DUMFRIES & GALLOWAY SHORELINE MANAGEMENT PLAN

Habitats Regulations Appraisal Record

Dumfries & Galloway SMP
HRA Record

F04

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
D01	Draft	Dr Louise Donohue Dr Laura McAnallen	Richard Bingham	Dr Malcolm Brian	08/03/22
F01	Draft Final	Dr Louise Donohue Dr Laura McAnallen	Richard Bingham	Dr Malcolm Brian	07/04/22
F02	Final	Dr Louise Donohue Dr Laura McAnallen	Richard Bingham	Dr Malcolm Brian	15/04/22
F03	For Consultation	Dr Louise Donohue Dr Laura McAnallen	Richard Bingham	Dr Malcolm Brian	09/06/22
F04	Final Post Consultation	Dr Louise Donohue Dr Laura McAnallen	Richard Bingham	Dr Malcolm Brian	17/01/23

Approval for issue

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1 INTRODUCTION AND BACKGROUND

1.1 Introduction

This Habitats Regulations Appraisal (HRA) record (including Appropriate Assessment) has been prepared by RPS Consulting Engineers (RPS) on behalf of Dumfries & Galloway Council and examines whether or not the proposed Dumfries & Galloway Shoreline Management Plan (SMP) is likely to give rise to adverse effects on the integrity of sites protected as part of the UK National Site Network (SACs and SPAs) in Scotland, in addition to relevant sites within England and Northern Ireland. The report has been prepared to assist the Competent Authority in fulfilling their duties in accordance with Regulation 48 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). These Regulations transpose *inter alia* Articles 6(3) and 6(4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora and remain relevant following the UK's departure from the EU. This approach is in line with the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019. It is intended that the findings of this plan level HRA will identify the potential for measures within the draft SMP to give rise to adverse effects upon the integrity of the relevant sites and to identify where the proposed Plan can be amended, as a form of high-level mitigation, or where further measures are required at implementation, to address any potential impacts upon the integrity of sites as required.

1.2 Appropriate Assessment

Regulation 48 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) states:

"(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—

(a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of the site,

shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.

(2) A person applying for any such consent, permission or other authorisation shall provide such information as the competent authority may reasonably require for the purposes of the assessment.

(3) The competent authority shall for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority may specify.

(4) They shall also, if they consider it appropriate, take the opinion of the general public; and if they do so, they shall take such steps for that purpose as they consider appropriate.

(5) In the light of the conclusions of the assessment, and subject to regulation 49, the authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site.

(6) In considering whether a plan or project will adversely affect the integrity of the site, the authority shall have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given.

(7) This regulation does not apply in relation to a site which is a European site by reason only of regulation 10(1)(c) (site protected in accordance with Article (4))"

In simple terms, a plan must be screened for appropriate assessment to ascertain whether or not likely significant effects on the UK national site network i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites; can be excluded. If not, the plan must be subject to appropriate assessment.

2 METHODOLOGY

2.1 Guidance on Appropriate Assessment

The approach for carrying out the HRA of the SMP is based on current best practice and guidance. In addition to the NatureScot (2015) guidance relating to the Habitats Regulations appraisal of plans, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including; '*Managing Natura 2000 sites – the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' (EC, 2019), which sets out the principles of how to approach decision making during the process, and updates the guidance taking into account current and relevant case law, including a number of recent judgements handed down in the European courts in respect of the interpretation of the Habitats and Birds Directives. This guidance has been followed in the preparation of this appraisal. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg (EC, 2000a);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2000b);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; (EC, 2007);
- Managing Natura 2000 sites – the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2019);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013);
- Habitats Regulations Appraisal of Plans: Guidance for Plan-making Bodies in Scotland. Scottish Natural Heritage, Edinburgh (SNH, 2015);
- NatureScot Guidance Note (2018) – The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU Judgement.
- European Commission Notice C(2021) 6913 'Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg (EC, 2021).

2.2 Approach

2.2.1 Stages of the Appropriate Assessment Process

An Appropriate Assessment (AA) is a three-stage process:

- The first stage involves a screening for appropriate assessment;
- The second stage arises where, having screened the proposed development, the competent authority determines that an appropriate assessment is required, in which case it must then carry out that appropriate assessment; and
- The third stage is a derogation procedure where adverse effects upon the integrity of a site remain, but the project must nonetheless proceed for imperative reasons of overriding public interest.

According to European Commission guidance documents 'Assessment of plans and projects significantly affecting Natura 2000 sites' (EC, 2001) and the 'Managing Natura 2000 sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2019), the obligations arising under Article 6 establish a stepwise procedure for Habitats Regulations Appraisal as follows, and as illustrated in Box 1.

The first part of this procedure consists of a pre-assessment stage ('screening') to determine whether, firstly, a plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site; it is governed by the first sentence of Article 6(3).

The second part of the procedure, governed by the second sentence of Article 6(3), relates to the appropriate assessment and the decision of the competent national authorities.

A third part of the procedure (governed by Article 6(4) comes into play if, despite a negative assessment, it is proposed not to reject a plan or project but to give it further consideration. In this case Article 6(4) allows for derogations from Article 6(3) under certain conditions.

The extent to which the sequential steps of Article 6(3) apply to a given plan or project depends on several factors, and in the sequence of steps, each step is influenced by the previous step. The order in which the steps are followed is therefore essential for the correct application of Article 6(3).

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of a Stage 1 screening appraisal is that significant effects on European sites can be excluded, there is no requirement to proceed to the next step. The steps are illustrated in Figure 2.1, extracted from EC (2021).

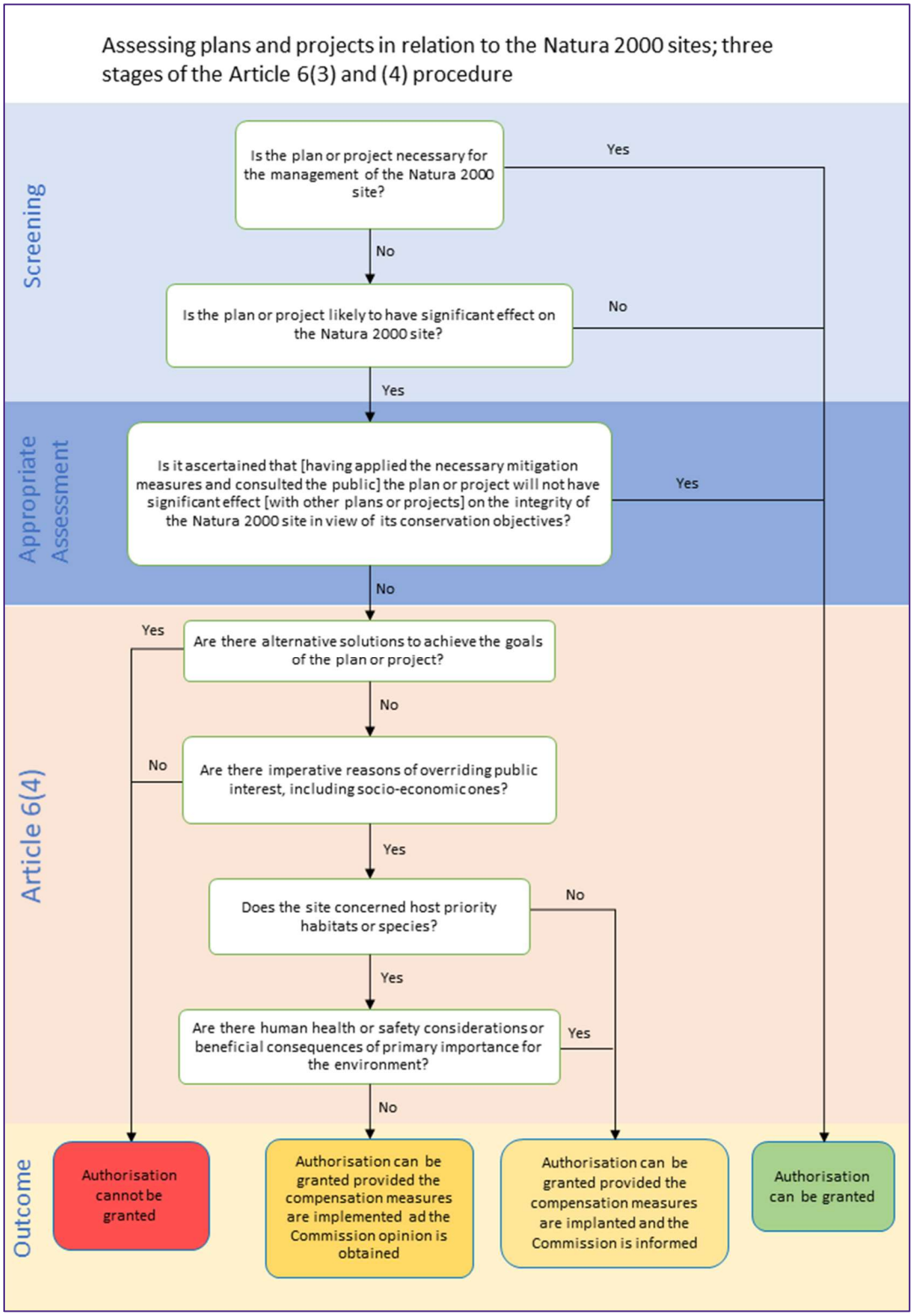

Figure 2-1 Step-wise procedure of Appropriate Assessment (from EC, 2021)

NatureScot (SNH, 2015) also recommends an approach to methodology and reporting of HRA, following a series of 13 (potential) stages, as outlined in Table 2.1. With the exception of Stage 6 and Stage 7, as discussed in Section 2.2.4, this HRA has followed the approach in this guidance.

Stage in HRA Process	Description
1	Decide whether plan is subject to Habitats Regulations Appraisal
2	If plan is subject to appraisal, identify European sites that should be considered in the appraisal
3	Gather information about the European sites
4	Discretionary consultation on the method and scope of the appraisal
5	Screen the plan for likely significant effects on a European site
6	Apply mitigation measures
7	Re-screen the plan after mitigation measures applied
8	If significant effects still likely, Undertake an appropriate assessment in view of conservation objectives
9	Apply mitigation measures until there is no adverse effect on site integrity
10	Prepare a draft record of the HRA
11	Consult SNH (NatureScot) (& other stakeholders and the public if appropriate) on draft HRA Record
12	Screen any amendments for likelihood of significant effects and carry out appropriate assessment if required, re-consult SNH (NatureScot) if necessary on amendments
13	Modify HRA Record in light of SNH (NatureScot) representations and any amendments to the plan and complete and publish final / revised HRA Record with clear conclusions

Table 2-1 Stages of HRA recommended by NatureScot (SNH, 2015)

2.2.2 Likely Significant Effect

The Commission's 2018 Notice (EC, 2019) advises that the appropriate assessment procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

The threshold for a Likely Significant Effect (LSE) is treated in the screening exercise as being above a *de minimis* level. A *de minimis* effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be LSEs.

Case law of the CJEU has confirmed that a significant effect is triggered when:

- there is a probability or a risk of a plan or project having a significant effect on a European site;
- the plan is likely to undermine the site's conservation objectives; and
- a significant effect cannot be excluded on the basis of objective information.

The requirement that the effect in question be 'significant' exists in order to lay down a *de minimis* threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.

2.2.3 Consideration of *ex-situ* effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 ("Brian Holohan and Others v An Bord Pleanála") that determined *inter alia* that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that an appropriate assessment must on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

In that regard, consideration has been given in this assessment to implications for habitats and species located both inside and outside of the European sites considered in the screening appraisal with reference to those sites' Conservation Objectives where effects upon those habitats and / or species are liable to affect the conservation objectives of the sites concerned.

2.2.4 Mitigation Measures at Screening Stage

In determining whether or not likely significant effects will occur or can be excluded in the Stage 1 appraisal, measures intended to avoid or reduce the harmful effects of the proposed development on European sites, (i.e., "mitigation measures") or best practice measures were not taken into account. This approach is consistent with up-to-date EU guidance (EC, 2019; EC, 2021) and the case law of the CJEU.

Following the NatureScot (SNH, 2015) guidance, mitigation measures should be applied both at the screening stage (Stage 6) and during the AA process, wherever they enable management of predicted LSEs (Table 2.1). However, the recent ruling of the EC has clarified that mitigation measures should not be taken into account at screening stage. NatureScot's Guidance Note (SNH, 2018) updates the guidance on HRA in Scotland following the EC judgement. NatureScot interprets the judgement as meaning that it is those measures *specifically intended* to avoid or reduce harmful effects to a European site which cannot be considered at the screening stage. The core of the approach is to distinguish early on in the HRA process between those measures within the plan or project intended to avoid or reduce harmful effects on a European site and elements that may incidentally provide some degree of mitigation, but which are intrinsic or essential parts of the plan or project itself. It is no longer permissible to seek to overtly insert proposed mitigation measures at, or in the lead up to, the screening stage in order to avoid progression of the case to AA. Mitigation measures can be proposed but, regardless of the likely success or otherwise of these measures, the correct conclusion at the screening stage is 'LSE', with the effectiveness of the proposed mitigation then being tested during the AA process.

2.2.5 In-Combination Effects

Article 6(3) of the Habitats Directive and Regulation 48 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) requires that in-combination effects with other plans or projects are also considered. As set out in the Commission's 2018 Notice (EC, 2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned. Whilst the Directive does not explicitly define which other plans and projects are within the scope of the in-combination provision of Article 6(3), it is

important to note that the underlying intention of this provision is to take account of cumulative impacts, and these will often only occur over time.

In that context, one can consider plans or projects which are completed, approved but uncompleted, or proposed. EC (2019) specifically advises that "*as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced*".

EC (2021) additionally advises that –

- an in-combination assessment is often less detailed at the screening stage than in the appropriate assessment;
- there is still a need to identify all other plans or projects that could give rise to cumulative impacts with the plan or project in question; and
- if this analysis cannot reach definitive conclusions, it should at least identify any other relevant plans and projects that should be scrutinised in more detail during the appropriate assessment.

2.2.6 Plan Level Appropriate Assessment

Recent guidance published by the European Commission (EC, 2021), sets out a number of pertinent points in respect of the undertaking of Appropriate Assessment of high-level plans, and states the following,

"…*there are also certain particularities in the assessment of plans…. These particularities pertain to possible limitations and constraints and suitable approaches that can be used to overcome the difficulties and uncertainties linked with a lack of detailed information or insufficient definition of all the elements, components and actions of the plan.*

The level of detail of the plan itself will determine the scope and extent of the appropriate assessment, but in all cases the assessment must aim to identify sensitive or vulnerable areas or other potential risks or conflicts with Natura 2000 sites so that these can be taken into account at later stages in the planning process.

The assessment should be proportionate to the geographical scope, to the plan's level of detail and to the nature and extent of the likely effects. In some cases, it may not be possible to analyse in detail all the possible impacts on individual sites at this stage."

It is further stated that the requirements of a plan-level appropriate assessment are as follows:

- The main potential impacts to the European Site network;
- Possible broad mitigation measures; and
- Potential alternatives; and
- Potential cumulative impacts.

It is further stated that,

"*For strategic plans where it is not possible to identify effects on individual sites, the analysis should as a minimum focus on potential impacts and major risks; site-specific effects will then need to be analysed at project level. In such cases, the appropriate assessment should focus at least on determining the Natura 2000 sites that could be adversely affected as well as any EU protected habitats and species that could be affected (also outside Natura 2000), effects on connectivity, fragmentation and other effects at the network scale. This should serve to orientate the scope and focus of the assessment of individual projects*."

2.3 Information Sources Consulted

The following general sources of information have been consulted for background environmental information.

- Information provided by the Dumfries & Galloway Council on the SMP, including Policy Screenings for each Policy Unit and SMP Action Plan;
- NatureScot – online European site information www.nature.scot;
- Natural England – online European site information https://designatedsites.naturalengland.org.uk;
- JNCC – online European site information https://jncc.gov.uk;
- UK Article 17 Reports, 2019, JNCC. Article 17 Habitats Directive Report 2019 (Habitats) | JNCC - Adviser to Government on Nature Conservation;
- UK Article 12 Report, 2019, JNCC. Eleventh Article 12 UK Birds Directive Report (2019): Annex A – General Report | JNCC Resource Hub;
- Habitat Map of Scotland (HabMoS) - https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/.

3 THE DUMFRIES & GALLOWAY SMP

3.1 Background and Objectives

A SMP is a large-scale assessment of the risks associated with coastal processes of flooding and erosion, which identifies measures to manage these risks to people and the developed, historic and natural environment. The need for the SMP was identified by the Scottish Environment Protection Agency (SEPA) and Dumfries & Galloway Council, through the development of the Regional Flood Risk Management Strategy. A SMP for Dumfries & Galloway was originally produced in 2005 and is now being updated to further develop the understanding of flooding, coastal erosion, wave overtopping, and the current coastal protection along the Solway coastline.

The SMP aims to provide guidance to operating authorities and regulatory bodies as to future sustainable flood and coastal erosion risk management; essentially providing an agreed high level approach, intent and framework for management. It establishes a robust, evidence-based and long-term sustainable approach for managing the risk of coastal flooding and erosion along each part of the Dumfries & Galloway coast. This will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding by highlighting constraints and opportunities for sustainable use of the coastal zone.

The objectives of the SMP are as follows:

- To identify the coastal flood and erosion risk to the human and natural environment within the shoreline of Dumfries & Galloway;
- To identify opportunities to maintain and improve the environment by managing the risks from coastal flooding and erosion;
- To establish preferred policies for managing the coastal flood and erosion risk over the next century;
- To identify the consequences of putting the preferred policies into practice;
- To define procedures for monitoring how effective these policies are;
- To inform others so that future land use, planning and development of the shoreline takes account of the risks and the preferred policies; and
- To ensure compliance with international and national nature conservation legislation and strive to achieve the biodiversity objectives.

It is not an objective of the SMP to develop detailed designs for individual shoreline management measures; however outline options and scenarios to meet the proposed objectives will be identified.

3.2 Scope of the SMP

The boundaries of the SMP are defined by the coastal extent of the Dumfries & Galloway Council operational area. The western extent of the SMP is just north of Cairnryan on the shore of Loch Ryan, whilst the eastern extent is the mouth of River Sark in Gretna. The inland and offshore extents of the SMP will be within approximately 1km of the coastline. The SMP has developed policies for management of the shoreline within these extents, illustrated in Figure 3-1.

The SMP will cover the period from 2022-2122, split into three epochs of short term 0 - 20 years, medium term 20 – 50 years and long term 50 – 100 years. The SMP will be reviewed periodically for updates and to monitor progress and impacts.

3.3 Development of SMP Policies

3.3.1 Coastal Process Units

Six Coastal Process Units (CPUs) have been identified for the Dumfries & Galloway coastline, the boundary locations of which are also shown in Figure 3-1, and defined in Table 3-1. These CPUs were identified on the basis that sediment movement between units was relatively limited i.e. the sediment dynamics of each unit was relatively independent of that of adjoining units. The definition of these CPUs is critical in terms of the development of a sustainable SMP for the management of the Dumfries & Galloway coast, as these CPUs define the areas within which various measures can be applied without affecting adjoining sections of the coast. Thus, the CPUs define the geographic boundaries for future studies associated with the detailed design of a wide range of coastal management measures with potential to impact on coastal sediment dynamics.

Sub-cell	Boundary locations
CPU 1	A74(T) – Southerness Point
CPU 2	Southerness Point – Torrs Point
CPU 3	Torrs Point – Isle of Whithorn
CPU 4	Isle of Whithorn – Mull of Galloway
CPU 5	Mull of Galloway – Milleur Point
CPU 6	Milleur Point – Galloway Burns

Table 3-1 Coastal sub-cell boundary locations

Figure 3-1 Geographical extent and CPU boundaries for the SMP

3.3.2 Identification of Strategic Policy Options

The policies employed by the SMP to meet its objectives will be dependent upon the issues identified at various locations along the Dumfries & Galloway coastline. Such issues include the risk of flooding or coastal erosion to people, property and infrastructure, along with the existing and proposed development pressures and sensitivities along the coastline. The four high-level policy options available to the SMP are summarised in Table 3-2.

Policy	Description
Advance the Line (ATL)	The shoreline is advanced, defences are built seawards of the existing defence line or land is reclaimed for development. This policy will require active management and construction.
Hold the Line (HTL)	The shoreline is proposed to be held in its contemporary position. This policy is likely to require active management and construction.
Managed Realignment (MR)	This policy allows the shoreline to move backwards or forwards, with management to control or limit movement such as building new defences on the landward side of the original defences, or relocation of assets that are at risk.
No Active Intervention (NAI)	No action is taken and natural uninterrupted coastal processes, including erosion and accretion, continue.

Table 3-2 Summary of High-Level SMP Policy Options

3.3.3 Identification of Policy Units

As there could be a need for more than one policy within a CPU, as well as several asset owners or administrative boundaries within each, these were divided into smaller discrete areas called Policy Units (PUs). The PUs defined are summarised in Table 3-3. Each PU is assigned its own policy / policies for future management of the shoreline. In total, 35 PUs were defined across the six CPUs.

Policy Unit	Location	Policy Unit	Location
1	Gretna to Browhouses	19	Isle of Whithorn to Barsalloch Point
2	Browhouses to Dornock Burn	20	Barsalloch Point to Low Drumskeog (Port William)
3	Dornock Burn to Waterfoot	21	Low Drumskeog to Kilfillan Point
4	Waterfoot to Nethertown	22	Kilfillan Point to Sandhead
5	Nethertown to Drum-Mains	23	Sandhead to Chapel Rossan
6	Glencaple to Dumfries	24	Chapel Rossan to Drummore
7	Drum-Mains to Southerness	25	Drummore
8	Southerness to Castlehill Point	26	Drummore to the Mull of Galloway
9	Castlehill Point to Dalbeattie	27	Mull of Galloway to Portpatrick
10	Castlehill to Balcary Point	28	Portpatrick
11	Balcary Point to Torrs Point	29	Portpatrick to Milleur Point
12	Torrs Point to Doon of Carsluith	30	Milleur Point to Kirkcolm
13	St Mary's Isle to Tongland	31	Kirkcolm to McCulloch's Point
14	Gatehouse of Fleet	32	McCulloch's Point to Innermessan (Stranraer)
15	Doon of Carsluith to Eggerness Point	33	Innermessan to Bankhead
16	Garlieston	34	Bankhead to Old House Point
17	Garlieston to Isle of Whithorn	35	Old House Point to Galloway Burn
18	Isle of Whithorn		

Table 3-3 SMP Policy Units

3.3.4 Development of Preferred Policies for PUs

For each PU, an assessment was carried out to identify receptors and assets at risk of coastal flooding and erosion, including homes, businesses, utilities, community facilities, cultural heritage, transport infrastructure and agricultural land. SEPA's National Flood Risk Assessment (NFRA) mapping was used to define coastal flood risk, and the Scottish Governments Dynamic Coast project outputs were used to define erosion risk. Visual inspections of existing defence assets were also undertaken, detailing their current condition and location.

Selection of Preferred Policies for each PU, from the options described in Table 3-2, was carried out by means of a four stage process:

Stage 1

- Identify the coastal flood and erosion risk, and the constraints and opportunities within each PU.

Stage 2

- Review each policy for technical issues, if a potential policy is not technically viable, then consider another policy;
- Review likely economic justification for policy, if not economically viable consider another policy;
- Identify environmental issues associated with each viable policy, quantify the scale of impacts; and
- Identify potential social issues associated with each viable policy.

Stage 3

- Identification of the preferred policies and possible alternative policies over the short, medium and long Term, to determine the most sustainable approach.

Stage 4

- Stakeholder and public engagement and review of the draft preferred policies.

Following the policy development process outlined in Stage 2, preferred policies were selected for each PU, as detailed in *HTL was the preferred Primary Policy for PU 2 at the Public Consultation Stage, however the Preferred Policy was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 3-4.

Coastal Process Unit	Policy Unit	Policy	Epoch		
			Short Term	Medium Term	Long Term
1	1	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	MR	MR
	2	Primary Policy	MR*	MR*	MR*
		Localised Policy	HTL	HTL	HTL
	3	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	4	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	5	Primary Policy	NAI	NAI	NAI
		Localised Policy	NAI	NAI	MR
	6	Primary Policy	HTL	HTL	HTL
		Localised Policy	NAI	NAI	NAI
	7	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
2	8	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	9	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	10	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	11	Primary Policy	NAI	NAI	NAI
		Localised Policy	*X*	*X*	*X*
3	12	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	13	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	14	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	15	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	MR	MR
	16	Primary Policy	HTL	HTL	HTL
		Localised Policy	NAI	NAI	NAI
	17	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	18	Primary Policy	HTL	HTL	HTL
		Localised Policy	NAI	NAI	NAI
4	19	Primary Policy	NAI	NAI	NAI
		Localised Policy	*X*	*X*	*X*

Coastal Process Unit	Policy Unit	Policy	Epoch		
			Short Term	Medium Term	Long Term
	20	Primary Policy	HTL	HTL	MR
		Localised Policy	X	X	X
	21	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	22	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	23	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	24	Primary Policy	HTL	MR	MR
		Localised Policy	X	X	X
	25	Primary Policy	HTL	MR	MR
		Localised Policy	X	X	X
	26	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
5	27	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	HTL
	28	Primary Policy	HTL	MR	MR
		Localised Policy	NAI	NAI	NAI
	29	Primary Policy	NAI	NAI	NAI
		Localised Policy	X	X	X
6	30	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	HTL	MR
	31	Primary Policy	NAI	NAI	NAI
		Localised Policy	HTL	MR	MR
	32	Primary Policy	HTL	HTL	HTL
		Localised Policy	X	X	X
	33	Primary Policy	HTL	MR	MR
		Localised Policy	X	X	X
	34	Primary Policy	HTL	HTL	HTL
		Localised Policy	X	X	X
	35	Primary Policy	NAI	NAI	NAI
		Localised Policy	X	X	X

*HTL was the preferred Primary Policy for PU 2 at the Public Consultation Stage, however the Preferred Policy was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 3-4 Preferred Policies for each PU in the SMP.

4 HRA SCREENING

4.1 Whether plan is subject to HRA

The first aspect of screening is to establish whether or not the proposed project is directly connected with or necessary to the management of any European site. The SMP is not necessary for the management of any European Site in the Plan area and should therefore be subject to HRA (Stage 1).

4.2 Identification of relevant European Sites

4.2.1 Pre-screening

The first step in the HRA process was to gather information on the area covered by the SMP, and the scope and intent of the plan. This included compiling information on the location, Qualifying Interests / Special Conservation Interests and Conservation Objectives of each European Site, along with the key factors that influence their condition. Information was also gathered regarding other plans or projects in the area that may act, in combination with the SMP, to affect a European Site.

Following UK guidance (Scott Wilson *et al.*, 2006), a buffer of 15km is typically taken as the initial Zone of Influence extending beyond the reach of the footprint of a plan or project, although there may be scientifically appropriate reasons for extending this Zone of Influence further depending on pathways for potential impacts. Therefore, all European Sites within 15km of the boundaries of the SMP were initially included in the screening process. The SMP area is located within 15km of the following SAC, SPA and Ramsar sites:

- Kilhern Moss SAC
- Luce Bay and Sands SAC
- Mull of Galloway SAC
- Burrow Head SAC
- River Bladnoch SAC
- Carsegowan Moss SAC
- Mochrum Lochs SAC
- Galloway Oakwoods SAC
- Solway Mosses North SAC
- Solway Mosses South SAC
- Solway Firth SAC
- Raeburn Flow SAC
- River Eden SAC (England)
- Glen App and Galloway Moors SPA
- Loch of Inch and Torrs Warren SPA and Ramsar
- Loch Ken and River Dee Marshes SPA and Ramsar
- Solway Firth SPA
- Upper Solway Flats and Marshes Ramsar
- Castle Loch, Lochmaben SPA and Ramsar

In addition, consideration has been given to mobile marine species that may enter the SMP area, where there may be a pathway for impact at a distance >15km from the European site at which they are a Qualifying Interest. Marine mammals such as Grey Seals, Harbour (Common) Seals, Harbour Porpoises and Bottlenose Dolphins may be affected by plans or projects within or adjacent to the marine environment. Recent advice, relating to SACs which have seals as a site selection feature, recommends the following ranges should be used when screening for either Harbour or Grey Seals:

- All SACs within 135km of the project / plan should be screened for Grey Seals (*Halichoerus grypus*) and;
- All SACs within 50km should be screened for Harbour Seals (*Phoca vitulina*)

No SACs designated for Grey Seals were located within 135km of the SMP boundary; all sites were a distance of >200km. Although there are two protected Grey Seal haul-out sites within the plan area, Solway Firth Outer Sandbank and Little Scares (in Luce Bay), owing to the significant distance these are not considered likely to be utilised by the SAC populations considered.

Of the SACs in the UK for which Harbour Seals are a Qualifying Interest, only Strangford Lough SAC is located within 50km of the SMP area. This site is situated approximately 50km away, at its closest point, in Northern Ireland and, taking a precautionary approach, has been included in the screening process.

There are three SACs in the UK for which Bottlenose Dolphins are a Qualifying Interest; the closest of these sites is located at a distance of almost 200km from the SMP area (Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC in Wales), and the SMP is not expected to have any potential pathway for impacts on these sites.

Of the seven SACs in the UK for which Harbour Porpoises are a Qualifying Interest, six are located a significant distance (>90km) from the SMP area, and there is not considered to be any potential for likely significant effects on these SAC populations from implementation of the SMP. The North Channel SAC, situated off the east coast of Northern Ireland, covers both inshore (within 12 nautical miles of coast) and offshore (beyond 12 nautical miles of coast) waters where the Department of Agriculture, Environment and Rural Affairs (DAERA) and the Joint Nature Conservation Committee (JNCC) have respective responsibility. At its closest point, this SAC is located approximately 15km from the SMP area. It has therefore been considered in the screening process. Therefore, in addition to the sites listed above, the following sites have also been included in the initial screening:

- Strangford Lough SAC
- North Channel SAC

It is possible at this stage, to identify the relevant European sites and interest features that could potentially be affected by the SMP and those sites which can be screened out of the HRA because there is no potential connectivity or pathway for an impact to occur. Table 4-1 presents all SACs, SPAs and Ramsar sites considered, together with reasons for 'screening out' some sites. Where there is uncertainty about the likelihood of the SMP having a significant effect on a site, or where a pathway for impact (connectivity to the European site) exists, a European site has been taken forward for further assessment in Section 4.4 (and is shaded in green in Table 4-1).

European Site Name	Broad description of qualifying habitats / Species	Screening In or Out	Reason for screening out, where applicable
Kilhern Moss SAC	Bogs	Out	This site lies >10km inland of the SMP area. There is not considered to be any pathway by which the SMP could impact upon this site.
Luce Bay and Sands SAC	Coastal habitats, estuarine and intertidal habitats, submerged marine	In	This site lies within the SMP area.

European Site Name	Broad description of qualifying habitats / Species	Screening In or Out	Reason for screening out, where applicable
	habitats. Great crested newt.		
Mull of Galloway SAC	Coastal habitat	In	This site lies within the SMP area.
Burrow Head SAC	Great crested newt	In	This site lies within the SMP area.
River Bladnoch SAC	Anadromous fish	In	This site lies within the SMP area.
Carsegowan Moss SAC	Bogs	In	This site lies within the SMP area
Mochrum Lochs SAC	Bogs	Out	This site lies >3km inland of the SMP area. There is not considered to be any pathway by which the SMP could impact upon this site.
Galloway Oakwoods SAC	Woodland	Out	This site lies >1.5km inland of the SMP area. There is not considered to be any pathway by which the SMP could impact upon this site.
Solway Mosses North SAC	Bogs	In	This site lies within the SMP area
Solway Mosses South SAC	Bogs	Out	This site lies inland from the coastline on the English side of the Solway Firth. There is not considered to be any pathway by which the SMP could impact upon this site.
Solway Firth SAC	Coastal habitats, estuarine and intertidal habitats, submerged marine habitats. Anadromous fish	In	This site lies within the SMP area.
Raeburn Flow SAC	Bogs	Out	This site lies >5km inland of the SMP area. There is not considered to be any pathway by which the SMP could impact upon this site.
River Eden SAC	Standing waters, riverine habitats and running waters, wet woodland. White-clawed crayfish. Anadromous fish and non-migratory fish. Otter.	In	This site is located in England and lies inland from the Solway Firth a short distance from the area covered by the SMP within Dumfries & Galloway. There is not considered to be pathway for impact on the freshwater habitats or species that are found upstream. There is a potential pathway for impact on anadromous fish in this SAC that use the Solway Firth, and these should be screened in for further assessment.
Strangford Lough SAC	Coastal habitats, estuarine and intertidal habitats, submerged marine habitats. Seal.	In	There is not considered to be any pathway for impact on the coastal, marine and estuarine / intertidal habitats of this SAC. Seals are mobile species and should be considered further.
North Channel SAC	Porpoise	In	This site lies approx. 15km from the SMP area, at its closest point. As porpoise are mobile species, the potential for LSEs should be considered further.

European Site Name	Broad description of qualifying habitats / Species	Screening In or Out	Reason for screening out, where applicable
Glen App and Galloway Moors SPA	Breeding Hen harrier	In	This site lies within the SMP area. The SMP has potential to disturb qualifying species or affect habitats that support these qualifying species that may forage in and around the plan area.
Loch of Inch and Torrs Warren SPA and Ramsar	Non-breeding Greenland White-fronted Goose and Hen harrier	In	This site lies within the SMP area. The SMP has potential to disturb qualifying species or affect habitats that support these qualifying species that may forage in and around the plan area.
Loch Ken and River Dee Marshes SPA and Ramsar	Wintering Greenland White-fronted Goose, non-breeding Greylag Goose	In	This site lies approx. 10km inland, but the SMP has potential to disturb qualifying species or affect habitats that support these qualifying species that may forage in and around the plan area.
Solway Firth SPA	Bar-tailed godwit, Black-headed gull, Common gull, Common scoter, Cormorant, Curlew, Dunlin, Golden plover, Goldeneye, Goosander, Grey plover, Herring gull, Knot, Lapwing, Oystercatcher, Pink-footed goose, Pintail, Red-throated diver, Redshank, Ringed plover, Sanderling, Scaup, Shelduck, Shoveler, Svalbard barnacle goose, Teal, Turnstone, Whooper swan, Waterfowl assemblage	In	This site lies within the SMP area. The SMP has potential to disturb qualifying species or affect habitats that support these qualifying species that may forage in and around the plan area.
Upper Solway Flats and Marshes Ramsar	Oystercatcher, Whooper swan, Pink-footed goose, Barnacle goose, Pintail, Scaup, Knot, Bar-tailed godwit, Curlew, Redshank, Wintering waterfowl assemblage, Natterjack toad	In	This site lies within the SMP area. The SMP has potential to disturb qualifying species or affect habitats that support these qualifying species that may forage in and around the plan area.
Castle Loch, Lochmaben SPA and Ramsar	Pink-footed Goose	In	This site lies approx. 13km inland, but the SMP has potential to disturb qualifying species or affect habitats that support these qualifying species that may forage in and around the plan area

Table 4-1 Pre-screening of European Sites

4.2.2 European Sites requiring assessment for LSE

The European sites screened in for further assessment at the pre-screening stage in Table 4-1 have potential to be affected by implementation of the SMP because there is a potential connectivity or pathway for an impact to occur, and these sites have therefore been considered for the potential for LSEs on their qualifying interests. Figure 4-1 and Table 4-2 present the SAC, SPA and Ramsar sites considered in this

Stage 1 screening assessment, together with their Qualifying Interests (QIs) / Special Conservation Interests (SCIs) which have the potential to be affected by the SMP.

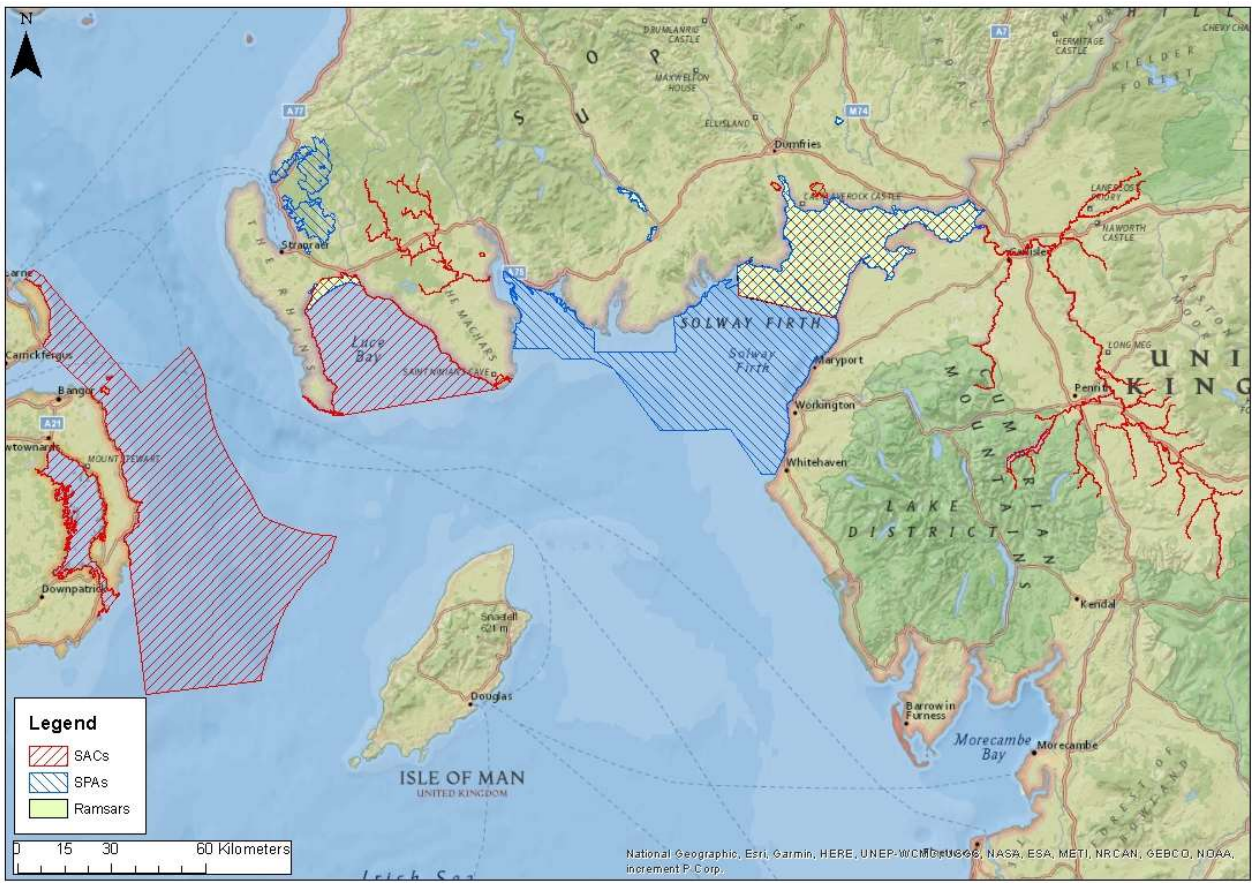

Figure 4-1 Location of European sites included in the screening stage of assessment

European Site	Area (ha)	Qualifying Interest(s) / Special Conservation Interest(s)
Luce Bay and Sands SAC (UK0013039)	48,753	[2150] Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* [2110] Embryonic shifting dunes [2130] Fixed dunes with herbaceous vegetation ("grey dunes")* [1160] Large shallow inlets and bays [1140] Mudflats and sandflats not covered by seawater at low tide [1170] Reefs [1110] Sandbanks which are slightly covered by sea water all the time [2120] Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") [S1166] Great crested newt (*Triturus cristatus*)
Mull of Galloway SAC (UK0030220)	137	[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts
Burrow Head SAC (UK0030102)	244	[S1166] Great crested newt (*Triturus cristatus*)
River Bladnoch SAC (UK0030249)	273	[S1106] Atlantic Salmon (*Salmo salar*)
Carsegowan Moss SAC (0030111)	49	[7110] Active raised bogs* [7120] Degraded raised bogs still capable of natural regeneration

European Site	Area (ha)	Qualifying Interest(s) / Special Conservation Interest(s)
Solway Mosses North SAC (UK0012907)	649	[7110] Active raised bogs* [7120] Degraded raised bogs still capable of natural regeneration
Solway Firth SAC (UK0013025)	43,676	[1110] Sandbanks which are slightly covered by sea water all the time [1130] Estuaries [1140] Mudflats and sandflats not covered by seawater at low time [1310] Salicornia and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1170] Reefs [1220] Perennial vegetation of stony banks [2130] Fixed coastal dunes with herbaceous vegetation ("Grey dunes") [1095] Sea lamprey (*Petromyzon marinus*) [1099] River lamprey (Lampetra fluviatilis)
River Eden SAC (UK0012643)	2463	[1095] Sea lamprey (*Petromyzon marinus*) [1099] River lamprey (Lampetra fluviatilis) [S1106] Atlantic Salmon (*Salmo salar*)
Strangford Lough SAC (UK0030314)	15,392	[1365] Harbour (Common) seal (*Phoca vitulina*)
North Channel SAC (UK0030399)	160,367	[1351] Harbour porpoise (*Phocoena phocoena*)
Glen App and Galloway Moors SPA (UK9003351)	8942	[A082] Hen harrier (*Circus cyaneus*), breeding
Loch of Inch and Torrs Warren SPA (UK9003121) and Ramsar (UK13037)	2111	[A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*), non-breeding [A082] Hen harrier (*Circus cyaneus*), non-breeding
Loch Ken and River Dee Marshes SPA (UK9003111) and Ramsar (UK13032)	769	[A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*), wintering [A043] Greylag Goose (*Anser anser*), non-breeding
Solway Firth SPA (UK10487) and Upper Solway Flats and Marshes Ramsar (UK11079)	135,749 (Ramsar 43,678)	[A157] Bar-tailed godwit (*Limosa lapponica*), non-breeding [A179] Black-headed gull (*Larus ridibundus*), non-breeding [A182] Common gull (*Larus canus*), non-breeding [A065] Common scoter (*Melanitta nigra*), non-breeding [A017] Cormorant (*Phalacrocorax carbo*), non-breeding [A160] Curlew (*Numenius arquata*), non-breeding [A149] Dunlin (*Calidris alpina*), non-breeding [A140] Golden plover (*Pluvialis apricaria*), non-breeding [A067] Goldeneye (*Bucaphala clangula*), non-breeding [A070] Goosander (*Mergus merganser*), non-breeding [A141] Grey plover (*Pluvialis squatorola*) [A184] Herring gull (*Larus argentatus*), non-breeding [A143] Knot (*Calidris canutus*), non-breeding [A142] Lapwing (*Vanellus vanellus*), non-breeding [A130] Oystercatcher (*Haematopus ostralegus*), non-breeding [A040] Pink-footed goose (*Anser brachyrhynchus*), non-breeding [A054] Pintail (*Anas acuta*), non-breeding [A001] Red-throated diver (*Gavia stellata*), non-breeding [A162] Redshank (*Tringa totanus*), non-breeding [A137] Ringed plover (*Charadrius hiaticula*), passage

European Site	Area (ha)	Qualifying Interest(s) / Special Conservation Interest(s)
		[A144] Sanderling (*Calidris alba*), non-breeding [A062] Scaup (*Aythya marila*), non-breeding [A048] Shelduck (*Tadorna tadorna*) , non-breeding [A056] Shoveler (*Anas clypeata*), non-breeding [A045] Svalbard barnacle goose (*Branta leucopsis*), non-breeding [A052] Teal (*Anas crecca*), non-breeding [A169] Turnstone (*Arenaria interpres*), non-breeding [A038] Whooper swan (*Cygnus cygnus*), non-breeding Waterfowl assemblage non-breeding Natterjack toad (*Bufo calamita*) (Ramsar site Criterion)
Castle Loch, Lochmaben SPA (UK9003191) and Ramsar (UK13006)	107.6	[A040] Pink-footed Goose (*Anser brachyrhynchus*)

*Denotes priority habitat / species

Table 4-2 Details of European sites included in the Stage 1 screening assessment.

4.3 Conservation Objectives

The assessment of LSEs in Section 4.4 considers the implications of the proposed SMP policies in view of the Conservation Objectives of the European sites. Details regarding these European sites, including site descriptions, qualifying features, feature condition and vulnerabilities, and Conservation Objectives are set out in Appendix A, and were considered in the assessment process.

There are currently no Conservation Objectives for Ramsar sites, however each of the Ramsar sites to be assessed are also SPAs, and therefore the SPA Conservation Objectives were consulted where the qualifying features were the same. Where additional qualifying features were part of the Ramsar site designation, Conservation Objectives were inferred from the relevant SSSI.

4.4 Screening the SMP for Likely Significant Effects

According to the NatureScot (SNH, 2015) HRA Guidance, the purpose of the screening stage is to:

a) Identify all aspects of the Plan which would have no effect on a European site, so that they can be eliminated from further consideration in respect of this and other Plans;

b) Identify all aspects of the Plan which would not be likely to have a significant effect on a European site (i.e. would have some effect, because of links / connectivity, but which are minor residual), either alone or in combination with other aspects of the same plan or other plans or projects, which therefore do not require AA; and

c) Identify those aspects of the plan where it is not possible to rule out the risk of significant effects on a European site, either alone or in combination with other Plans or Projects. This provides a clear scope for the parts of the Plan that will require AA.

The NatureScot (SNH, 2015) guidance outlines how the screening stage (Stage 5) of assessment should be undertaken, by following a series of systematic steps to eliminate, or ‘screen out’, elements of the Plan not likely to have a LSE on a European site, and to ensure that other elements of the Plan are ‘screened in’ to AA, and therefore subject to further appraisal.

The screening process has three key steps:

- Screening step one: screening out general policy statements

- Screening step two: screening out projects referred to in, but not proposed by, the Plan
- Screening step three: screening out aspects of a Plan that could have no LSE on a European site, alone or in combination with other aspects of the same Plan, or with other Plans or Projects. This includes the following categories:
    - Step 3a- Aspects which protect the natural environment, including biodiversity, or conserve or enhance the natural, built or historic environment;
    - Step 3b - Aspects which will not lead to development or other change;
    - Step 3c - Aspects which make provision for change, but which could have no conceivable effect on a European site, because there is no link or pathway between them and the Qis / SCIs, or any effect would be a positive effect, or would not otherwise undermine the conservation objectives for the site;
    - Step 3d - Aspects which make provision for change but which could have no significant effect on a European site (minor residual effects), because any potential effects would be so restricted that they would not undermine the conservation objectives for the site; and
    - Step 3e - Aspects which are too general so that it is not known where, when or how the aspect of the Plan may be implemented, or where any potential effects may occur, or which European sites, if any, may be affected.

The preferred policies of the SMP have been screened for potential LSEs on European Sites, following the three key steps described above. An effect that could undermine the Conservation Objectives was considered a significant effect. The likelihood of such effects occurring was assessed on a case by case basis, taking into account the precautionary principle and the specific characteristics and environmental conditions of the site concerned.

A first sift of the policies outlined in the SMP was undertaken, as described in Appendix B. This records the aspects of the SMP that could have no LSE on a European site and could be screened out as a result of the screening process of steps 1-3. Screening step 3 involved an assessment of the four high-level policies of the SMP, and the potential for these policies to result in a LSE on any European site, i.e. 'Advance The Line', 'Hold The Line', 'Managed Realignment' and 'No Active Intervention'. As described in Section 3.3, the SMP outlines the preferred policies for implementation within each Policy Unit of the Dumfries & Galloway coastline. The policy option of 'No Active Intervention' is not considered to have any potential for LSE on European sites, as it will not lead to development, and was therefore screened out at step 3b. Although there is potential for effects to occur within European sites where a policy of NAI applies, any changes in these areas will be due to the natural processes of erosion and accretion along the coastline, which may be exacerbated by climatic change and sea level rise, rather than from any development that is part of the SMP implementation. The other three high-level policies proposed in the SMP have the potential to affect the QIs / SCIs of European sites, should a pathway exist, as they make provision for change.

4.4.1 Establishing a pathway for LSEs on European Sites

Each European site was individually reviewed to identify whether there were potential impact pathways evident from the SMP policies that could lead to any LSEs on the Conservation Objectives of QIs / SCIs of European sites. The assessment reviewed the potential for:

- Direct effects, examples of which include (but are not limited to):
    - A construction footprint within the boundary of a European site;
    - A construction footprint outside a European site but which may obstruct the passage of a qualifying feature in accessing a European site;
    - Disturbance of species during construction or maintenance.

- Indirect effects, examples of which include (but are not limited to):
    - Short-term water quality impacts associated with construction works, for example, suspended sediment and sedimentation impacts;
    - Changes to existing hydrological and morphological regimes;
    - Interference with natural coastal processes;
    - Loss or damage to habitats in areas adjacent to fixed defences;
    - Loss of habitat through 'coastal squeeze' against fixed defences.

An assessment of the potential for LSEs from implementation of the preferred policies of the SMP on European sites is described in *Note at Public Consultation Stage HTL was the Primary policy, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 4-3. For each European Site, consideration was given to the preferred policies within the PUs that intersect the site, as well as those PUs that were within the same CPU as the site. For mobile marine species, the PUs considered were those within the screening distance considered in Section 4.2.1. The following sections outline the primary pathways identified through which the SMP could affect European sites.

4.4.1.1 Potential for direct or indirect habitat loss

A preferred policy of HTL includes the management of defence assets, including maintenance of existing defences, and coastal flood and erosion protection schemes. Maintenance of existing defences involving a minor patch and repair approach generally has potential for short term temporary and localised effects on habitats in the vicinity of defences but, as the footprint of defences is already established, is not likely to lead to significant direct adverse effects. However, should existing defences be improved beyond their existing footprint, there is potential for temporary or permanent effects on designated habitats and supported species in the footprint of defences, or affected by a change in hydraulic processes.

Direct habitat loss of natural and semi-natural habitat is associated with flood protection schemes where the construction of flood defences is required. Habitat loss can occur in the footprint and vicinity of the constructed defences. Although flood defences are likely to have a small physical footprint in terms of actual habitat removal, habitat loss in a European site may occur in an area containing qualifying Annex I habitat types. This could undermine the site's Conservation Objective to maintain the habitat area of the qualifying habitat type. Should any construction activities take place within or adjacent to a European site boundary, there is potential for damage to, or disturbance of, designated habitat.

New or extended hard (e.g. flood walls, embankments) or soft (e.g. beach nourishment) coastal defences can result in an interference with natural coastal processes in the vicinity, and alteration of sediment supply to habitats, including circumstances where introduced materials are transported away from the site to areas of designated habitat. The introduction of new hard coastal defences also has the potential to lead to a loss of intertidal habitats in the long term through coastal squeeze against fixed shoreline defences.

4.4.1.2 Construction-phase water quality and habitat deterioration

Maintenance of existing defences, and coastal flood and erosion protection schemes has the potential to result in a degradation of water quality of adjacent surface waters, which can lead to deterioration of coastal and intertidal habitats. Changes in water quality may be caused by construction of flood defence structures such as flood walls / embankments, and maintenance of existing flood protection structures. During construction or maintenance activities, there is potential for construction materials and fuels to enter watercourses, as well as suspended sediment due to runoff of soil from construction areas, and for the introduction and spread of invasive species.

Excavation works related to flood protection projects, and the associated storage of excavated spoil material, can pose a significant risk for sediment release into adjacent surface waters. Ground damage from construction vehicles and machinery can also cause rutting and increased erosion of soils. Any works within the water for construction or maintenance of assets can pose a significant risk of sediment release. Increased sediment supply and the potential for associated degradation in water quality can lead to adverse effects on European sites situated in proximity to coastal flood protection projects, with potential for effects upon the extent and / or quality of Annex I habitats, and to the intertidal and coastal habitats that provide a supporting function for the SCI bird species and mobile Annex II species of these European sites.

There is also potential for leaks or spillages of hydrocarbons into adjacent coastal or transitional water bodies during the maintenance of coastal defences, or construction phase of coastal flood and erosion protection schemes, which could have serious consequences for aquatic species in these areas. Hydrocarbons are products made from crude oil such as machinery fuels and lubricants. Leaks of these contaminants into watercourses can have serious impacts on aquatic species, particularly fish. Oil spillage and leaks are a common source of hydrocarbon contamination of groundwater and surface water (Manoli and Samara, 1999). A pollution event can occur as a result of poorly maintained vehicles and machinery, including portable generators, and accidental spillage during re-fuelling of same. When hydrocarbons are released into the environment as a result of accidental spillages, there may be some fractions that float on top of the water, forming a thin surface film. Other heavier fractions may sink through the water column and accumulate in the sediment at the bottom of the waterbody, which may affect bottom feeding fish and organisms. The release of hydrocarbons into the aquatic environment can result in chronic impacts upon water dependent species in a connected European site. The potential impacts include disruption to neurosensors, abnormal behaviour and development issues as well as direct impacts upon fertility. Oil spills can reduce the capacity of a water body to exchange oxygen as well as result in oil coating the gills of aquatic species causing lesions on respiratory surfaces. This can result in significant respiratory difficulties for aquatic organisms. Benthic invertebrates can be adversely affected if fractions of hydrocarbons settle and accumulate in sediments. This can result in the mortality of populations and prevent future colonisation (Bhattacharyya *et al.,* 2003), which could also impact upon SCI bird species feeding on these organisms.

Invasive species can have a major negative impact on native biodiversity. When non-native species become invasive, they can transform ecosystems and threaten native and endangered species. The most prominent negative effect of invasive species, in terms of ecology, is competition with native biota and alteration of habitats. The spread of invasive species within a European site may occur if transferred there at construction stage. This is likely to undermine the sites Conservation Objective to keep invasive or negative indicator species at a very low level.

4.4.1.3 Disturbance and Displacement

The construction phase of any coastal flood and erosion protection scheme, or maintenance of existing flood defences assets, may lead to disturbance of designated SCI bird species or Annex II species within, and in close proximity to, European sites, from people and machinery working at the site. In the marine environment, construction of coastal defences also has the potential to give rise to underwater noise causing disturbance to cetaceans or pinniped species.

Disturbance and displacement effects include:

- Disturbance to key species
- Habitat or species fragmentation
- Reduction in species density

SCI bird species may be temporarily displaced from suitable habitat by the presence of machinery and personnel during construction. Indirect loss of wintering habitats for bird species of conservation concern in Ireland may occur if they do not use traditional feeding or roosting sites during construction of flood protection projects.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
Luce Bay and Sands SAC *PUs Intersecting the site boundaries:* PU 19: Primary policy NAI, all epochs PU 20: Primary policy HTL short and medium-term, MR long-term PU 21: Primary policy NAI, localised policy HTL short and medium-term, MR long-term PU 22: Primary policy NAI, localised policy HTL short and medium-term, MR long-term PU 23: Primary policy NAI, localised policy HTL short and medium-term, MR long-term PU 24: Primary policy HTL short-term, MR medium and long-term PU 25: Primary policy HTL short-term, MR medium and long-term PU 26: Primary policy NAI, localised policy HTL short to medium-term, MR long-term		
Coastal Habitats: **Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)*** **Embryonic shifting dunes** **Fixed dunes with herbaceous vegetation ("grey dunes")*** **Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")**	Direct or indirect habitat loss or damage Construction-phase water quality and habitat deterioration Interference with natural coastal processes and sediment supply	In many of the PUs with connectivity to this site, the preferred primary policy is one of NAI; there is no potential for LSEs on the coastal habitats of this site from implementation of a preferred NAI policy. Any changes in these areas will be due to the natural processes of erosion and accretion along the coastline, which may be exacerbated by climatic change and sea level rise, rather than from any development that is part of the SMP implementation. In three PUs that intersect this site (PU 20; PU 24; PU 25), there is a preferred primary policy to HTL in the short to medium term, while in four PUs (PU 21; PU 22; PU 23; PU 26) there is a localised policy to HTL. A HTL policy in these areas has potential to result in direct adverse effects on designated coastal habitats within the immediately adjacent SAC in the footprint of any new or upgraded defences, or in indirect adverse effects on designated coastal habitats within this site, including through erosion in adjacent areas of the coastline. The latest assessed condition for these habitats is unfavourable. ***The potential for LSEs on coastal habitats through direct or indirect loss or damage through HTL policies (maintenance, upgrading or construction of coastal defences) cannot be excluded.*** The preferred policy to HTL at these locations has potential to lead to impacts on water quality during construction or maintenance of defences (sedimentation and / or pollution events and introduction or spread of invasive species with potential for deterioration of designated coastal habitats within this site. ***The potential for LSEs on coastal habitats through construction-phase water quality impacts that could lead to habitat deterioration***

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		through HTL policies (maintenance, upgrading or construction of coastal defences) cannot be excluded. The preferred policy to HTL at these locations has potential to alter natural coastal processes, including sediment supply to coastal habitats. The latest assessed condition for these habitats is unfavourable. ***The potential for LSEs on coastal habitats from HTL policies (maintenance, upgrading or construction of coastal defences), through interference with natural coastal processes and sediment supply cannot be excluded.*** MR is the preferred primary policy for PU 20 in the long-term, and for PU 24 and PU 25 in the medium-term, and the preferred localised policy for PUs 21, 22, 23 and 26 in the long-term. In all cases in these areas, MR relates to the relocation of at risk assets, and does not involve the removal of any existing defences, which could alter erosional processes. ***The potential for LSEs on coastal habitats from MR policies can be excluded.***
Intertidal habitats: **Large shallow inlets and bays** **Mudflats and sandflats not covered by seawater at low tide**	Direct or indirect habitat loss or damage Interference with natural coastal processes and sediment supply Indirect habitat loss through coastal squeeze	In many of the PUs with connectivity to this site, the preferred primary policy is one of NAI; there is no potential for LSEs on the intertidal habitats of this site from implementation of a preferred NAI policy. Any changes in these areas will be due to the natural processes of erosion and accretion along the coastline, which may be exacerbated by climatic change and sea level rise, rather than from any development that is part of the SMP implementation. In three PUs that intersect this site (PU 20; PU 24; PU 25), there is a preferred primary policy to HTL in the short to medium term, while in four PUs (PU 21; PU 22; PU 23; PU 26) there is a localised policy to HTL. A HTL policy in these areas has potential to result in direct adverse effects on designated intertidal habitats within the immediately adjacent SAC in the footprint of any new or upgraded defences. ***The potential for LSEs on intertidal habitats through direct loss or damage through HTL policies (upgrading or construction of coastal defences) cannot be excluded.*** The preferred policy to HTL at these locations has potential to alter the natural coastal processes, including sediment dynamics, with potential

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		for indirect adverse effects through deterioration of adjacent intertidal habitats. ***The potential for LSEs on intertidal habitats from HTL policies, through interference with natural coastal processes and sediment supply cannot be excluded.*** The preferred policy to HTL at these locations has potential for indirect effects on intertidal habitats through intertidal narrowing, where habitat is lost as a result of sea level rise against fixed hard defences (coastal squeeze). ***The potential for LSEs on intertidal habitats from HTL policies involving a loss of habitat through coastal squeeze cannot be excluded.*** MR is the preferred primary policy for PU20 in the long-term, and for PU 24 and PU 25 in the medium-term, and the preferred localised policy for PUs 21, 22, 23 and 26 in the long-term. In all cases in these areas, MR relates to the relocation of at risk assets, and does not involve the removal of any existing defences, which could alter erosional processes. ***The potential for LSEs on intertidal habitats from MR policies can be excluded.***
Submerged marine habitats: **Reefs** **Sandbanks which are slightly covered by sea water all the time**	Interference with natural coastal processes and sediment supply	In many of the PUs with connectivity to this site, the preferred primary policy is one of NAI; there is no potential for LSEs on the submerged marine habitats of this site from implementation of a preferred NAI policy. In three PUs that intersect this site (PU 20; PU 24; PU 25), there is a preferred primary policy to HTL in the short to medium term, while in four PUs (PU 21; PU 22; PU 23; PU 26) there is a localised policy to HTL. The preferred policy to HTL at these locations has potential to alter the natural coastal processes, including sediment dynamics, with potential for indirect adverse effects through deterioration of adjacent submerged marine habitats. ***The potential for LSEs on submerged marine habitats from HTL policies, through interference with natural coastal processes and sediment supply cannot be excluded.***
Great crested newt (*Triturus cristatus*)	Direct or indirect habitat loss or damage	As per the assessment of coastal habitats.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		The potential for LSEs on coastal habitats supporting great-crested newt through direct or indirect loss or damage through HTL policies (upgrading or construction of coastal defences, or through interference with natural coastal processes and sediment supply) cannot be excluded.
Mull of Galloway SAC *PUs Intersecting the site boundaries:* PU 26: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 27: Primary policy NAI, localised policy HTL all epochs *Additional PUs within the same CPU:* PU 23: Primary policy NAI, localised policy HTL short and medium-term, MR long-term PU 24: Primary policy HTL short-term, MR medium and long-term PU 25: Primary policy HTL short-term, MR medium and long-term		
Coastal habitat: **Vegetated sea cliffs of the Atlantic and Baltic coasts**	Direct or indirect habitat loss or damage	The majority of this site lies on the coastline within CPU5, while a small area lies within CPU4 on the northern side of the Mull of Galloway. In the two PUs that intersect this site, the primary policy is one of NAI, with a localised policy of HTL at Maryport caravan site in PU 26 (>3km distant from the site boundary) and at Port Logan in PU 27 (>6km distant from the site boundary), both involving maintenance through a patch and repair of existing defences. There is no potential for LSEs on the designated coastal habitat of this site from implementation of a primary NAI policy; any changes to designated habitats will be a result of natural coastal processes. Localised HTL in these areas will not introduce any new defences; there is not considered to be any potential for localised HTL to lead to any adverse effects, such as exacerbation of cliff erosion, on designated cliff habitats. In two other PUs there is a preferred primary policy of HTL in the short-term, involving the maintenance and repair of existing defences, while in PU 23 localised HTL at Sandhead may require some form of additional coastal protection. However, these PUs lie within CPU4 and are situated >6.5km (PU 25), >7.5km (PU 24) and >19km (PU 23) from the closest point of the SAC. There is not considered to be any potential for indirect loss or damage to designated coastal habitat within the SAC from HTL in these areas.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		The potential for LSEs on coastal habitat Vegetated sea cliffs of the Atlantic and Baltic coasts can be excluded.
Burrow Head SAC *PUs Intersecting the site boundaries:* PU 18: Primary policy HTL, localised policy NAI PU 19: Primary policy NAI, all epochs *Additional PUs within the same CPU:* PU 15: Primary policy NAI, localised policy HTL short-term, MR medium to long-term PU 16: Primary policy HTL, localised policy NAI PU 17: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 20: Primary policy HTL short to medium-term, MR long-term		
Great crested newt (*Triturus cristatus*)	Direct or indirect habitat loss or damage	This SAC comprises a pond cluster within agricultural landscape that provides habitat for great crested newt. PUs 18 and 19 intersect the SAC boundaries, which are >100m from the coastline at all points. The preferred policy option for PU 19 is one of NAI; there is no potential for LSEs on great crested newt habitat within this site from implementation of this preferred policy option. The preferred policy option for PU 18 is to HTL in the short-term through the maintenance and / or repair of existing defences; however there is no potential for LSEs on great-crested newt habitat, as any works undertaken in this PU will not be located within or close to the boundaries of the SAC. There is no potential for indirect impacts upon habitat supporting the species from implementation of SMP policies; PUs 15, 16, 17 and 20 do not intersect the SAC boundaries, and their preferred policies have no potential to lead to adverse effects within this site. ***The potential for LSEs on great crested newt through direct effects or loss of / damage to supporting habitat can be excluded.***
River Bladnoch SAC *PUs Intersecting the site boundaries:* PU 15: Primary policy NAI, localised policy HTL short-term, MR medium to long-term *Additional PUs within the same CPU:* PU 12: Primary policy NAI, localised policy HTL		

Qualifying interest(s)	Potential effects	Likelihood of significant effect
PU 16: Primary policy HTL, localised policy NAI PU 17: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 18: Primary policy HTL, localised policy NAI		
Atlantic Salmon (*Salmo salar*)	Obstacles to migration	The preferred primary policy for PU 15, which intersects this site, is NAI, with localised HTL at two locations, through maintenance of existing localised defence assets. There will be no HTL policies that could introduce obstacles to migration for Atlantic salmon, and therefore no LSEs are anticipated via this pathway. ***The potential for LSEs on Atlantic salmon from obstacles to migration can be excluded.***
	Construction-phase water quality and habitat deterioration	The preferred primary policy for PU 15, which intersects this site, is NAI, with localised HTL at two locations, through maintenance of existing localised defence assets; This includes the maintenance of a defence asset at Wigtown, directly adjacent to the boundary of the SAC. There is potential for impacts on water quality at this site, from localised HTL in this area that could lead to adverse effects on Atlantic salmon. Regarding other PUs within CPU 3, the closest PUs where HTL is the preferred primary policy are PU 16 and PU 18, at a hydrological distance of >12km and >20km, respectively from the SAC boundaries. A localised HTL policy for PU 12 and PU 17, involves the maintenance and repair of existing localised defences, at a hydrological distance of >22km and >18km, respectively from the SAC boundaries. HTL within these PUs is not considered to have any potential for water quality impacts that could lead to adverse effects on Atlantic salmon within this site. ***The potential for LSEs on Atlantic salmon via water quality degradation cannot be excluded for localised HTL within PU15.***
Carsergowan Moss SAC PU 15: Primary policy NAI, localised policy HTL short-term, MR medium to long-term		
Active raised bogs **Degraded raised bogs still capable of natural regeneration**	Direct or indirect habitat loss or damage Hydrological change	This site intersects PU 15, at a distance of c.2km from the coastline. The preferred policy is for NAI for the majority of the coastline in this area, with localised HTL in the short-term and MR in the medium to long-term for at risk assets. The closest location where there is a localised HTL / MR policy is *c.*4km from the site boundaries; there is not considered to

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		be any impact pathway by which the QIs at this site could be affected by the policies in these areas. ***The potential for LSEs on raised bog habitats from hydrological change can be excluded.***
Solway Mosses North SAC PU 5: Primary policy NAI, localised policy MR medium to long-term		
Active raised bogs **Degraded raised bogs still capable of natural regeneration**	Direct or indirect habitat loss or damage Hydrological change	The two components of this site, Longbridge Muir and Kirkconnel Flow, intersect PU 5, at a distance of c.650m and 1km, respectively from the coastline. The preferred policy is for NAI for the majority of the coastline in this area, with localised MR in the medium to long-term for sections of road assets at risk. The closest location where there is a localised MR policy is >3.5km from the site boundaries; there is not considered to be any impact pathway by which the QIs at this site could be affected by the policies in these areas. ***The potential for LSEs on raised bog habitats from hydrological change can be excluded.***
Solway Firth SAC *PUs Intersecting the site boundaries:* PU 1: Primary policy NAI, localised policy HTL short-term, MT medium to long term PU 2: Primary policy MR, localised policy HTL, all epochs* PU 3: Primary policy NAI, localised policy HTL PU 4: Primary policy NAI, localised policy HTL PU 5: Primary policy NAI, localised policy MR medium to long-term PU 6: Primary policy HTL, localised policy NAI PU 7: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 8: Primary policy NAI, localised policy HTL short to medium-term, MR long-term		
Coastal Habitats: **Perennial vegetation of stony banks** **Fixed coastal dunes with herbaceous vegetation ("Grey dunes")**	Direct or indirect habitat loss or damage Construction-phase water quality and habitat deterioration Interference with natural coastal processes and sediment supply	In the majority of PUs with connectivity to this site (PU 1; PU 3; PU 4; PU 5; PU 7; PU 8), the preferred primary policy is one of NAI; there is no potential for LSEs on the coastal habitats of this site from implementation of a preferred NAI policy. Any changes in these areas will be due to the natural processes of erosion and accretion along the coastline, which may be exacerbated by climatic change and sea level rise, rather than from any development that is part of the SMP implementation.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		In one PU that intersects this site (PU 6), there is a preferred primary policy to HTL over all epochs, while in six PUs (PU 1; PU 2; PU 3; PU 4; PU 7; PU 8) there is a localised policy to HTL. A HTL policy in these areas has potential to result in direct adverse effects on designated coastal habitats within the immediately adjacent SAC in the footprint of any new or upgraded defences, or in indirect adverse effects on designated coastal habitats within this site, including through erosion in adjacent areas of the coastline. In particular, options to implement HTL in PUs 4, 6 and 7 may involve increasing the footprint of defences or constructing new defences. The latest assessed condition for these habitats is unfavourable. ***The potential for LSEs on coastal habitats through direct or indirect loss or damage through HTL policies (maintenance, upgrading or construction of coastal defences) cannot be excluded.*** The preferred policy to HTL at these locations has potential to lead to impacts on water quality during construction or maintenance of defences (sedimentation and / or pollution events and introduction or spread of invasive species with potential for deterioration of designated coastal habitats within this site). The latest assessed condition for these habitats is unfavourable. ***The potential for LSEs on coastal habitats through water quality impacts that could lead to habitat deterioration through HTL policies (maintenance, upgrading or construction of coastal defences) cannot be excluded.*** The preferred policy to HTL at these locations has potential to alter natural coastal processes, including sediment supply to coastal habitats. The latest assessed condition for these habitats is unfavourable. ***The potential for LSEs on coastal habitats from HTL policies (maintenance, upgrading or construction of coastal defences), through interference with natural coastal processes and sediment supply cannot be excluded.***
Estuarine and intertidal habitats: **Estuaries** **Mudflats and sandflats not covered by seawater at low tide**	Direct or indirect habitat loss or damage Interference with natural coastal processes and sediment supply	In the majority of PUs with connectivity to this site (PU 1; PU 3; PU 4; PU 5; PU 7; PU 8), the preferred primary policy is one of NAI; there is no potential for LSEs on the estuarine and intertidal habitats of this site from implementation of a preferred NAI policy. Any changes in these areas will be due to the natural processes of erosion and accretion along

Qualifying interest(s)	Potential effects	Likelihood of significant effect
Salicornia and other annuals colonising mud and sand **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)**	Indirect habitat loss through coastal squeeze	the coastline, which may be exacerbated by climatic change and sea level rise, rather than from any development that is part of the SMP implementation. In one PU that intersects this site (PU 6), there is a preferred primary policy to HTL over all epochs, while in six PUs (PU 1; PU 2; PU 3; PU 4; PU 7; PU 8) there is a localised policy to HTL. A HTL policy in these areas has potential to result in direct adverse effects on designated estuarine and intertidal habitats within the immediately adjacent SAC in the footprint of any new or upgraded defences, or in indirect adverse effects on designated estuarine and intertidal habitats within this site, including through erosion in adjacent areas of the coastline. In particular, options to implement HTL in PUs 4, 6 and 7 may involve increasing the footprint of defences or constructing new defences. The latest assessed condition for Salicornia and Atlantic salt meadow habitats is favourable, while estuaries and mudflats / sandflats have not been assessed. ***The potential for LSEs on estuarine and intertidal habitats through direct or indirect loss or damage through HTL policies (maintenance, upgrading or construction of coastal defences) cannot be excluded.*** The preferred policy to HTL at these locations has potential to lead to impacts on water quality during construction or maintenance of defences (sedimentation and / or pollution events and introduction or spread of invasive species with potential for deterioration of designated estuarine and intertidal habitats within this site). The latest assessed condition for Salicornia and Atlantic salt meadow habitats is favourable, while estuaries and mudflats / sandflats have not been assessed. ***The potential for LSEs on estuarine and intertidal habitats through water quality impacts that could lead to habitat deterioration through HTL policies (maintenance, upgrading or construction of coastal defences) cannot be excluded.*** The preferred policy to HTL at these locations has potential to alter natural coastal processes, including sediment supply to estuarine and intertidal habitats. ***The potential for LSEs on estuarine and intertidal habitats from HTL policies (maintenance, upgrading or construction of coastal defences), through interference with natural coastal processes and sediment supply cannot be excluded.***

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		The preferred policy to HTL at these locations has potential for indirect effects on estuarine and intertidal habitats through intertidal narrowing, where habitat is lost as a result of sea level rise against fixed hard defences (coastal squeeze), following the addition of new defences, or continuing to hold the current defence line. ***The potential for LSEs on estuarine and intertidal habitats from HTL policies (maintenance, upgrading or construction of coastal defences) through coastal squeeze cannot be excluded.***
Submerged marine habitats: **Sandbanks which are slightly covered by sea water all the time** **Reefs**	Interference with natural coastal processes and sediment supply	In one PU that intersects this site (PU 6), there is a preferred primary policy to HTL over all epochs, while in six PUs (PU 1; PU 2; PU 3; PU 4; PU 7; PU 8) there is a localised policy to HTL. The preferred policy to HTL at these locations has potential to alter natural coastal processes, including sediment supply to submerged marine habitats. ***The potential for LSEs on submerged marine habitats from HTL policies (maintenance, upgrading or construction of coastal defences), through interference with natural coastal processes and sediment supply cannot be excluded.***
Anadromous fish: **Sea lamprey (*Petromyzon marinus*)** **River lamprey (Lampetra fluviatilis)**	Direct or indirect habitat loss or damage Water quality and habitat deterioration	See assessment for estuarine and intertidal habitats. These lamprey species are dependent on feeding on fish prey within the firth during part of their life cycle. The abundance of prey species is reliant on the distribution and extent of various habitats within the site, which has potential to be adversely affected by the preferred primary or localised HTL policy. ***The potential for LSEs on Sea lamprey and River lamprey from HTL policies, through habitat loss or change and effects on fish prey cannot be excluded.***
	Obstacles to migration	The preferred primary policy to HTL over all epochs in one PU that intersects this site (PU 6), and localised policy to HTL in six PUs (PU 1; PU 2; PU 3; PU 4; PU 7; PU 8) relate to coastal shoreline defences. HTL in these areas will not introduce any obstacles to migration, and therefore no significant effects on the species are anticipated via this pathway. ***The potential for LSEs on Sea lamprey or River lamprey from obstacles to migration can be excluded.***

Qualifying interest(s)	Potential effects	Likelihood of significant effect
River Eden SAC PU 1: Primary policy NAI, localised policy HTL short-term, MT medium to long term PU 2: Primary policy MR, localised policy HTL, all epochs* PU 3: Primary policy NAI, localised policy HTL		
Anadromous fish: **Sea lamprey (*Petromyzon marinus*)** **River lamprey (*Lampetra fluviatilis*)** **Atlantic salmon (*Salmo salar*)**	Obstacles to migration Water quality and habitat deterioration	The River Eden enters the English side of the Solway Firth at Rockcliffe. The site boundaries are >10km from any PU within the SMP. The preferred localised policy to HTL in PU 1, PU 2, and PU 3 relates to coastal shoreline defences. HTL in these areas will not introduce any obstacles to migration, and is separated from the mouth of the River Eden by the channel of the inner Solway firth; therefore no significant effects on the species are anticipated via this pathway. ***The potential for LSEs on Sea lamprey, River lamprey or Atlantic salmon from obstacles to migration can be excluded.*** The preferred policies in these PUs will not affect the river water quality or clean gravel beds used by these species for spawning. The site boundaries are a significant distance from any potential maintenance or construction arising from implementation of the SMP, and no LSEs are anticipated via this pathway. ***The potential for LSEs on Sea lamprey, River lamprey or Atlantic salmon from HTL policies via water quality degradation can be excluded.***
Strangford Lough SAC PU 27: Primary policy NAI, localised policy HTL		
Harbour (Common) seal (*Phoca vitulina*)	Noise / visual disturbance or displacement	The preferred policy of HTL in a localised area of PU 27 at Port Logan has the potential to lead to noise and / or visual disturbance of harbour seal during or maintenance activities. However, this management unit is located at the limit (approx. 50km) of the distance recommended for consideration of this species in screening for AA, and Port Logan is situated approx. 53km from the SAC at its closest point. Although Harbour seals are present in the area, there are no designated haul out sites for this species nearby. As harbour seals usually forage within 40 – 50 km of their haul-out sites (SCOS, 2014), there is highly unlikely to be any interaction between the SMP activities and harbour seals from this SAC located off the Irish coast.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		The potential for LSEs on harbour seal from HTL policies via noise / visual disturbance or displacement can be excluded.
North Channel SAC PU 27: Primary policy NAI, localised policy HTL PU 28: Primary policy HTL short-term, MR medium to long-term, localised policy NAI PU 29: Primary policy NAI, all epochs		
Harbour Porpoise (*Phocoena phocoena*)	Noise / visual disturbance or displacement	Draft Conservation Objectives and advice on activities have been prepared for the North Channel SAC (DOENI/JNCC 2016). Conservation Objectives for the site are to avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status for the UK harbour porpoise. The preferred policy for PU 28 is to HTL in the short-term; this is confined to the maintenance of existing coastal defences within Portpatrick, while the preferred localised HTL policy for PU 27 relates to the maintenance of existing defences at Port Logan. Given the distance of >15km from the North Channel SAC, at its closest point, and the limited works involved, there is not considered to be any potential for significant disturbance of the harbour porpoise population for which this site was designated. ***The potential for LSEs on harbour porpoise from HTL policies via noise / visual disturbance or displacement can be excluded.***
Glen App and Galloway Moors SPA *PUs Intersecting the site boundaries:* PU 33: Primary policy HTL short-term, MR medium to long-term PU 34: Primary policy HTL PU 35: Primary policy NAI *Additional PUs within the same CPU:* PU 29: Primary policy NAI PU 30: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 31: Primary policy NAI, localised policy HTL short-term, MR medium to long-term PU 32: Primary policy HTL		

Qualifying interest(s)	Potential effects	Likelihood of significant effect
Hen harrier (*Circus cyaneus*)	Direct or indirect habitat loss or damage	This site intersects PUs 33-35, at a distance of >350m from the coastline. The preferred primary policy of HTL over all epochs for PU 34, and HTL in the short-term for PU 33 has no potential impact pathway by which direct or indirect effects on supporting habitat could occur. The preferred policy of MR in the medium to long-term within PU 33 relates to the potential re-routing of the A77 coastal road. Owing to the proximity of the site, this has the potential to result in direct or indirect adverse effects on supporting habitat within the site. ***The potential for LSEs on supporting habitat of Hen harrier from a MR policy in PU 33 cannot be excluded.***
	Noise / visual disturbance or displacement	Hen harrier breed in open moorland and marginal grassland habitats, but can winter in more coastal and lowland coastal areas. The preferred primary policy of HTL over all epochs for PU 32 and PU 34, in the short-term for PU 33, and localised HTL in PU 30 and PU 31 have the potential to lead to noise and / or visual disturbance of this species. The preferred policy of MR in the medium to long-term within PU 33, relating to the potential re-routing of the A77 coastal road, also has the potential to lead to noise and / or visual disturbance of this species. ***The potential for LSEs on Hen harrier from HTL and MR policies via noise / visual disturbance cannot be excluded.***
Loch of Inch and Torrs Warren SPA & Ramsar *PUs Intersecting the site boundaries:* PU 22: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 23: Primary policy NAI, localised policy HTL short and medium-term, MR long-term *Additional PUs within the same CPU:* PU 19: Primary policy NAI, all epochs PU 20: Primary policy HTL short to medium-term, MR longer-term PU 21: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 24: Primary policy HTL short-term, MR medium and long-term PU 25: Primary policy HTL short-term, MR medium and long-term PU 26: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 32: Primary policy HTL, all epochs		
Greenland White-fronted Goose (*Anser albifrons flavirostris*)	Direct or indirect habitat loss or damage	This SPA is comprised of a large eutrophic freshwater loch (Loch of Inch) and a nearby area of foreshore and dunes (Torrs Warren) that support

Qualifying interest(s)	Potential effects	Likelihood of significant effect
Hen harrier (*Circus cyaneus*)		wintering populations of Greenland white-fronted goose and Hen harrier. The current condition of both species at this site is favourable maintained. There is no potential for damage to or loss of habitat at Loch of Inch, as no PUs intersect this part of the SPA; it is situated >2km inland of Loch Ryan and PU 32. PU 22 and PU 23 intersect the Torrs Warren area of the SPA; it is predominantly PU 22 that intersects this SPA, while a section of PU 23 also intersects the site. The preferred primary policy in these PUs is one of NAI; there is no potential for loss or damage to habitats supporting the species from implementation of this policy. There is a localised policy of HTL in the short to medium-term for these PUs (at a golf club in PU 22, and at Sandhead in PU 23). Localised HTL in these areas has potential for adverse effects on habitat that supports the designated species, directly in the footprint of defences, or indirectly including via water quality impacts during construction. HTL as a primary (PU 20; PU 24; PU 25) or localised (PU 21; PU 26) policy for other PUs within CPU 4 also has the potential to lead to adverse effects on coastal habitats supporting these species, via an alteration of natural coastal processes, including sediment supply to these supporting habitats. The preferred primary (PU 20; PU 25) or localised (PU 21; PU 22; PU 23; PU 26) policy of MR in the long-term in CPU 4 relates to the relocation of at risk assets and does not involve the removal of any existing defences, which could alter erosional processes. There is not considered to be any potential for direct or indirect effects on supporting habitat for the designated species at this site from implementation of this policy. ***The potential for LSEs on Greenland White-fronted Goose and Hen Harrier from HTL, via loss of / damage to supporting habitat, cannot be excluded.***
	Noise / visual disturbance or displacement	Hen harrier breed in open moorland and marginal grassland habitats, but can winter in more coastal and lowland coastal areas. According to SNH (NatureScot) (2013), Greenland White-fronted Goose has a core range of 5-8km, within which disturbance effects should be assessed. The preferred primary (PU 20; PU 24; PU 25; PU 32) or localised (PU 21; PU 22; PU 23; PU 26) policy of HTL has the potential to lead to noise and / or visual disturbance of these species.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		The potential for LSEs on* Greenland White-fronted Goose and *Hen harrier from HTL, via noise / visual disturbance, cannot be excluded.
Loch Ken and River Dee Marshes SPA & Ramsar PU 8: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 9: Primary policy NAI, localised policy HTL, all epochs PU 10: Primary policy NAI, localised policy HTL, all epochs PU 11: Primary policy NAI, all epochs PU 12: Primary policy NAI, localised policy HTL, all epochs PU 13: Primary policy NAI, localised policy HTL, all epochs PU 14: Primary policy NAI, localised policy HTL short to medium-term, MR long-term		
Greenland White-fronted Goose (*Anser albifrons flavirostris*) Greylag Goose (*Anser anser*)	Noise / visual disturbance or displacement	This SPA comprises part of a large freshwater loch (Loch Ken) and river course (River Dee) with associated areas of swamp, fen, grassland, and carr woodland that support wintering populations of Greenland white-fronted goose and Greylag goose. The Greenland white-fronted goose has a core range of 5-8km, and the Greylag goose has a core range of 15-20km, within which disturbance effects should be assessed (SNH 2013). There is a preferred policy for localised HTL in PU 9, PU 10 and PU 13. These PUs are within the potential core range of the population of geese utilising the SPA and, in the absence of any mitigation measures, the potential for noise and / or visual disturbance of these species from implementation of these SMP policies cannot be excluded. ***The potential for LSEs on designated bird species from HTL, via noise and / or visual disturbance, cannot be excluded.***
Solway Firth SPA / Upper Solway Flats and Marshes Ramsar Site (for PU 1 to PU 8) *PUs Intersecting the SPA site boundaries (Note PUs 1-8 intersect the Ramsar site boundaries):* PU 1: Primary policy NAI, localised policy HTL short-term, MT medium to long term PU 2: Primary policy MR, localised policy HTL, all epochs* PU 3: Primary policy NAI, localised policy HTL, all epochs PU 4: Primary policy NAI, localised policy HTL, all epochs PU 5: Primary policy NAI, localised policy MR medium to long-term PU 6: Primary policy HTL, localised policy NAI, all epochs PU 7: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU 8: Primary policy NAI, localised policy HTL short to medium-term, MR long-term		

Qualifying interest(s)	Potential effects	Likelihood of significant effect
PU 10: Primary policy NAI, localised policy HTL, all epochs PU 11: Primary policy NAI, all epochs PU12: Primary policy NAI, localised policy HTL, all epochs PU15: Primary policy NAI, localised policy HTL short-term, MR medium to long-term PU16: Primary policy HTL, localised policy NAI, all epochs PU17: Primary policy NAI, localised policy HTL short to medium-term, MR long-term PU18: Primary policy HTL, localised policy NAI, all epochs *Additional PUs within the same CPU:* PU 9: Primary policy NAI, localised policy HTL, all epochs PU13: Primary policy NAI, localised policy HTL, all epochs PU14: Primary policy NAI, localised policy HTL short to medium-term, MR long-term		
Bar-tailed godwit (*Limosa lapponica*) **Black-headed gull (*Chroicocephalus ridibundus*)** **Common gull (*Larus canus*)** **Common scoter (Melanitta nigra)** **Cormorant (*Phalacrocorax carbo*)** **Curlew (*Numenius arquata*)** **Dunlin (*Calidris alpina*)** **Golden plover (*Pluvialis apricaria*)** **Goldeneye (*Bucaphala clangula*)** **Goosander (*Mergus merganser*)** **Grey plover (*Pluvialis squatorola*)** **Herring gull (*Larus argentatus*)** **Knot (*Calidris canutus*)** **Lapwing (*Vanellus vanellus*)** **Oystercatcher (*Haematopus ostralegus*)**	Direct or indirect habitat loss or damage	This SPA / Ramsar site is important for wintering wildfowl and waders, and forms part of a series of estuaries on the west coast of the UK used by migrating waterbirds. The Ramsar site is also noted for its populations of natterjack toad, supporting >10% of the British population of this species. In the majority of PUs with connectivity to this site (PU 1; PU 3; PU 4; PU 5; PU 7; PU 8; PU 9; PU 10, PU 11; PU 12; PU 13; PU 14; PU 15; PU 17), the preferred primary policy is one of NAI; there is no potential for LSEs on the coastal and intertidal habitats supporting the designated species of this site from implementation of a preferred NAI policy. Any changes in these areas will be due to the natural processes of erosion and accretion along the coastline, which may be exacerbated by climatic change and sea level rise, rather than from any development that is part of the SMP implementation. In three PUs that intersect this site (PU 6; PU 16; PU 18), there is a preferred primary policy to HTL over all epochs, while in ten PUs that intersect the site (PU 1; PU 2; PU 3; PU 4; PU 7; PU 8; PU 10; PU 12; PU 15; PU 17) and three PUs within the same CPU as the site (PU 9; PU 13; PU 14), there is a localised policy to HTL. A HTL policy in these areas has potential to result in direct adverse effects on habitats supporting the designated species within the immediately adjacent SPA in the footprint of any new or upgraded defences, or in indirect adverse effects on supporting habitats within this site, including through erosion in adjacent areas of the coastline. In particular, options to implement HTL in PUs 4, 6 and 7 may involve increasing the footprint of defences or constructing new defences.

Qualifying interest(s)	Potential effects	Likelihood of significant effect
Pink-footed goose (*Anser brachyrhynchus*) **Pintail (*Anas acuta*)** **Red-throated diver (Gavia stellate)** **Redshank (*Tringa totanus*)** **Ringed plover (*Charadrius hiaticula*)** **Sanderling (*Calidris alba*)** **Scaup (*Aythya marila*)** **Shelduck (*Tadorna tadorna*)** **Shoveler (*Anas clypeata*)** **Svalbard barnacle goose (*Branta leucopsis*)** **Teal (*Anas crecca*)** **Turnstone (*Arenaria interpres*)**		The preferred policy to HTL at these locations has potential to lead to impacts on water quality during construction or maintenance of defences (sedimentation and / or pollution events and introduction or spread of invasive species), with potential for deterioration of supporting habitats within this site. The preferred policy to HTL at these locations has potential to alter natural coastal processes, including sediment supply to coastal habitats. It also has potential for indirect effects on estuarine and intertidal habitats supporting the designated species through intertidal narrowing, where habitat is lost as a result of sea level rise against fixed hard defences (coastal squeeze), following the addition of new defences, or continuing to hold the current defence line. The preferred localised policy of MR in the long-term in PUs intersecting this SPA relates to the relocation of at risk assets and does not involve the removal of any existing defences, which could alter erosional processes. There is not considered to be any potential for direct or indirect effects on supporting habitats for the designated species at this site from implementation of this policy ***The potential for LSEs on designated species from HTL, via loss of / damage to supporting habitats, cannot be excluded.***
Whooper swan (*Cygnus cygnus*) **Waterfowl assemblage** **Natterjack toad (*Bufo calamita*) Ramsar site Criterion)**	Noise / visual disturbance or displacement	The preferred primary or localised policy of HTL in these areas has the potential to lead to noise and / or visual disturbance of designated species using the coastal and intertidal habitats. ***The potential for LSEs on designated bird species from HTL, via noise and / or visual disturbance, cannot be excluded.***
Castle Loch, Lochmaben SPA & Ramsar Not intersected by any PU, inland from PU 5 and PU 6 PU 5: Primary policy NAI, localised policy MR medium to long-term PU 6: Primary policy HTL, localised policy NAI		
Pink-footed Goose (*Anser brachyrhynchus*)	Noise / visual disturbance or displacement	This SPA is situated >11km inland from PU 6, and >12.5km inland from PU 5. The Pink-footed goose population of this SPA is part of the wintering Icelandic / Greenland population who roost within the site, feeding on nearby agricultural land. When feeding, pink-footed geese mainly remain within 5-10km of roosting sites (Mitchell & Hearn, 2004). Owing to the distance from these PUs to the SPA, there is not considered to be any potential for the primary policy of HTL in PU 6, or

Qualifying interest(s)	Potential effects	Likelihood of significant effect
		the localised policy of MR in PU 5, to lead to adverse effects on the designated species at this site via noise and / or visual disturbance. ***The potential for LSEs on Pink-footed goose from HTL, via noise and / or visual disturbance, can be excluded.***

*Note at Public Consultation Stage HTL was the Primary policy, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 4-3 Screening assessment of LSEs on European sites from implementation of the preferred SMP policies.

Details on the proposals for each PU are provided in Table 3.4, with further information in the individual Policy Screening reports.

4.4.2 Summary of potential for LSEs

A summary of the potential for LSEs on the QIs / SCIs of European sites from implementation of the SMP preferred policies is presented in Table 4-4. Where the potential for LSEs on QIs / SCIs of a site cannot be excluded at this screening stage, in the absence of mitigation measures; these must be considered further in the Stage 2 HRA in Section 5.

European Site	Qualifying Interest(s) / Special Conservation Interest(s)	Can potential for LSEs be excluded?
Luce Bay and Sands SAC	Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)*	**No**
	Embryonic shifting dunes	**No**
	Fixed dunes with herbaceous vegetation ("grey dunes")*	**No**
	Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	**No**
	Large shallow inlets and bays	**No**
	Mudflats and sandflats not covered by seawater at low tide	**No**
	Reefs	**No**
	Sandbanks which are slightly covered by sea water all the time	**No**
	Great crested newt (*Triturus cristatus*)	**No**
Mull of Galloway SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts	Yes
Burrow Head SAC	Great crested newt (*Triturus cristatus*)	Yes
River Bladnoch SAC	Atlantic Salmon (*Salmo salar*)	**No**
Carsegowan Moss SAC	Active raised bogs Degraded raised bogs still capable of natural regeneration	Yes
Solway Mosses North SAC	Active raised bogs Degraded raised bogs still capable of natural regeneration	Yes
Solway Firth SAC	Sandbanks which are slightly covered by sea water all the time	**No**
	Estuaries	**No**
	Mudflats and sandflats not covered by seawater at low time	**No**
	Salicornia and other annuals colonising mud and sand	**No**
	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	**No**
	Reefs	**No**
	Perennial vegetation of stony banks	**No**
	Fixed coastal dunes with herbaceous vegetation ("Grey dunes")	**No**
	Sea lamprey (*Petromyzon marinus*)	**No**
	River lamprey (*Lampetra fluviatilis*)	**No**
River Eden SAC	Sea lamprey (*Petromyzon marinus*)	Yes
	River lamprey (*Lampetra fluviatilis*)	Yes
	Atlantic salmon (*Salmo salar*)	Yes
Strangford Lough SAC	Harbour (Common) seal (*Phoca vitulina*)	Yes
North Channel SAC	Harbour porpoise (*Phocoena phocoena*)	Yes
Glen App and Galloway Moors SPA	Hen harrier (*Circus cyaneus*)	**No**
Loch of Inch and Torrs Warren SPA & Ramsar	Greenland White-fronted Goose (*Anser albifrons flavirostris*)	**No**
	Hen harrier (*Circus cyaneus*)	**No**
Loch Ken and River Dee Marshes SPA & Ramsar	Greenland White-fronted Goose (*Anser albifrons flavirostris*)	**No**
	Greylag Goose (*Anser anser*)	**No**

European Site	Qualifying Interest(s) / Special Conservation Interest(s)	Can potential for LSEs be excluded?
Solway Firth SPA / Upper Solway Flats and Marshes Ramsar	Bar-tailed godwit (*Limosa lapponica*)	**No**
	Black-headed gull (*Chroicocephalus ridibundus*)	**No**
	Common gull (*Larus canus*)	**No**
	Common scoter (Melanitta nigra)	**No**
	Cormorant (*Phalacrocorax carbo*)	**No**
	Curlew (*Numenius arquata*)	**No**
	Dunlin (*Calidris alpina*)	**No**
	Golden plover (*Pluvialis apricaria*)	**No**
	Goldeneye (*Bucaphala clangula*)	**No**
	Goosander (*Mergus merganser*)	**No**
	Grey plover (*Pluvialis squatorola*)	**No**
	Herring gull (*Larus argentatus*)	**No**
	Knot (*Calidris canutus*)	**No**
	Lapwing (*Vanellus vanellus*)	**No**
	Oystercatcher (*Haematopus ostralegus*)	**No**
	Pink-footed goose (*Anser brachyrhynchus*)	**No**
	Pintail (*Anas acuta*)	**No**
	Red-throated diver (Gavia stellate)	**No**
	Redshank (*Tringa totanus*)	**No**
	Ringed plover (*Charadrius hiaticula*)	**No**
	Sanderling (*Calidris alba*)	**No**
	Scaup (*Aythya marila*)*	**No**
	Shelduck (*Tadorna tadorna*)	**No**
	Shoveler (*Anas clypeata*)	**No**
	Svalbard Barnacle goose (*Branta leucopsis*)	**No**
	Teal (*Anas crecca*)	**No**
	Turnstone (*Arenaria interpres*)	**No**
	Whooper swan (*Cygnus cygnus*)	**No**
	Waterfowl assemblage	**No**
	Natterjack toad (*Bufo calamita*) (Ramsar site Criterion)	**No**
Castle Loch, Lochmaben SPA & Ramsar	Pink-footed Goose (*Anser brachyrhynchus*)	Yes

Table 4-4 Summary of potential LSEs identified for QIs / SCIs of European Sites.

4.5 In-Combination Effects with other Plans or Projects

This assessment aims to identify any possible significant in-combination or cumulative effects of the proposed SMP with other plans or projects on the European Sites identified in Table 4-4. A series of individually modest impacts may, in combination, produce a significant impact.

Plans and projects relevant to the area were searched in order to identify any elements of the plans and projects that may act cumulatively or in-combination with the proposed development. A search of Dumfries & Galloway Council's planning enquiry system was also conducted for developments that may have in-combination effects on European Sites. A full list of Plans and Programmes and their interaction with the SMP is provided in Appendix D of the SEA Environmental Report. Table 4-5 includes the Plans or projects

considered for the potential to affect European sites considered cumulatively or in-combination with the SMP. Owing to the strategic nature of the SMP, the potential for in-combination or cumulative effects of other Plans or projects on European sites with the SMP may vary over the lifetime of the Plan; currently approved, pending or planned Plans and projects should be assessed at project level for the potential for in-combination or cumulative effects on European sites with projects arising from implementation of the SMP policies.

Plan / Project	Key Policies / Objectives / Issues	Assessment of In-Combination Effects
National Plans and Programmes		
National Planning Framework 3 (June 2014)	The National Planning Framework (NPF) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole.	The HRA for the NPF assessed the potential for significant effects on European sites from national developments. It concludes that there are no adverse effects on European site integrity either alone, or in combination. Consequently, no significant in-combination effects with the SMP are anticipated.
Draft Climate Change Plan (2017-2032)	The aim of the Climate Change Plan is to reduce GHG emissions.	The draft climate change plan encourages renewable energy projects, which have the potential to result in in-combination effects. However, any renewable energy project will require planning permission, and Dumfries & Galloway LDP2 will not permit development proposals that would adversely protect European sites. Consequently, no significant in-combination effects with the SMP are anticipated.
Marine (Scotland) Act 2010	This Act established a new marine planning system, overseen by Marine Scotland. It makes provision in relation to functions and activities in the Scottish marine area, including provision about marine plans, marine activities, the protection of the area and its wildlife including seals, and regulation of sea fisheries.	The Act recognises that potential effects on marine health or seascape can arise from land based developments and these are not necessarily restricted to developments on the shoreline. Conversely, potential offshore developments may impact on onshore interests. Under the Act, Local Authorities and Marine Planning Partnerships (MPPs) are expected to work together in planning and managing these onshore and offshore effects
Scottish National Marine Plan (NMP) and the Scottish Marine Regions Order, adopted 2015	The National Marine Plan covers the management of both Scottish inshore waters (out to 12 nautical miles) and offshore waters (12 to 200 nautical miles). This Plan is an important step in the implementation of the Marine (Scotland) Act 2010 and provides an overarching framework for all marine activities. The Scottish Marine Regions Order enabled the creation of 11 marine planning regions; regional marine planning powers may be delegated to Marine Planning Partnerships (MPPs) within these regions. The area covered by the SMP falls within the Solway Marine Region, however no MPP has	A Regional Marine Plan which will guide decision making for the Solway Firth up to the mean high water mark is to be prepared by a MPP. Prior to the establishment of the Solway MPP, Dumfries & Galloway Council will seek to ensure coherence with the National Marine Plan (NMP). The Council will work closely with the MPP to ensure the Regional Marine Plan complements the National Plan and vice versa. At the same time, proper account will be taken of the SMP. This will ensure that there are no significant in-combination effects with the SMP.

Plan / Project	Key Policies / Objectives / Issues	Assessment of In-Combination Effects
	been established for the area, to date.	
Regional and Local Plans and Programmes		
Dumfries & Galloway Local Development Plan 2 (LDP2)	The Dumfries & Galloway LDP2 was adopted on 3rd October 2019 and sets out how and where land and property will be used in Dumfries & Galloway to realise the vision for the next 20 years.	A HRA was undertaken for the Dumfries & Galloway LDP2 and determined that only two aspects of the Plan (Policy ED3 The Crichton Quarter and Policy ED4 Chapelcross) had potential, either individually or cumulatively, to lead to minor residual effects on Solway Firth SAC. This related to the potential for water quality effects from run off during or post-construction of development. These effects were considered minimal, and all aspects of the LDP2, alone or in-combination, were screened out of further appraisal. There is therefore not considered to be any potential for in-combination effects on European sites with this Plan.
Solway Local Plan District Flood Risk Management Strategy (2016), and Solway Local Plan District (LDP 14) Draft Flood Risk Management Plans 2022-2028	The Local Flood Risk Management Strategy (2016) included an action to build from and update the SMP of 2005. This should take account of Scotland's Coastal Change Assessment.	Potential developers will have to ascertain the extent of the risk and if it could potentially be avoided or overcome. This should include climate change and flooding and have regard to the SMP (currently the 2005 Plan) but may require a more detailed level of assessment. Operations which are proposed to protect properties from coastal erosion must consider the impact they may have on the coastline or adjoining areas. Proper account should also be taken of the National Marine Plan, the Regional Marine Plan, once adopted, and possible cross-border interactions with the Cumbria Coastal Strategy. The SMP will feed into and support the Solway Local Plan District (LPD 14) draft Flood Risk Management Plans 2022-2028, by informing how to best manage risk in the coastal areas of the Plan. There is not considered to be any potential for in-combination effects on European sites with this Plan.
Cumbria Coastal Strategy	The Cumbria Coastal Strategy (CCS) aims to evaluate and manage the risks related to coastal flooding and erosion along the Cumbrian coastline on a long-term scale. Following on from the North West Shoreline Management Plan (SMP2) which covered the coastline from the Great Orme in North Wales to the Scottish Border, the need for a more focused Strategy was identified. The CCS will assess the existing condition of land and flood defences along the coastline and build on the existing proposals set out in the SMP2, identifying potential future interventions required.	Screening for Appropriate Assessment of the CCS was undertaken in June 2019. The Strategy recognized the potential for in-combination effects of its implementation with the SMP, however, was unable to expand upon as this SMP was not yet in progress. The possible sites identified that could be affected in-combination are: Solway Firth SAC, Upper Solway Flats and Marshes SPA. The Stage 2 HRA is not yet available for further assessment.
Ayrshire Shoreline Management Plan	The Ayrshire Shoreline Management Plan aims to	The CPU 6 in the SMP overlaps with a section in the south of the Ayrshire SMP, and there is

Plan / Project	Key Policies / Objectives / Issues	Assessment of In-Combination Effects
	provide guidance to operating authorities and regulatory bodies as to future sustainable flood and coastal erosion risk management. It covers the shoreline from the northern boundary of North Ayrshire to the southern limit of South Ayrshire at Galloway Burn.	potential for in combination effects on the nearby European sites, i.e. Luce Bay and Sands SAC, Mull of Galloway SAC, River Bladnoch SAC, Solway Firth SAC, Loch of Inch and Torrs Warren SPA and Ramsar, Loch Ken and River Dee Marshes SPA and Ramsar, and Upper Solway Flats and Marshes SPA and Ramsar. Each of the above sites was assessed for the potential for in combination effects with the Ayrshire SMP. A HRA was undertaken for the Ayrshire SMP and concluded no potential for LSEs on any of the above sites from implementation of the SMP policies, therefore there is not considered to be any potential for in-combination effects on European sites with this Plan.
Planning Applications	A search was undertaken of planning applications recently approved or received by Dumfries & Galloway Council. The majority of applications relate to agricultural, domestic, or small-scale commercial activities, with no potential for cumulative impacts on European sites. A number of windfarm sites have been granted approval or are pending approval in the area around St. John's Town of Dairy; there is potential for cumulative noise and displacement effects on the Greylag Goose population of Loch Ken and River Dee Marshes SPA, situated approx. 4km from the town.	Adherence to the overarching policies and objectives of the Dumfries & Galloway Local Development Plan 2 (2019) will ensure that local planning applications and subsequent grant of planning will comply with the requirements of relevant environmental legislation including the Habitats Directive. Therefore there is not considered to be any potential for in-combination effects on European sites with this Plan. However, currently approved, pending or planned projects should be assessed at project level for the potential for in-combination or cumulative effects on European sites with projects arising from implementation of the SMP policies.

Table 4-5 Plans or projects considered for the potential to affect European sites, in combination with the SMP.

4.6 Conclusions of HRA Screening

The Stage 1 screening assessment has identified that implementation of preferred policies of the SMP could result in a LSE (or the risk of this remains uncertain and hence the precautionary principle applies) on the QIs / SCIs of seven European sites, as follows:

- The potential for LSEs on QIs of Luce Bay and Sands SAC cannot be excluded, via direct or indirect habitat loss or damage; construction-phase water quality and habitat deterioration; interference with natural coastal processes and sediment supply; indirect habitat loss through coastal squeeze;
- The potential for LSEs on the QI of River Bladnoch SAC cannot be excluded, via construction-phase water quality and habitat deterioration;
- The potential for LSEs on QIs of Solway Firth SAC cannot be excluded, via direct or indirect habitat loss or damage; construction-phase water quality and habitat deterioration; interference with natural coastal processes and sediment supply; indirect habitat loss through coastal squeeze; including the potential for LSE in-combination with the CCS;

- The potential for LSEs on SCIs of Glen App and Galloway Moors SPA cannot be excluded, via direct or indirect habitat loss or damage; noise / visual disturbance or displacement;
- The potential for LSEs on the SCIs of Loch of Inch and Torrs Warren SPA / Ramsar site cannot be excluded, via direct or indirect habitat loss or damage; noise / visual disturbance or displacement;
- The potential for LSEs on the SCIs of Loch Ken and River Dee Marshes SPA cannot be excluded, via noise / visual disturbance or displacement; and
- The potential for LSEs on the SCIs of Solway Firth SPA / Upper Solway Flats and Marshes Ramsar cannot be excluded, via direct or indirect habitat loss or damage; noise / visual disturbance or displacement; including the potential for LSE in-combination with the CCS.

Consequently, these need to be subject to a Stage 2 Appropriate Assessment (Stage 8).

5 APPROPRIATE ASSESSMENT

5.1 Introduction

The Stage 2 assessment considers the potential for adverse effects[1] that implementation of the SMP could have on the integrity of any European site, with respect to its Conservation Objectives, structure and function. This represents Stage 8 of the stages of HRA outlined by NatureScot (SNH, 2015). EC guidance states that the integrity of a site involves its ecological functions, and the decision as to whether it is adversely affected should focus on, and be limited to, the site's Conservation Objectives. In the absence of specificity at this strategic Plan level regarding the potential actions that could be applied from implementation of the preferred policies contained within the SMP, a precautionary approach has been taken regarding the likelihood of adverse effects on site integrity; the addition of detail at lower-level consenting or project-level tiers will be necessary to apply site specific Conservation Objectives to any certainty regarding effects on site integrity. The potential effects have been assessed in the absence of any mitigation measures and with reference to the precautionary principle.

5.2 Approach to Assessment

In line with the relevant guidance, this stage of the Appropriate Assessment consists of three main steps:

- **Impact Prediction:** where the likely impacts of the SMP are examined. A source-pathway-receptor model has been used to assess potential for impact;
- **Assessment of Effects:** where the effects of the SMP are assessed as to whether they have any adverse effects on the integrity of European Sites as defined by Conservation Objectives; and
- **Mitigation Measures:** where mitigation measures are identified to ameliorate any adverse effects on the integrity of any European Site.

5.3 Impact Prediction

The methodology for the assessment of impacts is derived from the *Assessment of Plans and Projects in relation to Natura 2000 Sites* (EC, 2021). When describing changes / activities and impacts on ecosystem structure and function, the types of impacts that are commonly presented include:

- Direct and indirect effects;
- Short and long-term effects;
- Construction, operational and decommissioning effects; and
- Isolated, interactive and cumulative (or 'in-combination') effects.

A 'source-pathway-receptor' approach has been applied for this assessment:

- The **source** relates to the policies outlined in the SMP that have the potential to adversely impact European sites, e.g. HTL.
- The **pathway** relates to how implementation of the SMP can potentially impact European sites, e.g. habitat loss / fragmentation, disturbance to species, impacts to water quality.

The **receptor** is the European (UK National Site) network.

The Stage 1 screening appraisal has identified the potential for a number of principle pathways for likely significant effects to occur to European Sites as a result of the preferred policies of the SMP, these include:

[1] Effects considered include direct, indirect, short term, long term, temporary, permanent and cumulative.

- Direct or indirect habitat loss or damage from maintenance or construction of coastal flood and erosion defences;
- Construction-phase water quality and habitat deterioration;
- Interference with natural coastal processes and sediment supply;
- Habitat loss through coastal squeeze against fixed hard shoreline defences;
- Noise / visual disturbance or displacement of species.

In line with the methodology for impact prediction outlined above, the main ecological impacts that could potentially arise from the preferred policies outlined in the SMP were outlined in Section 4.4.1 and are detailed for each European site considered in * Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1. In-combination impacts were assessed in Section 4.5 and are noted in * Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1, where appropriate. However, owing to the strategic nature of the SMP, the potential for in-combination or cumulative effects of other Plans or projects on European sites with the SMP may vary over the lifetime of the Plan; currently approved, pending or planned Plans and projects should be assessed at project level for the potential for in-combination or cumulative effects on European sites with projects arising from implementation of the SMP policies.

5.4 Assessment of Effects

Stage 1 HRA concluded that seven European sites should be subject to a Stage 2 HRA, as the potential for LSEs on the Conservation Objectives of QIs / SCIs from implementation of the preferred policies of the SMP could not be excluded, in the absence of consideration of mitigation measures.

* Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1 assesses whether the policies identified as having a LSE in Chapter 4, are likely to have an adverse effect on the integrity of these European sites. Site integrity is defined by NatureScot (SNH, 2015) as '*the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and / or the levels of population of the species for which it is classified*'.

This assessment makes reference to the most up to date Conservation Objectives for QIs / SCIs of the sites and information included in the Conservation Advice Packages (CAP) for these sites, where available. Habitat survey information from the Habitat Map of Scotland (HabMoS) was also used to inform distribution of surveyed habitats within these sites.

5.5 Mitigation Measures

Where the potential for adverse effects on site integrity cannot be excluded at this strategic plan level, mitigation is outlined in * Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1 to ensure the avoidance of adverse effects. The mitigation provided is considered appropriate at this strategic Plan level, as the details regarding required defence maintenance works, the scale or nature of potential alterations to existing defences and / or new defences are not known at this stage.

The Plan level mitigation outlined in * Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1 states that any maintenance works or coastal flood and erosion protection schemes should be designed appropriately at the outset to avoid any direct losses, minimise the potential for damage to designated habitats, and avoid significant effects on European Sites. It stipulates that works areas should be minimised to avoid disturbance of habitats, and that best practice guidance should be followed during any maintenance or construction works in order to avoid the potential for pollution and the spread of invasive species.

Any projects that arise from the implementation of the policies identified in the SMP will themselves be required to conform with the regulatory provisions of Environmental Impact Assessment (EIA), Habitats Regulations Appraisal (HRA), Ecological Impact Assessment (EcIA), Consent under the Nature Conservation (Scotland) Act 2004, environmental risk assessments, and planning regulations / requirements, as appropriate. The Plan-level mitigation outlined in * Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1 includes the requirement for consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 (for SSSIs) and / or project-level HRA, which should prescribe appropriate project-level mitigation measures, when specific details regarding the scale and nature of any works are known.

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
Luce Bay and Sands SAC						
PU 20: Primary HTL **PU 21: Localised HTL** **PU 22: Localised HTL** **PU 23: Localised HTL** **PU 24: Primary HTL** **PU 25: Primary HTL** **PU 26: Localised HTL**	Direct loss of designated habitat should new / extended coastal defences encroach on these habitats and / or indirect loss or damage to habitats in the vicinity of defences. Habitat deterioration through construction-phase impacts (water quality / invasive species). Interference with natural coastal processes and sediment supply to designated habitats.	Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* Embryonic shifting dunes Fixed dunes with herbaceous vegetation ("grey dunes")* Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	To avoid deterioration of the qualifying habitats, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and To ensure for the qualifying habitats that the following are maintained in the long term: • *Extent of the habitat on site* • *Distribution of the habitat within site* • *Structure and function of the habitat* • *Processes supporting the habitat* • *Distribution of typical species of the habitat* • *Viability of typical species as components of the habitat*	There are areas of designated dune habitat within PU 22, and in the northern part of PU 23, as shown in the Sand Dune Vegetation Survey of Scotland (HabMoS). Localised HTL in PU 22 is likely to involve limited maintenance of informal defences, while HTL in PU 23 may require additional hard defences or soft shoreline management measures, however no details are known at this stage as the next stage of policy implementation is further study. There is potential for direct loss of / damage to designated dune habitats in the footprint of any new works or upgrading of defences in this area, which could adversely affect conservation objectives such as	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these areas will be subject to further study. The following plan-level mitigation is proposed: Maintenance works / coastal flood and erosion protection schemes will be designed appropriately to avoid footprint losses, reduce any damage to dune habitats and avoid significant effects on the SAC. Mitigation for works will include: - works area minimised and traffic routed to	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			• *No significant disturbance of typical species of the habitat* Qualifying interest features are currently in Unfavourable Condition, all are declining with the exception of 'grey dues', which are no change; management measures are in place that should, in time, improve the features to Favourable condition. The current condition of the dune system is understood to primarily result from 'under grazing'. The latest (2019) Article 17 Conservation Status Assessment for these habitats includes 'Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and	*extent of the habitat on site*, or alter sediment transport within this area. There is potential for habitat deterioration in the vicinity of maintenance / construction activity through pollution impacts or the spread of invasive species. HTL in PU 20 may require upgrading of existing defences, while HTL in PUs 21, 24, 25 and 26 is likely to involve limited maintenance of existing defences, however no details are known at this stage as the next stage of policy implementation is further study. Any modification of existing defences in these areas could affect coastal processes and the supply of sediment northwards to dune habitats. This could have implications for conservation objectives, including	avoid sensitive dune habitats; - Best practice guidance followed to avoid pollution and the introduction of invasive species; - Any works should ensure that they do not interfere with natural coastal processes, including sediment transport; and - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including dune habitat monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			infrastructures) (F08)' and 'Other invasive alien species (other than species of Union concern) (I02)' as high pressures.	*processes supporting the habitat*.	known. At project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect the coastal habitats. The HRA should conclude 'no adverse effects' onsite integrity.	
PU 20: Primary HTL **PU 21: Localised HTL** **PU 22: Localised HTL** **PU 23: Localised HTL** **PU 24: Primary HTL** **PU 25: Primary HTL**	Direct loss of designated habitat should new / extended coastal defences encroach on these habitats and / or indirect loss or damage to habitats in the vicinity of defences. Habitat deterioration through construction-phase impacts (water quality / invasive species). Interference with natural coastal processes and sediment supply to designated habitats.	Large shallow inlets and bays Mudflats and sandflats not covered by seawater at low tide Reefs Sandbanks which are slightly covered by sea water all the time	To avoid deterioration of the qualifying habitats, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and To ensure for the qualifying habitats that the following are maintained in the long term: • *Extent of the habitat on site*	HTL in PU 20 may require upgrading of existing defences, while HTL in PU23 may require additional hard defences or soft shoreline management measures. In PUs 21, 24, 25 and 26 HTL is likely to involve limited maintenance of existing defences, however no details are known at this stage as the next stage of policy implementation is further study.	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these areas will be subject to further study. The following plan-level mitigation is proposed: Maintenance works / coastal flood and erosion protection schemes will be	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
PU 26: Localised HTL	Loss of intertidal habitats due to rising sea levels against fixed defences.		• *Distribution of the habitat within site* • *Structure and function of the habitat* • *Processes supporting the habitat* • *Distribution of typical species of the habitat* • *Viability of typical species as components of the habitat* • *No significant disturbance of typical species of the habitat* Qualifying interest features are currently in Unfavourable Condition. The latest (2019) Article 17 Conservation Status Assessment for these habitats includes 'Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and	There is potential for direct loss of / damage to designated intertidal habitats in the footprint of any new works or upgrading of defences in these areas, which could adversely affect conservation objectives such as *extent of the habitat on site*. There is potential for habitat deterioration in the vicinity of maintenance / construction activity through pollution impacts or the spread of invasive species. Any modification of existing defences in these areas could affect coastal processes and sediment transport, which could have implications for conservation objectives, including *processes supporting the habitat*.	designed appropriately to avoid footprint losses, reduce any damage to intertidal habitats, avoid potential for intertidal narrowing and avoid significant effects on the SAC. Mitigation for works will include: - works area minimised; - Best practice guidance followed to avoid pollution and the introduction of invasive species; - Any works should ensure that they do not interfere with natural coastal processes, including sediment transport; and - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			infrastructures) (F08)', 'Other invasive alien species (other than species of Union concern) (I02)' and 'Mixed source marine water pollution (marine and coastal) (J02)' as high pressures. The CAP for marine features at the site includes sensitivity and vulnerability of these habitats to civil engineering, including construction and maintenance of structures such as linear coastal defences or erosion control measures.		which will prescribe project-level mitigation measures including intertidal habitat monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known. At project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect the intertidal habitats. The HRA should conclude 'no adverse effects' on site integrity.	
PU 20: Primary HTL **PU 21: Localised HTL**	Direct loss of supporting habitat should new / extended coastal defences encroach on these habitats and / or indirect loss or	Great-crested newt	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the	As per coastal designated habitats. HTL also has potential for noise and visual disturbance and displacement of the	As per coastal designated habitats. Project-level mitigation measures may also include survey	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
PU 22: Localised HTL **PU 23: Localised HTL** **PU 24: Primary HTL** **PU 25: Primary HTL** **PU 26: Localised HTL**	damage to habitats in the vicinity of defences. Deterioration of supporting habitat through construction-phase impacts (water quality / invasive species). Alteration to supporting habitat through interference with natural coastal processes and sediment supply. Disturbance of the species during construction / maintenance.		site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and To ensure for the qualifying species that the following are maintained in the long term: • *Population of the species as a viable component of the site* • *Distribution of the species within site* • *Distribution and extent of habitats supporting the species* • *Structure, function and supporting processes of habitats supporting the species* • *No significant disturbance of the species.*	species from these areas during maintenance or construction activities due to people and machinery at the site.	and monitoring of great-crested newt (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known.	
River Bladnoch SAC						
PU 15: Localised HTL	Deterioration of supporting habitat through construction-phase impacts (water	Atlantic Salmon (*Salmo salar*)	1. To ensure that the qualifying feature of the River Bladnoch SAC is	HTL in PU 15 is likely to involve limited maintenance of existing defences at	The details regarding any maintenance works are not	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
	quality / invasive species).		in favourable condition and makes an appropriate contribution to achieving favourable conservation status. 2. To ensure that the integrity of the River Bladnoch SAC is restored by meeting objectives 2a 2b and 2c for the qualifying feature. a. Restore the population of the species, including range of genetic types, as a viable component of the site. b. Restore the distribution of the species throughout the site. c. Restore the habitats supporting the species within the site and availability of food.	Wigtown, directly adjacent to the site boundary, however no details are known at this stage as the next stage of policy implementation is further study. There is potential for habitat deterioration in the vicinity of maintenance / construction activity through pollution impacts, which could have implications for conservation objective 2c.	known at this strategic plan stage. A HTL policy in this area will be subject to further study. The following plan-level mitigation is proposed: Maintenance works will be designed appropriately to avoid significant effects on the SAC. Mitigation for works will include: - Best practice guidance followed to avoid pollution and the introduction of invasive species; and - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
					measures when specific details of the scale and nature of the maintenance works are known. The HRA should conclude 'no adverse effects' on site integrity.	
Solway Firth SAC						
PU 1: Localised HTL **PU 2: Localised HTL*** **PU 3: Localised HTL** **PU 4: Localised HTL** **PU 6: Primary HTL** **PU 7:Localised HTL** **PU 8: Localised HTL**	Direct loss of designated habitat should new / extended coastal defences encroach on these habitats and / or indirect loss or damage to habitats in the vicinity of defences. Habitat deterioration through construction-phase impacts (water quality / invasive species). Interference with natural coastal processes and sediment supply to designated habitats.	Perennial vegetation of stony banks Fixed coastal dunes with herbaceous vegetation ("Grey dunes")	To avoid deterioration of the qualifying habitats, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and To ensure for the qualifying habitats that the following are maintained in the long term: • *Extent of the habitat on site* • *Distribution of the habitat within site* • *Structure and function of the habitat*	Actions to implement a primary HTL policy in PU 6, and a localised HTL policy in PU 4 and PU 7 may involve increasing the footprint of defences or constructing new defences. Localised HTL in PU 1, PU 2, PU 3, and PU 8 is likely to involve limited maintenance of informal defences. However, no details are known at this stage, as the next stage of policy implementation is further study. There is potential for direct loss of / damage to designated coastal	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these areas will be subject to further study. The following plan-level mitigation is proposed: Maintenance works / coastal flood and erosion protection schemes will be designed appropriately to avoid footprint losses, reduce any	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			• *Processes supporting the habitat* • *Distribution of typical species of the habitat* • *Viability of typical species as components of the habitat* • *No significant disturbance of typical species of the habitat.* Qualifying interest features are currently in Unfavourable Condition. The latest (2019) Article 17 Conservation Status Assessment for these habitats includes 'Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)', and for fixed coastal dune habitat, 'Other invasive alien species (other than species of	habitats in the footprint of any new works or upgrading of defences in areas where there is a HTL policy, which could adversely affect conservation objectives such as *extent of the habitat on site* or alter sediment transport within this area. There is potential for habitat deterioration in the vicinity of maintenance / construction activity through pollution impacts or the spread of invasive species. This could include dune habitat at Southerness in PU 7 /PU 8 Any modification of existing defences in these areas could affect coastal processes and sediment dynamics, which could have implications for conservation objectives, including *processes supporting the habitat*.	damage to coastal habitats and avoid significant effects on the SAC. Mitigation for works will include: - works area minimised and traffic routed to avoid sensitive coastal habitats; - Best practice guidance followed to avoid pollution and the introduction of invasive species; - Any works should ensure that they do not interfere with natural coastal processes, including sediment transport; and - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			Union concern) (I02)', as high pressures. The Standard Data Form for the site includes shipping lanes, ports, marine constructions (D03), Human induced changes in hydraulic conditions (J02), and Marine water pollution (H03) as medium pressures, and Invasive non-native species (I01) as a high pressure at the site.		coastal habitat monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known. At project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect the coastal habitats. The HRA should conclude 'no adverse effects' on-site integrity.	
PU 1: Localised HTL **PU 2: Localised HTL*** **PU 3: Localised HTL**	Direct loss of designated habitat should new / extended coastal defences encroach on these habitats and / or indirect loss or damage to habitats in the vicinity of defences.	Estuaries Mudflats and sandflats not covered by seawater at low tide Salicornia and other annuals colonising mud and sand	To avoid deterioration of the qualifying habitats, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to achieving favourable conservation status for	Actions to implement a primary HTL policy in PU 6, and a localised HTL policy in PU 4 and PU 7 may involve increasing the footprint of defences or constructing new defences. Localised HTL in PU 1, PU 2,	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
PU 4: Localised HTL **PU 6:Primary HTL** **PU 7:Localised HTL** **PU 8: Localised HTL**	Habitat deterioration through construction-phase impacts (water quality / invasive species). Interference with natural coastal processes and sediment supply to designated habitats. Loss of intertidal habitats due to rising sea levels against fixed defences.	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Sandbanks which are slightly covered by sea water all the time Reefs	each of the qualifying features; and To ensure for the qualifying habitats that the following are maintained in the long term: • *Extent of the habitat on site* • *Distribution of the habitat within site* • *Structure and function of the habitat* • *Processes supporting the habitat* • *Distribution of typical species of the habitat* • *Viability of typical species as components of the habitat* • *No significant disturbance of typical species of the habitat.* Sandbanks, Salicornia and Atlantic salt meadow at the site are currently in Favourable Condition, while estuaries, mudflats and sandflats and reefs are not assessed. The latest	PU 3, and PU 8 is likely to involve limited maintenance of informal defences. However, no details are known at this stage, as the next stage of policy implementation is further study. There is potential for direct loss of / damage to designated intertidal habitats in the footprint of any new works or upgrading of defences in these areas, which could adversely affect conservation objectives such as *extent of the habitat on site*. There is potential for habitat deterioration in the vicinity of maintenance / construction activity through pollution impacts or the spread of invasive species. This could include saltmarsh habitat in the vicinity of defences in PU 2,	areas will be subject to further study. The following plan-level mitigation is proposed: Maintenance works / coastal flood and erosion protection schemes will be designed appropriately to avoid footprint losses, reduce any damage to intertidal habitats, avoid potential for intertidal narrowing and avoid significant effects on the SAC. Mitigation for works will include: - works area minimised; - Best practice guidance followed to avoid pollution and the introduction of invasive species; - Any works should ensure that they do not interfere with natural coastal processes,	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			(2019) Article 17 Conservation Status Assessment for these habitats includes 'Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)' as a high pressure for all habitats, with the exception of sandbanks; 'Mixed source marine water pollution (marine and coastal) (J02)' as a high pressure for sandbanks, estuaries, mudflats and sandflats and reefs; and 'Other invasive alien species (other than species of Union concern) (I02)', as a high pressure for estuaries, mudflats and sandflats, Salicornia and reefs. The Standard Data Form for the site includes shipping lanes, ports, marine	PU 3, PU 4, and PU 6. Any modification of existing defences in these areas could affect coastal processes and sediment transport, which could have implications for conservation objectives, including *processes supporting the habitat*.	including sediment transport; and - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including intertidal habitat survey / monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known. At project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect the intertidal habitats. The HRA should conclude	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			constructions (D03), Human induced changes in hydraulic conditions (J02), and Marine water pollution (H03) as medium pressures, and Invasive non-native species (I01) as a high pressure at the site.		'no adverse effects' on-site integrity.	
PU 1: Localised HTL **PU 2: Localised HTL*** **PU 3: Localised HTL** **PU 4: Localised HTL** **PU 6: Primary HTL** **PU 7: Localised HTL** **PU 8: Localised HTL**	Deterioration of supporting habitat through construction-phase impacts (water quality / invasive species).	Sea lamprey (*Petromyzon marinus*) River lamprey (Lampetra fluviatilis)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and To ensure for the qualifying species that the following are maintained in the long term: • *Population of the species as a viable component of the site* • *Distribution of the species within site*	Actions to implement a primary HTL policy in PU 6, and a localised HTL policy in PU 4 and PU 7 may involve increasing the footprint of defences or constructing new defences. Localised HTL in PU 1, PU 2, PU 3, and PU 8 is likely to involve limited maintenance of informal defences. However, no details are known at this stage, as the next stage of policy implementation is further study. There is potential for habitat deterioration in the vicinity of maintenance / construction activity	As per coastal and intertidal designated habitats.	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			• *Distribution and extent of habitats supporting the species* • *Structure, function and supporting processes of habitats supporting the species* • *No significant disturbance of the species.*	through pollution impacts.		
Glen App and Galloway Moors SPA						
PU 30: Localised HTL **PU 31: Localised HTL** **PU 32: Primary HTL** **PU 33: Primary HTL short-term, MR medium to long-term** **PU 34: Primary HTL**	Direct or indirect loss of supporting habitats through: - Re-routed A77 road (MR in PU 33) encroaching on these habitats and / or indirect loss or damage to habitats in the vicinity of re-routed road. Disturbance / displacement of qualifying species	Hen harrier (*Circus cyaneus*)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • *Population of the species as a viable component of the site* • *Distribution of the species within site* • *Distribution and extent of habitats supporting the species*	Actions to implement a long-term MR policy in PU 33 may involve the re-routing of the A77 road. Owing to the proximity of the SPA, re-routing the A77 inland could directly or indirectly adversely affect habitats supporting Hen harrier at this site. However no details are known at this stage, as the next stage of policy implementation is further study. HTL as a primary policy in PU 32, PU 33 and PU 34 and MR as a primary long-term policy in	The details regarding any re-routing of the A77, maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL or MR policy in these areas will be subject to further study. The following plan-level mitigation is proposed: Any scheme to re-route the A77 road will be designed appropriately to avoid footprint losses, and identify	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			• *Structure, function and supporting processes of habitats supporting the species* • *No significant disturbance of the species*	PU 34 also has potential for noise and visual disturbance and displacement of the qualifying species from these areas during maintenance or construction activities due to people and machinery at the site. These PUs are outside the SPA boundaries but, following the precautionary principle, it is considered that the Hen harrier population of this SPA could utilise coastal habitats within these PUs. This could negatively affect the conservation objective '*no significant disturbance of the species*'.	and reduce any damage to suitable / sensitive habitat used by this species, and avoid significant effects on the SPA. Mitigation for works arising from implementation of MR and HTL policies will include: - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including timing of works to avoid periods of key bird usage in the identified locations, bird surveys / monitoring (if required) when specific details of the scale and nature of the works are known. At	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
					project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect the intertidal habitats. The HRA should conclude 'no adverse effects' on site integrity.	
Loch of Inch and Torrs Warren SPA & Ramsar						
PU 20: Primary HTL **PU 21: Localised HTL** **PU 22: Localised HTL** **PU 23: Localised HTL** **PU 24: Primary HTL**	Direct or indirect loss of supporting habitats through: - new / extended coastal defences encroaching on these habitats and / or indirect loss or damage to habitats in the vicinity of defences; - Habitat deterioration through construction-phase impacts (water quality / invasive species). - Interference with natural coastal	Greenland White-fronted Goose (*Anser albifrons flavirostris*) Hen harrier (*Circus cyaneus*)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • *Population of the species as a viable component of the site* • *Distribution of the species within site*	HTL policies have potential to adversely affect supporting habitat for these species, as described for coastal and intertidal designated habitat assessment at Luce Bay and Sands SAC. HTL also has potential for noise and visual disturbance and displacement of the qualifying species from these areas during maintenance or construction	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these areas will be subject to further study. The following plan-level mitigation is proposed: Maintenance works / coastal flood and	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
PU 25: Primary HTL **PU 26: Localised HTL**	processes and sediment supply to designated habitats. Disturbance / displacement of qualifying species		• *Distribution and extent of habitats supporting the species* • *Structure, function and supporting processes of habitats supporting the species* • *No significant disturbance of the species*	activities due to people and machinery at the site. This could negatively affect the conservation objective '*no significant disturbance of the species*'.	erosion protection schemes will be designed appropriately to avoid footprint losses, identify and avoid any damage to suitable / sensitive habitat used by these species, avoid potential for intertidal narrowing and avoid significant effects on the SPA. Mitigation for works will include: - works area minimised; - Best practice guidance followed to avoid pollution and the introduction of invasive species; - Any works should ensure that they do not interfere with natural coastal processes, including sediment transport; and - consultation with NatureScot to confirm the need	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
					for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including timing of works to avoid periods of key bird usage in the identified locations, bird surveys / monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known. At project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect the intertidal habitats. The HRA should conclude	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
					'no adverse effects' on site integrity.	
Loch Ken and River Dee Marshes SPA & Ramsar						
PU 9: Localised HTL **PU 13: Localised HTL**	Disturbance / displacement of qualifying species	Greenland White-fronted Goose (*Anser albifrons flavirostris*) Greylag Goose (*Anser anser*)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • *Population of the species as a viable component of the site* • *Distribution of the species within site* • *Distribution and extent of habitats supporting the species* • *Structure, function and supporting processes of habitats supporting the species* • *No significant disturbance of the species*	Localised HTL in PU 10 and PU 13 has potential for noise and visual disturbance and displacement of the qualifying species from this site during maintenance or construction activities due to people and machinery at the site. These PUs are outside the SPA boundaries, but are within the potential core range of the population of geese utilising the SPA; following the precautionary principle it is considered that this population could utilise coastal habitats within these PUs. This could negatively affect the conservation objective '*no significant disturbance of the species*'.	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these areas will be subject to further study. Following the precautionary principle, the following plan-level mitigation is proposed: - consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including timing of works to avoid periods of	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
					key bird usage in the identified locations, bird surveys / monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known. The HRA should conclude 'no adverse effects'.	
Solway Firth SPA / Upper Solway Flats and Marshes Ramsar						
PU 1: Localised HTL **PU 2: Localised HTL*** **PU 3: Localised HTL** **PU 4: Localised HTL** **PU 6: Primary HTL**	Direct or indirect loss of supporting habitats through: - new / extended coastal defences encroaching on these habitats and / or indirect loss or damage to habitats in the vicinity of defences; - Habitat deterioration through construction-phase impacts (water quality / invasive species).	Barnacle goose (*Branta leucopsis*) Bar-tailed godwit (*Limosa lapponica*) Cormorant (*Phalacrocorax carbo*) Curlew (*Numenius arquata*) Dunlin (*Calidris alpina*)	1. To ensure that the qualifying features of Solway Firth SPA are in favourable condition and make an appropriate contribution to achieving favourable conservation status. 2. To ensure that the integrity of Solway Firth SPA is maintained or restored as	Actions to implement a primary HTL policy in PU 6, PU 16 and PU 18, and a localised HTL policy in PU 4 and PU 7 may involve increasing the footprint of defences or constructing new defences. Localised HTL in the other PUs is likely to involve limited maintenance of existing defences. However, no details are known at this stage, as the next stage of policy	The details regarding any maintenance works, alterations of existing defences or new defences are not known at this strategic plan stage. A HTL policy in these areas will be subject to further study. The following plan-level mitigation is proposed:	No

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
PU 7: Localised HTL **PU 8: Localised HTL** **PU 9: Localised HTL** **PU 10: Localised HTL** **PU 12: Localised HTL** **PU 13: Localised HTL** **PU 14: Localised HTL** **PU 15: Localised HTL** **PU 16: Primary HTL** **PU 17: Localised HTL**	- Interference with natural coastal processes and sediment supply to designated habitats. Disturbance / displacement of qualifying species	Goldeneye (*Bucaphala clangula*)* Grey plover (*Pluvialis squatorola*) Golden plover (*Pluvialis apricaria*) Knot (*Calidris canutus*) Lapwing (*Vanellus vanellus*) Oystercatcher (*Haematopus ostralegus*) Pink-footed goose (*Anser brachyrhynchus*) Pintail (*Anas acuta*) Redshank (*Tringa totanus*) Ringed plover (*Charadrius hiaticula*) Scaup (*Aythya marila*) Shelduck (*Tadorna tadorna*)	appropriate, in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: a. The populations of the qualifying features are viable components of the site. b. The distributions of the qualifying features throughout the site are maintained, or where appropriate restored by avoiding significant disturbance of the species. c. The supporting habitats and processes relevant to the qualifying features and their prey / food are maintained or, where appropriate, restored. Restore objectives are set for bar-tailed	implementation is further study. HTL policies have potential to adversely affect supporting habitat for these species, as described for coastal and intertidal designated habitat assessment at Solway Firth SAC, which could negatively affect conservation objective 2c, as well as SSSI Management Objective 5 for natterjack toad (for PU s 2, 4, 6 and 7, which intersect the Ramsar site boundaries). HTL also has potential for noise and visual disturbance and displacement of the qualifying species from these areas during maintenance or construction activities due to people and machinery at the site. This could negatively	Maintenance works / coastal flood and erosion protection schemes will be designed appropriately to avoid footprint losses, identify and avoid any damage to suitable / sensitive habitats used by the species, avoid potential for intertidal narrowing and avoid significant effects on the SPA / Ramsar site. Mitigation for works will include: - works area minimised; - Best practice guidance followed to avoid pollution and the introduction of invasive species; - Any works should ensure that they do not interfere with natural coastal processes, including sediment transport; and	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
PU 18: Primary HTL		Whooper swan (*Cygnus cygnus*) Waterfowl assemblage Natterjack toad (*Bufo calamita*) (Ramsar site Criterion)	godwit and common goldeneye as they are considered to be in an unfavourable condition at the Solway Firth SPA. For natterjack toad, which is not a SCI species of the Solway Firth SPA, the relevant Conservation Objectives are inferred from the Upper Solway Flats and Marshes SSSI, taken from the Site Management Statement (SNH, 2010). Of the Management Objectives listed, the following (Objective 5) is considered relevant to consideration of impacts on the natterjack toad: • To maintain populations of other key plant and animal species. Maintain and enhance the existing water quality to prevent the loss of key plants and animals through sympathetic	affect conservation objective 2b, as well as Management Objective 5 for natterjack toad.	- consultation with NatureScot to confirm the need for consent under the Nature Conservation (Scotland) Act 2004 and / or HRA which will prescribe project-level mitigation measures including timing of works to avoid periods of key bird usage in the identified locations, bird / natterjack toad surveys / monitoring (if required) when specific details of the scale and nature of the maintenance works / coastal flood and erosion protection scheme are known. At project level, the potential for in-combination effects from implementation of SMP policies in other areas of the CPU should be examined, as well as other projects that could affect	

SMP Policy	Potential adverse effects	Qualifying Interest(s)	Conservation Objectives	Implications for QI in light of its conservation objectives	Mitigation required	Adverse effect on site integrity
			habitat management and maintenance. Maintain and manage freshwater and brackish pools for natterjack toad and other amphibian interest. The latest condition assessment for the species is Favourable, maintained (July, 2009).		the supporting habitats. The HRA should conclude 'no adverse effects' on site integrity.	

* Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1 Assessment of adverse effects on the integrity of screened in European sites

6 CONCLUSIONS

This Habitats Regulations Appraisal (HRA) record (including a Stage 2 appraisal for HRA) has considered the potential of the SMP to give rise to adverse effects on the integrity of European sites, with regard to their Qualifying Interests / Special Conservation Interests, associated conservation status and the overall site integrity, alone and in-combination with other relevant plans and programmes.

The Stage 1 screening appraisal assessed the potential for the SMP to result in LSEs on any European site, either alone or in-combination with other plans and projects. Of the European sites considered at screening stage, it was concluded that eight had no potential for LSEs on the Conservation Objectives of qualifying interests, and these were excluded from further assessment.

The Stage 1 screening appraisal concluded that a Stage 2 appraisal for HRA should be undertaken for the following reasons:

- The SMP is not directly connected with or necessary to the management of a European site; and
- LSEs on 7 no. European sites could not be excluded at the screening stage, alone or in-combination with other Plans and projects.

A Stage 2 appraisal for HRA of the policies comprising the SMP on the European sites that were screened in at Stage 1 was undertaken. A review of Conservation Objectives, Qualifying Interests / Special Conservation Interests and threats to site integrity for these sites was undertaken in order to identify sites that could be negatively impacted by the policies comprising the SMP.

The SMP is a strategic-level plan, and does not determine the precise location or nature of any development project. Implementation of the preferred policies of the SMP will be subject to further study. At this strategic level, implementation of the preferred SMP policies in a number of locations was considered to have the potential to result in significant effects on European sites, and it was therefore necessary to outline mitigation for these. For each European site, * Note at Public Consultation Stage HTL was the Primary policy for PU 2, however this was subsequently changed to MR (or potentially NAI), with localised HTL, based on confirmation from the MoD that potential for contaminated ground at Eastriggs was low.

Table 5-1 outlined avoidance and mitigation measures to prevent potential adverse effects on the integrity of the European sites concerned, including:

- **Avoidance:** Potential impacts will be avoided by locating and designing any future coastal flood and erosion protection schemes / relocation of infrastructure in a manner that avoids adverse effects to the Qualifying interests / Special Conservation Interests of the European Sites.
- **Mitigation at the Project level:** Potential impacts will be mitigated during the detailed design of any projects arising from implementation of SMP policies (coastal flood and erosion protection schemes / maintenance works / infrastructure projects). This will include measures to avoid significant adverse effects on European sites. Potential impacts will also be mitigated through consultation with, and project-level advice from NatureScot, and appropriate project-level mitigation such as detailed surveys, monitoring, timing of works, and the following of best practice guidance to avoid pollution during maintenance / construction.

On the basis of the proposed strategic-level policies of the SMP, and information on European sites, it has been concluded that, subject to securing the prescribed mitigation, the SMP will not adversely affect the integrity of any European site, either alone or in-combination with other relevant plans or programmes. Further assessment should be undertaken at project level, when detailed information on preferred shoreline management measures is known.

In light of the conclusions of the assessment contained in this Stage 2 appraisal for HRA, the authors are of the view that the adoption of the SMP alone, or in-combination with other plans and programmes, will not adversely affect the integrity of any European site, subject to the appropriate implementation of mitigation.

Accordingly, and in light of the conclusions of the assessment contained here, the Competent Authority is enabled to ascertain that the adoption of the SMP, alone or in-combination with other relevant plans and programmes, will not adversely affect the integrity of any European site.

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APPENDIX A

Conservation Objectives of European Sites Considered in the HRA

Luce Bay and Sands SAC

Luce Bay and Sands SAC is an extensive coastal and marine site covering an area of 48,753ha. The Annex I habitats that are a primary reason for selection of this site are 'Large shallow inlets and bays', 'Embryonic shifting dunes', 'Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)', 'Fixed coastal dunes with herbaceous vegetation (grey dunes)' and 'Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)'. Luce Bay and Sands SAC represents a high-quality large shallow inlet and bay, with sediments that range from mixed-sized boulders, deep sediments and mobile fringing sands supporting a rich plant and animal community. Torrs Warren-Luce Sands is the largest acidic dune system in south-west Scotland, containing a variety of dune landforms and therefore a complex mosaic of dune habitats. There are extensive areas of Atlantic decalcified fixed dunes (*Calluno-Ulicetea*), dominated by heather *Calluna vulgaris.* Owing to the length of dune front at the site, and its relative inaccessibility, there is an identifiable zone of embryonic shifting dune vegetation, dominated by lyme-grass *Leymus arenius*. Torrs Warren-Luce Sands has examples of two types of shifting dune vegetation; the foredunes support a narrow band of "white dunes", with associated species such as sand sedge *Carex arenaria* and red fescue *Festuca rubra*. The dunes are relatively undisturbed and are more or less free from grazing by domestic livestock, resulting in relatively stable vegetation communities. The current condition of designated habitats is shown in Table A-1. The main pressures on this site relate to biocenotic evolution and succession, invasive non-native species, problematic native species, fishing and harvesting of aquatic resources and air pollution (JNCC 2015a).

Qualifying Interest	Latest Assessed Condition
Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	Unfavourable Declining
Embryonic shifting dunes	Unfavourable Declining
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	Unfavourable Declining
Great-Crested Newt (*Triturus cristatus*)	Unfavourable Declining
Fixed coastal dunes with herbaceous vegetation (grey dunes)	Unfavourable No Change
Mudflats and sandflats not covered by seawater at low tide	Not Assessed
Reefs	Not Assessed
Large shallow inlets and bays	Not Assessed
Sandbanks which are slightly covered by sea water all the time	Not Assessed

Table A-1 Conservation Condition of Qualifying Interests of Luce Bay and Sands SAC

The conservation objectives for the Annex I habitats are as follows:

- To avoid deterioration of the qualifying habitat, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and
- To ensure for the qualifying habitat that the following are maintained in the long term:
    - Extent of the habitat on site
    - Distribution of the habitat within site
    - Structure and function of the habitat
    - Processes supporting the habitat
    - Distribution of typical species of the habitat
    - Viability of typical species as components of the habitat
    - No significant disturbance of typical species of the habitat.

The conservation objectives for the Annex II species great-crested newt are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and
- To ensure for the qualifying species that the following are maintained in the long term:
    - Population of the species as a viable component of the site
    - Distribution of the species within site

- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

The Conservation Advice Package (CAP) for the marine features of Luce Bay and Sands SAC NatureScot, 2006) provides advice of the sensitivity and vulnerability of the marine qualifying interests, and any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, in so far as such disturbance could be significant, for which the site has been designated. This includes coastal development (civil engineering) as one such operation, as follows:

"*The construction and maintenance of structures, both within and adjacent to the sea have the potential to cause direct loss of qualifying habitat and deterioration of adjacent habitats and communities as tidal currents and therefore coastal processes are affected. For example coastal structures such as linear coastal defences or erosion control measures (e.g. gabions) can affect local sediment suspension and deposition patterns and therefore have the potential to cause deterioration of qualifying habitats, particularly reefs, through smothering. Installation, replacement and maintenance of undersea cables have the potential to cause direct loss of qualifying habitats as well as local deterioration of qualifying habitats and communities*".

Mull of Galloway SAC

Mull of Galloway SAC covers an area of 137ha and is designated for the presence of the Annex I habitat vegetated sea cliffs of the Atlantic and Baltic coasts. The site has considerable biogeographical importance, straddling the boundary between northern and southern biota. There are large areas of maritime heath and grassland, base-rich flushes and rock-face vegetation and well-developed cliff scrub.

The CAP for the site (NatureScot, 2020a) lists the latest (2013) Site Condition Monitoring (SCM) for the designated habitat as 'Favourable Declining', and the UK overall Conservation Status as Unfavourable-Bad. Key factors affecting the site include changes in agriculture land use (fertiliser-drift and seed-throw) leading to over-enrichment, grazing practice and colonisation of the vegetated sea-cliffs by invasive native species (e.g. creeping thistle and bracken).

The Conservation Objectives for vegetated sea cliffs are as follows:

1. To ensure that the qualifying feature of Mull of Galloway SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status.
2. To ensure that the integrity of Mull of Galloway SAC is maintained by meeting objectives 2a 2b and 2c for the qualifying feature.
    a. Maintain the extent and distribution of the habitat within the site.
    b. Maintain the structure, function and supporting processes of the habitat.
    c. Maintain the distribution and viability of typical species of the habitat.

Burrow Head SAC

Burrow Head SAC covers an area of 244ha and is designated for the presence of the Annex II species Great-crested newt (*Triturus cristatus*). The site comprises a cluster of ponds situated in a rolling, agricultural landscape of pasture interspersed with stands of semi-natural vegetation. Numerous ponds occur in the shallow depressions, and Great-crested newts have been recorded in 20 ponds. The site contains by far the most important known Scottish population of this species and is also significant in overall UK terms.

The latest assessed condition (2010) for the qualifying interest is 'Unfavourable Declining'. The main pressures on this site relate to urbanisation and human habitation, mining and quarrying, commercial and industrial areas and biocenotic evolution and succession (JNCC 2015b).

The conservation objectives for the Annex II species are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
    - Population of the species as a viable component of the site
    - Distribution of the species within site
    - Distribution and extent of habitats supporting the species
    - Structure, function and supporting processes of habitats supporting the species
    - No significant disturbance of the species

River Bladnoch SAC

River Bladnoch SAC covers an area of 273ha and is designated for the presence of a high-quality population of Atlantic salmon *Salmo salar*.

The CAP for the site (NatureScot, 2020b) lists the latest (2011) SCM for the designated species as 'Unfavourable Recovering', and the UK overall Conservation Status as 'Unfavourable-Inadequate'. The unfavourable condition was assessed due to a decline in the numbers of adult recorded from rod catch data; the site is categorised as being unfavourable for salmon but recovering for habitat. Generally, Atlantic salmon may be impacted by a range of pressures in the freshwater and marine phases of their lifecycle. In the freshwater environment these pressures may include, amongst others: over exploitation, loss of habitat connectivity, habitat degradation, climate change-related changes to surface water temperature and hydrology, built development (such as hydropower), invasive non-native species, direct and diffuse pollution, predation and the inappropriate stocking of conspecifics. The main natural and artificial pressures on Atlantic salmon populations in the Bladnoch were assessed in a 2007 Catchment Management Plan. This identified 12 major pressures on the river, including: water quality and water resource management; river morphology and riparian habitat; salmon biology and fisheries management.

The Conservation Objectives for Atlantic salmon are as follows:

3. To ensure that the qualifying feature of the River Bladnoch SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status.
4. To ensure that the integrity of the River Bladnoch SAC is restored by meeting objectives 2a 2b and 2c for the qualifying feature.
    a. Restore the population of the species, including range of genetic types, as a viable component of the site.
    b. Restore the distribution of the species throughout the site.
    c. Restore the habitats supporting the species within the site and availability of food.

Carsegowan Moss SAC

This site lies between Newton Stewart and Wigtown and is one of the best examples of an active raised bog in Wigtownshire. The site has a domed bog surface and is typically carpeted with Sphagnum mosses, and also supports ericaceous shrubs, sedges and typical bog plants such as cranberry, bog rosemary, round leaved sundew and white beak sedge. On the edges of the bog the peat depth decreases and slopes towards the bog margin. Here the degraded raised bog habitat comprises birch woodland and scrub.

The CAP for the site (NatureScot, 2020c) lists the latest (2012) SCM for the designated habitats as follows:

- Active raised bogs 'Unfavourable Recovering', and the UK overall Conservation Status 'Unfavourable-Bad'.
- Degraded raised bog 'Unfavourable Recovering', and the UK overall Conservation Status 'Unfavourable-Bad'.

These bogs can be very sensitive to any changes in their hydrological conditions. Such changes can include changes to water levels through alterations to drainage and climatic changes; alterations to the acidic

conditions (typically a weakening of the acidity) that the vegetation communities need to persist; and physical damage to their structure, especially to their surface layers.

The overall objective for this SAC is to restore the healthy condition of the areas of active raised bog, and to restore the areas of degraded raised bog to become active raised bog.

The Conservation Objectives for active raised bogs and degraded raised bogs are as follows:

1. To ensure that the qualifying features of Carsegowan Moss SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.
2. To ensure that the integrity of Carsegowan Moss SAC is restored by meeting objectives 2a 2b and 2c.
    a. Maintain the extent and distribution of the habitat within the site.
    b. Restore the structure, function and supporting processes of the habitat.
    c. Restore the distribution and viability of typical species of the habitat.

Solway Mosses North SAC

Solway Mosses North SAC comprises two separate SSSIs: Longbridge Muir SSSI and Kirkconnell Flow SSSI.

The CAP for the site (NatureScot, 2020d) lists the latest (2009) SCM for the designated habitats as follows:

- Active raised bogs 'Unfavourable Recovering', and the UK overall Conservation Status 'Unfavourable-Bad'.
- Degraded raised bog 'Unfavourable Recovering', and the UK overall Conservation Status 'Unfavourable-Bad'.

These bogs can be very sensitive to any changes in their hydrological conditions. Such changes can include changes to water levels through alterations to drainage and climatic changes; alterations to the acidic conditions (typically a weakening of the acidity) that the vegetation communities need to persist; and physical damage to their structure, especially to their surface layers.

The overall objective for this SAC is to restore the healthy condition of the areas of active raised bog, and to restore the areas of degraded raised bog to become active raised bog.

The Conservation Objectives for active raised bogs and degraded raised bogs are as follows:

1. To ensure that the qualifying features of Solway Mosses North SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.
2. To ensure that the integrity of Solway Mosses North SAC is restored by meeting objectives 2a 2b and 2c.
    a. Maintain the extent and distribution of the habitat within the site.
    b. Restore the structure, function and supporting processes of the habitat.
    c. Maintain the distribution and viability of typical species of the habitat.

Solway Firth SAC

The Solway is a large, complex estuary, representing one of the most natural large estuaries in Europe, which has been largely unaffected by human activities such as industrial development and dredging. It is an unusually dynamic estuarine system, with mobile channels and banks, tidal streams that are moderately strong, and levels of wave energy that can be high. The site contains the third-largest area of continuous littoral mudflats and sandflats in the UK. The high-energy environment of the inner estuary means has led to constantly changing channels, and a predominance of sand, while there is a transition to less extreme conditions in the outer estuary. The current condition of designated habitats is shown in Table A-2. The

main pressures on this site relate to fishing and harvesting of aquatic resources, grazing, and renewable abiotic energy use (JNCC 2015c).

Qualifying Interest	Latest Assessed Condition
Sandbanks which are slightly covered by sea water all the time	Favourable Maintained
Salicornia and other annuals colonising mud and sand	Favourable Maintained
Atlantic salt meadows (*Glauco-Puccinelliatalia maritimae*)	Favourable Maintained
Perennial vegetation of stony banks	Unfavourable Declining
Fixed coastal dunes with herbaceous vegetation (grey dunes)	Unfavourable No Change
Estuaries	Not Assessed
Mudflats and sandflats not covered by seawater at low tide	Not Assessed
Reefs	Not Assessed
Sea Lamprey (*Petromyzon marinus*)	Not Assessed
River Lamprey (*Lampetra fluviatilis*)	Not Assessed

Table A-2 Conservation Condition of Qualifying Interests of Solway Firth SAC

The conservation objectives for the Annex I habitats are as follows:

- To avoid deterioration of the qualifying habitat, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and
- To ensure for the qualifying habitat that the following are maintained in the long term:
    - Extent of the habitat on site
    - Distribution of the habitat within site
    - Structure and function of the habitat
    - Processes supporting the habitat
    - Distribution of typical species of the habitat
    - Viability of typical species as components of the habitat
    - No significant disturbance of typical species of the habitat.

The conservation objectives for the Annex II species are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and
- To ensure for the qualifying species that the following are maintained in the long term:
    - Population of the species as a viable component of the site
    - Distribution of the species within site
    - Distribution and extent of habitats supporting the species
    - Structure, function and supporting processes of habitats supporting the species
    - No significant disturbance of the species

River Eden SAC

The River Eden SAC covers an area of 2463ha.The river catchment includes the headwaters that run off the Yorkshire Dales, North Pennines and eastern fells of the Lake District, as well as the Ullswater lake. The streams that flow from limestone areas are calcareous, whilst those flowing off the Pennines and the Lake District fells are more acidic in nature. The nutrient status gradually changes along the Eden's length as nutrient loadings increase in the lower reaches. It is designated for the following Qualifying Interests:

- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and / or of the *Isoeto-Nanoj*uncetea (3130)
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Btrachion* vegetation (3260)

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae Salicion albae*) (91E0)
- White-clawed (or Atlantic stream) crayfish (1092) (*Austropotamobius pallipes*)
- Sea lamprey (1095) (*Petromyzon marinus*)
- Brook lamprey (1096) (*Lampetra planeri*)
- River lamprey (1099) (*Lampetra fluviatilis*)
- Atlantic salmon (1106) (*Salmo salar*)
- Bullhead (1163) (*Cottus gobio*)
- Otter (1355) (*Lutra lutra*)

The main pressures on this site relate to cultivation, human induced changes in hydraulic conditions, invasive non-native species, changes in biotic conditions and pollution to groundwater (point sources and diffuse sources) (JNCC 2015d).

Conservation objectives for Qualifying Interests are as follows (Natural England, 2018):

- Ensure that the integrity of the site is maintained or restores as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Feature, by maintaining or restoring:
    - The extent and distribution of qualifying natural habitats and habitats of qualifying species
    - The structure and function (including typical species) of qualifying natural habitats
    - The structure and function of the habitats of qualifying species
    - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
    - The populations of qualifying species, and
    - The distribution of qualifying species within the site.

Strangford Lough SAC

Strangford Lough is a large (150km^2) marine inlet situated on the east coast of County Down in Northern Ireland. Approximately 50km^2 of the site lies between high water mark mean tide (HWMMT) and low water mark mean tide (LWMMT). Strangford Lough is important for the range of marine habitats and communities that it supports. In overall terms, Strangford Lough was deemed to be in **Favourable Condition** at the time of its designation. Reef habitat was deemed to be in 'Unfavourable' condition in the 2007 Condition Assessment, owing to a reduction in the extent of Horse Mussel beds. The main pressures on this site relate to invasive non-native species, pollution to surface waters and changes in abiotic conditions (JNCC 2015e). The Conservation Objective for the site is to maintain (or restore where appropriate) the Qualifying Interests to favourable condition (DAERA, 2018). For each SAC feature there are a number of component objectives, outlined in Table A-3 below.

Qualifying Interest	Component Objective
Large shallow inlet and bay	Maintain the extent of the large shallow inlet and bay
	Allow the natural processes which determine the development, structure, function and extent of the large shallow inlet and bay, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this habitat
Coastal lagoons	Maintain the extent of the coastal lagoons
	Allow the natural processes which determine the development, structure, function and extent of the coastal lagoons, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this habitat
	Maintain the extent of mudflats and sandflats not covered by sea water at low tide

Qualifying Interest	Component Objective
Mudflats and sandflats not covered by sea water at low tide	Allow the natural processes which determine the development, structure, function and extent of the mudflats and sandflats not covered by sea water at low tide, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this habitat
Reefs	To restore the reefs and their characteristic species to favourable condition, allowing for natural change
	Allow the natural processes which determine the development, structure, function and extent of the reefs, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this habitat
Annual vegetation of drift lines	Maintain and enhance the extent of annual vegetation of drift lines, subject to natural processes
	Allow the natural processes which determine the development, structure, function and extent of the annual vegetation of drift lines, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this community including the presence of notable species
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To restore the Atlantic salt meadows and their characteristic species to favourable condition, allowing for natural change
	To maintain or enhance, as appropriate, the composition of the salt marsh communities
	To maintain transitions between salt marsh communities and to other adjoining habitats
	To permit the continued operation of formative and controlling natural processes acting on the salt marsh communities
Perennial vegetation of stony banks	To restore the perennial vegetation of stony banks, and their characteristic species, to favourable condition, allowing for natural change
	Allow the natural processes which determine the development, structure, function and extent of the perennial vegetation of stony banks, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this community including the presence of notable species
Salicornia and other annuals colonising mud and sand	To restore the Salicornia and other annuals colonising mud and sand, and their characteristic species, to favourable condition, allowing for natural change
	Allow the natural processes which determine the development, structure, function and extent of the Salicornia and other annuals colonising mud and sand, to operate appropriately
	Maintain and enhance, as appropriate, the species diversity within this habitat
Harbour (Common) seal (*Phoca vitulina*)	Maintain and enhance, as appropriate, the Harbour (Common) seal population

Table A-3 Conservation Objective requirements for Qualifying Interests of Strangford Lough SAC

North Channel SAC

The North Channel SAC is designated for the presence of the Annex II species Harbour porpoise *Phocoena phocoena*. This species occurs in elevated densities in the site, particularly during the winter months (October – March). The site covers both inshore (within 12 nautical miles of coast) and offshore (beyond 12 nautical miles of coast) waters where the Department of Environment Northern Ireland (DOE) and the Joint Nature Conservation Committee (JNCC) have respective responsibility. The main pressures on this site relate to marine water pollution, military use and civil unrest, fishing and harvesting aquatic resources, shipping lanes, ports and marine constructions and exploration and extraction of oil or gas (JNCC 2019).

The conservation objectives for the site are as follows:

- To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an

appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise.

- To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:
  - The species is a viable component of the site
  - There is no significant disturbance of the species
  - The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

Glen App and Galloway Moors SPA

Glen App and Galloway Moors SPA comprises a large upland area of 8942ha, mainly covered by heather moorland and rough grassland. Site designation is based on the presence of a breeding population of Hen harrier *Circus cyaneus*. The latest assessed condition of Hen harrier (2008) is 'Favourable Maintained'. The main pressures on this site relate to interspecific faunal relations, grazing, hunting or collection of wild animals, and other ecosystem modifications (JNCC 2015f).

The conservation objectives for the qualifying species are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
  - Population of the species as a viable component of the site
  - Distribution of the species within site
  - Distribution and extent of habitats supporting the species
  - Structure, function and supporting processes of habitats supporting the species
  - No significant disturbance of the species

Loch of Inch and Torrs Warren SPA and Ramsar

The Loch of Inch and Torrs Warren SPA is comprised of a large eutrophic freshwater loch (Loch of Inch or White Loch) and a nearby area of foreshore and dunes (Torrs Warren) and covers a combined area of 2111ha. Site designation is based on the presence of an internationally important wintering population of Greenland white-fronted goose (*Anser albifrons flavirostris*) and a nationally important population of Hen harrier (*Circus cyaneus*). The latest assessed condition of Greenland white-fronted goose is 'Favourable Declining' (2019), and Hen harrier is 'Favourable Maintained' (2016). The main pressures on this site relate to interspecific faunal relations, grazing, hunting or collection of wild animals, changes in biotic conditions and changes in abiotic conditions (JNCC 2015g).

The conservation objectives for the qualifying species are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
  - Population of the species as a viable component of the site
  - Distribution of the species within site
  - Distribution and extent of habitats supporting the species
  - Structure, function and supporting processes of habitats supporting the species
  - No significant disturbance of the species

Loch Ken and River Dee Marshes SPA and Ramsar

Loch Ken and River Dee Marshes comprises a long linear loch and river system that is the southernmost of its type in Scotland. Loch Ken was dammed in the 1930s, which raised the water levels, allowing marshes to reform along its banks. The site contains areas of swamp, fen, wet grassland and carr woodland. The

site supports internationally important roosting numbers of Greenland White-fronted Goose (*Anser albifrons flavirostris*) and Icelandic Greylag Goose (*Anser anser*), both of which also feed in agricultural areas outside of the site. The latest assessed condition of both species is 'Favourable Maintained' (2007 for Greenland White-fronted Goose; 2010 for Greylag Goose). The main pressures on this site relate to changes in biotic conditions, changes in abiotic conditions, interspecific faunal relations, and hunting or collection of wild animals (JNCC 2015h).

The conservation objectives for the qualifying species are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
    - Population of the species as a viable component of the site
    - Distribution of the species within site
    - Distribution and extent of habitats supporting the species
    - Structure, function and supporting processes of habitats supporting the species
    - No significant disturbance of the species

Solway Firth SPA

The Upper Solway Flats and Marshes SPA is situated on the English / Scottish border and represents one of the largest continuous areas of intertidal habitat in the UK. The estuarine complex is important to wintering wildfowl (ducks, geese and swans) and waders, and forms part of a series of estuaries on the west coast of the UK used by migrating waterbirds. This site supports virtually all of the Svalbard population of Barnacle Goose *Branta leucopsis* over the winter. There is no current assessed condition reported for the designated species. The main pressures on this site relate to pollution to surface waters (limnic & terrestrial, marine & brackish); fishing and harvesting aquatic resources; hunting and collection of wild animals; shipping lanes, ports, marine constructions; and marine water pollution (JNCC, 2020).

The draft conservation objectives (NatureScot / Natural England 2021) for the qualifying species are as follows:

3. To ensure that the qualifying features of Solway Firth SPA are in favourable condition and make an appropriate contribution to achieving favourable conservation status.
4. To ensure that the integrity of Solway Firth SPA is maintained or restored as appropriate, in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:
    a. The populations of the qualifying features are viable components of the site.
    b. The distributions of the qualifying features throughout the site are maintained, or where appropriate restored by avoiding significant disturbance of the species.
    c. The supporting habitats and processes relevant to the qualifying features and their prey / food are maintained or, where appropriate, restored.

Restore objectives are set for bar-tailed godwit and common goldeneye as they are considered to be in an unfavourable condition at the Solway Firth SPA.

Upper Solway Flats and Marshes Ramsar

The boundaries of the Upper Solway Flats and Marshes Ramsar site are coincident with those of Solway Firth SAC, and the former Upper Solway Flats and Marshes SPA; coastal areas of the site are coincident with the Upper Solway Flats and Marshes SPA.

The flats and marshes of the Upper Solway Firth form one of the largest continuous areas of intertidal habitat in Britain. The whole estuarine complex is a site of national and international importance for wintering wildfowl and wading birds and is a vital link in a chain of west coast estuaries used by migrating

birds. The site is also noted for its populations of breeding birds, natterjack toad and invertebrates. The geomorphology and vegetation of the estuarine saltmarshes or merses is also of international importance with broad transitions to mature 'upper-marsh' being particularly well represented. A number of rare plant species and geological exposures also occur within the site.

The site qualifies as a Ramsar site for the following criteria[2]:

Ramsar Criterion 2

Supports over 10% of the British population of natterjack toad (Habitats Directive Annex IV species (S1202)).

Ramsar Criterion 5 - Assemblages of international importance:

Species with peak counts in winter: 135720 waterfowl (5 year peak mean 1998 / 99 - 2002 / 2003)

Ramsar criterion 6 – Species / populations occurring at levels of international importance.

Qualifying Species / populations (as identified at designation):

Species with peak counts in Spring / Autumn	
Oystercatcher, Europe and NW Africa-wintering	56,831 individuals, representing an average of 5.5% of the population (5 year peak mean 1998/9 – 2002/3)
Species with peak counts in winter	
Whooper swan, Iceland / UK / Ireland	154 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9 – 2002/3)
Pink-footed goose, Greenland, Iceland / UK	4,321 individuals, representing an average of 1.8% of the population (5 year peak mean 1998/9 – 2002/3).
Barnacle goose, Svalbard / Denmark, UK	13,515 individuals, representing an average of 58.7% of the population (5 year peak mean 1998/9 – 2002/3).
Northern pintail, north-west Europe	4,264 individuals, representing an average of 7.1% of the population (5 year peak mean 1998/9 – 2002/3).
Greater scaup, western Europe	1,612 individuals, representing an average of 21.3% of the GB population (5 year peak mean 1998/9 – 2002/3). Red knot, western and southern Africa (wintering) 9,370 individuals, representing an average of 2% of
Red knot, western and southern Africa (wintering)	9,370 individuals, representing an average of 2% of the population (5 year peak mean 1998/9 – 2002/3).
Bar-tailed godwit, Western Palearctic	1,758 individuals, representing an average of 1.4% of the population (5 year peak mean 1998/9 – 2002/3).
Curlew, northern Europe (breeding)	6,179 individuals, representing an average of 1.4% of the population (5 year peak mean 1998/9 – 2002/3)
Redshank	3,459 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9 – 2002/3).

Table A-4 Ramsar Criterion 6 – species / populations occurring at levels of international importance

Species / populations identified subsequent to designation for possible future consideration under criterion 6.

[2] JNCC (2008), Ramsar Information Sheet: UK11079, Upper Solway Flats and Marshes. Available online at: https://jncc.gov.uk/jncc-assets/RIS/UK11079.pdf.

Species regularly supported during the breeding season	
Lesser black-backed gull, western Europe / Mediterranean / west Africa	2,402 apparently occupied nests, representing an average of 1.6% of the breeding population (Seabird 2000 Census)
Herring gull, north-west Europe and Iceland / W Europe	7,211 apparently occupied nests, representing an average of 1.9% of the breeding population (Seabird 2000 Census)
Species with peak counts in spring / autumn	
Ringed plover, Europe / north-west Africa	1405 individuals, representing an average of 1.9% of the population (5 year peak mean 1998/9 – 2002/3 - spring peak)
Species with peak counts in winter	
Dunlin, west Siberia / west Europe	14807 individuals, representing an average of1.1% of the population (5 year peak mean 1998/9 – 2002/3)

Table A-5 Species / populations identified subsequent to designation for possible future consideration under Criterion 6

Conservation Objectives for the Solway Firth SPA apply for those species also listed as a SCI for this site.

Castle Loch, Lochmaben SPA and Ramsar

Castle Loch, Lochmaben is located approximately 10 km east of Dumfries in south-west Scotland. The lake has eutrophic water conditions, with extensive fringes of emergent vegetation that merge into marshy grassland and then to carr woodland. An area of mature deciduous woodland has established on the drier ground. The site is a winter roost for large numbers of the Iceland / Greenland population of Pink-footed Goose *Anser brachyrhynchus.* During the day the geese feed on nearby agricultural land outside the SPA boundaries. The latest assessed condition of this species at the site is 'Unfavourable No Change' (2016). The main pressure on this site relates to renewable abiotic energy use, however this is considered a low level pressure (JNCC 2015i).

The conservation objectives for the qualifying species are as follows:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
    - Population of the species as a viable component of the site
    - Distribution of the species within site
    - Distribution and extent of habitats supporting the species
    - Structure, function and supporting processes of habitats supporting the species
    - No significant disturbance of the species

APPENDIX B

HRA Screening SMP – Steps 1-3

BACK TO MENU

Guidance on Habitats Regulations Appraisal of Plans – Classifying No Negative Effect	
A1	Options / policies that will not themselves lead to development e.g. because they relate to design or other qualitative criteria for development, or they are not a land use planning policy.
A2	Options / policies intended to protect the natural environment, including biodiversity.
A3	Options / policies intended to conserve or enhance the natural, built or historic environment, where enhancement measures will not be likely to have any negative effect on a European site.
A4	Options / policies that positively steer development away from European sites and associated sensitive areas.
A5	General policy statements or policies which only express general intentions or political aspirations.

Objective	Measure	Category A?	Next Stage	Comment
High-level SMP Policy 1: Advance The Line (ATL) Advancement of the existing shoreline, allowing new defences to be built on the seaward side of existing defences.	Potential measures could include new hard protection measures, mixed coastal / shore protection or soft protection.	No	Yes	Policy could lead to direct and indirect impacts on European sites.
High-level SMP Policy 2: Hold The Line (HTL) Hold the existing defence line, allowing maintenance or improvement of the standard of protection presently afforded.	Proactive maintenance and / or improvement of existing defences.	No	Yes	Policy could lead to direct and indirect impacts on European sites.
	Coastal flood and erosion protection scheme. Potential measures could include hard protection (e.g. sea walls, revetments, embankments), mixed coastal / shore protection (e.g. groynes, detached breakwaters), soft protection (e.g. dune stabilisation, beach nourishment).	No	Yes	Policy could lead to direct and indirect impacts on European sites.
High-level SMP Policy 3: Managed Realignment (MR) Abandoning existing properties or infrastructure and relocate outside the floodplain / erosion zone; or Realignment of existing defences.	Abandoning existing properties or infrastructure and relocate outside the floodplain / erosion zone	No	Yes	Policy could lead to direct and indirect impacts on European sites.
	Realignment of existing defences	No	Yes	Policy could lead to direct and indirect impacts on European sites.
High-level SMP Policy 4: No Active Intervention (NAI) No investment in coastal defences or operations and the shoreline is either allowed to remain in a natural state or to revert to a natural state.	Allow the shoreline to function naturally.	A1	No	Policy in itself will not lead to any direct or indirect impacts on European sites.