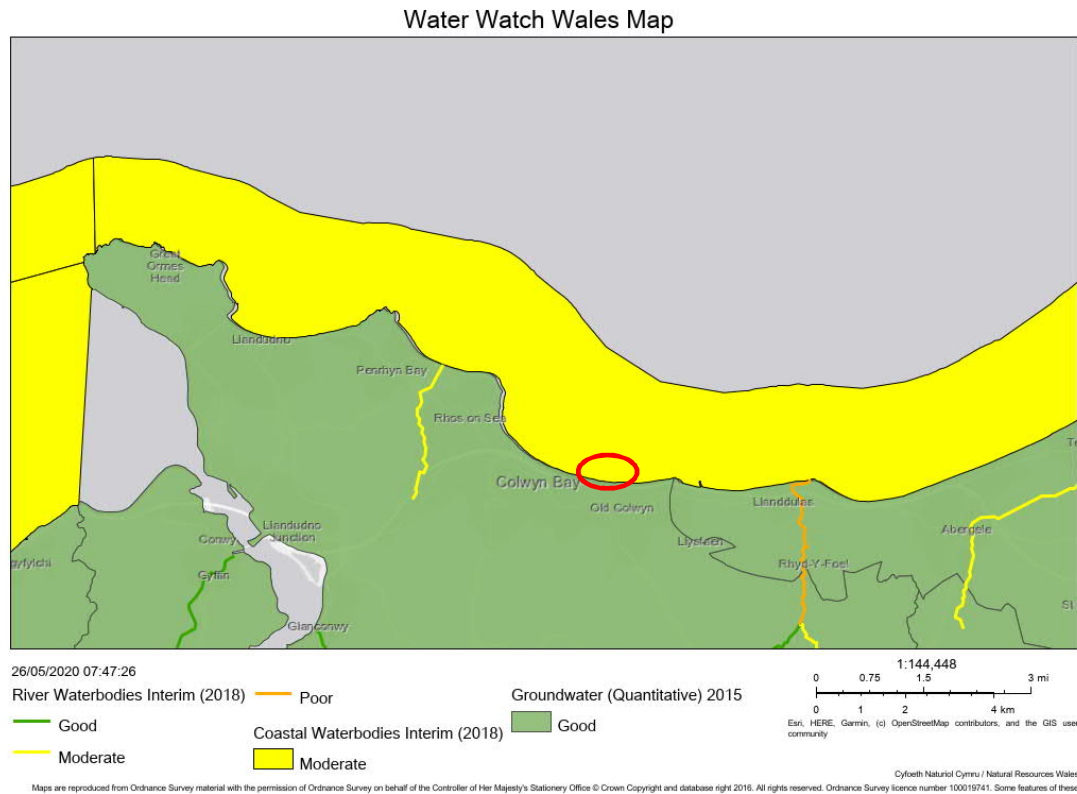
- The Nant-y-Groes (Main River) is present to the immediate west of the Scheme area, discharging to the beach via a culvert that passes beneath Porth Eirias at approximate NGR 285760, 378946;
- The Llwd (Main River) is culverted and is understood to discharge to the beach behind the existing revetment at approximate NGR 285877, 378888 within the Scheme area to the east of Porth Eirias. The culvert flows beneath a sports centre and recreational ground before discharging to the beach; and
- The Nant-y-Fynnon (Ordinary Watercourse) passes through Old Colwyn, flowing in an artificial channel down Beach Road and beneath the A55 Expressway before being culverted beneath the NWC Railway Line and outfalling directly onto the beach at Splashpoint at approximate NGR 287008, 378709.

As none of these watercourses are classified WFD waterbodies, they will be assessed as part of the downstream water body (North Wales Coastal Water Body).

⁷ Water Watch Wales website: <https://waterwatchwales.naturalresourceswales.gov.uk/en/>, accessed June 2020

⁸ Western Wales River Basin Management Plan: <https://naturalresources.wales/media/674895/ww-rbmp.pdf>, accessed June 2020

Figure 4.1: Map of WFD Water Bodies in the Vicinity of the Scheme



Source: Water Watch Wales website⁷

4.1.2 Potential Impact Pathways: Scoping In/Out of Waterbodies

Table 4.1 identifies which water bodies are considered to have a potential impact pathway with the Scheme and are therefore scoped in.

Table 4.1: Scoping In/Out of WFD Water Bodies

Water Body Name	WFD ID	Relationship to the Scheme	Potential Impact Pathway?	Scoped in?
<i>Coastal Waterbodies</i>				
North Wales	GB641011650000	- Scheme is situated within coastal water body intertidal area, immediately adjacent to the Liverpool Bay SPA. - Coastal waters also Bathing Waters within Scheme area and supporting sensitive habitats.	Yes – scheme located within coastal water body.	✓
<i>Surface Waterbodies</i>				

Ganol East	GB641011650000	• Scheme is located ~3km east of the water body. • Water body flows into the North Wales Coastal Water body (it does not discharge into Colwyn Bay).	No – water body is located over 2km distant from the Scheme at its closest point.	X
<i>Groundwaters</i>				
Conwy Groundwater Body	GB41002G203000	• Promenade aspects of Scheme are located above northern most edge of groundwater body in an area of saline intrusion. • Scheme includes raising of promenade with only shallow localised excavations.	No – works are not anticipated to impact upon groundwaters.	X

Source: Water Watch Wales⁷

4.1.3 Baseline WFD Status of Scoped-in Water Body

- North Wales Coastal Water Body (ID: GB 641011650000).

The current (baseline) WFD status and objectives for the screened-in water body are summarised in Table 4.2. Status information has been obtained from the NRW Water Watch Website⁷, and from the Western Wales River Basin Management Plan⁸.

Table 4.2: Baseline WFD Status of Scoped-in Surface Water Body (RBMP 2018 Cycle 2 Interim Classification)

WFD Water body	North Wales
2018 Cycle 2 Interim Classification	
Water body ID	GB641011650000
River Basin District name	Western Wales
Water body type	Coastal
Water body total area (ha)	148.28km ²
Highly modified water body (HMWB) and use	Yes (for coastal protection)
Overall water body status (2018 interim)	Moderate
Ecological status	Moderate (phytoplankton blooms)
Chemical status	Fail
Invertebrates	Good
Phytoplankton	Moderate (blooms)
Dissolved Inorganic Nitrogen	Good
Dissolved Oxygen	High
Annex 8 chemicals, priority hazardous substances, priority substances and other pollutants	High (with exception of Moderate for Mercury)
Water body Objectives and Measures (2017)	
Failing WFD elements	Dissolved inorganic nitrogen, mercury
WFD overall objective	Good by 2021
WFD chemical objective	Good by 2021
WFD ecological objective	Good by 2021

Source: Water Watch Wales⁹

4.2 Habitats and Designated Sites

The WFD assessment considers the potential impact of an activity on other protected areas and sensitive habitats which may be considered as part of a designation for a Natura 2000 or SSSI protected site, be considered Features of Conservation Interest (FOCI) or be broad scale habitats which could be qualifying features for Marine Conservation Zones (MCZs).

4.2.1 European Commission Protected Areas and Designated Sites

There is one designated site within 2km of the works with the potential to be impacted:

- Liverpool Bay/ Bae Lerpwl Special Protected Area (SPA)⁹. The SPA is located immediately parallel to the north of the works extent straddling both Welsh and English territorial waters. It is designated a SPA supporting several wintering bird species, including five Annex II bird species and covers an area of ~252, 773 ha.

⁹ MAGIC map, DEFRA (N.D). Available at <https://magic.defra.gov.uk/magicmap.aspx>. Accessed on 01/04/2020

4.2.2 Other WFD Protected Areas and Sensitive Habitats

4.2.2.1 Shellfish Waters, Bathing Waters and Nutrient Sensitive Areas

Shellfish Waters

There are no Shellfish Waters within the Scheme area or within 2km of the red line boundary⁹. The closest are:

- Rhos-on-Sea 2.0km to the north-west; and
- Llanddulas 2.6km to the east.

Bathing Waters

The inshore waters at Colwyn Bay are classified as Bathing Waters which needs to be assessed for potential impacts under the WFD.

There are two Bathing Water Quality monitoring points in the wider Colwyn Bay area – to the west of Porth Eirias (approximate NGR 285566, 379291, around 500m north-west of the red line boundary) and further west again at Rhos-on-Sea (284634,380141, around 1.8km north-west), although there is no specific monitoring point within the Scheme area.

In 2019 the results of sampling and analysis of water quality at Porth Eirias (along with the sampling point at Rhos on Sea) against the revised Bathing Water Directive by NRW resulted in an Excellent classification¹⁰. Water quality at designated bathing water sites in Wales is assessed by NRW from May to September including testing the numbers of Intestinal enterococci and Escherichia coli present.

According to NRW “there are no sewage treatment works that discharge directly into Colwyn Bay bathing waters. A major improvement scheme was completed by Welsh Water for Conwy, Deganwy, Llandudno and Colwyn Bay in 1999. The sewage from the immediate catchment of the Llandudno, Conwy, Deganwy and Colwyn Bay areas is now pumped to the Ganol Wastewater Treatment Works, at Llandudno Junction”¹⁰.

Within the catchment there are a number of storm and surface water outfalls, that discharge to the rivers and streams. After periods of rainfall these discharges could have an adverse effect on bathing water quality. There are understood to be five active outfalls within the Scheme area.

Nutrient Sensitive Areas

There are no coastal/nutrient sensitive areas i.e. sensitive to nutrients and therefore eutrophication, in the Scheme area⁹.

4.2.2.2 WFD Sensitive Habitats

There are several ‘WFD sensitive habitats’ located within the Scheme area⁹ (see Appendix C for the Phase 1 Habitat Survey plan).

- Lower sensitivity habitats (medium to high resistance to, and recovery rate from, human pressures):
 - Subtidal soft sediment;
 - Intertidal soft sediment; and
 - Gravel and cobbles.

¹⁰ NRW Bathing Water data: <https://environment.data.gov.uk/wales/bathing-waters/profiles/profile.html?site=uk1301-40425>, accessed June 2020

- Higher Sensitivity Habitats (these have a low resistance to, and recovery rate from human pressures):
 - Blue Mussel beds:

The Preliminary Ecological Appraisal Report (PEAR)¹¹ describes the mussel beds as follows: *“Blue Mussel beds on sediment (within the survey area): The mussel beds within the survey area broadly meets the description for this priority habitat, in that Blue Mussel beds are present within the sand substrate. However, the beds are isolated areas of relatively sparse mussels (with areas that appeared to have previously been dense) in poor condition are now all that are present. Blue Mussel beds as a priority habitat is valued as having a role in coastal sediment dynamics, acting as a food source for overwintering waders and providing an enhanced area of biodiversity (typically associated with a range of organisms including fucoids, barnacles, isopods and other fauna). The mussel beds within the survey area are small and in poor condition, whilst no evidence of any diverse assemblage of associated organisms was recorded during the surveys undertaken. On this basis, the habitats on site are considered to be poor examples of this priority habitat type and are not considered to be of any elevated ecological value in a local context.”*

In addition, (also as detailed in the PEAR) the following habitat within the survey area are considered to be of elevated value in the context of the site and could qualify as Priority Habitat (as listed under Section 7 of the Environment (Wales) Act):

- *Sabellaria alveolata* Reef patches along three groyne structures: *“The patches of Honeycomb Worm (Sabellaria alveolata)... could meet the description of the priority habitat Sabellaria alveolata Reefs. This priority habitat can typically be 30 to 50cm thick and form large expanses. However, the patches in the site were noted to be relatively small and isolated in extent (not reef forming) and so not a high quality example of this priority habitat.”*

4.3 North Wales Coastal Water Body: Scoping In/Out of WFD Elements

The Scheme may present potential risks to a number of receptors within the study area, based on the screened-in water body's WFD quality elements. These include:

- Hydromorphology;
- Biology – habitats;
- Biology – fish;
- Protected areas;
- Water quality; and
- Invasive and non-native species.

Table 4.3 details the potential risk from the proposed scheme to each of these quality elements and determines which are at risk and require a full impact assessment (those activities determined not to constitute a risk have been shaded grey).

¹¹ Colwyn Bay Preliminary Ecological Appraisal Report (410895-MMD-N-R-00-XX-1701), Mott MacDonald 2020

Table 4.3: Scoping In/Out of WFD Quality Elements

WFD Quality Element	Consideration of Scheme Activity:	Potential Risk?	Stage 3 Assessment required?
Hydromorphology	Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status?	No. Overall status of water body is Moderate.	x
	Could significantly impact the hydromorphology of any water body (including morphological conditions and tidal patterns)?	No. Proposed scheme has potential to alter morphological conditions locally along the Old Colwyn frontage – however change in morphological conditions is not anticipated to be 'significant' in terms of water body as whole. There is currently extensive coastal protection along the frontage of the coastal water body (approximately 45km). Therefore, these works are considered to be relatively minor in the context of the entire water body, comprising approximately 2.5% of the length of frontage along the water body as a whole when considering the ~1.15km length, or approximately 0.8% when considering the 400m section without any revetment currently.	x
	Physical footprint is greater than 1% of surface area of water body or greater than 0.5km ² ?	No. Scheme physical footprint within coastal area ~3.9ha which is ~0.026% of the total water body surface area.	x
	Is in a water body that is heavily modified for the same use as the activity?	Yes. Water body is heavily modified for coastal protection	✓
Priority Habitats and Species	Physical footprint is greater than 1% of surface area of water body or greater than 0.5km ²	No. Scheme physical footprint within coastal area ~3.9ha which is ~0.026% of the total water body surface area.	x
	Is within 500m of any higher sensitivity habitat?	Yes. A single Blue Mussel bed (<i>Mytilus edulis</i>) and intermittent patches of Honeycomb Work (<i>Sabellaria alveolata</i>), although they are sparse and poor quality examples of these habitats and are not considered to be critical to the health of the water body.	✓

WFD Quality Element	Consideration of Scheme Activity:	Potential Risk?	Stage 3 Assessment required?
	1% or more of any lower sensitivity habitat?	No. Lower sensitivity habitats in question are very common along 45km frontage of water body ¹² .	x
Biology - fish	Will impact on normal fish behaviour like movement, migration, spawning; species composition and abundance; or mechanical injury?	No. No physical barriers, chemical changes, habitat changes, significant changes to water quality or quantity, no changes to depth or flow and no possibilities of entrainment/impingement.	x
	Is in a transitional water body and could affect fish?	No	x
	Is outside of a transitional water body and could impact upon migratory fish?	No	x
Water Quality	Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	No. Majority of works are to be undertaken at low tide on the upper shore area, minimising the potential for the generation of suspended solids; if the 3-6t revetment stone is to be delivered by barge, this would increase turbidity levels, however only intermittently during unloading, not continuously and any impact would be temporary and limited to the construction period.	x
	Is in a water body with a phytoplankton status of moderate, poor or bad	Yes (Moderate)	✓
	Is in a water body with a history of harmful algae	No	x
	Puts water quality at risk from your activity through the use, release or disturbance of chemicals	No. Chemical use or release is not anticipated. Ground investigation and associated sediment quality testing has not yet been completed, however sediments not in a historically contaminated area and there is no evidence that elevated contaminant levels would be present.	x

¹² NRW online mapping: <https://naturalresources.wales/evidence-and-data/maps/wales-environmental-information/?lang=en>, accessed June 2020

WFD Quality Element	Consideration of Scheme Activity:	Potential Risk?	Stage 3 Assessment required?
		An Outline Environmental Management Plan (OEMP) ¹³ has been produced for the Scheme. This would be updated to a Construction EMP when a Contractor is appointed.	
Protected areas	Within 2km of any WFD protected area	Yes. Scheme is immediately adjacent to a SPA and within a Bathing Water area.	✓
Invasive and non-native species (INNS)	Introduce or spread INNS (including materials or equipment that have come from, had use in or travelled from other water bodies; or activities that help spread INNS).	No. Introduction of alien species is not seen as a significant risk. Measures to prevent the import of INNS are included in the Biosecurity Risk Assessment, Appendix D.	x

¹³ Old Colwyn Coastal Defence and Active Travel Scheme, Outline Environmental Management Plan, 417437-MMD-00-XX-RP-N-1728, Mott MacDonald Ltd, July 2020

5 Stage 3: Detailed Compliance Assessment

This stage considers the potential impacts of an activity, identifies ways to avoid or minimise impacts, and concludes if the activity may prevent any WFD quality element within any WFD water body achieving good status/potential or may cause deterioration.

Four receptors were identified as being at risk from the Scheme:

- Hydromorphology (development for coastal protection);
- Priority habitats and species (higher sensitivity habitat: Blue Mussel and Honeycomb Worm reef patches within red line boundary);
- Water quality (phytoplankton status of Moderate); and
- Protected areas (Liverpool Bay SPA, Colwyn Bay Bathing Waters).

In addition in-combination and cumulative effects have been considered.

A WFD compliance assessment has been completed for each receptor, as shown in Table 5.1.

Table 5.1: Potential Impacts on WFD status of the North Wales Coastal Water body

WFD Quality Element	Construction of Rock Revetment and Associated Beach Access Structures – Potential Impacts (taking into account mitigation measures identified during the EIA process) For more information see the Old Colwyn Coastal Defence and Active Travel Scheme Environmental Statement Volume 1 (Report No. 415437-MMD-00-XX-RP-N-1719), Mott MacDonald, August 2020,	Will the Scheme Result in Deterioration of WFD Quality Element (when the status of at least one quality element reduces by one class or more)?
Hydro-morphology: Development for coastal protection	Overview This water body is currently heavily modified due to 'coastal protection', which is also the purpose of the proposed works as supported by the Shoreline Management Plan policy to 'Hold the Line'¹⁴. A total of ~1.15km of rock revetment would be constructed along the coastline, which provides an impact pathway to coastal morphology. However, all bar the 400m immediately west of Splashpoint is already defended by smaller scale rock revetment which is to be upgraded with the proposed larger-scale revetment. Extension of rock revetments would affect coastal morphology but only in the locality of the scheme. There is currently extensive coastal protection along the frontage of the coastal water body (approximately 45km). Therefore, these works are considered to be relatively minor in the context of the entire water body, comprising approximately 2.5% of the length of frontage along the water body as a whole when considering the ~1.15km length, or approximately 0.8% when considering the 400m section without any revetment currently. Potential Impacts • The construction of the revetment would require excavation of beach material and glacial till to provide a solid foundation. During the construction phase, machinery would need to track along the foreshore to excavate existing material and to place new materials. This could result in the loosening of beach material, making it more available for transporting along the frontage and to be suspended into the water column. However, works are to be undertaken at low water, reducing the potential for resuspension. • Material from the excavation would be evenly distributed along the foreshore following the construction of a section of revetment that was excavated. This would allow the material to remain in the system and maintain the sediment balance. • The construction phase may lead to short term adverse impacts on sediment transport through the temporary placement of rock used for revetment construction in the intertidal zone prior to re-location to its final location within the new revetment structure. It is assumed that revetment rock would be	No – Residual effects of the Scheme on coastal hydromorphology are not considered to result in a deterioration of this WFD quality element when considering the mitigation already allowed for as discussed in the Environmental Statement (ES) ¹⁶ .

¹⁴ North West England and North Wales Shoreline Management Plan SMP2, Halcrow Group Ltd, February 2011

¹⁶ Old Colwyn Coastal Defence and Active Travel Scheme, Environmental Statement Volume 1: Main Text, 415437-MMD-00-XX-RP-N-1719, Mott MacDonald Ltd, July 2020

stockpiled immediately seaward of its eventual location within the revetment. This temporary storage of materials may affect current localised sediment transport patterns, leading to settling-out of materials in the vicinity of the stockpiled materials and the reduction in sediment transported along the frontage. It is considered that once the stockpiles have been removed the beach would return to its current state.

- It is likely that in the long term there would be some accumulation of sediment material at the toe of the new revetment, as has been recorded along the revetment currently in place along the Colwyn Bay frontage. The modelling that was previously undertaken for the Colwyn Bay Phase Waterfront Project¹⁵ (of which this Scheme is equivalent to Phase 3 of) indicated that with control structures in place, erosion of the wider beach area still occurred in the long term. Although this scenario has not been modelled, it can be assumed that the wider beach would continue to erode in the longer term as per the Waterfront Project model. Taking the 15 year monitoring of beach levels into account, the Scheme has been designed to include a beach lowering of 0.5m to account for any longer term sediment movement at the toe of the structure.
- The revetment in front of the existing sea wall may result in the alteration of waves incident at the sea wall. This would provide a less reflective surface and as such would be expected to reduce scour and thus reduce further erosion and lowering of the beach along the frontage. However, with time beach levels are anticipated to reach equilibrium levels.

Mitigation Measures

- In general, with the exception of minor ecological enhancement works to the groynes, the majority of construction plant movements would be within a primary working area 20-30 m from the toe of the revetment (50-60m from the sea wall). The exception to this would be if 3-6t revetment stone is to be delivered by barge. Barge deliveries would be made at high tide. Following the appointment of a Contractor, and the selection of a delivery method for the 3-6t rock revetment (barge or road), the CEMP would be updated to outline the routes where the construction vehicles can travel to minimise the area of beach affected. These routes would be finalised in agreement with CCBC and NRW, but as a minimum would exclude the Blue Mussel bed, and areas of Honeycomb Worm which has been identified on sand/gravel substrate. The existing rock groyne areas where Honeycomb Worm has been identified would also be disturbed, other than for ecological enhancement works – placement of ecological armouring units). A site walkover by a marine ecologist 6 weeks prior to works commencing would be completed to make any necessary changes to plant movement routes. Where material is disturbed localised reinstatement of the beach would be undertaken.
 - Stockpile locations would be agreed in advance with CCBC and NRW once a Contractor has been appointed (to be recorded in the CEMP) and the 3-6t revetment delivery method has been selected. During construction, to reduce short term negative impact on hydrodynamics and the sediment transport regime, materials, such as rock armour used for revetment construction, would be stored as
-

¹⁵ Detailed Modelling Studies for Colwyn Bay Coastal Defence Scheme, Royal Haskoning, July 2010

high up the beach as practicable, close to the working area. Where this is not possible, the size of the stockpile would be assessed to ensure that changes to the current flows are not creating areas of scour. Monitoring of the beaches around the stockpile would be undertaken and the beach levels reinstated should beach lowering be recorded. A Contractor-led beach inspection scheme would be agreed in advance with CCBC and NRW and detailed in the CEMP. Stockpiles would only be temporary and would not be permitted to remain beyond the end of the construction phase.

- Any barge delivery of revetment is also proposed to be undertaken in the months of least storm activity which would reduce the impact on sediment and water quality in relation to plant movements on the lower beach area.
- Excavation of waste materials would be kept to the minimum required in order to allow a solid founding for new structures without the removal and disturbance of excess materials. This would minimise displacement of removed sediments onto the foreshore that might be dispersed leading to an increase in suspended sediments.
- For rock delivered by barge, the Contractor would produce a Transshipment Management Plan in consultation with CCBC, NRW and other local stakeholders prior to construction. It is proposed that this plan would include the identification of the transshipment locations offshore and a bathymetric survey of the area prior to works commencing. The plan would also include shipping corridors to the frontage, along with bathymetric surveys of these areas. The methodology for transferring rocks between barges would also be included to minimise the loss of rocks overboard. A plan for recovering any lost rocks off the seabed would also be included should this be required by NRW.
- Regular beach monitoring would be undertaken along this section of the frontage and a beach monitoring regime would need to continue throughout the life of the coastal defence works to record how the beach is evolving in front of the new rock revetment, enabling any remedial action to be planned if required. Should the beach level drop below 0.5m CCBC would be required to undertake localised beach recycling and if it should rise by over 1m, localised beach management may be required to ensure ecological enhancement and outfalls remain operational.

Priority habitats and species

Overview

Blue Mussel (*Mytilus edulis*) beds: A small, poor quality Blue Mussel bed is present within the red line boundary area in the far east of the Scheme to the immediate north of Splashpoint and east of the Splashpoint groyne. The mussel bed is not located beneath the revetment footprint and is separated from the base of the existing Splashpoint revetment by an approximately 15m strip of beach and shingle where no mussels are present, providing an access around the base of the proposed revetment.

Honeycomb Worm (*Sabellaria alveolata*) reef: Poor quality and sparse patches of *Sabellaria alveolata* have been noted intermittently along the northern third to half of the groynes present (with the exception of the Splashpoint groyne where the environment appears to be too muddy). They were observed approximately ~60m north of the sea wall at their closest point however these examples were very sparse – the conditions

No – Residual effects of the Scheme on priority habitats and species are not considered to result in a deterioration of this WFD quality element when considering the mitigation already allowed for as discussed in the ES⁶.

within the northernmost 50m of the longer groynes provided more favourable conditions with more patches noted along the eastern side of the groynes rather than the west. There was also a very small area of *Sabellaria alveolata* reef located within the intertidal sediment to the immediate east of the westernmost of the three longer groynes (approximately 200m north of the sea wall).

Potential Impacts – Mussel Beds

Both dense and sparse mussel bed habitats are present within the eastern end of the Site, although it is noted that these are considered to be in poor condition. Mussel beds present on site are likely to be susceptible to direct effects from:

Physical damage – the Scheme would result in the tracking of plant, machinery and personnel across the site area in order to undertake construction. It is unlikely that the entire mussel bed would be able to be avoided by tracking plant, however limiting the area for tracking to the sparse sections and avoiding dense areas would lead to minimal temporary impacts on the mussel bed only. The use of the barge in the intertidal area and stockpiling, along with necessary marine support vessels provides the potential for physical damage to the mussel beds.

Acoustic underwater noise and vibration (piling) – the Scheme would involve piling within the intertidal area at low tide. Vibration when not properly mitigated can propagate through the bedrock and sediment and has been found to impact on shellfish species (both the fitness of individuals and mussel beds of *Mytilus edulis* due to disruption of natural valve movements¹⁷).

The potential for indirect effects on Blue Mussel beds include:

- Water pollution – given the nature of works, there is a risk of oil and fuel spills into the environment from machinery and vehicles in, and adjacent to, the intertidal habitats, as well as from the barge and associated vessels should this be required. This release of pollutants could prove toxic to this shellfish species, resulting in the loss and degradation of this habitat type.
- Changes in turbidity & impacts on coastal water quality – it is possible for sediment to be disturbed and released through construction activities and deliveries of material to site (e.g. dropping of rocks onto beach via barge). Despite *Mytilus edulis* being a species relatively tolerant to high levels of turbidity¹⁸, large increases in turbidity can reduce the levels of dissolved oxygen in the water column, resulting in decreases in respiration rate and the eventual closing of valve systems which can lead to mussel death¹⁹. It is unlikely that the proposed works would result in sediment disturbance large enough to impact on the *Mytilus edulis* present and any impact would be temporary, short-term and is not anticipated to cause any WFD quality element deterioration.

¹⁷ Roberts, et al., 2015. *Sensitivity of the mussel Mytilus edulis to substrate-borne vibration in relation to anthropogenically-generated noise*. Marine Ecology Progress (538).

¹⁸ Mainwaring, et al., 2014. *Assessing the sensitivity of Blue Mussels (Mytilus edulis) to pressures associated with human activities*. Joint Nature Conservation Committee.

¹⁹ Tang, B., & Riisgard, H.U., 2018. *Relationship between oxygen concentration, respiration and filtration rate in Blue Mussel Mytilus edulis*.

Potential Impacts – Construction Honeycomb Worm

These segments of reef structure are likely to be susceptible to direct effects from:

- Physical damage – the Scheme would result in the tracking of plant, machinery and personnel across the Site area in order to undertake construction. The use of the barge in the intertidal area and rock stockpiling provides the potential for physical damage to the *Sabellaria alveolata*. Additionally, under the Scheme modular ecological armouring units would be installed on the groyne structures to enhance the area for biodiversity. In order to install these structures approximately 1m³ of groyne structure would be required to be removed from the two central larger groynes. This would likely result in the permanent loss of some small patches of *Sabellaria alveolata* reef.

The potential for indirect effects on the reef structures include:

- Water pollution – given the nature of works, there is a risk of oil and fuel spills into the environment from machinery and vehicles in, and adjacent to the intertidal habitats, as well as from the barge and associated vessels. This release of pollutants could prove toxic to the polychaete worm that builds these honeycomb reef structures, resulting in the further loss and degradation of this habitat type.

Other than bioblock installation, the only works which would require plant to travel further north down the beach would be if the rock revetment delivery by barge with revetment deposited into shallow water at high tide. During barge delivery periods it is anticipated that there would be an increase in turbidity however this would be temporary and of short duration. Additionally the rock delivery would be made at high tide, reducing the distance plant or machinery would have to track across the intertidal area.

Mitigation Measures

- The core wintering bird season (October to March inclusive) would be avoided for the delivery of revetment rock via barge. This would avoid disturbance to SPA bird species and also would minimise the risk of standing time due to storms and safety/delay risks for moving boulders between barges by transshipment in bad weather.
 - Vessels present in the intertidal area of the Site at high tide (for the unloading of rock via barge) would not be allowed to drop anchor and instead barges would be guided and positioned by tugs or small support vessels. This would avoid any potential impact on mussel bed or Honeycomb Worm habitat as a result of coming into contact with anchors.
 - Delivery via barge and stockpiling would not be permitted in the area of the Blue Mussel bed or isolated patches of Honeycomb Worm located on intertidal sands/gravels.
 - Tracking of plant for the rock revetment construction would be undertaken within an approximate working buffer of 20-30m from the base of the proposed 30m deep revetment (approximate maximum of 50-60m from the sea wall), with tracking to occur only over the sparse section of mussel bed is absolutely unavoidable and avoidance of the dense section.
-

- A site walkover would be completed 6-8 weeks prior to construction by a marine ecologist to ensure any changes in area of mussel bed and Honeycomb Worm are recorded, the site environmental constraints plan is updated, and a suitable approach to tracking plant over the mussel bed is agreed.
- Toolbox talks with site workers and copies of the site environmental constraints plan to be made available.
- Vibropiling with a variable frequency control would be used and higher frequencies would be adhered to in order to reduce vibration effects;
- The unloading of rocks from the barge would be undertaken at high tide to reduce vibration effects; and
- Pollution prevention measures and contingency planning would be implemented through the CEMP to ensure these features are safeguarded during the works.

Habitats in the area would have adapted to the presence of rock revetments, which are present along much of the coastal frontage and would further adapt to additional revetments being proposed, which are on a small scale in the context of the entire water body. In addition, a number of ecological enhancements are proposed as part of the scheme which would have a beneficial impact on the habitats present.

Protected areas –
Bathing Waters

Overview

The Scheme is located within a Bathing Water area, which is sensitive to changes in water quality and a Bathing Water quality monitoring point is located to the immediate west of the red line boundary at Porth Eirias.

Potential Impacts

The revetment construction works would be completed at low tide, meaning that there would be limited potential for the generation of suspended sediments in relation to this activity.

The Scheme would not increase within the water body:

- Concentrations of pollution from sewage (specifically Intestinal enterococci and Escherichia coli as monitored by NRW throughout the Bathing Water season);
- Quantities or concentrations of water draining from populated areas;
- Concentration of domestic sewage; or
- Animals on beaches (during construction access to the beach would be prohibited for the general public including dog owners) which would result in a decrease in dog faeces deposition throughout construction within the Scheme area.

For rock revetment barge deliveries deposited into shallow water at high tide there would be a localised increase in turbidity at the time of delivery. However this would be temporary, intermittent and of short duration. Additionally, the long shore drift in this area would result in the movement of sediments to the east, away from Old Colwyn.

No – Residual effects of the Scheme on Bathing Waters are not considered to result in a deterioration of this WFD quality element when considering the mitigation already allowed for as discussed in the ES⁶.

	Mitigation Measures • Chemicals used for cleaning of the beach access points (stairs and slipways) must be specified to be non-hazardous to ensure that there is no adverse impact on sediment and water quality. • All necessary pollution prevention measures would be detailed in a CEMP during the construction phase to minimise potential adverse impacts on water quality. This detailed CEMP would be produced by the Contractor detailing the practical and necessary measures required during construction to prevent the pollution of the surrounding environment. • It should also be noted that there are a number of major Welsh Water sewers which run beneath the promenade. Without the Scheme, if the promenade should suffer severe damage during an extreme storm event, there is the risk that one of these services could rupture which would result in a major release of raw sewage directly onto the intertidal area (the Scheme would defend these assets). • The Contractor would produce a Transshipment Management Plan in consultation with CCBC, NRW and other local stakeholders prior to construction. This plan would detail any additional measures necessary.	
Protected areas – Liverpool Bay SPA	Overview Liverpool Bay SPA is designated for the wintering and breeding bird assemblages it supports. Impacts Impacts have been assessed in full in the HRA Screening Assessment (Appendix E). Mitigation Measures Mitigation has been proposed during the construction phase to avoid or minimise risk of impacts as follows: • The CEMP would include best practice pollution prevention measures to minimise risk of habitat degradation through oil spills and increased turbidity; • Delivery of revetment by barge would be outside of October - March (the most sensitive period for wintering birds); and • Measures to minimise disturbance during works (directional lighting, vibropiling, toolbox talks to contractors, etc) would minimise disturbance from on-shore works. Further enhancement measures are proposed to raise awareness of the importance of birds.	No – Impacts of the Scheme on the SPA are not considered to be significant when considering the mitigation already allowed as discussed in the HRA Screening (Appendix E). A deterioration of this WFD quality element is not anticipated.
Water Quality - Phytoplankton	According to NRW, blooms of the algae <i>Phaeocystis</i> do occur along this coastline during warm and calm weather in May and June. This typically produces a cream or brown coloured scum along the water's edge, but is otherwise harmless. The Scheme would not result in an increase in the amount of organic material being deposited into the water body and is not anticipated to result in any impact upon phytoplankton. The Biosecurity Risk Assessment (Appendix D) covers the import of materials from other sites into the intertidal area. A detailed CEMP would be produced by the Contractor detailing the practical and necessary measures required during construction to prevent the pollution of the surrounding environment.	No – Residual effects of the Scheme on phytoplankton are not considered to result in a deterioration of this WFD quality element when considering the mitigation already allowed as discussed in the ES ⁶ .

Cumulative Effects	A full assessment of in-combination and cumulative effects has been completed as part of the Old Colwyn Coastal Defence and Active Travel Scheme Environmental Statement Volume 1 Chapter 16¹⁶. One development (not yet in planning but well defined and likely to proceed) has been identified: ● Colwyn Bay Waterfront project Phase 2b: Not yet in the planning system but known to be at outline design stage). This project forms part of the wider Colwyn Bay Waterfront Project for coastal defence remediation (repairs to the sea wall), beach recharge (understood to be from the location of Horizon Shine kiosk (approximate NGR 284880, 379374) westward to Rhos-on-Sea Harbour (approximate NGR 284253, 380450) and promenade enhancements for the western third of Colwyn Bay (approximately 1.3km in length in total of which ~850m comprise the sea wall and promenade improvements). The plans for this scheme are yet to be finalised and the construction timetable would be determined by availability and grant of funding. On this basis, it is assumed that there could be some overlap in the construction period between the Phase 2b scheme and the Scheme. Potential Cumulative Construction Impacts and Additional Mitigation ● Cumulative effects from disturbance have been assessed under the HRA as no likely significant effect, following implementation of mitigation measures. ● If construction periods for both the Scheme and Phase 2b overlap, there is the potential for the increased generation of suspended solids and increased turbidity from the beach recharge Scheme which has the potential to affect Bathing Waters within Colwyn Bay. However the cumulative effects in relation to the Scheme are considered to be negligible given that Bathing Water areas within the respective red line boundaries would be closed to the public for the duration of works and long-shore drift is to the east away from the Old Colwyn Bathing Water area. The majority of impacts would result from the Phase 2b Scheme on the central (Phase 1 area) in isolation rather than in combination. The Phase 2b works would need to be designed to minimise and mitigate effects through the use of appropriate construction method statements and measures contained within the CEMP. Potential Cumulative Operational Impacts and Additional Mitigation ● The Phase 2b scheme is proposed to have beach recharge as part of the outline design. It is considered that material from this scheme could be transported eastwards in line with the sediment transport patterns onto the Old Colwyn Coastal Defence and Active Travel scheme. This would be beneficial to maintaining existing beach levels along the frontage. ● The combined Scheme would protect the wider promenade and vastly reduce the risks of severe damage and associated pollution events.	No – Residual cumulative effects of the Scheme when considered in combination with the Phase 2b scheme are not considered to result in a deterioration of this WFD quality element when considering the mitigation already allowed as discussed in the ES⁶.
--------------------	--	---

6 Outcomes and Conclusions

6.1 Assessment Outcomes

In accordance with the NRW document “Guidance for assessing activities and projects for compliance with the Water Framework Directive” (OGN 72, 2018), the 3-Stage approach to Water WFD Assessment has been completed for the Scheme.

6.1.1 Stage 1 – Screening

The Stage 1 assessment determined that there are activities associated with the Scheme which have the potential to impact on water bodies within the vicinity, specifically the:

- Construction of 1.2km length of rock revetment connecting the existing Porth Eirias revetment in the west to the Splashpoint revetment in the east and associated extensions of outfalls through the revetment (including revetment deliveries by barge); and
- Construction of promenade access build out, associated fishing platform and access steps.

6.1.2 Stage 2 – Scoping

The Stage 2 assessment identified the North Wales Coastal Water body to be the only one likely to be impacted as a result of the scheme. The remaining water bodies considered were scoped out of the assessment at this stage. It was acknowledged that the North Wales Coastal Water Body is currently classified as ‘Heavily Modified’ as a result of existing coastal defences. Stage 2 also identified quality elements that are at risk from the proposed activities and required further assessment.

It was recognised that the Scheme could potentially impact upon WFD quality elements associated with the North Wales Water Body. Four quality elements were shortlisted as being at risk from the Scheme:

- Hydromorphology (further development for coastal protection);
- Priority habitats and species (higher sensitivity habitat: Blue Mussel and Honeycomb Worm reef patches within red line boundary);
- Water quality (phytoplankton status of Moderate); and
- Protected areas (Liverpool Bay SPA, Colwyn Bay Bathing Waters).

6.1.3 Stage 3 – Detailed Compliance

The Stage 3 assessment considered the potential impacts of the Scheme activities on the WFD quality elements, identified ways to avoid or minimise impacts, and concluded if the activity may prevent any WFD quality element within any WFD water body achieving good status/potential or may cause deterioration.

The assessment found that given:

- The mitigation already incorporated into the Scheme for hydromorphology; and
- The relatively small scale of works in the context of the WFD water body as a whole;

Residual effects on the WFD water body were not considered to cause deterioration of the WFD water body status.

Mitigation measures already incorporated into the Scheme also resulted in effects relating to priority habitats and species and Bathing Waters being assessed as not causing deterioration. A separate HRA Screening Assessment determined that there would be no significant adverse effects on the effects on the features of the Liverpool Bay SPA. No phytoplankton effects were found to be associated with the Scheme. The assessment of cumulative effects also concluded no deterioration when considering the combined effects of the Scheme alongside the proposed Colwyn Bay Waterfront Project Phase 2b works.

6.2 Marine Biodiversity Enhancement

The Scheme has been identified as having potential for ecological enhancement which has been integrated into Scheme design from the earliest opportunity.

Two key areas of ecological enhancement have been chosen through discussions between Mott MacDonald marine biologists and ornithologists in consultation with CCBC as being of optimum value given the locations of bird species and the potential for ecological connectivity. The first is located between Porth Eirias and the access build out and the second to the immediate west of Splashpoint (this area also has the advantage of providing links with improved fish habitat for local anglers). Each of the two areas would include:

- Placement of 3 clusters of 3 tidal pools; and
- Localised enhancement of approximately 80m of enhanced rock revetment (25-30% enhanced rock) in the lower intertidal revetment area (around 3.6m width). The rock enhancement would comprise adding areas of rock with more complex surfacing to encourage colonisation.

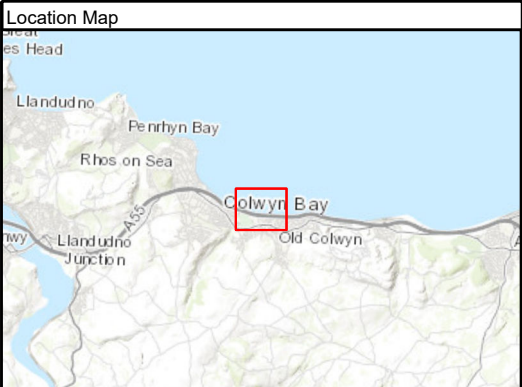
In addition the following would also be implemented:

- Enhancement of the three longer groyne structures with the placement of two ecological armouring unit habitats (bioblocks or similar) per groyne close to the low tide mark;
- The installation of 'Vertipool' features to retain water on vertical surfaces at lower tidal states at the south walls of the stepped access points and the north face of the ramp at the access build-out; and
- The enhancement of outer wall finishes along the intertidal sections of the perpendicular access steps and outer walls of the access buildout to provide greater complexity and improved potential for colonisation.

6.3 Conclusions

This WFD Assessment has found that, when considering the mitigation already proposed, the Scheme is very unlikely to affect the WFD status or cause any deterioration of the WFD quality elements for the North Wales Coastal Water Body. The potential for marine biodiversity enhancement has been identified and built into the Scheme design.

A. Red Line Boundary and Area of Permanent Construction Drawings



Key to Symbols

 Red line boundary

Notes

1. For information only, not for construction.
2. Contains Ordnance Survey data © Crown copyright and database rights 2019 Ordnance Survey. All rights reserved.
3. Contains OS data © Crown Copyright and database right 2020
Contains data from OS Zoomstack, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

P1	23/07/20	MH	For information	NS	CW
Rev	Date	Drawn	Description	Ch'k'd	App'd



**MOTT
MACDONALD**

Mott MacDonald House
5 Woodland Road West
Colwyn Bay
LL29 7DH
T +44 (0)2920 467800
W www.mottmac.com

Client



CONWY
CYNGOR BWRDEISTREF SIROL
COUNTY BOROUGH COUNCIL

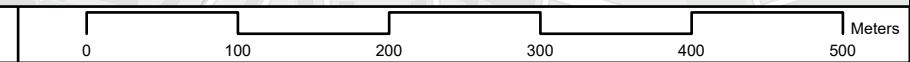
**Conwy County
Borough Council**

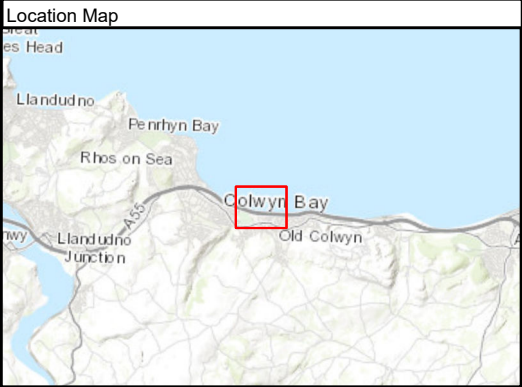
Title: Old Colwyn Coastal Defence and Active Travel Scheme
Anticipated principal working area buffer (approximate only)
Red Line Boundary

Designed	N Spofforth	NS	Eng. Check	N Spofforth	NS
Drawn	M Hayward	MH	Coordination	N Spofforth	NS
GIS Check	G O'Donovan	GO	Approved	C Williams	CW

Scale at A3	Status	Rev	Security
1:5,000	INF	P1	STD

Drawing Number
415437-MMD-00-XX-DR-N-1707





- Key to Symbols
- Red line boundary
 - Area of permanent construction
 - Ecological enhancements only

Notes

1. For information only, not for construction.
2. Contains Ordnance Survey data © Crown copyright and database rights 2019 Ordnance Survey. All rights reserved.
3. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

P1	23/07/20	SA	For information	NS	CW
Rev	Date	Drawn	Description	Ch'k'd	App'd



**MOTT
MACDONALD**

Mott MacDonald House
5 Woodland Road West
Colwyn Bay
LL29 7DH
T +44 (0)2920 467800
W www.mottmac.com

Client



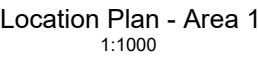
CONWY
CYNGOR Y BRIDISTREF SIROL
COUNTY BOROUGH COUNCIL

**Conwy County
Borough Council**

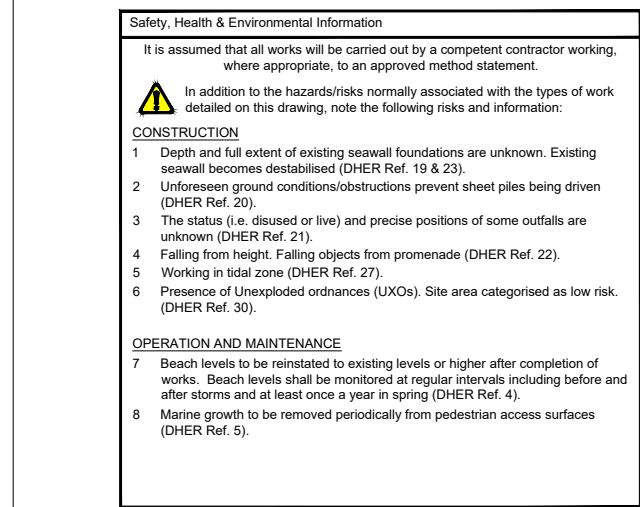
Title Old Colwyn Coastal Defence and Active Travel Scheme					
Area of Permanent Construction					
Designed	N Spofforth	NS	Eng. Check	N Spofforth	NS
Drawn	S Anstice	SA	Coordination	N Spofforth	NS
GIS Check	G O'Donovan	GO	Approved	C Williams	CW
Scale at A3 1:5,000		Status INF	Rev P1	Security STD	
Drawing Number 415437-MMD-00-XX-DR-N-1708					



B. Scheme Drawings



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
Drawing Number 415437-MMD-00-XX-DR-C-3001					Revision P05



- | 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 |

415437-MMD-00-XX-DR-C-3052 - Plan at Splash Point Ends
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-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 G.A Landscape Drawing

Status Stamp

Client

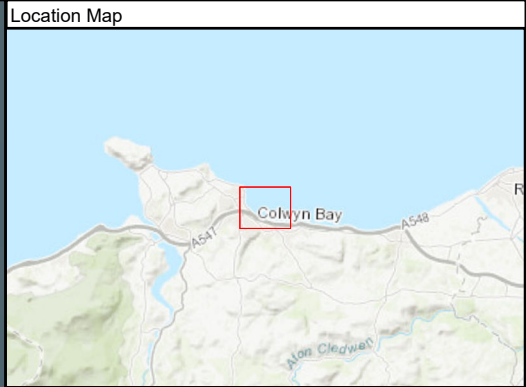


CONWY
CYNGOR BWRDEISTREF SIROL
COUNTY BOROUGH COUNCIL

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 415437		Scale at A1 1:1000			Security STD
Suitability Description Issue for Construction Approval					Suit. Code S4
Drawing Number 415437-MMD-00-XX-DR-C-3002					Revision P05

C. Phase 1 Habitat Plan



Key to Symbols	
	Target note
	Phase boundaries
	Trees with low bat potential
	Honeycomb Worm Reef - sparse (approximate location)
	A3.1 - Broadleaved parkland/scattered trees
	A2.1 - Scrub - dense/continuous
	A3.1 - Broadleaved parkland/scattered trees
	B6 - Poor semi-improved grassland
	C1.1 - Bracken - continuous
	G1.6 - Standing water - brackish
	H1.1 - Intertidal - mud (approximate location)
	H1.1 - Intertidal - sand
	H1.2 - Intertidal - shingles/cobbles (approximate location)
	H1.3 - Intertidal - boulders/rocks (Groynes and man-made features)
	J1.2 - Cultivated/disturbed land - amenity grassland
	J3.5 - Artificial sea wall
	J3.6 - Buildings & infrastructure
	J5 - Hardstanding
	Mussel bed - dense (approximate location)
	Mussel bed - sparse (approximate location)

Notes

1. For information only, not for construction.
2. Contains Ordnance Survey data © Crown copyright and database rights 2019 Ordnance Survey. All rights reserved.
Mott Macdonald OS License: 0100026791.
3. Contains public sector information licensed under the Open Government Licence v3.0.
4. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
5. Phase 1c beach recharge extended into the Phase 2b area while transitioning back to existing beach levels and Phase 2a promenade improvements straddled the Phase1 and Phase2 boundary.

P5	23/07/20	SA	For information	NsS	JB
Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Mott MacDonald
2 Callaghan Square
Cardiff
CF10 5BT
T +44 (0)2920 467800
W www.mottmac.com

Client

CONWY
CYNGOR BWRDEISTREF SIRIOL
COUNTY BOROUGH COUNCIL

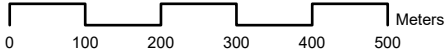
Conwy County Borough Council

Title Old Colwyn Coastal Defence and Active Travel Scheme
Phase 1 Habitat Survey

Designed	L Woolley	LW	Eng. Check	N Spofforth	NS
Drawn	S Anstice	SA	Coordination	L Woolley	LW
GIS Check	H Wheldon	HW	Approved	J Bates	JB

Scale at A3	Status	Rev	Security
1:10,000	INF	P5	STD

Drawing Number
415437-MMD-00-XX-DR-N-1713



D. Biosecurity Risk Assessment



Old Colwyn Coastal Defence and Active Travel Scheme

Bio-Security Risk Assessment

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

Old Colwyn Coastal Defence and Active Travel Scheme

Bio-Security Risk Assessment

July 2020

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
P01	23/07/2020	E. Haggett	R. Byrne N. Spofforth	C. Williams	First issue

Document reference: 417437-MMD-00-XX-RP-N-1722

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

1	Introduction	3
1.1	Overview	3
1.2	Terrestrial INNS	3
1.3	Marine INNS	3
1.3.1	High Risk INNS	4
1.3.2	Medium Risk INNS	4
2	Bio Security Risk Assessment	1
A.	Bio-Security Risk Assessment Scoring Matrix	1

1 Introduction

1.1 Overview

This Bio Security Risk Assessment (BSRA) document has been produced in support of the Old Colwyn Coastal Defence and Active Travel Scheme (hereafter referred to as “the Scheme”).

This BSRA outlines the potential hazards relating to the introduction and spread of invasive and non-native species (INNS) on site for the Scheme. The Scheme will involve working on land, within the intertidal zone and it also may require the delivery of revetment rock by ship and barge. As a result, INNS relating to the terrestrial and marine environments have been considered.

Prior to implementing this risk assessment on site, a site briefing and a toolbox talk should be provided to all site workers regarding the importance of bio security. The required inspection, preventative and management techniques for personnel should be outlined and pest/containment identification should also be explained to ensure rapid and appropriate responses to any INNS present, (if INNS are found on site, the Ecological Clerk of Works (ECoW) should be notified and guidance should be sought with statutory agencies). An ecological walkover survey should be undertaken on site approximately 6-8 weeks prior to the construction phase commencing. This will provide an opportunity to confirm any new occurrences of INNS on site and for these to be managed suitably prior to works starting.

Formal standardised reporting to Natural Resources Wales (NRW) should be implemented on site throughout the duration of the works regarding the presence of INNS should any be discovered.

1.2 Terrestrial INNS

A Preliminary Ecological Appraisal Report has been produced for the Scheme¹, along with other subsequent assessments (both terrestrial and intertidal) for which a number of field surveys were undertaken from December 2019 to June 2020. During these surveys no invasive plant species were discovered on site. However, it is noted that INNS can be introduced into the site through poor bio-security protocols and construction practice, so a precautionary approach for the management of terrestrial INNS on site is outlined in Section 2.

1.3 Marine INNS

It should be noted that to date no site visit has been undertaken by a marine ecologist (visits were planned but these had to be cancelled due to the Covid-19 pandemic). Instead comprehensive high definition (HD) photographic evidence taken by an experienced local environmental consultant has been reviewed by a qualified marine ecologist to establish marine species present on site. It was not possible to confirm the presence/absence of marine INNS from these photographs. However, due to the potential delivery of revetment rock to the site via barge, precautionary measures to manage potential INNS within the marine environment need to be outlined.

The Marine Strategy Framework Directive (MSFD) (2008) outlines a monitoring list for INNS. These INNS listed by the MSFD are further outlined within the “Priority Monitoring and Surveillance List of Marine INNS for Wales”² and have been categorised into “High Risk” and “Medium Risk”

¹ Colwyn Bay Preliminary Ecological Appraisal Report (Ref: 410895-MMD-N-R-00-XX-1701), Mott MacDonald Ltd, 2020.

² Gov.Wales (2017). *Marine Invasive Non-Native Species Priority Monitoring and Surveillance List for Wales*. [Online] Available at: <https://gov.wales/sites/default/files/publications/2018-02/invasive-aquatic-species-priority-marine-species.pdf>

INNS. A “Low Risk” category also exists, but there are not INNS considered to require monitoring by the MSFD.

The “High” and “Medium” risk INNS listed by the MSFD have been reviewed and INNS from these categories that are believed to have the potential to interact with the site as a result of the delivery of revetment rock via barge have been considered for this BSRA. These species considered for this risk assessment are outlined below:

1.3.1 High Risk INNS

- Compass sea squirt (*Asterocarpa humilis*) – potential for introduction through fouling;
- Carpet sea squirt (*Didemnum vexillum*) – potential for introduction through fouling;
- Chinese mitten crab (*Eriocheir sinensis*) – potential for introduction through ballast water; and
- Red ribbon bryozoan (*Watersipora subatra*) – potential for introduction through fouling.

1.3.2 Medium Risk INNS

- Bonnemaison’s hook weed (*Bonnemaisonia hamifera*) – potential for introduction through fouling and ballast water;
- Japanese skeleton shrimp (*Caprella mutica*) – potential for introduction through fouling;
- Orange striped anemone (*Diadumene lineata*) – potential for introduction through fouling;
- Japanese wireweed (*Sargassum japonica*) – potential for introduction through fouling;
- Leathery sea squirt (*Styela clava*) – potential for introduction through fouling; and
- Wakame, Asian kelp (*Undaria pinnatifida*) – potential for introduction through fouling.

Bio Security Risk Assessment

The BSRA scoring methodology is presented in Appendix A

The risk assessment in **Error! Reference source not found.** outlines the potential hazards of the Scheme associated with the introduction, transfer and spread of INNS. This risk assessment should be included within the Construction Environmental Management Plan (CEMP). As outlined above, this risk assessment is precautionary as it relies upon records of INNS within and near to the site.

Table 2.1: BSRA for the Scheme (risk is the transfer and introduction of INNS)

Hazard	Who or What Might be Affected?	Initial Assessment			Risk Control Measures	Residual Risk		
		Severity	Likelihood	Assessed Risk		Severity	Likelihood	Assessed Risk
Land Based Plant								
Machinery access	Where access points are varied and/or used on a number of occasions, the risk of pathogen transfer/introduction will increase.	4	H	UA	The number of vehicles used on site and the frequency at which they enter the intertidal area should be limited (vehicles should only enter the intertidal area on an ebb tide when there is a suitable dry area available for working). Tracking of vehicles across the intertidal zone will remain within a strict working buffer of 20m from the rock revetment (which is 30m wide, so in total a buffer of 50m from the seawall will be adhered to).	2	L	A
Use of land-based plant on the foreshore	Heavy lifting plant will be used in the intertidal zone to collect revetment rock delivered by the barges once the tide has receded. This provides the opportunity for the spread of INNS across the intertidal area.	4	M	AR	Sections of the plant that would come into direct contact with the intertidal area (track/wheels) should be thoroughly cleaned before and after use to avoid the spread of any INNS. This will also prevent potential spread from the Scheme's site area into other sites that may be used after the Scheme's construction is completed.	3	L	A

Hazard	Who or What Might be Affected?	Initial Assessment			Risk Control Measures	Residual Risk		
		Severity	Likelihood	Assessed Risk		Severity	Likelihood	Assessed Risk
Machinery origins/ previous works	Machinery travelling or having previously worked on different sites has the potential to introduce non-native or non-localised species to site.	4	H	JA	A stringent system of vehicle maintenance and cleanliness should be implemented during construction works, including frequent vehicle washing between road and beach access. A CEMP should be adhered to and available on site and NRW Pollution Prevention Guidelines should be followed.	3	M	AR
Promenade works	Material used to raise and widen the promenade may introduce alien species or spread existing species and/or pathogens on site.	3	H	AR	Existing material will be reclaimed as far as possible, therefore the risk of introduction of invasive species is considered low.	2	L	A
PPE – contractor staff, operatives and sub-contractors	PPE can collect contaminants including mud, seeds, pathogens etc. which can easily be transferred to and between sites.	4	VH	JA	All PPE especially footwear, Velcro closures, gloves, etc. should be thoroughly inspected and cleaned and inspected before arrival on site. Boot washing as well as equipment cleaning facilities (with a biocide such as Virkon) should be provided and carried out when entering and exiting site. Ideally equipment should then be allowed to dry for 48 hours before it is used elsewhere (a different site). Transfer between work areas on site should be avoided and minimised where possible.	3	M	AR
Marine Vessels / Marine Plant								
Ballast water	It is currently anticipated that the rocks required for the construction of the revetment on site may be transported by ship from Norway. There may be a requirement for these ships to take on board ballast waters from seas of different nations and to then dispose of these in	4	H	JA	All vessels and associated staff must ensure adherence to the Ballast Water Management Convention, 2017 for each vessel required for the works. This legislation outlines the requirements for each vessel to have a ballast water management plan, a ballast water record book and an international ballast water management certificate. Vessels should have a on-board ballast water treatment system, if this is not possible then ballast water should be	3	L	A

Hazard	Who or What Might be Affected?	Initial Assessment			Risk Control Measures	Residual Risk		
		Severity	Likelihood	Assessed Risk		Severity	Likelihood	Assessed Risk
	UK waters (and vice versa). This could result in the spread of INNS in the form of marine microbes, plants and animals (such as Carpet sea squirt (<i>Didemnum vexillum</i>) larvae).				exchanged mid-ocean and not near the shoreline of the site.			
Anchorage	Anchors used for the mooring of vessels pose the opportunity for bio-fouling and introduction of INNS to the site when lowered to the seabed.	3	L	A	Only the larger ships that contain the delivery of the revetment rock will be allowed to drop anchor. These ships will be moored off-site, outside of the site boundary. Barges will be held in place by tugs which are self-propelled and so these will not require anchorage within the intertidal zone. Anchors for vessels used on site should be cleaned when the opportunity arises (e.g. at port or when refuelling) to minimise cross contamination between sites. It should be noted that the anchor will provide a relatively small opportunity for cross site contamination in comparison to other hazards listed in this risk assessment.	2	L	A
Bio-fouling of revetment rock	If revetment rocks delivered on site have been reused from other projects or have spent prolonged periods of time in the marine environment, they may already be colonised to marine INNS which would then be introduced to the site.	4	M	AR	Revetment rock delivered to site should preferably be virgin material and not consist of rocks used for previous coastal defence schemes that may have spent prolonged periods of time in coastal waters. Rocks should also be clean prior to introduction into the intertidal zone on site.	2	L	A
Bio-fouling (ships, barges and tugs used)	It is possible for the hulls of ships, barges and tugs used on site to be fouled by INNS such as algae,	4	M	AR	All vessels used on site should ensure they have a copy of their Bio-fouling Management Plan on board with clear information outlining efforts to reduce bio-fouling of the vessel, e.g.	4	L	AR

Hazard	Who or What Might be Affected?	Initial Assessment			Risk Control Measures	Residual Risk		
		Severity	Likelihood	Assessed Risk		Severity	Likelihood	Assessed Risk
for revetment deliveries).	barnacles, sea squirts. This presents an opportunity to introduce INNS to site and to other waters (e.g. from UK waters at Colwyn Bay to Norwegian waters where revetment rock is obtained).				through anti-fouling treatments or use of biocides.			
Bio-fouling of groynes	It should be noted that in order to install the ecological armouring units (ecological enhancements for the Scheme), sections of the existing groyne structures will be required to be removed to fit these in place. It is possible that if these sections of removed groyne are re-used on other projects, there could be a cross contamination of INNS from the Scheme area to other locations as the groyne structures could be fouled.	3	M	AR	Once removed, the sections of groyne should be disposed of suitably on land and should not be disposed of or reused within the marine environment.	3	VL	A

A. Bio-Security Risk Assessment Scoring Matrix

Table A.1: Bio-Security Risk Assessment Scoring Matrix

Biosecurity Severity or Consequence					
1 = Slight – no measurable consequence					
2 = Minor – slight impact, small scale, easily contained					
3 = Moderate – damage recoverable, moderate impact					
4 = Permanent – considerable damage, long term impacts on native flora and/or fauna					
5 = catastrophic – major damage, threat to species					
Likelihood					
VL = Improbable – unlikely to occur					
L = Remote – unlikely but possible					
M = Occasional – possible at some time					
H = Probable – likely to occur several times					
VH = Frequent – likely to occur many times					
Acceptability of assessed risks					
UA = Unacceptable (action essential)					
AR = Action required (if reasonably practical)					
A = Acceptable (manage risk)					
N = Negligible					
Assessed risk					
	Severity				
Likelihood	1	2	3	4	5
VL	N	N	A	A	A
L	N	A	A	AR	AR
M	A	A	AR	AR	UA
H	A	AR	AR	UA	UA
VH	A	AR	UA	UA	UA

Source: Mott MacDonald, 2015



E. HRA Screening Assessment



Old Colwyn Coastal Defence and Active Travel Scheme

Habitats Regulations Assessment - Report to
Inform an Appropriate Assessment

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

Old Colwyn Coastal Defence and Active Travel Scheme

**Habitats Regulations Assessment - Report to
Inform an Appropriate Assessment**

July 2020

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	23/07/2020	L Woolley	N Shelton	C Williams	First Issue

Document reference: 417437-MMD-00-XX-RP-N-1726

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

1	Introduction	1
1.1	Background and Site Location	1
1.2	Purpose and Structure of this Report	2
1.3	Ecologist Qualifications	3
2	Project Description	4
2.1	Scheme Description	4
2.2	Proposed Works Methodology and Programme	4
2.2.1	Construction	4
2.2.2	Operation	5
2.2.3	Decommissioning	5
3	HRA Framework and Study Area	6
3.1	HRA Framework	6
3.2	Study Area	7
4	Ecology Baseline	8
4.1	Site Description and Context	8
4.2	Assessment of Bird Assemblage	9
4.2.1	Common Scoter	9
4.2.2	Red-throated Diver	12
4.2.3	Little Gull	12
4.2.4	Common and Little tern	13
4.2.5	Waterbird assemblage	13
5	Screening Assessment	16
5.1	Identification of Sites	16
5.2	Assessment of Impact Pathways	16
5.3	Screening Assessment	17
6	Mitigation	21
6.1	Embedded Mitigation Measures	21
6.2	Secondary (Additional) Mitigation	21
7	Appropriate Assessment	22
7.1	Appropriate Assessment	22
7.1.1	Assessment of the Project Alone	22
7.1.2	In-combination Assessment	22

8	Conclusions	25
9	References	26
A.	International Designations within 2.0km	27
B.	HRA Process	29
C.	WeBS Raw Data	30
D.	Distribution Maps (JNCC Report Extracts)	37

Click or tap here to enter text.

1 Introduction

1.1 Background and Site Location

Mott MacDonald Limited is advising on ecology matters relating to the proposed 'Old Colwyn Coastal Defence and Active Travel Scheme' in Colwyn Bay (see Figures 1.1 and 1.2 for Site Location).

Figure 1.1: Overview Site location



Source: DigitalGlobe, Microsoft, Earthstar Geographics | Esri UK, Esri, HERE, Garmin, METI/NASA, USGS

The Victorian built coastal defences around Colwyn Bay from Rhos-on-Sea in the west to Old Colwyn in the east have suffered from undermining, corrosion, partial collapses and degradation with frequent overtopping events occurring at Spring Tides. Phase 1abc and 2a of the Colwyn Bay Waterfront Project have already been completed which included the construction of a 150m groyne and Porth Eirias, beach recharge and promenade improvements in the central Colwyn Bay area. Subsequent to this, CCBC are now seeking to provide a permanent upgrade of the coastal defences to protect the western and eastern areas of the bay concurrently with improvements to the promenade to facilitate active travel and regeneration. The proposed works will include upgrades to the promenade, new coastal defences and beach recharge. These will be referred to as the Scheme within this report.

The Scheme is located along the easternmost section of the Promenade at Old Colwyn, from the eastern side of Porth Eirias in the west to Splashpoint in the east. The Scheme footprint is divided into two principal areas:

- Area 1 – From the picnic area to the east of Porth Eirias car park (approximate National Grid Reference (NGR) 285822, 378870) to the east of Rotary Way (approximate NGR 286347, 378756) where the road currently reduces in height from the junction back down to Promenade level; and
- Area 2 – From the eastern edge of Area 1 (approximate NGR 286347, 378756) to Splashpoint in the far east (approximate NGR 287029, 378701).

The red line boundary has been extended beyond the footprint as shown in Figure 1.2 to allow for access during construction. For the purposes of this report, the site refers to everything within the redline boundary.

Figure 1.2: Location of the Scheme



Source: Adapted from Red Line Boundary Plan Drawing 415437-MMD-00-XX-DR-N-1707

The Scheme is located immediately adjacent to Bae Lerpwl / Liverpool Bay inshore Special Protection Area (SPA), which is also an Important Bird Area (IBA), designated for a number of breeding and wintering bird species (see Appendix A for location). Notably wintering common scoter (*Melanitta nigra*), red-throated diver (*Gavia stellata*), little gull (*Hydrocoloeus minutus*) and breeding little tern (*Sternula albifrons*) and common tern (*Sterna hirundo*). It is also designated for its overwintering waterbird assemblage (over 60,000 birds).

Mott MacDonald Limited has therefore been commissioned by Conwy County Borough Council (CCBC) to prepare a report to inform a Habitats Regulations Assessment (HRA) in relation to the proposed works. Based on an initial assessment, avoidance and mitigation measures have already been proposed as part of the scheme to avoid adverse effects on wintering birds using the SPA. On this basis this report has been prepared to inform an Appropriate Assessment (Stage 2) to consider the effectiveness of applied mitigation measures.

1.2 Purpose and Structure of this Report

This document has been prepared to document the assessment of the proposed coastal defence improvement works in relation to the potential for effects on European Sites as required by Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations). The HRA process is described in Section 3 and in Appendix B.

The structure of this report can be summarised as:

- Sections 1-4 provide the context and baseline information (including an ecology baseline for SPA features of interest abundance and distribution) to inform the screening and appropriate assessment;
- Section 5 provides the information to inform a screening assessment; and
- Sections 6-8 provide information to inform an appropriate assessment.

1.3 Ecologist Qualifications

Table 1.1: Ecologist Qualifications

Name and Role	Qualifications	Experience
Clive Williams Approver	BSc (Hons), MSc, FGS, CGeol	23 years' environmental consultancy experience preparing Environmental Statements and HRA for various projects.
Nigel Shelton Checker	BA(Hons) MSc, MIFM	Over 25 years' experience in ecology with 15 years in national government agency and consultancy, with a specialism in ornithology, advising on ecological matters in relation to legislation, licensing and impact assessment, including review of HRA's for the competent authority.
Lorraine Wooley Author	MA (Oxon), MRes, CEcol, CEnv, MCIEEM	Over 10 years' experience in consultancy, advising on ecological matters including HRA and EclA

Source: Mott MacDonald Ltd

2 Project Description

2.1 Scheme Description

The Scheme comprises a combination of coastal defence, promenade and active travel improvements.

Coastal defence improvements include:

- The construction of a rock revetment approximately 32m in cross-sectional width and 1.15km in length, with associated modifications to existing surface water outfalls on the beach to extend them through the new revetment;
- 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;
- New pedestrian accesses through the proposed revetment to comprise three sets of beach access steps perpendicular to the linear rock revetment;
- A dedicated fishing platform in the Splashpoint Area to keep anglers at a safe distance from active travel routes: and
- 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.

Active Travel improvements, to include new cycleway layouts, improved pedestrian access areas, improved lighting, new handrailing, improved picnic and outdoor spaces, improved signage and landscaping.

In addition, a series of ecological and educational enhancements have been incorporated into the proposals including new intertidal habitat creation, classification of the beach as a plastic free zone, incorporation of wildflower grassland into new amenity areas and enhancements to the network rail embankment.

2.2 Proposed Works Methodology and Programme

2.2.1 Construction

As funding is yet to be secured for Scheme construction, the programme has not yet been confirmed. Due to the scale and funding requirements of the Scheme, the construction process may need to be split into several phases. However, it is anticipated that works would be undertaken over a period of approximately 20 months and would be split into at least two phases for areas 1 and 2.

The construction phase will involve construction of the above listed works. It is anticipated that construction would require the following elements (of key relevance to this assessment) and would be subject to tidal working:

- Import of rock revetment by barge or by road:
 - Import by barge would be undertaken outside of the period October to March only. For this method of delivery, the delivery barge would be guided to shore by a tug at a designated (and rising) tidal state when access to the upper shore area is possible. The rock armour would be unloaded directly to shallow water on the beach. The window for this operation would be relatively small (considered likely to be limited to 2 hours either side of high tide only) and therefore 24 hour working (requiring artificial lighting) may be

required. Rock armour would be stockpiled immediately seaward from where it is to be placed within the revetment; and

- Import by lorry would be undertaken throughout the year, as required, and would involve a large number of lorries offloading directly onto the foreshore. Storage of revetment would either be on the upper beach or on the promenade (awaiting transfer to the beach);
- Extensive and prolonged periods of piling along the existing promenade and revetment (tubular steel piles driven into the underlying clay for the fishing platform and sheet piles for the access steps and access build-out structure) (anticipated at least 12-14 weeks); and
- Vehicular movements on the beach and promenade as well as increased presence of construction personnel.

Construction compound locations are not yet finalised but will be located within the red line boundary. The existing groynes would be retained, maintained and enhanced.

2.2.2 Operation

Once constructed, the sea defences will work in a similar way to the current sea wall. However, maintenance requirements are anticipated to be reduced compared with the existing situation as fewer emergency repairs (often required in winter) would be needed.

2.2.3 Decommissioning

It is considered highly unlikely that the proposed coastal defences would be decommissioned as this would pose a safety and environmental hazard. These works are proposed as a long-term solution.

3 HRA Framework and Study Area

3.1 HRA Framework

National Site Network (formerly known as European or Natura 2000) sites form a network protected sites, designated for their rare, vulnerable and/or endangered species and habitats. National Site Network sites include Special Areas of Conservation and Special Protection Areas (SPA). HRAs are also required, as a matter of UK Government policy, for potential SPAs (pSPA), candidate SACs (cSAC) and wetlands of international importance (Ramsar sites) for the purposes of considering plans and projects, which may affect them. Hereafter all of the above designated nature conservation sites are referred to as “National Site Network sites

Part 6 of the Conservation of Species and Habitats Regulations 2017 (as amended) transpose the requirements of Article 6 paragraphs (3) of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) into UK law. These Regulations require that the competent authority undertakes an appropriate assessment of implications of a project for a National Site Network site, where this is likely to have a significant effect on any sites under that designation.

The regulations also require a person, or organisation, applying for a consent to undertake an activity to provide the competent authority with sufficient information to inform its assessment. This process of assessment has become known as a Habitat Regulations Assessment (HRA)

The HRA process consists of four stages;

Table 3.1: HRA Stages

Stage	Description
Screening (Stage One)	This is the process which identifies the potential effects upon the National Site Network sites and considers if the effects are likely to be significant. A significant effect or impact on a National Site Network site is that which could undermine the conservation objectives or/and management of the site. The likelihood of it occurring is judged on a case-by-case basis, taking account of the precautionary principle and the local circumstances of the site. The judgment of 'likelihood' is, in turn conducted in a very precautionary manner, taking account of the ecological circumstances of the National Site Network site. This is an iterative process and before moving to Stage Two it can be repeated if required. Proposals to mitigate any significant effects are no longer allowed to be considered at the screening stage, only features which are considered to be integral to the scheme and not those designed to avoid or mitigate for any negative effects on the National Site Network site, are included in the screening assessment. The competent authority must consult with the appropriate nature conservation body (in this case Natural Resources Wales (NRW)) and have regard to any representations made by that body.
Appropriate Assessment (Stage Two)	If the Stage One Screening identifies that the project or plan, alone or in combination, may have significant effects on a National Site Network site, or if there is uncertainty, the competent authority must undertake an Appropriate Assessment of the implications for that site in view of that site's conservation objectives. This step involves the consideration of the predicted adverse effects of the project or plan either alone or in combination with other projects or plans, on the integrity of the National Site Network site with respect to the site's structure and function and conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts is also required.
Assessment of Alternative Solutions (Stage Three)	If the mitigation measures prescribed at Stage Two cannot avoid adverse effects on the integrity of a National Site Network site, this process examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the National Site Network site.
Assessment where no alternative solutions exist and where adverse	If no suitable alternative solutions are available, Stage Four requires an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (“IROPI”), it is deemed that the project or plan should proceed.

Stage	Description
impacts remain (Stage Four)	In making this assessment, it is important to recognise that it will be appropriate to the likely scale, importance and impact of the proposed project.

Each stage determines whether further stages in the process are required.

If the conclusion of Stage 1 is that there will be no significant effects on the National Site Network site, there is no requirement to undertake further stages.

All the Stages of the HRA process, including those beyond appropriate assessment are shown in Appendix B.

3.2 Study Area

The proposed coastal defence project has the potential to impact on ecological features such habitats and/or species beyond the confines of the working area itself. The potential impacts on the SAC are defined as:

- Areas where there will be land take and habitat removal for the works;
- Areas where there is a risk of altering the hydrodynamic regime;
- Areas where there is a risk of an increase in air, noise and light pollution;
- Areas where there is a risk of a reduction in water quality; or
- Areas where there is physical disturbance to international designated sites and/or their designated interest features.

Taking the above into consideration, for the proposed Scheme, a zone of influence (Zoi) of 2.0km (10.0km for SACs designated for bats or marine mammals) has been used to define the study area for this screening assessment.

4 Ecology Baseline

4.1 Site Description and Context

The site comprises approximately 1.2km stretch of intertidal habitats, including sandy beach, areas of gravel, rocky groynes and associated habitats as well as existing coastal defence, promenade and adjacent grassy verges. The beach is well used throughout the year for recreational use, including water sports (outside of winter), whilst the existing coastal defences are also subject to regular maintenance including frequent emergency works (often in winter) due to their poor state of repair.

The inshore area of Colwyn Bay lies within the boundary of Bae Lerpwl / Liverpool Bay SPA.

The wintering bird survey data is also presented for Colwyn Bay Phase 1abc (west of the site, comprising a stretch of sandy beach recently subject to recharge) and Colwyn Bay Phase 2b (west of Phase 1abc, comprising similar habitats to the site). These areas are indicated within Figure 4.1 below.

Figure 4.1: Detailed site location



Source: 'ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community'. Note The completed Colwyn Bay Waterfront Phase 2a Scheme area straddles the Phase 1 and Phase 2 areas.

4.2 Assessment of Bird Assemblage

Given the proximity of the site to Liverpool Bay SPA, in order to understand the local waterbird assemblage present, wintering bird surveys of the site and the adjacent areas (Phase 2b and Phase 1abc as shown in Figure 1.2) were undertaken in November 2019 to January 2020 (Mott MacDonald, 2020). In addition, Wetland Bird Survey (WeBS) data has also been sourced from the BTO for the count sectors covering the area (Colwyn Bay to Rhos Point and Abergele to Llandulais) for the most recent five-year period (2014 to 2019; see Appendix C for full records).

Liverpool Bay SPA regularly supports more than 1% of the British populations of red-throated diver (*Gavia stellata*), 1% of the biogeographical population of common scoter (*Melanitta nigra*) and more than 60,000 waterfowl during the non-breeding season. Within the entire SPA, peaks of common scoter can reach up to 29,000 birds (60% of total population) and up to 1000 (5%) of the UK red-throated diver population during October to March. The SPA is also designated for non-breeding little gull (*Hydrocoloeus minutus*) and breeding common tern (*Sterna hirundo*) and little tern (*Sternula albifrons*). The baseline survey results are therefore summarised below with particular reference to these interest features of the Liverpool Bay SPA. As common scoter were recorded in far larger numbers than other species, more detail from the WeBS counts and wintering bird surveys has been included in respect of this species than for the others.

4.2.1 Common Scoter

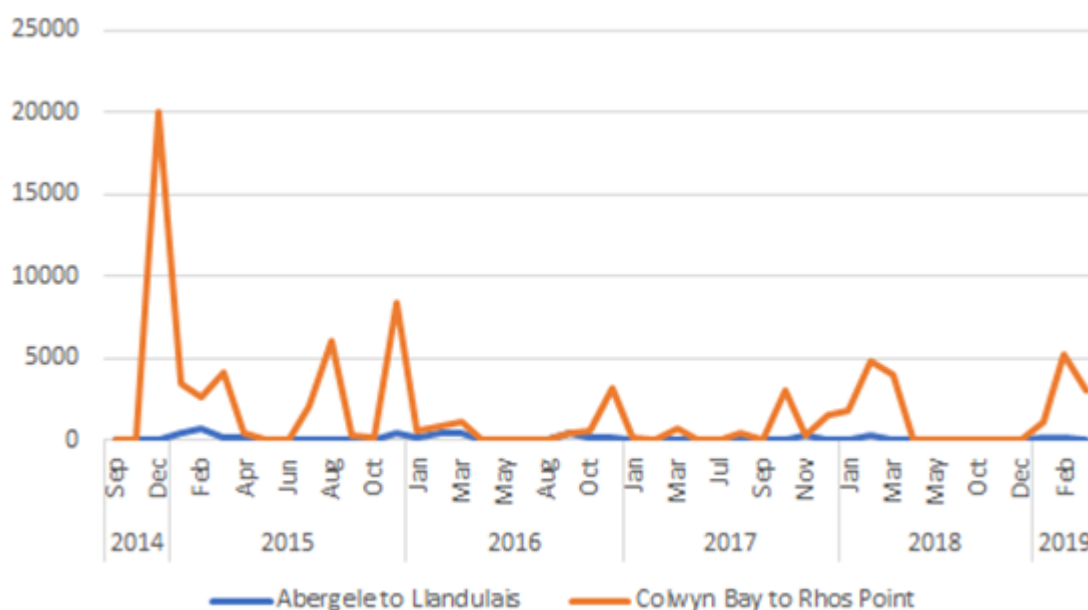
4.2.1.1 WeBS data (2014 – 2019)

The WeBS sector counts from the last five years is plotted in Figure 4.2 whilst the counts recorded for different months is summarised in Table 4.1. Raw data is provided in Appendix C.

This data shows that common scoter are present over winter in both the Abergele to Llandulais and the Colwyn Bay to Rhos Point sectors, with the latter supporting large numbers (typically 5,000 – 8,000, with a peak of 20,000 in December 2014). This is consistent with the wintering bird survey results from 2019 – 2020 (see next section) which also recorded large rafts of thousands of common scoter offshore from Colwyn Bay.

The trends in bird numbers vary between years but the majority of high bird counts appear between October and March, with the notable exception of a peak in August 2015 which is atypical for the species (a winter resident) and so not considered relevant to this analysis.

Figure 4.2: Common scoter



Source: WeBS data (BTO, 2020)

Table 4.1: Common scoter WeBS counts per month

Month	Abergele to Llandulais							Colwyn Bay to Rhos Point						
	2014	2015	2016	2017	2018	2019	Average	2014	2015	2015	2017	2018	2019	Average
Jan		415	200	0		200	204	3000	350	200	1800	1000		1270
Feb		710	461	6	386	230	359	2000	400	5	4500	5000		2381
Mar		206	505		0	4	179	4000	600	730	4000	3000		2466
Apr		203	0	0			68	300	0	1	0			75
May		4					4	0	101		4			35
Jun								0	0					0
Jul								2100			0			1050
Aug								6000	0		400			2133
Sep	51	0	420		0		118	300	4	0				101
Oct	53	0	161	0	0		43	200	400	3000	1			900
Nov				268	52		160							
Dec		401	220	0	44		166	20000	8000	3000	1500			8125

Source: Summarised from WeBS data (BTO, 2020)

4.2.1.2 Wintering Bird Surveys (2019-2020)

The wintering bird surveys recorded observations of common scoter on all four site visits. The common scoter observations from the wintering bird surveys are summarised in Table 4.2 below whilst full results are available in the wintering bird survey report (Mott MacDonald, 2020).

Table 4.2: Field survey results (2019/2020) – common scoter

Site	Date	Overall Count	Summary of Observations
Colwyn Bay Coastal Defence and Active Travel	22 Nov 2019	c.2000	- Scattered medium to large rafts of birds (50-500) were visible from the coastal footpath, up to 1.0km-3.0km out to sea; and - Two small rafts of 13-20 birds were recorded within 500m of the coastline for short periods* before returning to the larger groups.
	09 Dec 2019	c. 2000	- Large rafts of birds (approximately 1,000 individuals) were visible from coastline, approximately 1.5-2.0km out to sea; - Small rafts of birds (3 and 23 individuals) were observed within 0.5km of the bay for short periods* of time before returning to the larger groups.
	06 Jan 2020	c. 1000	- Large rafts of birds (approximately 1,000 individuals) were visible from coastline, approximately 2.0-3.0km out to sea; - Small rafts of birds (approximately 6 - 21 individuals) were observed within 0.5km of the bay for short periods* of time before returning to the larger groups.
	16 Jan 2020	c. 1300	Scattered medium to large rafts of birds (40-300) were visible from the coastal footpath. The closest of these (40 individuals) was recorded approximately 0.5km from shore but did not drift closer during the time observed.
Colwyn Bay Waterfront Phase 2b	06 Dec 2019	c. 700	Scattered medium to large rafts of birds (50-300) were visible, at least 1.0km out to sea.
	09 Dec 2019	c. 1200	Large scattered raft (1200) visible, at least 1.0km out to sea.
	06 Jan 2020	c. 800	- Scattered medium to large rafts of birds (50-300) were visible from the coastal footpath, at least 1.0km out to sea; and - One small rafts of 3 birds was recorded approximately 0.5km from the coastline but did not drift closer during the time observed.
	16 Jan 2020	c. 800	Large raft (800) visible, at least 1.0km out to sea.
Colwyn Bay Phase 1abc**	22 Nov 2019	c. 2000	Scattered medium to large rafts of birds (50-500) were visible from the coastal footpath, up to approximately 1.0km – 3.0km out to sea.

Source: Mott MacDonald Limited (2020); * typically 5 to 15 minutes; ** supplementary data from one visit only

In summary, the key findings from the wintering bird surveys are:

- Common scoter were consistently present in large rafts over 1.0km from shore during every visit;
- The largest numbers recorded were from the November and December visits (rafts of approximately 2,000 individuals);
- Smaller rafts (ranging from between 50-500 individuals) were observed between 0.5km – 1.0km from shore but did not drift closer; and
- Small numbers of individuals (typically up to 20) were observed within 0.5km for periods of 5 to 15 minutes before re-joining the larger rafts offshore.

4.2.1.3 Conclusions

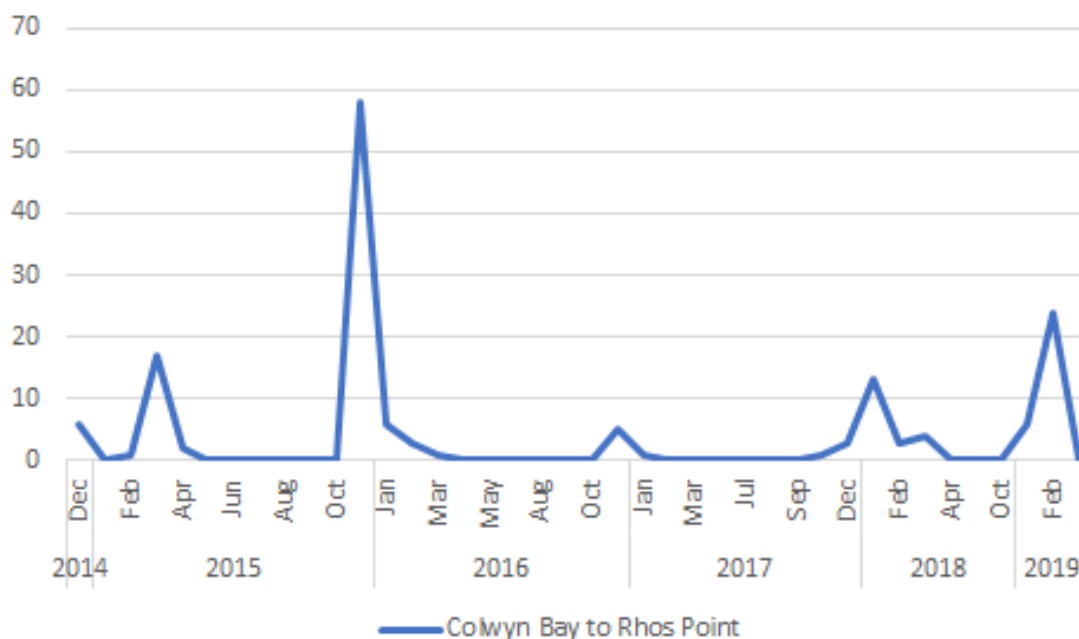
On the basis of the WeBS sector counts and field observations it is clear that common scoter use Colwyn Bay in large numbers over winter, with the key period appearing to be October to March. This is consistent with other research of common scoter in the local area which also concluded October to March as being the key period for this species (Kaiser *et al.*, 2002). The most important area appears to be approximately 1.0km offshore where large rafts of birds gather to rest and forage. Areas within approximately 0.5km appear to be used infrequently and only by very small numbers of individuals in short duration, so are unlikely to be of significant importance to the population.

4.2.2 Red-throated Diver

4.2.2.1 WeBS data (2014 – 2019)

Red-throated diver was only recorded within the Colwyn Bay to Rhos Point sector during October to March. The WeBS sector counts from the last five years are plotted in Figure 4.3 below. Raw data is provided in Appendix C.

Figure 4.3: Red-throated diver



Source: WeBS data (BTO, 2020)

In summary, red-throated diver was only recorded during the period October to March and numbers appear inconsistent between years. The peak counts returned are 58 and 24 from December 2015 and February 2019 respectively.

4.2.2.2 Wintering Bird Surveys (2019-2020)

The wintering bird surveys undertaken only recorded red-throated diver during one survey visit, on 6 December 2019, where two individuals were recorded within approximately 0.8km offshore in the Colwyn Bay Phase 2b survey area.

4.2.2.3 Conclusions

Red-throated diver has been confirmed as present in the Colwyn Bay area over winter (strictly between October and March) but in low numbers, indicating that this is unlikely to be a key area of importance for this species. This is consistent with distribution maps shown in Lawson *et al.* (2016) (see Appendix D) which show Colwyn Bay to be located outside of the main hotspots for this species.

4.2.3 Little Gull

No records of Little Gull were returned from the WeBS sector counts nor was this species recorded during any of the survey visits.

WeBS data online for little gull presents the annual peaks for this species for Colwyn Bay and North Clwyd Coast for the last five years. The peak count for this species was one bird for 2015/2016. The JNCC report (Lawson *et al.*, 2016; Appendix D) which assessed numbers and distribution of wintering waterbirds and seabirds to inform the SPA citation indicates that this species is largely associated with the areas further offshore from the Dee and Ribble Estuaries. For the purposes of this assessment, this species is considered likely to be a passage species migrating through in Autumn.

4.2.4 Common and Little tern

No records of any common or little terns were returned from the WeBS sector counts, whilst these species were not recorded during the wintering bird surveys (as anticipated). Common and little tern are known to be summer breeding species in the SPA.

Common terns are known to breed on shingle beaches and gravelly areas, which are notably absent from the Site, whilst only one known little tern breeding colony is known in Wales at Gronant Dunes (approximately 24.0km north east).

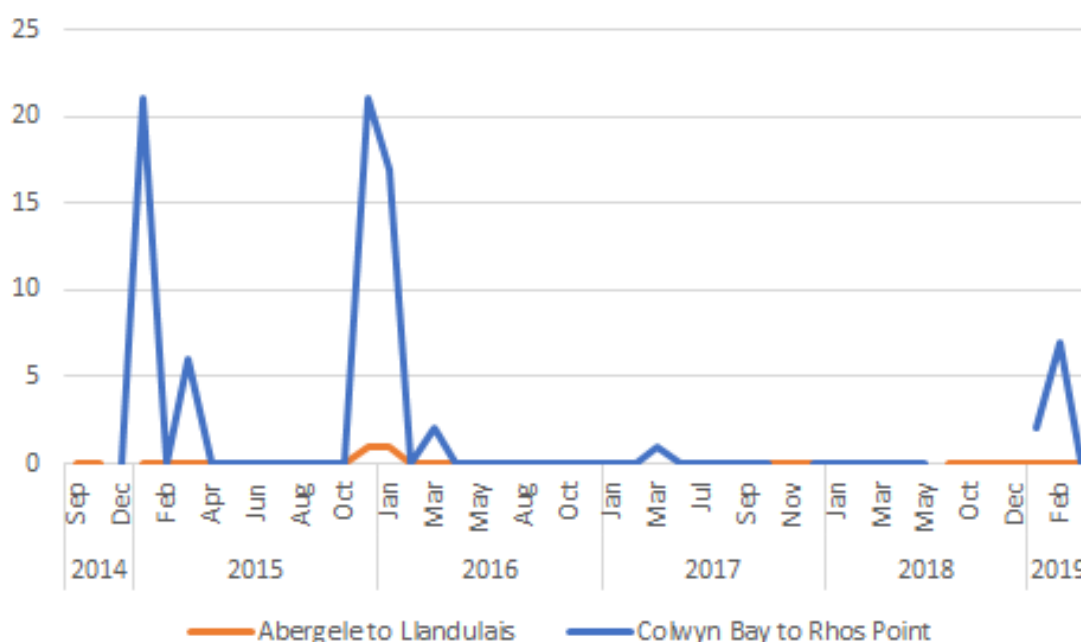
4.2.5 Waterbird assemblage

The waterbird assemblage is specifically noted to include common scoter, red-throated diver and little gull, discussed above, as well as red-breasted merganser and great cormorant as being present in greater numbers.

4.2.5.1 Red-breasted merganser

Red-breasted merganser was not recorded during the wintering bird surveys undertaken at the site, whilst only low numbers of this species were returned from WeBS sector counts from winter months (peak count of 21; see Figure 4.4 below).

Figure 4.4: Red-breasted merganser

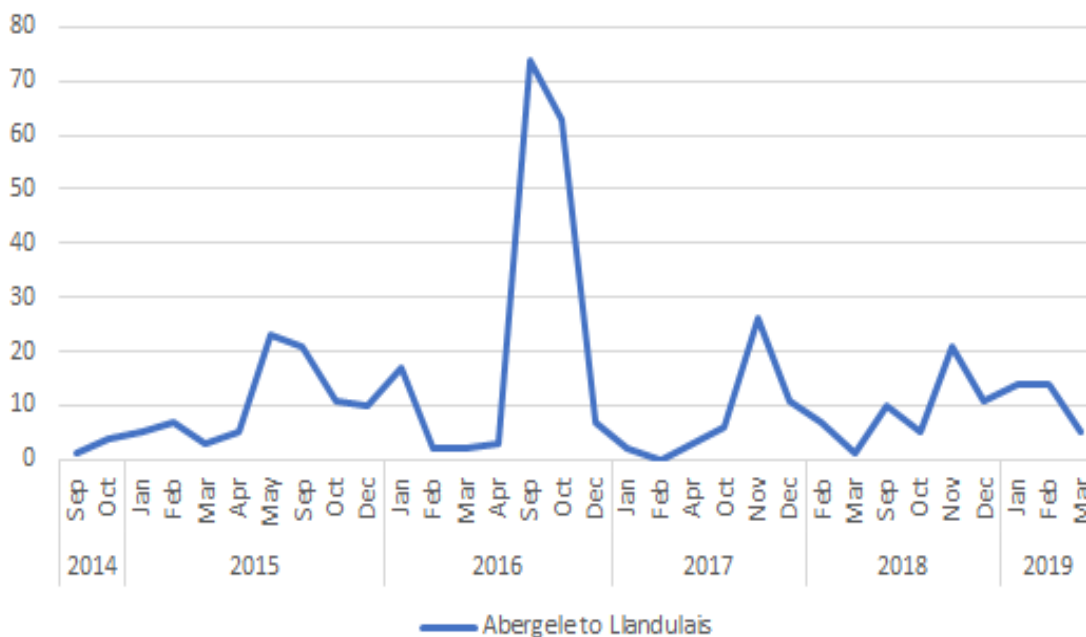


Source: WeBS data (BTO, 2020)

4.2.5.2 Cormorant

Cormorant appears to be present in small numbers throughout the year from the WeBS sector counts (see Figure 4.5), with larger numbers present in winter months, although given the small numbers present it is difficult to accurately draw out any trends in this data.

Figure 4.5: Cormorant



Source: WeBS data (BTO, 2020)

The wintering bird surveys did record this species consistently across the survey period, loafing on manmade structures along the bay as well as feeding both close to shore (within 0.1-0.4km) and out at sea amongst common scoter. The largest counts were recorded in the November and December surveys within the vicinity of the Colwyn Bay Coastal Defence and Active Travel survey area (104 and 86 respectively), before dropping to 18 and 1 individuals observed in the January visits. Similar trends were observed for the Phase 2b area.

Survey results for cormorant are summarised in Table 4.3 below.

Table 4.3: Field survey results (2019/2020) – cormorant

Site	Date	Overall Count	Summary of Observations
Colwyn Bay Coastal Defence and Active Travel	22 Nov 2019	104	- Majority of birds observed day roosting / loafing on manmade structures in the bay; and - Several individuals observed feeding at sea (close to common scoter) and inshore (within 100m of the bay).
	09 Dec 2019	86	- Majority of birds observed day roosting / loafing on manmade structures in the bay; and - A few individuals observed feeding at sea.
	06 Jan 2020	18	Majority of birds observed basking on rocks or feeding inshore (within 400m of the bay).
	16 Jan 2020	1	Flying at sea.
	06 Dec 2019	46	Majority of birds observed day roosting / loafing on manmade structures in the bay; and

Site	Date	Overall Count	Summary of Observations
Colwyn Bay Waterfront Phase 2b	09 Dec 2019	42	› A few individuals observed flying and feeding at sea. › Majority of birds observed day roosting / loafing on manmade structures in the bay; and › A few individuals observed feeding at sea.
	06 Jan 2020	16	› Majority of birds observed day roosting / loafing on manmade structures in the bay; and › A few individuals observed feeding at sea.
	16 Jan 2020	16	› All birds observed day roosting / loafing on manmade structures in the bay.
Colwyn Bay Phase 1abc**	22 Nov 2019	5	› Flying overhead.

Source: Mott MacDonald Limited (2020); * typically 5 to 15 minutes; ** supplementary data from one visit only

4.2.5.3 Conclusions

These results indicate that Colwyn Bay is unlikely to be of key importance for red-breasted merganser but does appear to be more well used by cormorant, albeit still in relatively low numbers in the context of the SPA population. Considering the distances and behaviour observed during surveys cormorant appear to have a considerable degree of habituation to any existing disturbance from the shore.

5 Screening Assessment

5.1 Identification of Sites

The only internationally designated site within 2.0km is Liverpool Bay SPA, located immediately north of the Scheme. No additional SACs designated for bats or marine mammals have been identified from within 10.0km.

As set out in Section 3.2, based on the project scope and assessment potential impact pathways, no designations outside of this distance are considered likely to be affected.

5.2 Assessment of Impact Pathways

Potential impact pathways and sources of disturbance from construction include:

- Pollution event – resulting from an oil spill or other pollution sources (from the barge or from machinery) which could damage habitats (reducing prey availability) as well as cause harm to birds directly;
- Noise and vibration disturbance – resulting from piling works (anticipated to last a number of weeks and which could be undertaken over winter), machinery, vehicle movements (including barge and transshipment vehicles if required) and personnel. Any such sources of disturbance close to the shoreline could disturb or displace individuals using these areas to forage, whilst disturbance out at sea from a barge and associated transshipment could disrupt any larger rafts of birds (if present outside October to March);
- Visual disturbance – from increased human activity and machinery along the promenade and intertidal area, which could disturb and displace birds foraging closer to shore;
- Artificial lighting disturbance – there is a requirement to use artificial lighting at night if the delivery of rocks via barge is required to be undertaken during hours of darkness to make use of the periods of high tide. This could which could disturb and displace birds using areas closer to shore or, for lighting associated with barges and transshipment, could affect larger rafts of birds out at sea (if present outside October to March); and
- Changes in turbidity – it is possible for sediment to be disturbed and released through construction activities and deliveries of material to site (e.g. dropping of rocks onto beach via barge). This could adversely impact submerged seaweeds/plants and filter feeding organisms which provide prey for birds, as well as affecting diving bird species using sight to feed/hunt close to the coast.

Disturbance impacts can affect birds directly, by displacing them away from key foraging grounds and causing swimming or flight flee responses. Fleeing from a disturbance event can also indirectly reduce food availability by displacing birds, directing them to less favourable habitats which can subsequently affect energy budgets and survival rates, thus impacting the overall population numbers.

Displacement from preferred feeding areas may have an adverse effect by being energetically expensive to individuals, particularly diving birds, where the feeding activity is physically depleting. Birds displaced from preferred feeding areas may need to swim against currents in order to stay in an area where prey species are present (Hawkins et al. 2000).

As set out above in respect of operational and decommissioning stages of the project, the operational stage is considered to be an improvement to the baseline in terms of potential disturbance to birds (with less maintenance required and therefore fewer emergency repairs), whilst no decommissioning is anticipated. As such, no potential impact pathways from these phases have been identified.

5.3 Screening Assessment

The following Tables 5.1 to 5.3 document the screening exercise to assess if the project, alone or in combination with other projects, will have an impact on Liverpool Bay SPA.

Table 5.1: Liverpool Bay SPA – Citation Details and Conservation Status

National Site Network Site(s)	Bae Lerpwl/ Liverpool Bay SPA	
Distance from the National Site Network Site(s)	Immediately adjacent	
Description of the site(s)		
Key Qualifying features		
Annex I habitats or species	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site	No Annex I habitats that qualify for the primary reason for the designation
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site	No Annex I habitats present as a qualifying feature
Annex II habitats or species	Annex II species that are a primary reason for selection of this site	Red throated diver (<i>Gavia stellata</i>) Little gull (<i>Larus minutus</i>) Common Scoter (<i>Melanitta nigra</i>) Little tern (<i>Sterna albifrons</i>) Common tern (<i>Sterna hirundo</i>)
	Annex II species present as a qualifying feature, but not a primary reason for site selection	No Annex II species present as a qualifying feature
Assemblage qualification	An internationally important assemblage of birds present as a qualifying feature	In the non-breeding season, the site regularly supports at least 69,687 (2004/05 -2010/11) individual waterbirds. The main components of the assemblage include all of the non-breeding qualifying features listed above and red breasted merganser (<i>Mergus serrator</i>) and great cormorant (<i>Phalacrocorax carbo</i>).
Management of the site		
Vision of the site(s)	The stated objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features; • The structure and function of the habitats of the qualifying features; • The supporting processes on which the habitats of the qualifying features rely; • The population of each of the qualifying features; and • The distribution of the qualifying features within the site.	
Current status of species or habitats and vulnerabilities		
Site	Species	Status and vulnerabilities
Bae Lerpwl/ Liverpool Bay	Red-throated diver (wintering)	The increase in numbers may be the result of i) a proportion of the biogeographic population moving further west from Baltic wintering grounds, ii) a change in survey method i.e. visual aerial to digital aerial where there is greater confidence in the estimate or iii) a combination of the two. Known vulnerabilities including physical loss or damage of supporting habitat, disturbance (from certain sources noise or movement), toxic and non-toxic (turbidity) contamination and biological disturbance. Disturbance was noted to be the highest vulnerability for this species.
	Common scoter (wintering)	The significant change in numbers may be the result of i) a proportion of the biogeographic population moving from Baltic wintering grounds, ii) a change in survey method i.e. visual aerial to digital aerial where there is greater confidence in the estimate or iii) a combination of the two. Known vulnerabilities including physical loss or damage of supporting habitat, disturbance (from certain sources noise or movement), toxic and non-toxic (turbidity) contamination and biological disturbance. Disturbance was noted to be the highest vulnerability for this species.

**National Site
Network Site(s)** **Bae Lerpwl/ Liverpool Bay SPA**

Little Gull	NOT AVAILABLE
Little tern	NOT AVAILABLE
Common tern	NOT AVAILABLE
Waterbird assemblage	Common scoter are noted to be the dominant species in this feature and so the current status and vulnerabilities has been taken from this species.

Source: Natural England (October 2012)

Table 5.2: Liverpool Bay SPA – Screening Assessment

Screening		Likely significance effect of the project during:		
Qualifying Feature	Assessment of significance	Construction	Operation	Decommissioning
Common scoter (wintering)	Construction Effects are considered in respect of the impact pathways above: ● Oil Spills: In the absence of mitigation, a pollution event from oil spills from the barge, transshipment or machinery cannot be ruled out. Such a pollution event would degrade habitat quality, foraging availability and injure birds; ● Disturbance: Common scoter can be sensitive to disturbance. Due to lack of research of construction disturbance in relation to overwintering common scoter, recommended safe working distances during the breeding season (sensitive period) have been used as a broad guidance for the proposed works. Recommended safe working distances for nesting common scoter during construction is 300-800m (although reference is also included to 300-500m as an upper estimate). Survey work undertaken on site indicated only small numbers of individuals appeared to come within c.500m of shore (<25 individuals or small rafts) whilst a few rafts of approximately 40 birds were recorded to rest within offshore areas (c.500m-1.0km). The majority of birds rested further offshore (approximately 1.0km-3.0km). On this basis, the key sources of disturbance are considered below: – <i>Barge movements:</i> Delivery of revetment by barge would be within close proximity of large rafts of birds out to sea and so could cause significant disturbance at a population level; – <i>Piling:</i> Piling onshore is anticipated for extended time periods and, in the absence of mitigation, could result in propagation of noise and vibration through the water column (where this is required for the fishing platform) as well as the air which could affect benthic fauna (prey for scoter) as well as potentially disturbing birds themselves (albeit in small numbers) such that effects from piling cannot be ruled out; and – <i>Other onshore disturbance:</i> Other disturbance from construction, such as additional human presence, noise, artificial lighting, represent an increase to the existing baseline but are not new sources of disturbance for the area. Such effects would be temporary and are considered unlikely to affect birds beyond the above 500m threshold referenced above. Based on survey work this would result in temporary displacement to small numbers of individuals. The total length of shoreline (measured as the coast itself) within the SPA is approximately 125km, of which only approximately 1.5km (1.2% falls within the Site), such that there remains a large area of shoreline habitat (i.e. habitat within 500m of the coast where waters are shallower) available for foraging birds within the SPA. Such effects would therefore be considered <i>de-minimis</i> and not anticipated to significantly affect the population integrity. ● Changes in turbidity: Changes in turbidity would be localised and mostly associated with the shoreline (i.e. unloading rocks from the	Yes	None	None

Screening

	transshipment), such that they are likely to disperse and attenuate before affecting foraging for this species. As such, these temporary affects are considered unlikely to significant affect the population integrity. On the basis of the above, a LIKELY SIGNIFICANT EFFECT cannot be ruled out during construction as a result of the risk of pollution (oil spills) and disturbance to birds from the barge movements and piling. <u>Operation and Decommissioning</u> As set out above, no impact pathways during operation or decommissioning have been identified.			
Red-throated diver (wintering)	<u>Construction</u> Effects are considered in respect of the impact pathways above: ● Oil Spills: In the absence of mitigation, a pollution event from oil spills from the barge, transshipment or machinery cannot be ruled out. Such a pollution event would degrade habitat quality, foraging availability and injure birds; ● Disturbance: Red-throated diver can be sensitive to disturbance. Due to lack of research of construction disturbance in relation to over wintering common scoter, recommended safe working distances during the breeding season (sensitive period) have been used as a broad guidance for the proposed works. Recommended safe working distances for nesting red-throated diver during construction is 500-750m. Survey work identified only identified two individuals within this distances whilst the WeBS sector counts indicate that relatively low numbers are present in this area (key areas of importance being further north along the coast, offshore from the Dee and Ribble Estuaries). On this basis, displacement of individuals to other areas is considered unlikely to significantly affect the integrity of the SPA population. However, delivery of revetment by barge could affect larger numbers of birds which could be using offshore habitats such that significant effects from barge movements cannot be ruled out; and ● Changes in turbidity: Changes in turbidity would be localised and mostly associated with the shoreline (i.e. unloading rocks from the transshipment), such that they are likely to disperse and attenuate before affecting foraging for this species. As such, these temporary affects are considered unlikely to significant affect the population integrity. On the basis of the above, a LIKELY SIGNIFICANT EFFECT cannot be ruled out during construction as a result of the risk of pollution (oil spills) and disturbance to birds from the barge. <u>Operation and Decommissioning</u> As set out above, no impact pathways during operation or decommissioning have been identified.	Yes	None	None
Little Gull	The SPA is designated for non-breeding use by little gull, which were not recorded during the wintering bird species or WeBS sector counts. No likely significant effect on the integrity of the population from works is anticipated.	None	None	None
Little tern	The SPA is designated for summer use by little tern but this species was not recorded in the WeBS sector counts indicating this area is unlikely of importance to the SPA population. The upper shore habitats within the Scheme footprint do not offer any particular breeding opportunities for these species and the site is approximately 24.0km from the known breeding colony (Gronant Dunes). At this distance, no direct or indirect effects on breeding sites are anticipated as a result of the works, whilst any disturbance of foraging individuals (if present) would be low numbers and considered unlikely to significant affect the population.	None	None	None
Common tern	The SPA is designated for summer use by common terns. The upper shore habitats within the Scheme footprint do not offer any particular breeding opportunities for these species. Common terns are known to breed on shingle beaches and gravelly areas, which are notably absent from the Site. On this basis, no direct or indirect effects on breeding sites are anticipated as a result of the works, whilst any disturbance of foraging individuals (if present) would be low numbers and considered unlikely to significant affect the population.	None	None	None
Waterbird assemblage	Natural England advice (2002) on the vulnerability of this feature specifically cites that the most sensitive species, upon which the feature vulnerability is based, is common scoter. Disturbance effects on common	Yes	None	None

Screening

scoter are set out above, which conclude that likely significant effects cannot be ruled out for these species during construction, so a likely significant effect is also concluded for the waterbird assemblage in respect of oil spills, barge movements and piling.

Other species listed as part of the Waterbird assemblage include red-breasted merganser, recorded in extremely low numbers (and not observed during the surveys) and cormorant, which was recorded using manmade features close to shore and appeared to be well acclimatised to disturbance. It is therefore anticipated that this species would either readily habituate to increased shoreline disturbance or would be displaced to similar features in the wider surrounds. Given the numbers and activity recorded (largely loafing and foraging), no significant effects on the integrity of the SPA population would be anticipated.

As set out above, no impact pathways during operation or decommissioning have been identified.

Source: Mott MacDonald Limited

Table 5.3: Liverpool Bay SPA – Screening (In-combination Assessment)

Screening Qualifying Feature	Assessment of significance	Likely significance effect of the project during:		
		Construction	Operation	Decommissioning
Red-throated diver (wintering)	Potential impact pathways from this project have only been identified from the construction stage, where waterbirds could be disturbed by works and displaced away from key foraging grounds or expend energy to flee. It is therefore considered that appropriate to consider only projects nearby (therefore likely affecting the same population / group / rafts of birds) during the same or consecutive construction periods as likely to result in in-combination effects. Colwyn Bay Waterfront Phase 2b project is proposed along the same stretch of bay (approximately 1.0km northwest of the site), the scope of works for which also includes coastal and promenade improvements along with beach recharge. The construction period for this project is anticipated to coincide with the Colwyn Bay Coastal Defence and Active Travel scheme. On this basis, a LIKELY SIGNIFICANT EFFECT from the two projects cannot be ruled out. No other projects have been identified, on the basis of the above criteria, that are considered likely to have an in-combination effect.	Yes	None	None
Common scoter (wintering)		Yes	None	None
Waterbird assemblage		Yes	None	None
Little Gull	As set out in Table 5.2, the survey area is not considered to be of key importance for these species such that no significant impact pathways have been identified and any disturbance to individuals would be negligible. Given the extremely low numbers anticipated, no likely significant effects in-combination with any the Colwyn Bay Phase 2b scheme are anticipated.	None	None	None
Little tern		None	None	None
Common tern		None	None	None

Source: Mott MacDonald Limited

6 Mitigation

A description of all of the mitigation measures proposed under the Scheme in respect of biodiversity is included within the EIA, Chapter 8 - Biodiversity. The mitigation of relevance to the SPA and designated interest features is set out below.

6.1 Embedded Mitigation Measures

The following mitigation measures have been embedded into the Scheme design in order to avoid impacts on wintering birds and as part of best practice:

- The core wintering bird season (October to March, based on the data in Section 4) would be avoided for the delivery of revetment rock via barge. This activity would require the delivery barge to be moored offshore with smaller barges taking transhipped loads of rock to the shore, resulting in high levels of noise and movement in the zone where the wintering features of interest have been recorded. Timing delivery of revetment rock outside this period would avoid disturbance to SPA bird species;
- Piling works associated with the installation of fishing platforms would be undertaken at low tides. This would avoid piling within the marine waterbody, therefore avoiding the propagation of underwater noise through the water column. The tide cycle would also mean that birds would be further offshore and disturbance activities greatly reduced by the increased distance;
- Throughout the construction and operational phases, best practice guidance in reference to pollution prevention will be followed; and
- Pollution prevention measures and contingency planning would be implemented through the CEMP and during operational phases to ensure the marine environment and associated species/features are safeguarded during the works in line with CIRIA (Construction Industry Research and Information Associated) (2015).

6.2 Secondary (Additional) Mitigation

Given the nature of the works, which are highly constrained by tidal patterns and cannot be flexible in programme or location, mitigation options are limited. In particular, screening or stopping works is not feasible without compromising delivery of the repair works. On this basis, the additional measures proposed are as follows:

- Use of vibro piling instead of percussive piling;
- Toolbox talks will be undertaken with site staff prior to works commencing to highlight the importance of the SPA habitat and wintering birds, particularly their sensitivity to disturbance and what types of activities can disturb the birds, in order to minimise the disturbance as much as possible from construction as well as reduce the risk of pollution;
- Best practice measures under the CEMP to reduce noise;
- Avoidance of excessive working hours on site (save for where barge unloading is required); and
- Use of directional lighting, hoods and cowls to reduce light spill onto marine habitats.

7 Appropriate Assessment

7.1 Appropriate Assessment

7.1.1 Assessment of the Project Alone

The Stage 1 assessment screened in the following designated interest features:

- Common scoter;
- Red-throated diver; and
- Waterbird assemblage (of notable importance for the above species as well as red-breasted merganser and cormorant).

Likely significant effects were anticipated from the construction phase only. Impact pathways during construction were identified as follows:

- Damage to habitat and birds from oil spills / pollution;
- Disturbance to large rafts of birds offshore and out to sea from delivery of revetment by barge; and
- Disturbance to birds closer to shore from piling.

Following implementation of the mitigation set out in Section 6, the following table documents the assessment of significant effects on Liverpool Bay SPA, in respect of the above impact pathways, in line with Stage 2 of the HRA process.

Table 7.1: Liverpool Bay SPA – Appropriate Assessment

Designated Interest Feature	Assessment of Effects	Significance of Effect
Common Scoter	Oil Spills	Negligible
Red-throated Diver	The CEMP and best practice pollution safeguards are proposed to reasonably avoid or significantly minimise the risk of pollution events (oil spills) and potential degradation of foraging grounds. Following these measures, the likelihood of such an event occurring is considered extremely low.	Negligible
Water Bird Assemblage	Disturbance No disturbance from the rock revetment delivery by barge is anticipated as this will be undertaken outside of the wintering bird season. Mitigation for piling includes undertaking works at low tides to avoid any piling within the water column (for the fishing platform) as well as use of vibropiling instead of percussive piling, which will reduce the disturbance to benthic fauna. Combined with other best practice measures to reduce disturbance levels, any impacts on birds, particularly at a population level, are considered <i>de-minimis</i> and not anticipated to significantly affect the population integrity.	Negligible

Source: Mott MacDonald Limited

7.1.2 In-combination Assessment

As set out in the Stage 1 screening assessment, no likely significant effects are anticipated from the operation or decommissioning phases of the project. As such, only cumulative effects from the construction phases, where these construction periods overlap or are consecutive, are considered. The only such project identified is:

- Colwyn Bay Waterfront project Phase 2b:** Not yet in the planning system but known to be at outline design stage). This project forms part of the wider Colwyn Bay Waterfront Project for coastal defence remediation (repairs to the sea wall), beach recharge (understood to be from the location of Horizon Shine kiosk (approximate NGR 284880, 379374) westward to Rhos on Sea Harbour (approximate NGR 284253, 380450) and promenade enhancements for the western third of Colwyn Bay (approximately 1.3km in length in total of which ~850m comprise the sea wall and promenade improvements). The plans for this scheme are yet to be finalised and the construction timetable will be determined by availability and grant of funding. On this basis, it is assumed that there could be some overlap in the construction period between this Phase 2b scheme and the Scheme (Colwyn Bay Coastal Defence and Active Travel).

Cumulative impacts from this project with the proposed Scheme are considered in Table 7.2 below in respect of the designated interest features identified in the screening assessment (Table 5.3).

Table 7.2: Assessment of in-combination effects with Colwyn Bay Waterfront Phase 2b

Impact Pathway	Assessment of in-combination effects	Assessment of Significant Effects		
		Common Scoter	Red throated Diver	Waterbird assemblage
Oil Spills	The CEMP and best practice pollution safeguards are proposed to reasonably avoid or significantly minimise the risk of pollution events (oil spills). It is anticipated that similar best practice measures would be required for Colwyn Phase 2b. Following these measures, the likelihood of such an event occurring is considered extremely low.	Negligible	Negligible	Negligible
Disturbance - Noise and vibration - Visual disturbance - Artificial lighting	The construction periods of both schemes are likely to either overlap or occur consecutively. Disturbance could result from construction activities (e.g. piling works or machinery) as well as barge delivery of revetment and sand. Barge deliveries from Colwyn Phase 2b are anticipated to be subject to the same timing restrictions as this scheme (e.g. outside of October to March), whilst mitigation to reduce construction disturbance would also be anticipated to be consistent with this scheme. On this basis, disturbance would be anticipated to be of a similar nature to that described above and would only affect small numbers of birds during winter from works on the shore. In line with the assessment set out above, given the numbers of and distribution of birds recorded and the abundant alternative opportunities elsewhere in the SPA, such effects are considered unlikely to significantly affect the SPA population integrity of these features.	Negligible	Negligible	Negligible
Changes in turbidity	The beach recharge associated with Colwyn Phase 2b could result in increased turbidity changes in addition to localised and temporary effects from unloading of revetment or vehicle movements. However, it is anticipated that best practice measures to contain and minimise these effects would be implemented during construction, whilst effects would be temporary in nature. As described above, the bay represents a small proportion of the foraging habitat available for designated species, with abundant and more	Negligible	Negligible	Negligible

Impact Pathway	Assessment of in-combination effects	Assessment of Significant Effects		
		Common Scoter	Red throated Diver	Waterbird assemblage
	important foraging grounds available elsewhere. Given the relatively low numbers of designated interest features recorded inshore during surveys and from WeBS count data, any effects from changes in turbidity would be unlikely to affect the SPA population integrity of these features.			

Source: Mott MacDonald Limited

In summary, no significant adverse effects are anticipated on the designated interest features of Liverpool Bay SPA as a result of the project in combination with any other plans or projects.

8 Conclusions

This report to inform an Appropriate Assessment provides evidence that, following the implementation of mitigation, any adverse effects on Liverpool Bay SPA and its designated interest features alone or in combination with other projects are considered to be *de-minimis* such that no adverse effect on the integrity of the Liverpool Bay Special Protection Area is anticipated.

No impact pathways to any other internationally designated sites have been identified.

This report is provided to inform the competent authority in completing their Appropriate Assessment of the project.

9 References

Degraer, S., Vincx, M., Meire, P. and Offringa, H., 1999. The macrozoobenthos of an important wintering area of the common scoter (*Melanitta nigra*). *Journal of the Marine Biological Association of the United Kingdom*, 79(2), pp.243-251.

Hawkins, P.A.J., Butler, P.J., Woakes, A.J. & Speakman, J.R. 2000. Estimation of the rate of oxygen consumption of the common eider duck (*Somateria mollissima*) with some measurements of heart rate during voluntary dives. *J. Exp Biol.* 203: 2819–2832.

Kaiser, M.J., Galanidi, M., Showler, D.A., Elliott, A.J., Caldow, R.W., Rees, E.I.S., Stillman, R.A. and Sutherland, W.J., 2006. Distribution and behaviour of Common Scoter *Melanitta nigra* relative to prey resources and environmental parameters. *Ibis*, 148, pp.110-128.

Kaiser, M.J., *et al.* 2002. Predicting the displacement of common scoter *Melanitta nigra* from benthic feeding areas due to offshore windfarms. COWRIE funded project under BEN-03-2002. Centre for Applied Marine Sciences, School of Ocean Sciences, University of Wales, Bangor; NERC Centre for Ecology and Hydrology; School of Biological Sciences, University of East Anglia.

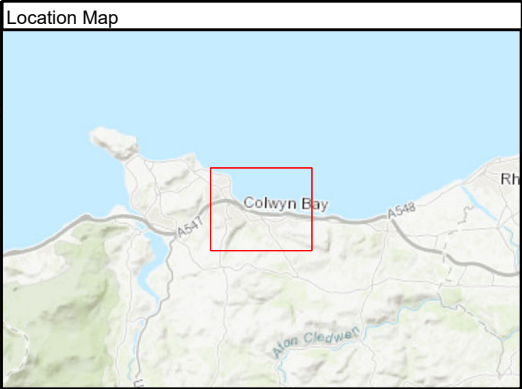
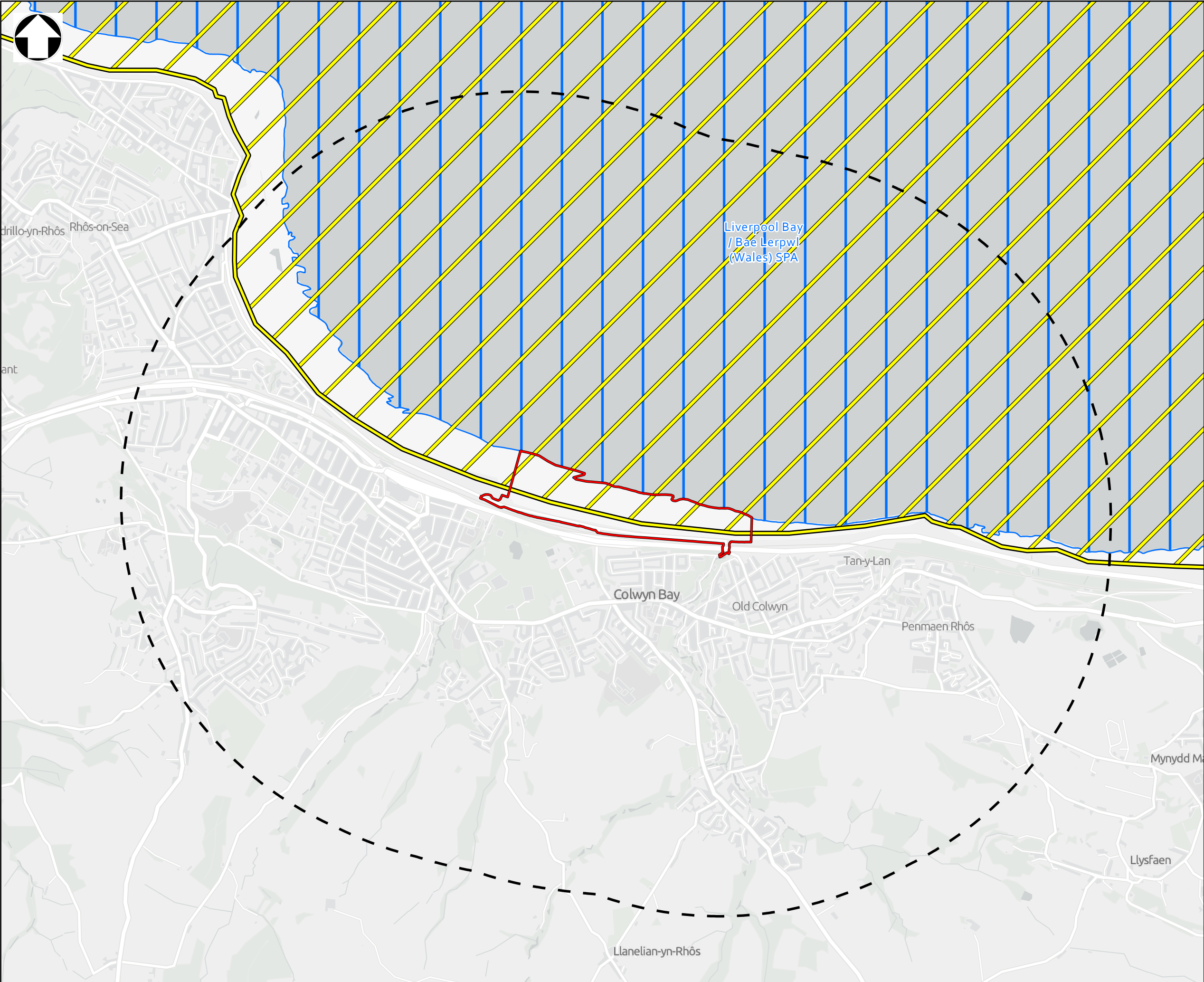
Lawson, J., Kober, K., Win, I., Allcock, Z., Black, J., Reid, J.B., Way, L. and O'Brien, S.H. (February 2016) An assessment of the numbers and distributions of wintering waterbirds and seabirds in Liverpool Bay/Bae Lerpwl area of search. JNCC Report No. 576.

Mott MacDonald (February 2020) Colwyn Bay: Over Wintering Bird Survey Report. Ref: 410895-MMD-N-R-00-XX-1700

Natural England (October 2012) Liverpool Bay / Bae Lerpwl Special Protection Area – Advice under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended). Version 6.5.

Ruddock, M. and Whitfield, D.P., 2007. A review of disturbance distances in selected bird species. *A report from Natural Research (Projects) Ltd to Scottish Natural Heritage*, p.181.

A. International Designations within 2.0km



Key to Symbols

- Red line boundary
- 2km buffer of red line boundary
- Important Bird Area (IBA)
- Special Protection Area (SPA)

Notes

1. For information only, not for construction.
2. Contains Ordnance Survey data © Crown copyright and database rights 2019 Ordnance Survey. All rights reserved.
3. Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
4. Data reproduced with the permission of RSPB. © Crown Copyright. Ordnance Survey licence number 100021787 (2020).
5. Contains OS data © Crown Copyright and database right 2020. Contains data from OS Zoomstack, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

P1	23/07/20	SA	For information	LW	CW
Rev	Date	Drawn	Description	Ch'k'd	App'd



**MOTT
MACDONALD**

Mott MacDonald House
5 Woodland Road West
Colwyn Bay
LL29 7DH
T +44 (0)2920 467800
W www.mottmac.com

Client



Conwy County
Borough Council

Title
Old Colwyn Coastal Defence and Active Travel Scheme
International designations within 2.0km

Designed	L Woolley	LW	Eng. Check	N Spofforth	LW
Drawn	S Anstice	MH	Coordination	L Woolley	LW
GIS Check	G O'Donovan	GO	Approved	C Williams	CW

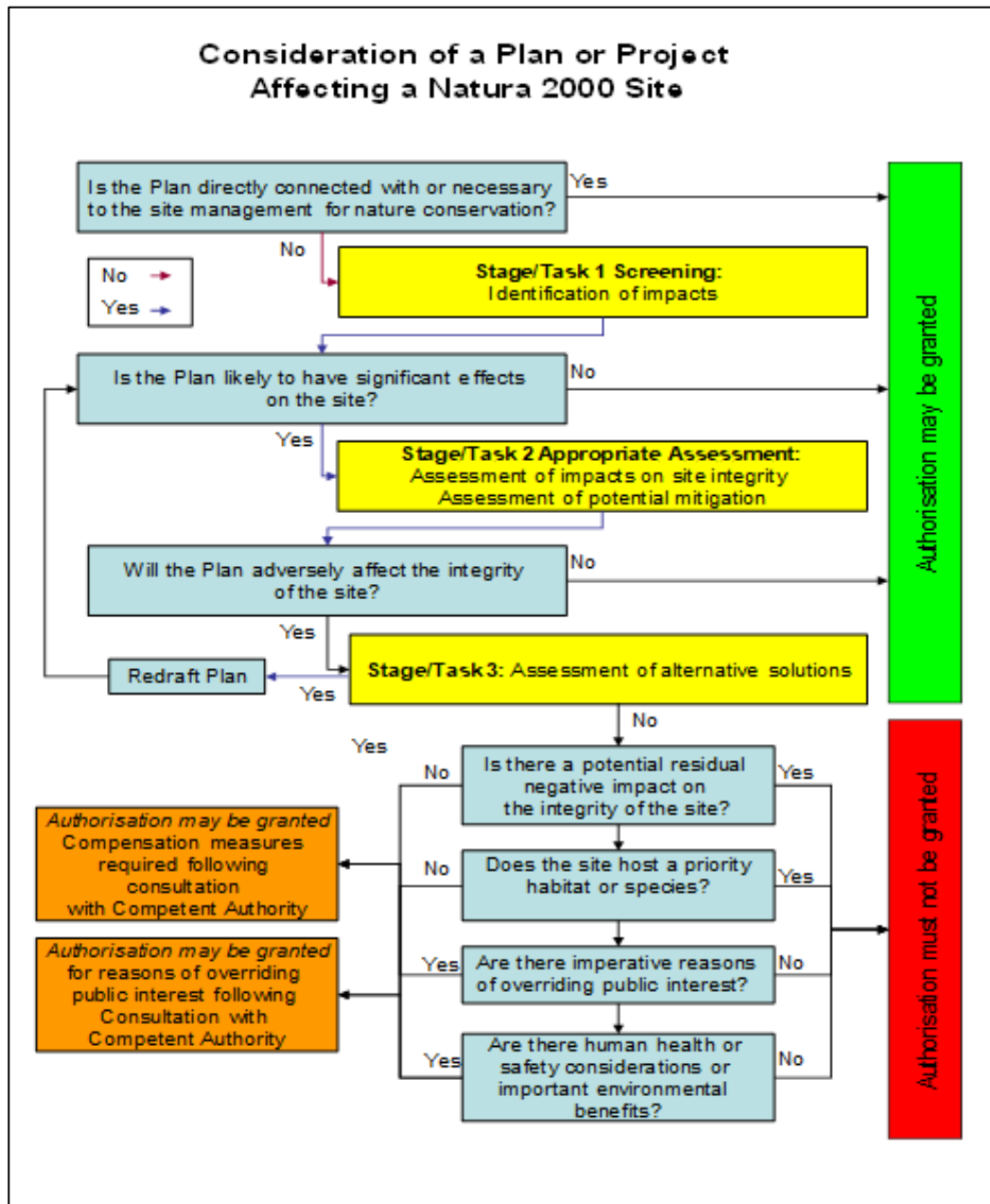
Scale at A3	Status	Rev	Security
1:20,000	INF	P1	STD

Drawing Number
415437-MMD-00-XX-DR-N-1714



B. HRA Process

Figure A.1: The Habitats Regulations Assessment Process



The term 'Task' is used in reference to an HRA of a plan and the term 'Stage' in reference to an HRA of a project.

C. WeBS Raw Data

The raw data has been curtailed to only show the species considered in this report, namely common scoter, common tern, red-throated diver, red-breasted merganser and cormorant. Full information is available on request.

Table 9.1: WeBS sector counts (2014-2019)

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
CX	Common Scoter	5810	Sep-14	51	Good	Abergele to Llandulais
CX	Common Scoter	5810	Oct-14	53	Good	Abergele to Llandulais
CX	Common Scoter	5810	Jan-15	415	Good	Abergele to Llandulais
CX	Common Scoter	5810	Feb-15	710	Good	Abergele to Llandulais
CX	Common Scoter	5810	Mar-15	206	Good	Abergele to Llandulais
CX	Common Scoter	5810	Apr-15	203	Good	Abergele to Llandulais
CX	Common Scoter	5810	May-15	4	Good	Abergele to Llandulais
CX	Common Scoter	5810	Sep-15	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Oct-15	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Dec-15	401	Good	Abergele to Llandulais
CX	Common Scoter	5810	Jan-16	200	Good	Abergele to Llandulais
CX	Common Scoter	5810	Feb-16	461	Good	Abergele to Llandulais
CX	Common Scoter	5810	Mar-16	505	Good	Abergele to Llandulais
CX	Common Scoter	5810	Apr-16	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Sep-16	420	Good	Abergele to Llandulais
CX	Common Scoter	5810	Oct-16	161	Poor	Abergele to Llandulais
CX	Common Scoter	5810	Dec-16	220	Good	Abergele to Llandulais
CX	Common Scoter	5810	Jan-17	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Feb-17	6	Good	Abergele to Llandulais
CX	Common Scoter	5810	Apr-17	0	Poor	Abergele to Llandulais
CX	Common Scoter	5810	Oct-17	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Nov-17	268	Good	Abergele to Llandulais
CX	Common Scoter	5810	Dec-17	0	Poor	Abergele to Llandulais
CX	Common Scoter	5810	Feb-18	386	Good	Abergele to Llandulais
CX	Common Scoter	5810	Mar-18	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Sep-18	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Oct-18	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Nov-18	52	Good	Abergele to Llandulais
CX	Common Scoter	5810	Dec-18	44	Good	Abergele to Llandulais
CX	Common Scoter	5810	Jan-19	200	Good	Abergele to Llandulais
CX	Common Scoter	5810	Feb-19	230	Good	Abergele to Llandulais
CX	Common Scoter	5810	Mar-19	4	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Sep-14	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Oct-14	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Jan-15	0	Good	Abergele to Llandulais

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
RM	Red-breasted Merganser	6030	Feb-15	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Mar-15	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Apr-15	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	May-15	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Sep-15	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Oct-15	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Dec-15	1	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Jan-16	1	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Feb-16	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Mar-16	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Apr-16	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Sep-16	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Oct-16	0	Poor	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Dec-16	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Jan-17	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Feb-17	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Apr-17	0	Poor	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Oct-17	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Nov-17	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Dec-17	0	Poor	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Feb-18	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Mar-18	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Sep-18	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Oct-18	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Nov-18	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Dec-18	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Jan-19	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Feb-19	0	Good	Abergele to Llandulais
RM	Red-breasted Merganser	6030	Mar-19	0	Good	Abergele to Llandulais
CA	Cormorant	25040	Sep-14	1	Good	Abergele to Llandulais
CA	Cormorant	25040	Oct-14	4	Good	Abergele to Llandulais
CA	Cormorant	25040	Jan-15	5	Good	Abergele to Llandulais
CA	Cormorant	25040	Feb-15	7	Good	Abergele to Llandulais
CA	Cormorant	25040	Mar-15	3	Good	Abergele to Llandulais
CA	Cormorant	25040	Apr-15	5	Good	Abergele to Llandulais
CA	Cormorant	25040	May-15	23	Good	Abergele to Llandulais
CA	Cormorant	25040	Sep-15	21	Good	Abergele to Llandulais
CA	Cormorant	25040	Oct-15	11	Good	Abergele to Llandulais
CA	Cormorant	25040	Dec-15	10	Good	Abergele to Llandulais
CA	Cormorant	25040	Jan-16	17	Good	Abergele to Llandulais
CA	Cormorant	25040	Feb-16	2	Good	Abergele to Llandulais
CA	Cormorant	25040	Mar-16	2	Good	Abergele to Llandulais
CA	Cormorant	25040	Apr-16	3	Good	Abergele to Llandulais

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
CA	Cormorant	25040	Sep-16	74	Good	Abergele to Llandulais
CA	Cormorant	25040	Oct-16	63	Poor	Abergele to Llandulais
CA	Cormorant	25040	Dec-16	7	Good	Abergele to Llandulais
CA	Cormorant	25040	Jan-17	2	Good	Abergele to Llandulais
CA	Cormorant	25040	Feb-17	0	Good	Abergele to Llandulais
CA	Cormorant	25040	Apr-17	3	Poor	Abergele to Llandulais
CA	Cormorant	25040	Oct-17	6	Good	Abergele to Llandulais
CA	Cormorant	25040	Nov-17	26	Good	Abergele to Llandulais
CA	Cormorant	25040	Dec-17	11	Poor	Abergele to Llandulais
CA	Cormorant	25040	Feb-18	7	Good	Abergele to Llandulais
CA	Cormorant	25040	Mar-18	1	Good	Abergele to Llandulais
CA	Cormorant	25040	Sep-18	10	Good	Abergele to Llandulais
CA	Cormorant	25040	Oct-18	5	Good	Abergele to Llandulais
CA	Cormorant	25040	Nov-18	21	Good	Abergele to Llandulais
CA	Cormorant	25040	Dec-18	11	Good	Abergele to Llandulais
CA	Cormorant	25040	Jan-19	14	Good	Abergele to Llandulais
CA	Cormorant	25040	Feb-19	14	Good	Abergele to Llandulais
CA	Cormorant	25040	Mar-19	5	Good	Abergele to Llandulais
CN	Common Tern	46930	Sep-14	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Oct-14	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Jan-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Feb-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Mar-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Apr-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	May-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Sep-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Oct-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Dec-15	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Jan-16	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Feb-16	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Mar-16	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Apr-16	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Sep-16	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Oct-16	0	Poor	Abergele to Llandulais
CN	Common Tern	46930	Dec-16	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Jan-17	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Feb-17	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Apr-17	0	Poor	Abergele to Llandulais
CN	Common Tern	46930	Oct-17	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Nov-17	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Dec-17	0	Poor	Abergele to Llandulais
CN	Common Tern	46930	Feb-18	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Mar-18	0	Good	Abergele to Llandulais

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
CN	Common Tern	46930	Sep-18	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Oct-18	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Nov-18	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Dec-18	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Jan-19	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Feb-19	0	Good	Abergele to Llandulais
CN	Common Tern	46930	Mar-19	0	Good	Abergele to Llandulais
CX	Common Scoter	5810	Dec-14	20000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jan-15	3000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Feb-15	2000	Poor	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Mar-15	4000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Apr-15	300	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	May-15	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jun-15	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jul-15	2100	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Aug-15	6000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Sep-15	300	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Oct-15	200	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Dec-15	8000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jan-16	350	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Feb-16	400	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Mar-16	600	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Apr-16	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	May-16	101	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jun-16	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Aug-16	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Sep-16	4	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Oct-16	400	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Dec-16	3000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jan-17	200	Poor	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Feb-17	5	Poor	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Mar-17	730	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Apr-17	1	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jul-17	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Aug-17	400	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Sep-17	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Oct-17	3000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Dec-17	1500	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jan-18	1800	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Feb-18	4500	Poor	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Mar-18	4000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Apr-18	0	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	May-18	4	Good	Colwyn Bay to Rhos Point

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
CX	Common Scoter	5810	Oct-18	1	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Jan-19	1000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Feb-19	5000	Good	Colwyn Bay to Rhos Point
CX	Common Scoter	5810	Mar-19	3000	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Dec-14	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jan-15	21	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Feb-15	0	Poor	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Mar-15	6	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Apr-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	May-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jun-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jul-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Aug-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Sep-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Oct-15	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Dec-15	21	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jan-16	17	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Feb-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Mar-16	2	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Apr-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	May-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jun-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Aug-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Sep-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Oct-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Dec-16	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jan-17	0	Poor	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Feb-17	0	Poor	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Mar-17	1	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Apr-17	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jul-17	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Aug-17	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Sep-17	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Oct-17	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Dec-17	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jan-18	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Feb-18	0	Poor	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Mar-18	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Apr-18	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	May-18	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Oct-18	0	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Jan-19	2	Good	Colwyn Bay to Rhos Point
RM	Red-breasted Merganser	6030	Feb-19	7	Good	Colwyn Bay to Rhos Point

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
RM	Red-breasted Merganser	6030	Mar-19	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Dec-14	6	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jan-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Feb-15	1	Poor	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Mar-15	17	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Apr-15	2	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	May-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jun-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jul-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Aug-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Sep-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Oct-15	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Dec-15	58	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jan-16	6	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Feb-16	3	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Mar-16	1	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Apr-16	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	May-16	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jun-16	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Aug-16	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Sep-16	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Oct-16	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Dec-16	5	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jan-17	1	Poor	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Feb-17	0	Poor	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Mar-17	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Apr-17	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jul-17	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Aug-17	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Sep-17	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Oct-17	1	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Dec-17	3	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jan-18	13	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Feb-18	3	Poor	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Mar-18	4	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Apr-18	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	May-18	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Oct-18	0	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Jan-19	6	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Feb-19	24	Good	Colwyn Bay to Rhos Point
RH	Red-throated Diver	16760	Mar-19	0	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Dec-14	10	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jan-15	2	Good	Colwyn Bay to Rhos Point

Species Code	Species	Taxon Sort	Visit	Count	Species Cover	Location
CA	Cormorant	25040	Feb-15	4	Poor	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Mar-15	14	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Apr-15	4	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	May-15	26	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jun-15	1	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jul-15	2	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Aug-15	12	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Sep-15	4	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Oct-15	0	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Dec-15	22	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jan-16	21	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Feb-16	20	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Mar-16	1	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Apr-16	3	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	May-16	16	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jun-16	3	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Aug-16	3	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Sep-16	2	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Oct-16	4	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Dec-16	14	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jan-17	53	Poor	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Feb-17	2	Poor	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Mar-17	8	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Apr-17	3	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jul-17	3	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Aug-17	6	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Sep-17	5	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Oct-17	30	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Dec-17	18	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jan-18	16	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Feb-18	3	Poor	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Mar-18	0	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Apr-18	2	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	May-18	14	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Oct-18	4	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Jan-19	26	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Feb-19	10	Good	Colwyn Bay to Rhos Point
CA	Cormorant	25040	Mar-19	19	Good	Colwyn Bay to Rhos Point

Source: BTO (2020)

D. Distribution Maps (JNCC Report Extracts)

Lawson *et al.* (2016) includes the distribution maps showing the location of red-throated diver, common scoter and little gull within the Liverpool Bay SPA. Extracts from this report are provided here.

3.2 Distribution and densities of birds in Liverpool Bay/Bae Lerpwl area of search

3.2.1 Red-throated diver

The higher density areas of red-throated diver are located along the coastline close inshore. The main aggregation of red-throated diver is captured within the existing Liverpool Bay/Bae Lerpwl SPA, although a satellite aggregation is evident to the north of this, adjacent to the Duddon Estuary SPA and extending around towards Morecambe Bay.

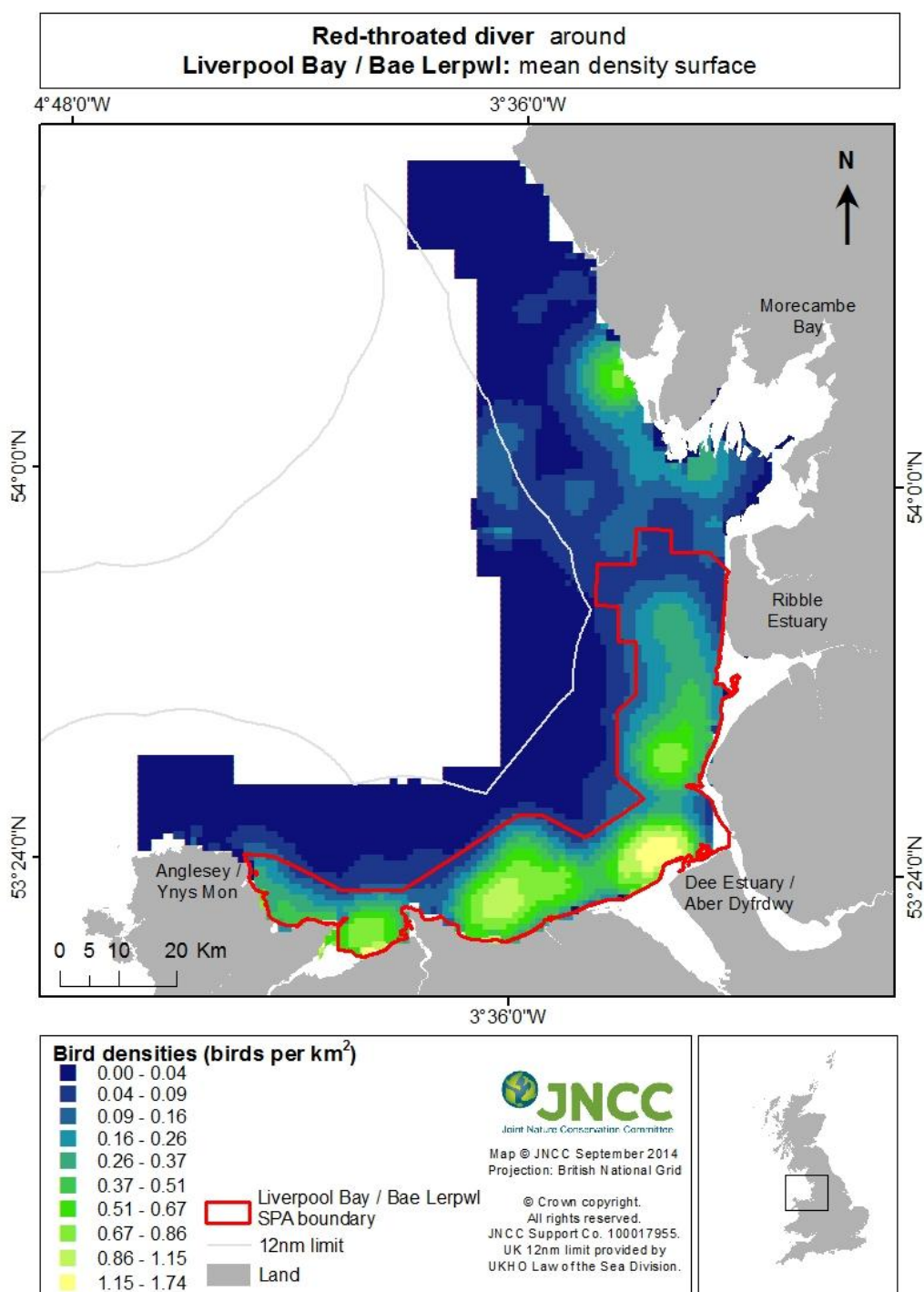


Figure 6. Estimated mean density surface of red-throated diver recorded from aerial surveys within Liverpool Bay/Bae Lerpwl area of search (2004/05, 2005/06, 2006/07, 2007/08, 2010/11).

3.2.2 Common scoter

Two main aggregations of common scoter are evident from the mean density surface and these are contained within the existing Liverpool Bay/Bae Lerpwl SPA.

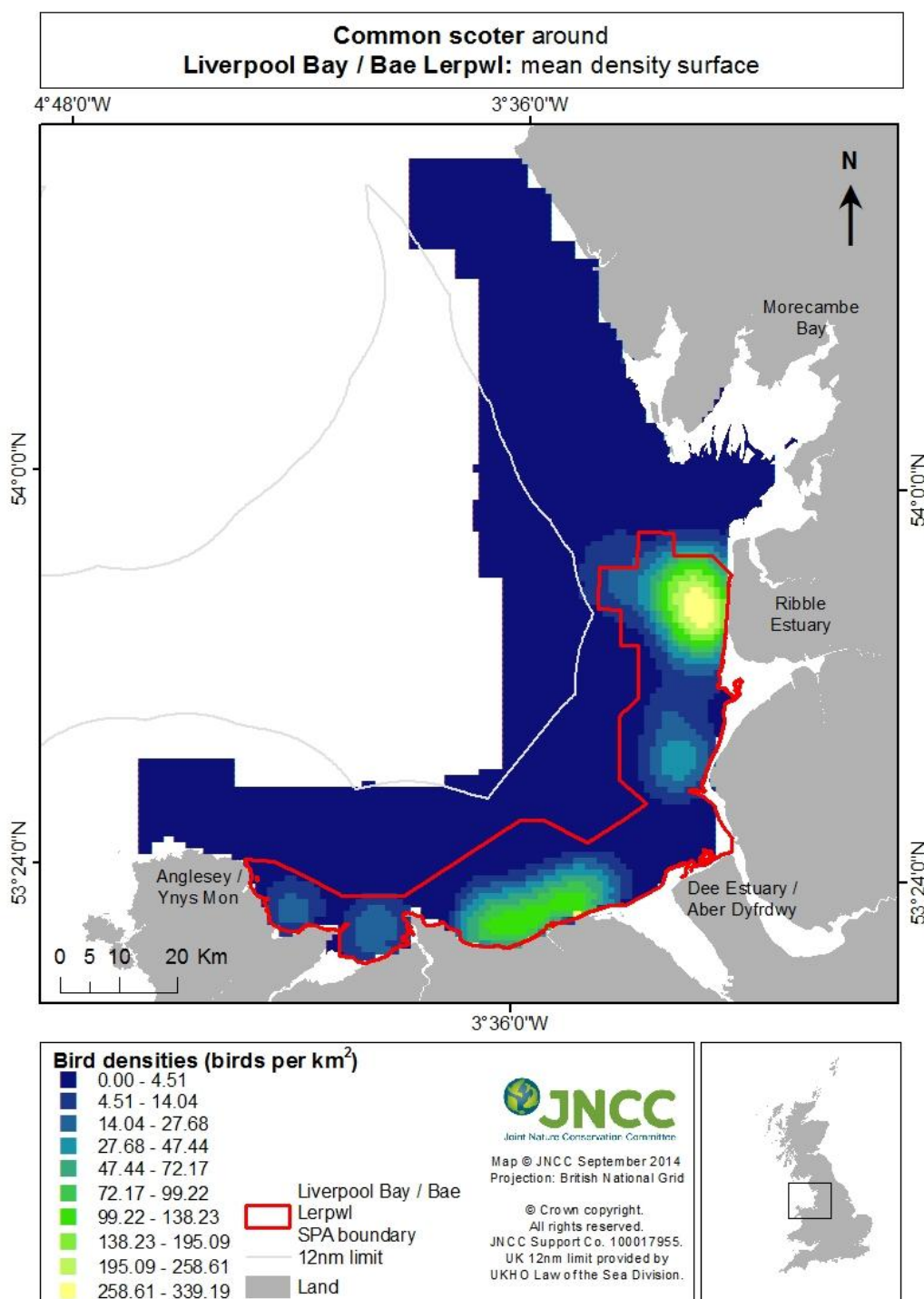


Figure 7. Estimated mean density surface of common scoter recorded from aerial surveys within Liverpool Bay/Bae Lerpwl area of search (2004/05, 2005/06, 2006/07, 2007/08, 2010/11).

3.2.3 Little gull

Observations of little gull within the Liverpool Bay/Bae Lerpwl area of search were concentrated off Blackpool close to the 12 nautical mile limit, the mean density surface reflects this pattern (Figure 8 and Figure 9), the higher density aggregation of little gull extends beyond the existing Liverpool/Bae Lerpwl SPA boundary to just beyond the 12 nautical mile line.

To assess the consistency of these aggregations or hotspots, the density threshold (0.0648 birds per km²) - determined by maximum curvature analysis - was applied to each survey-specific density surface. As a result each cell on the surface with a density equal to or greater than the density threshold was given a score of 1 (hotspot present) and cells with a density less than the threshold were given a score of 0 (hotspot absent). The survey-specific density surfaces were then overlaid and summed to create a hotspot assessment surface, such that each cell on this surface had a count of the number of times a hotspot was present in that cell.

The results of this hotspot analysis are presented in Figure 10 and shows that little gull were consistently present in a well defined location within the Liverpool Bay/Bae Lerpwl area of search. Twelve surveys were assessed in the hotspot analysis from the seasons (2004/05–2010/11), though the area covered varied between surveys.

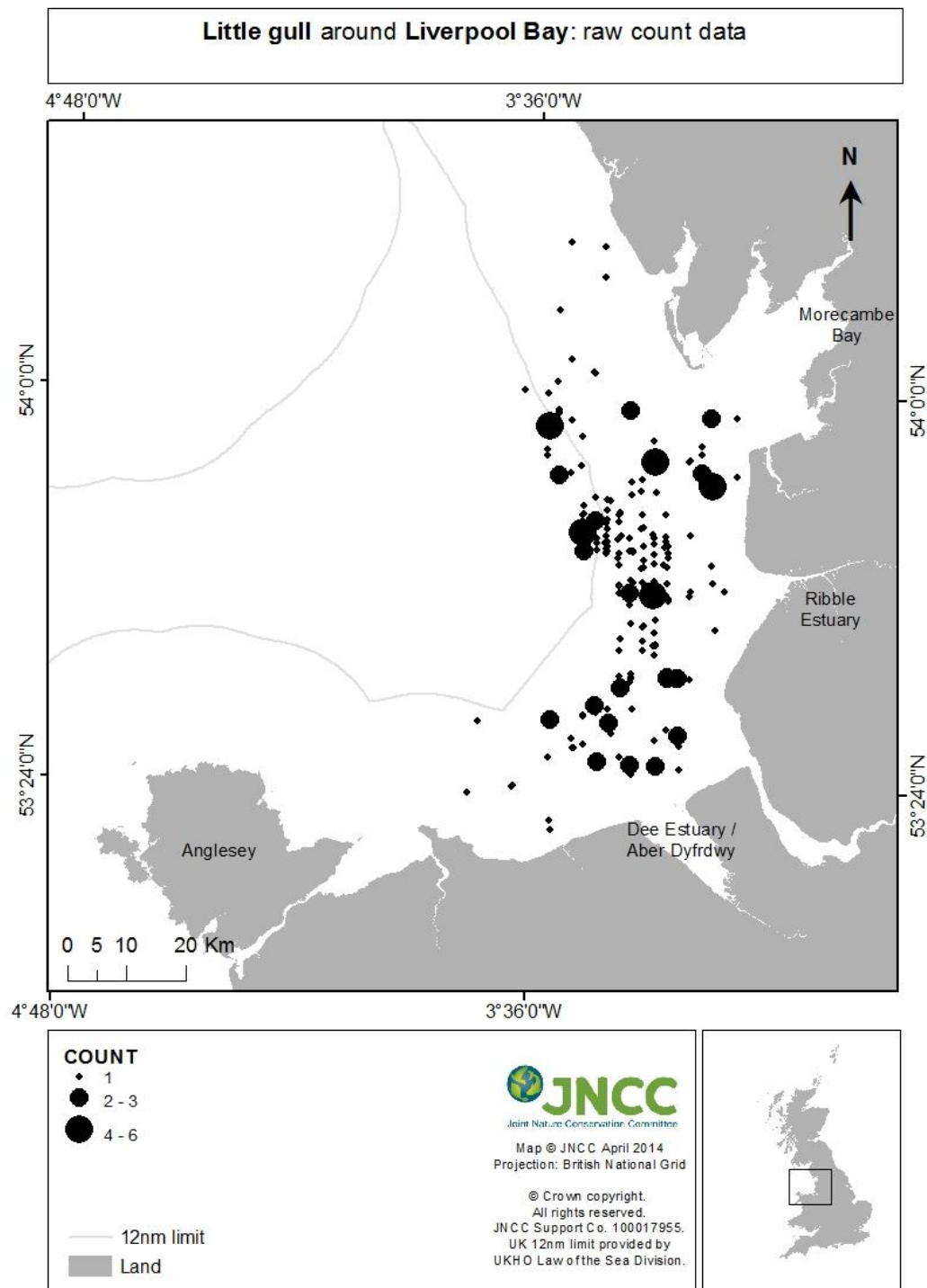


Figure 8. Raw count data of little gull recorded during WWT Consulting aerial surveys within Liverpool Bay/Bae Lerpwl area of search (2004/05, 2005/06, 2006/07, 2007/08, 2010/11).

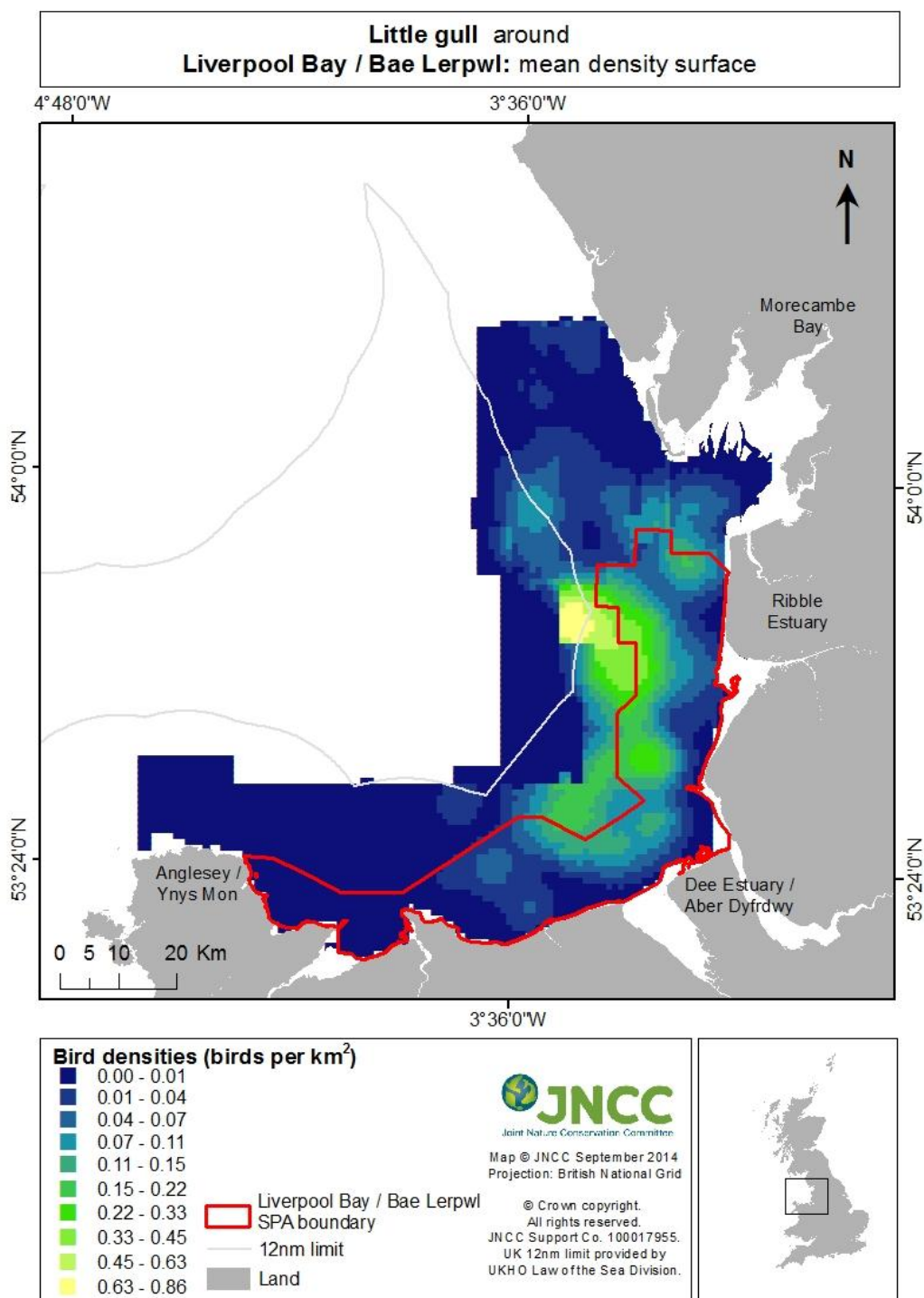


Figure 9. Estimated mean density surface of little gull recorded from aerial surveys within Liverpool Bay/Bae Lerpwl area of search (2004/05, 2005/06, 2006/07, 2007/08, 2010/11).

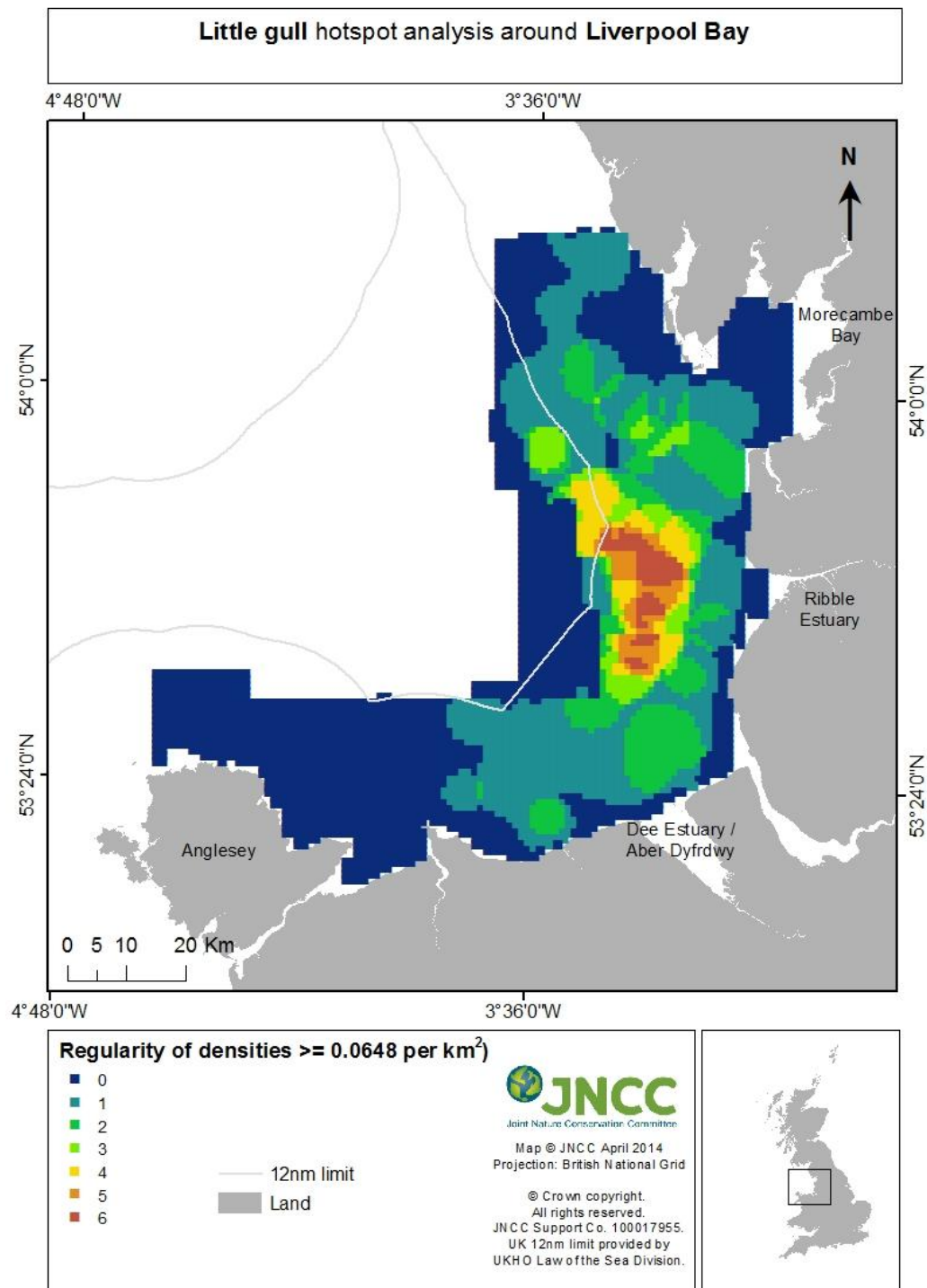


Figure 10. The number of surveys on which little gull densities met or exceeded the maximum curvature density threshold (0.0648 birds per km^2) in the Liverpool Bay/Bae Lerpwl area of search.

